

No.ERB-I/2019/23/49

New Delhi, dated 09.12.2019

**ORDER**

Ministry of Railways (Railway Board) have decided to constitute a Committee to review MCNTM formulae. The Committee will consist of the following by name:-

- |  |               |
|--|---------------|
| (i) Shri A. K. Agarwal, PCE/Central Railway      | .....Convener |
| (ii) Shri Ajay Goyal, Director/IRICEN            | .....Member   |
| (iii) Shri Ashish Bansal, CTE/Northern Railway   | .....Member   |
| (iv) Mrs S. Darbari, FA&CAO/F&G/Northern Railway | .....Member   |

2. The Terms of Reference of the Committee will be as under:-

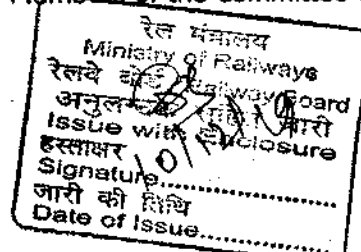
- (i) *Assesment of manpower requirement of different activities covered in 'T' and 'R' of MCNTM formulae for maintenance of Main lines with and without mechanization of activities especially shallow screening and unloading/loading of material.*
- (ii) *Assesment of requirement of manpower for maintenance of running yard lines*
- (iii) *List out activities which can be outsourced along with the requirement of funds under revenue for such outsourced activities.*

3. The tenure of the Committee will be three months from the date of its constitution.

4. The Headquarters of the Committee will be at New Delhi.

5. Civil Engineering-I branch, Railway Board will be the Nodal branch for functioning of the Committee. Therefore, submission of report of the Committee for consideration of Railway Board, implementation of its recommendations and all related issues including Parl. Questions, RTI cases and other formalities with regard to the Committee, shall be dealt with by Civil Engineering-I branch, Railway Board.

6. The Convener and Members of the Committee will draw TA/DA as per extant rules.



(Vijay Kumar)  
Under Secretary (Estt)-I  
Railway Board

Copy to:-

1. The General Managers, all Indian Railways (Including Metro & CORE) Construction and PUs.
2. The Director General, RDSO/Lucknow and NAIR/Vadodara.
3. PS/MR, EDPG/MR, EDPG/MOS(R) & Addl. PS/MR.
4. OSDs/PSOs/Sr.PPSs/PPSS/PSs to CRB, FC, ME, MRS, MS, MTR, MT, MST, MMM, Secy., All DGs/AMs/PEDs, JS(G), JS, JS(E), JS(P), JS(D), ED/I&P, Dir(Tele), Dir(A), DS(P), US(O&M), US(A)I & II, US(Protocol).
5. The Chief Commissioner of Railway Safety, 16-A, Ashok Marg, Lucknow.
6. The PFA, Northern Railway, New Delhi.
7. The Pay & Accounts Officer, Railway Board.
8. The Secretary General, FROA, IRPOF, AIRPFA.
9. The General Secretary, AIRF & NFIR.
10. The General Secretary, RBSS & RBSSS Association, Rail Bhawan, New Delhi
11. The General Secretary, IRCA, New Delhi.

...2/-

**Government of India  
Ministry of Railways  
(Railway Board)**

New Delhi, Dated 12-12-2019

**No.2019/AM/Planning/CommitteeMCNTM.**

To

- i) Shri A. K. Agarwal, PCE/Central Railway.....(Convener)
- ii) Shri Ajay Goyal, Director/IRICEN.....(Member)
- iii) Shri Ashish Bansal, CTE/Northern Railway.....(Member)
- iv) Mrs S. Darbari, FA&CAO/F&G/Northern Railway....(Member)

**Sub: Review of MCNTM Formulae on 16.12.2019.**

**Ref: Board's Letter No.ERB-I/2019/23/49 dated 09-12-2019.**

With reference to above, a presentation is to be made by the Committee on the above subject to Railway Board at 11:30 on 16-12-2019. The Committee is also required to submit their final Report by Thursday, 19-12-2019 positively.

Kindly make it convenient to attend.

  
(Piyush Agarwal)

Additional Member Planning  
Railway Board

Copy to:-

- i) OSD to CRB for information to CRB.
- ii) PPS to ME for information to ME.
- iii) Secretary Railway Board.
- iv) General Manager/Central Railway.
- v) General Manager/Northern Railway.

**मध्य रेल/CENTRAL RAILWAY**

**Principal Chief Engineer's Office,  
CHHATRAPATI SHIVAJI MAHARAJ TERMINUS,  
MUMBAI-400001.**

संख्या/No.W.226.MPP.Creation/P.Way

December 24, 2019

**EDCE (G)  
Railway Board  
New Delhi**

**Sub :** Report of the Committee to review MCNTM formulae.

**Ref :** i) Under Secretary (Estt)-I Railway Board's letter No.ERB-I/  
2019/23/49 dated 09.12.19.  
ii) AM/PL, Railway Board's letter No.2019/AM/Planning/  
Committee MCNTM dated 12.12.19.

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As desired by Board, report the Committee is sent herewith, in duplicate,  
for kind consideration of Railway Board.

**(A.K. Agrawal)  
Convener &  
Pr.Chief Engineer, CR**

DA : As above.

**C/- Shri Ajay Goyal, Member & Director/IRICEN/PA  
C/- Shri Ashish Bansal, Member & CTE/NR, NDLS  
C/- Mrs Shalini Darbari, Member & FA&CAO/F&G/NR, NDLS**



## **Report of the Committee**

**On**

### **Review of MCNTM Formulae for T & R Activities of Main Lines and Running Yard Lines**



## REPORT OF THE COMMITTEE SET UP BY BOARD TO REVIEW MCNTM FORMULAE

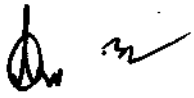


1. Committee was set up by Railway Board vide letter No. ERB-I/2019/23/49 dated 09.12.19 (Annexure-1) to review the MCNTM Formulae with the following terms of reference:-
  - (i) Assessment of manpower requirement of different activities covered in 'T' and 'R' of MCNTM formulae for maintenance of Main lines with and without mechanization of activities especially shallow screening and unloading/ loading of material.
  - (ii) Assessment of requirement of manpower for maintenance of running yard lines.
  - (iii) List of activities which can be outsourced along with the requirement of funds under revenue for such outsourced activities.
- (a) Members of the Committee :
 

(i) Shri A.K. Agrawal, PCE/CR	:	Convenor
(ii) Shri Ajay Goyal, Director/IRICEN	:	Member
(iii) Shri Ashish Bansal, CTE/NR	:	Member
(iv) Smt. Shalini Darbari, FA&CAO/F&G/NR	:	Member

A time period of three months was given to the Committee to submit its report.

- 1.1 Further, AM/PL, Railway Board vide letter No.2019/AM/Planning/Committee MCNTM dated 12.12.19, advised that a presentation be made by the Committee on 16.12.19 and also submit its report by 19.12.19 (Annexure-2).
2. The Committee visited Railway Board on 16.12.19 and had discussion with Chairman, Railway Board and Member Engineering. During this visit, AM/PL, briefed the Committee regarding views of the Railway Board that there are many items in the MCNTM report, which can be outsourced and that as per the terms of reference of the Committee, assessment is to be made for 'T' and 'R' activities, especially shallow screening, unloading/loading of materials and maintenance of running yard lines. Committee was further advised to give requirement of funds in revenue for the additional items proposed for outsourcing.
3. First meeting of the Committee was held in Board's office on 16.12.19 afternoon, and due to paucity of time, it was decided that while two members of the Committee headquartered at Delhi would interact with field officials of NR & NCR on 17 & 18<sup>th</sup> December'19 and the other two members would interact with field supervisors of WR and CR at Mumbai on 17<sup>th</sup> & 18<sup>th</sup> December'19. Thereafter, further meeting of all the four members of the Committee will be held on 19.12.19 and 20.12.19 in Pune to finalize the report. It was decided by the Committee that while making the report, data available in TMS would be made use of wherever considered appropriate.
4. **Broad Status of Manpower on IR**

Total sanctioned strength of Trackmen as of date is 2,70,737 as per details in Annexure-3, out of this manpower, Trackmen have largely been assigned the duties which are essentially required for safety of the track and also for assisting field supervisors in their inspection, and very few trackmen are available to improve the track.

(i) **Gateman:-**

There are 20,622 gates in IR on date. Out of which 14,829 are Engineering Gates. Total Manpower required for manning these gates is approximately 47,380 with rest givers and leave reserve. Calculations are placed as Annexure-4.

These gates are planned to be progressively eliminated, with this the requirement of gate keepers will come down every year commensurate with the reduction in gates.

(ii) **Keyman Patrolling:-**

There are 14,273 sanctioned posts of key men who are essentially deployed for safety related duty of daily patrolling of track which is to be done 365 days a year i.e. even on holidays. Rest giver (RG) and LR are provided from the gangs taking this into account total men required for this work are 18555. However, the sanctioned posts continue to be 14,273.

(iii) **Mates:-**

Sanctioned strength of Mates who are in-charges of gangs is 11685. They are essentially required for supervision and management of the gangs as per present system of working.

(iv) **Trolleyman: -**

There is a sanctioned strength of 16723 Trolley men, which is approximately based on average three trollies per SSE depot in-charge (one for in-charge SSE and two of Sectional SSE/P.Way & 4 men per trolley). The Trolley men also work for inspection of ADENs and other senior officials. These trollies are also shared by Inspector of works in certain sections. These Trolley men are also used for helping supervisors in taking measurements while inspecting various assets and the look out duties as well.

(v) **USFD:-**

Total workload of USFD is 4,48,562 km per year (Annexure-5). Progress of one team is 4 Km per day with DRT and 2 Km per day by SRT. Each Team is to be provided with 4-5 Trackmen daily. As per Board's latest instructions, complete USFD is to be done departmentally only, for this 2,252 men are required.

Sum of all the above (i) to (v) is 96,595.

- 4.1 The Committee, after examining the matter, is of the view that in the above categories, feasibility of reduction in manpower as per the current system of maintenance, even by mechanised means, does not appear to be there, apart from Gatemen. Proportionate reduction in the strength of Gatemen would take place as and when LCs are eliminated.

- 4.2 Therefore, out of total sanction of 2,70,037, as many as 96,595 staff are engaged in the above said 5activities,therefore presently effective manpower to work in track activities related to improvement of track is 1,73,422 only. Gatekeeping will progressively come down in future by elimination of level crossing gates which is to be accounted for in the annual review of gang strength as per MCNTM.
- 4.3 Another major activity is that of winter patrolling. As per provisions in Annexure-XB of LWR Manual, one Patrolman is required for every 2 Track KM. Total track of IR is 90,000 TKM, out of which while 15000 Km (approximately) is in Zones-I & II and about 75,000 Track Kms is in Zones III and IV. Winter patrolling is done for 3-4 months in Zone-III & IV while in Zones I & II this is either negligible or for a few days. For 75,000 Track kms with LR & RG of 30%, total requirement of men comes to 48,750,\* who are not available for track maintenance during winter for three months, which is the main working season, and also nor during summer for one to two months due to hot weather patrolling. Due to serious shortage of labour, this safety related activity is presently being done by increasing the beat to more than 2 Track Km per man depending upon availability of labour, which in clear violation of provisions stipulated in LWR Manual
- 4.4 Therefore, actual Track men in question which are to be examined for reduction by mechanisation/outsourcing etc., in the year 2019, are from the balance  $1,73,442 - 48,750^* = 1,24,692$  Trackmen and partly from 47,380 Gatekeepers after progressive elimination of Level Crossings in future. \*These 48,750 men would, however, be available during the period when patrolling is not there.

## 5. Background

5.1 Earlier gang strength was calculated based on **Mafflin** Formula, adopted in 1931, which was revised as "**Revised Mafflin Formula**" implemented in 1962, in this the gang strength was based on number of trains per day in the section.

5.2 Subsequently, **Special Committee** was set up in 1976, which was adopted in 1979, as per this the gang strength was based on Equated Track Kms with different manpower factors for various types of tracks. A correction factor of 0.5 was applied due to mechanization, for LWR track on PSC sleepers, mechanically maintained. As per Special Committee Formula, only 12 activities were mandated, to be done by gangs as under:-

- (i) Through packing
- (ii). Shallow screening
- (iii). Picking up of slacks
- (iv). Lubrication of joints
- (v). Casual renewal of rails
- (vi). Casual renewal of sleepers
- (vii). Attention to level crossings
- (viii). Attention to points & crossings
- (ix). Cess repair
- (x). Clearance of rails
- (xi). Creep Pulling
- (xii). Bridge Timber

*Shukla*  
24/11/2019

5.2.1. Strength calculated by the Special Committee formulae did not include Mate, Key men, Gate men, Trolley men etc. and their LR and RG, and all other activities apart from the 12 activities as above were to be done by casual labour.

5.3 As casual labour system was abolished, a need was felt to revise the formula and a Committee called "**MCNTM**" was set up in January 1996, who submitted its report in 2000 which was approved by Board with certain modifications vide letter No.05/CE-I/GNS/2/Vol.II/Part-II dated 03.03.2006 (Annexure-6), and at present the gang strength is required to be worked out based on the above formulae of MCNTM.

As per this Report, Activities have been sub divided as under: -

**i). Primary Maintenance Activities**

Activities 'T' (Affected by Traffic Density)

Activities 'R' (Unaffected by Traffic Density)

**ii). Auxiliary Maintenance Activities**

Activities 'M' (Miscellaneous)

Activities 'S' (Site Specific)

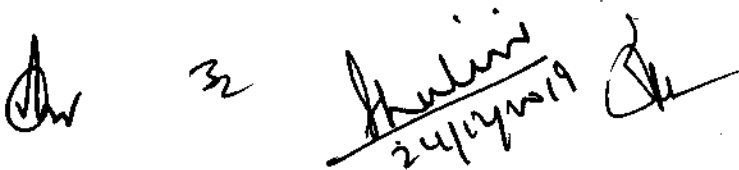
6. As per the terms of reference of the instant Committee, activities '**T**' and '**R**' of the **MCNTM** are to be primarily looked into by the present Committee.

Classification of (B.G.) tracks was done in three categories by the MCNTM Committee:-

- (a) Machine packed (Non-suburban)
- (b) Manually packed (Non-suburban)
- (c) Machine packed (High density suburban)

At present, in IR, most of the track (B.G.) is machine packed non-suburban and only a small part of the track is manually maintained which will also become machine packed in the near future. Similarly, machine packed high density suburban track is largely limited to Mumbai area whose overall percentage of IR is insignificant. Therefore, Committee decided to confine its study, in the short time available with it, to machine packed non-suburban sections which constitute majority of the track.

6.1 While 'T' Activities have been divided into 4 sub heads T1, T2, T3 and T4, 'R' activities have been divided into 12 sub categories R1 to R12. A sample table is given below, for 20 GMT track, indicating requirement of labour in terms of man days per km, for each sub-activity of 'T' and 'R' as per Table-P of MCNTM Report approved by Board with certain modifications (Annexure-6), which is appended below:-

 32 24/11/19



ACTIVITIES		NORM	REQUIREMENT	
T. ACTIVITIES AFFECTED BY TRAFFIC DENSITY			(Mandays / Km)	
<b>T.1 Slack attention to</b>				
(a)	Bad spots	12 sl./head, ¼ length	1660/(4x12)	35
(b)	Low Joints, (FP or welded), Glued joints	12 GJ/Lj attended 4 times/yr, 4 sl/joint, 12 sl/head	12x4x4/12	16
(c)	SEJ (1 No. per Km)	6 times/yr, 8 sl/SEJ, 12 sl/head	6x8/12	4
(d)	Minor curve alignment	As required		10
<b>Sub Total</b>				<b>65</b>
<b>T.2 For tie tamper working</b>		(2 yr. Cycle)		
(a)	Pre tamping operations	20 men/Km	20/2	10
(b)	Along with tamper	10 men for 1 week, 10 Km gang length	10x6(10x2)3	
(c)	Post tamping operations	28 me/km (includes boxing needed)	28/2	14
<b>Sub Total</b>				<b>27</b>
<b>T.3 Casual Renewal of</b>				
(a)	Rails	60 mandays/gang length of 10 Km		6
(b)	Track Sleepers	60 mandays/gang length of 10 Km		6
(c)	Fasteners (along with regauging)	100 mandays/gang length of 10 Km		10
<b>Sub Total</b>				<b>22</b>
<b>T.4 Repair Welding</b>		12 men per 1 failure/year		12
<b>Total for Activities T</b>				<b>126</b>
<b>ACTIVITIES 'R' UNAFFECTED BY TRAFFIC DENSITY</b>				
R.1	Lubrication of ERCs	Keyman's duty (occasional assistance)		2
R.2	Shallow screening (1/5 length)	Sl/head		83*
R.3	Loading, leading, unloading	Inferred from field data analysis		20
R.4	Overhauling of level crossing	1LC per 1.5 Km, 20 men/LC	20/1.5	13
R.5	Watching caution spot and Miscellaneous	Inferred from field data analysis		10
R.6	Tree cutting for visibility	-do-		10
R.7	Lubrication of rails in curves	-do-		4
R.8	Accident relief Carcass removal in run over case	-do-		10
R.9	Bridge sleeper attention and renewal	-do-		10
R.10	Pre-monsoon attention, such as clearing of drains & water ways, cess repairs, de-weeding of track attention to cuttings & trolley refuges	-do-		18
R.11	Creep pulling (approaches of bridge turnout)	-do-		5
R.12	Rectifying damage to L/C posts and gates	-do-		2
<b>Total for activities 'R'</b>				<b>187</b>
<b>Grand Total (T + R)</b>				<b>313 *</b>

\* This was modified by Railway Board vide letter No. 95/CE-I/GNS/2 Vol II-Pt II dated 03/06-03-2006 (Annexure-6) from 55 to 83 for PSC Sleeper track. The Grand Total taken in earlier MCNTM report was 285, which was modified by Railway Board to 313.

*Shubir*  
24/12/17

- 6.2 Committee decided to study adequacy of the provisions for manpower without going into finer details, primarily taking into account larger view, and work to decide upon the activities that can be partially/fully outsourced out of the 'T' and 'R' activities.

As per MCNTM report, following 20 activities are required to be done through contracts, which are not part of gang duties (other than 'T', 'R', 'M' & 'S' activities), which do not form part of the calculation of gang strength).

1. Formation treatment works.
2. Collection of ballast, training out ballast by material train, leading ballast from stack to track, insertion of ballast in track and profiling.
3. Deep screening of the ballast in track, carried out manually or by deploying ballast cleaning machine in which case manpower support is provided by the contractor.
4. Introduction of sub ballast and ballast layers.
5. Heavy repairs to track, including lifting.
6. Complete re-alignment of curved track.
7. Through renewal of rails, sleepers and fasteners.
8. Complete renewals of points and crossings, SEJs, traps, etc.
9. Resurfacing of crossings and switch rails.
10. Loading and unloading of P.Way materials in bulk.
11. Lorrying out of P.Way materials for other than casual renewal.
12. Security of materials in 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, side drains and catch water drains.
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 vicinity of tracks in coaching and goods yards, repair depots and workshops of Engineering, Mechanical, Electrical and S&T departments.

All these activities are not part of MCNTM Formulae in calculation of manpower, and these are considered to be already outsourced, by the present Committee.

7. To get a pulse of the position obtaining in the field, two Members of the Committee had detailed interaction with following SSEs (P.Way) of Central and Western Railways at Mumbai while two Members Headquartered at Delhi met SSEs (P.Way) of Northern and North Central Railways, on 17.12.19 and 18.12.19.

Sr. No.	Name of the Supervisors (S/Shri)	Designation
1.	Shiva kumar S. Chikgouda	SSE/P.Way/Kalburgi, CR
2.	Umesh Chandra Gupta	SSE/P.Way/Dadar, WR
3.	Pramod Kumar Tripathi	SSE/P.Way/Ahmedabad, WR

*Shalin*  
24/11/2019

4.	Radheshyam Singh	SSE/P.Way/Baroda, WR
5.	Samar Bahadur Yadav	SSE/P.Way/Kalyan, CR
6.	Sanjeev Kapoor	SSE/P.Way/Rajpura, NR
7.	Dori Lal	SSE/P.Way-1/Ghaziabad, NR
8.	Om Vir Singh	SSE/P.Way-2/Ghaziabad, NR
9.	Digambar Singh	SSE/P.Way/Kasganj, NCR
10.	O.P. Gupta	SSE/P.Way/South, Mathura Jn. NCR

7.1. During the meeting, following basic questions put to them were;

- What has materially changed since year 2000 when MCNTM Formulae were developed till date, requiring significantly more/less labour/resources;
- For which activities and to what extent further outsourcing should be contemplated keeping an eye on safety; and
- Any other activities in the MCNTM report where manpower prescribed is too less or too much, ignoring minor variations.
- Activities which need to be added/deleted from 'T' and 'R'.

7.2 Salient points brought out by the SSEs (P.Way) are as under:

- There are large arrears of track maintenance. Many basic activities like greasing of ERCs and shallow screening are not being done for want of adequate manpower and machines, which is leading to jammed ERCs and problem of drainage, increase in requirement of deep screening and rapid deterioration of the track.
- Activities of shallow screening and greasing of ERCs can largely be outsourced.
- Pre and post tamping activities can be outsourced. However, if contractual labour is not available during critical times i.e. Diwali, Holi, Harvest season etc., we cannot afford to stop tamping machines costing crores just because of non-availability of contractual labour, therefore, partial outsourcing, say 50% may be done to begin with.
- As per Correction Slip No. 142 dated 27.03.18 to IRPWM, greasing of ERC is to be completely done by gang, which was earlier to be done by key man and only need based occasional assistance was to be provided by gang. Therefore, this requirement of men shall be considered in the manpower calculation and taken into account while calculating cost of outsourcing.

While all the three technical Members are of the view that this is an important requirement and must be included in the manpower calculation. However, the finance member of the Committee is of the view that there should be no increase on this account as the total activity remains the same.

- (v) Due to increase in the length of LWR while number of fishplated joints have reduced giving relief in maintenance, but at the same time, a large number of joggled fishplates have been provided in the track which are required to be periodically opened for visual examination along with oiling and greasing, opening and re-fixing for tamping and USFD testing of welds, and additional work of de-stressing is also associated with LWR. As a result, total workload is more or less the same.
- (vi) A large number of activities such as drilling of holes, trimming and grinding of welds, cutting of rails etc. have been mechanized, which are now done with small track machines to achieve proper quality. While earlier, this activity was done for 8 hours by Trackman, but now this work is confined during block period only, as a result productivity has come down but quality of the work has certainly improved. Additional associated work of carrying the whole set of welding equipments/small track machines to and from the welding site has come into being.
- (vii) There are many activities which were not accounted for in the MCNTM report like stock verification, fuelling of track machines, carrying and providing various Engg. indicators, protection of track machines during block etc. which should be included in the Manpower Calculations.
- (viii) Loading/leading and unloading of materials is now partly being handled by UTV, because with increased traffic and speeds, it is not possible to deal the materials safely by rail dollies or dip lorries. While earlier, this activity was done under caution order for 8 hours, which is now being done by UTV in 1 to 2 hours of traffic block. For running of UTV, one man is required for taking and cancelling block, two men are required for protection of UTV in block in double line as per G&SR and further two men are required for assisting, guiding and lifting the materials and to keep an eye to avoid infringement to the adjacent line. **Number of rails withdrawn/casual renewal of sleepers have considerably increased with increase in traffic, thereby the work of loading, unloading, leading of materials for scattered spot renewals has gone up several fold.** As a result of this, while UTV has increased the safety but at the same time working time has reduced and thereby not much benefit from the point of view of reduction in manpower has accrued. Finance Member of the Committee, however, is not in agreement with this view. With mechanisation there should be reduction in loading/unloading.
- (ix) Earlier, curved switches were inserted in a block of about two hours, but due to many cases of block bursting, now as per new practice, first the switch is assembled outside and checked with S&T, disassembled and then it is inserted in track during block. This has increased requirement of manpower and the whole process takes about 10 - 15 men per day for about 5 days.
- (x) Patrolling activity consumes huge manpower at present. With available manpower it is not possible to do patrolling (especially cold weather patrolling) as per laid down norms. Winter

patrolling, as per MCNTM, is to be done for 60 days at the rate of 5 track km per man against the beat of 2 Track km per Patrolman as per Anneure-X B of LWR Manual, also it is actually done for longer period, for example in Western Railway, it is done for 120 days and in Northern Railway for 90 days. As a result the manpower actually required for this safety related activity is about 4 times of what is accounted for in the MCNTM Formula. Views of SSEs are enclosed as Annexure-7.

- (xi) For night patrolling in winter & monsoon, a companion is essentially required with Patrolmen for safety reasons and efficiently discharging the safety related duties during night time. Some Railways have started outsourcing this activity of providing companion to night patrolmen but are unable to do so in all sections due to paucity of funds.
- (xii) There are a number of scattered works of maintenance of track on main lines, loops and Points & Crossings etc. including special attention, which are not susceptible to measurements and checks. For this purpose, a special team of Trackmen should be provided to each SSE/P.Way in-charge to take care of several small activities vital for maintenance of track spread over entire jurisdiction.

**8.0. Committee scrutinized TMS data and following important points are worth noting -**

- (i). Total rails changed on account of accidents/derailment, corroded rail, crack in rail, failure of crossings, defective weld, distressing, DFWR, excess wear of rail, Glued joint failure, hogged rail, IMR rail, IMR weld, interchanging of rail, kinky rails, OBS rail, pitted rail, rail failure, scabbed rail, SEJ failure, SEJ gap adjustment, SEJ removal/ renewal, switch change, weld failure, wheel burnt rails, etc. from 01/12/2018 to 30/11/2019 i.e. preceding one year, is a staggering figure of 1,80,806 locations on IR (Annexure-8). With a total track kilometer of about 90,000 it works out to approximately 2 rail withdrawals per km as against 1 rail per kilometer considered by MCNTM Committee (Table 'P' of the MCNTM report). The work has, therefore, increased by about two folds. As the increase is significant, it is commensurately proposed to be increased in the manpower calculation in view of the reason that this activity is directly related to safety. However, the finance member is of the view that there should be no need to increase manpower on this account.
- (ii). Total welds done by Zonal Railways during 01/12/2018 to 30/11/2019 are 4,08,523 (Annexure-9), out of which departmental teams have done welding of 3,27,973 joints and rest 80,550 are by contractual agencies. While all the welds done by departmental teams are for maintenance activities, the works done by contractual agency are partly for maintenance and partly for renewal activities. It can, therefore, be safely assumed that 3,50,000 welds were done for maintenance i.e. for replacement of rails, Glued joints, etc. As the casual rail replacement has increased two folds, the repair welding has also gone up to similar extent which is also proposed to be enhanced accordingly in the manpower calculation, as this activity also has a direct bearing on safety. However, the finance member is of the view that there should be no need to increase manpower on this account as it can be handled with existing manpower.

*[Handwritten signatures and dates]*  
 24/11/2019

- (iii) 13,699 Level Crossings were overhauled from 01/12/2018 to 30/11/2019.
- (iv) Fittings were replaced as under in casual renewal from 01/12/2018 to 30/11/2019: (Apart from through renewal)
- ERC 375 Kms  
Liners 718 Kms  
GRSP 476 Kms

- (v) Inputs given on Turnouts are as under from 01/12/2018 to 30/11/2019.

- Complete renewal -3202 Nos.
- New Turn outs - 1371 Nos
- Removal of Turn outs - 2244 Nos
- Locations for correction - 1326 Nos
- Switch renewal - 7397 Nos
- Crossing changed -7378Nos

Out of above, while switch renewal and crossing renewal are primarily maintenance activities, location correction is also partly a maintenance activity.

- (vi) Total tamping done is 32,746 Km by 3X and CSM and 5233 Km by UNIMAT.

- (vii) **Maintenance of Yards**

Total reported accidents on IR from 01/04/2016 to 30/09/2019 on Engineering account have been 98, out of which, while 50 are on mid sections, 48 are on yards (Annexure-10). It is also well-known that many minor accidents in yards may not be reported to Board, therefore, a large number of accidents have taken place in yards which go to indicate that improvements in yards are overdue. Adequate maintenance of yards is lacking due to shortage of manpower.

## 9. **Other Important Points**

- (i) While interacting with various stake holders, the Engineering Members of the Committee noted that there is a belief that all mechanization of track maintenance is primarily done to save manpower, whereas in reality primary objective of mechanization is to improve the quality of heavy track structure which is otherwise not possible through manual means, which may be appreciated from the fact that if gang strength is increased several folds and track machines are withdrawn, it would not be possible to maintain the track in safe and satisfactory condition. In other words mechanization is to economically maintain the track at a level, which can carry present load of traffic, and at the same time save manpower. In fact during interaction with SSEs (P.Way), it transpired that mechanization always does not necessarily improve productivity, for example earlier all P.Way artisan staff used to work for 8 hours in a day in the time interval available between passage of trains for drilling, cutting in caution order, but, now these activities are being done in traffic blocks, with small track machines, reducing working time to 1-2 hours. Thus, although safety and quality have surely improved but working hours have reduced, therefore, saving in manpower is not there as expected. The Finance Member does not totally agree with this view. Globally, the intent of mechanization

*Shweta*

*Shweta*  
24/11/2019

726019/2020/GS is reduction in dependency on manpower, and reduction in manpower is one of the stated objectives of mechanization.

Many activities which were earlier non-block activities that used to be done under caution order throughout the day, are now being done under block protection such as lubrication of joints and replacement of fittings like GRSP etc.

- (ii) In present day track structure, track components have become too heavy to handle, for casual renewal of these materials, more manpower is required as compared to earlier days, e.g. fish plate of 52 Kg track (610 mm long) weighed only 35 kg per pair, against this now 60 Kg, one meter fish plate weighs 58 kg per pair. In fact, replacement of present day 60 kg one metre long fish plate cannot be handled by single person, i.e. Keyman.
- (iii) Track circuited areas (length) have significantly increased. Also, number of S&T fixtures such as Glued Joints, Axle Counters, etc. have gone up substantially. Pre-monsoon works of clearance of flange way of rails has significantly increased and also maintenance of Glued Joints has gone up. Total Glued Joints replaced during 01/12/2018 to 30/11/2019 were 46,972 (Annexure-11) i.e. about 0.5 glued joint per track km.
- (iv) Shallow screening is proposed to be fully outsourced, the cost of which, if done manually, at the rate of 83 man days, per km every five years, works out to  $83 \times \text{Rs. } 743.22 \times 5 / 1000 = \text{Rs. } 308.40$  per metre. If this work is done by FRM, the cost comes to Rs. 364.90 (average unit cost of IR) of machine + Rs.143.56 field contractual cost = Total Rs. 508.46 per metre.

In this connection, it may be appreciated that while the quality of work with FRM is far superior than what is achieved by manual labour, but the cost with mechanization does not come down. Thus, the requirement of funds projected for outsourcing this activity will not come down with FRM.

**10. Proposed outsourcing of 'T' & 'R' activities and corresponding requirement of funds**

Details are available in Tables I to IV as under:-

Table-I	:	Main Lines, T & R activities recommended for outsourcing.
Table-II	:	Running yard lines, 'R' activities recommended for outsourcing.
Table-III	:	Cost calculations for requirement of additional funds in revenue for outsourcing of recommended 'T' & 'R' activities of Main Lines.
Table-IV	:	Cost calculation for requirement of additional funds in revenue for running yard lines for outsourcing of recommended activities of running yard lines

2019/2020/CE-I Details of 'T' &amp; 'R' activities recommended for outsourcing for Main Lines (20 GMT) (TABLE-I)

Activity	Description	Manpower as per table 'P' of MCNTM report	Manpower as recommended by this committee	Recommended Outsourcing (%)	Activity to be outsourced (Mandays per km)	Remarks
T-1	Slack attention	65	65	33%	21.45	SSE/Pways have mentioned during the interaction that this activity has increased due to increase in traffic. However, this could not be quantified. Committee has kept same work load as provided in MCNTM. 1/3rd of work load is proposed to be outsourced.
T-2	For tie tamper working	27	27	50% ✓	13.5	This activity can be outsourced. However to take care of situation where costly tamping machines do not become idle due to unavailability of contractual labour, 50% outsourcing has been proposed.
T-3	Casual Renewal *	22	28	33%	9.24	For Casual renewal, manpower given in MCNTM is 22, however it is noticed that in MCNTM report, 1 rail withdrawal has been assumed, whereas actual rail withdrawals are 2 per km. As such mandays required have been kept as 28, out of which 33% of this activity is proposed to be outsourced.
T-4	Repair Welding *	12	24	0%	0	As rail withdrawals have gone up two folds, load of repair welding has also doubled. This activity is proposed to be done departmentally and mandays required have been kept as 24 instead of 12 in MCNTM.
	<b>Sub Total</b>	<b>126</b>	<b>144</b>		<b>44.19</b>	
R-1	Lubrication of ERCs *	2	16	100%	16	Earlier this activity was done by keyman and occasional assistance was provided by gang. As per correction slip number 142, this activity is now to be done by gang. Man days required for 1 km are 16 @ 50 sleepers per man at a frequency of every 2 years. Requirement of lubrication in corrosion prone areas @ 1 year has been ignored in calculations.
R-2	Shallow screening of track	83	83	100%	73	While accepting MCNTM report, manpower for shallow screening was modified from 55 to 83 vide Board's letter number 95/CE-I/GNS/2 Vol. II-PT.II dated 06.03.2006 (Annexure-6). This activity can be outsourced 100%, however 10 mandays per km are essentially required for protection of track and other miscellaneous activities.
R-3	Loading, leading, unloading	20	20	0%	0	This activity is now being partly handled by UTV because with increased traffic, it is not possible to deal the material safely by rail dollies or dip lorries. Earlier, this activity was done for 8 hours under caution order, which is now being done by UTV, in 1 to 2 hours of block. For running of UTV, one man is required for taking block, two men are required for protection of UTV in block and further two men are required for assisting, guiding and lifting the material. So while UTV has increased the safety but at the same time has reduced the working time and thereby net benefit from manpower point of view is not significant. Number of rails withdrawn/casual renewal of sleepers have considerably increased thereby the work of loading, unloading, leading of materials for scattered spot renewals has gone up several fold.
R-4	Overhauling of level crossings	13	7	100%	7	Scope has reduced to half due to reduction in number of LC/km. 13 mandays provided in MCNTM have been reduced to 7. This activity can be fully outsourced.
R-5	Watching caution spots & Misc	10	10	0%	0	
R-6	Tree cutting for visibility	10	10	80% ✓	8	20 % activity to be done departmentally
R-7	Lubrication of rails in curves	4	4	0%	0	Spread over activity, better done departmentally
R-8	Accident relief and carcass removal in run-over case	10	10	0%	0	Location & timing are uncertain, to be done departmentally
R-9	Bridge sleeper attention and renewal	10	10	0%	0	No outsourcing
R-10	Premonsoon attention, such as clearing of drains and waterways, cess repairs, dewatering of track and attention to cuttings and trolley refuges	18	18	50% ✓	9	50% outsourcing is proposed to be done
R-11	Creep pulling (approaches of bridge, turnout)	5	5	0%	0	Creep pulling has been retained departmentally
R-12	Rectifying damage to L/C posts and gates	2	2	0%	0	Bridge and T/outs approaches should be done departmentally
	<b>Sub Total</b>	<b>187</b>	<b>195</b>		<b>113</b>	
	<b>Grand Total</b>	<b>313</b>	<b>339</b>		<b>157.19</b>	

\* Finance member made certain observations which are deliberated in Para 7.2(iv), (vi) & 8(i).

Manpower required for 'T' activities after outsourcing = 144 - 44.19 = 99.81, say 100 mandays per km.

Manpower required for 'R' activities after outsourcing = 195 - 113 = 82 mandays per km.

Total manpower required for 'T' & 'R' activities after outsourcing = 339 - 157.19 = 181.81, say 182 mandays per km.

NOTE- Requirement of manpower, for 20 GMT track, after the proposed outsourcing, comes down to 100 from 126 in 'T' activities as per MCNTM bringing a reduction of 20.63%, and 82 from 187 in 'R' activities as per MCNTM bringing a reduction of 56.15%. For combined 'T' and 'R' activities, manpower comes down to 182 from 313 in MCNTM bringing a reduction of 41.85%. This combined percentage reduction will vary for different GMTs.

*Shukla*  
24/11/2018



Details of 'R' activities recommended for outsourcing **RUNNING YARD LINES**

(TABLE-II)

Activity	Description	Manpower as per MCNTM table 'S'	Manpower as recommended by this committee	Recommended outsourcing (%)	Activity to be outsourced (Mandays per km)	Remarks
R-1	Slack attention	28	28	33%	9.24	1/3rd of work load is proposed to be outsourced.
R-2	For tie tamper working	18	18	50%	9	This activity can be partly outsourced. However to take care of situation where costly tamping machines do not become idle due to unavailability of contractual labour, 50% outsourcing has been proposed.
R-3	Casual Renewal	12	12	33%	3.96	As for Main Line, 33% of this activity is proposed to be outsourced.
R-4	Lubrication of ERCs *	0	16	100%	16	Earlier this activity was done by keyman and occasional assistance was provided by gang. As per correction slip number 142 of IRPWM, this activity is now to be done by gang. Man days required for 1 Tkm are 16 @ 50 sleepers per man at a frequency of every 2 years. Requirement of increased lubrication in corrosion prone areas @ 1 year has been ignored in calculations.
R-5	Lubrication of Rail Joints	10	10	50%	5	50% of the work load is proposed to be outsourced
R-6	Shallow screening (1/5 length)	55	83	100%	73	Same is adopted as for Main Line since track structure is now more or less same on Main Lines & running yards lines. Also running line are often occupied by the trains which increases difficulty in doing the work.
R-7	Loading, leading, unloading	15	15	0%	0	This activity is now being partly handled by UTV, work load of this activity has increased. For running of UTV, one man is required for taking block, two men are required for protection of UTV in block and further two men are required for assisting, guiding and lifting the material. So while UTV has increased the safety but at the same time has reduced the working time and thereby net benefit from manpower point of view is not significant.
R-8	Lubrication of rails in curves	3	3	100%	3	
R-9	Premonsoon attention, such as clearing of drains and waterways, cess repairs, dewatering of track and attention to cuttings and trolley refuges	36	36	50%	18	50% Outsourcing has been proposed.
<b>Total</b>		<b>177</b>	<b>221</b>		<b>137</b>	

\* Finance member made certain observations which are deliberated in Para 7.2(iv), (viii) & 8(i).

Manpower required after outsourcing = 221 (-) 137 = 84 Man days per km.

NOTE- Requirement of man power, after the proposed outsourcing, comes down from 177 in MCNTM to 84, bringing a reduction of 52.54 %

Shukla  
24/11/2017

Details of 'T' &amp; 'R' activities recommended for outsourcing and their costing for Main Lines

(TABLE -III)

	Description	As per table I of this report (Mandays per km)	Outsourcing %	Activity to be outsourced (Mandays)	Minimum Wages (Rs.)	EPF @13.16%	ESIC @ 3.25%	1% Contingency on all the above	Contractor's Profit @10%	GST 18% on all	Total to be paid	Extra Budget requirement (Rs.)
T-1	Slack attention	65	33%	21.45								
T-2	For tie tamper working	27	50%	13.5								
T-3	Casual Renewal	28	33%	9.24								
T-4	Repair Welding	24	0%	0								
	<b>Sub Total 'T'</b>	<b>144</b>		<b>44.19</b>	<b>487</b>	<b>64.09</b>	<b>15.83</b>	<b>5.67</b>	<b>57.26</b>	<b>113.37</b>	<b>743.22</b>	<b>32842.74</b>
R-1	Lubrication of ERCs	16	100%	16								
R-2	Shallow screening of track	83	100%	73								
R-3	Loading, leading, unloading	20	0%	0								
R-4	Overhauling of level crossings	7	100%	7								
R-5	Watching caution spots & Misc	10	0%	0								
R-6	Tree cutting for visibility	10	80%	8								
R-7	Lubrication of rails in curves	4	0%	0								
R-8	Accident relief and carcass removal in run-over case	10	0%	0								
R-9	Bridge sleeper attention and renewal	10	0%	0								
R-10	Premonsoon attention, such as clearing of drains and waterways, cess repairs, dewatering of track and attention to cuttings and trolley refuges	18	50%	9								
R-11	Creep pulling (approaches of bridge, turnout)	5	0%	0								
R-12	Rectifying damage to L/C posts and gates	2	0%	0								
	<b>Sub Total 'R'</b>	<b>195</b>		<b>113</b>	<b>487</b>	<b>64.0092</b>	<b>15.8275</b>	<b>5.669167</b>	<b>57.2585867</b>	<b>113.372</b>	<b>743.22</b>	<b>83983.46</b>
	<b>Grand Total (T &amp; R)</b>	<b>339</b>		<b>157.19</b>		<b>128.1784</b>	<b>31.655</b>	<b>11.338334</b>	<b>114.5171734</b>	<b>226.744</b>	<b>1486.433</b>	<b>1,16,826.194</b>

*Shulini*  
24/11/2020

Details of 'R' activities recommended for outsourcing and their costing for RUNNING YARD LINES

(TABLE-IV)

	Description	As per Table II of this report (Mandays per km)	Outsourcing %	Activity to be outsourced (Mandays)	Minimum Wages (Rs.)	EPF @13.16%	ESIC @ 3.25%	1% Contingency on all the above	Contractor's Profit @10%	GST 18% on all	Total to be paid	Extra Budget requirement (Rs.)
R-1	Slack attention	28	33%	9.24								
R-2	For tie tamper working	18	50%	9								
R-3	Casual Renewal	12	33%	3.96								
R-4	Lubrication of ERCs	16	100%	16								
R-5	Lubrication of Rail Joints	10	50%	5								
R-6	Shallow screening (1/5 length)	83	100%	73								
R-7	Loading, leading, unloading	15	0%	0								
R-8	Lubrication of rails in curves	3	100%	3								
R-9	Premonsoon attention, such as clearing of drains and waterways, cess repairs, dewatering of track and attention to cuttings and trolly refuges	36	50%	18								
		221		137	487	64.8892	15.8275	5.669167	57.2585867	113.372802	743.22	1,01,969.29




*Amelia*  
24/11/2019



## 11. Recommendations of the Committee

In light of above deliberations of the Committee, the following recommendations are made for consideration of Railway Board.

- A.(i) In addition to the 20 activities listed out for outsourcing, (which are not part of duties of gangs and not included in Manpower calculations) in the MCNTM Report, further outsourcing of certain additional activities to the extent indicated in Para 10, Table-I, of this report may be resorted to in the case of machine packed track on **Main lines** (for 20 GMT).

As per calculation required manpower for 'T' activities comes down from 126 in MCNTM to 100 Man days per km, and for 'R' activities, it comes down from 187 in MCNTM to 82 Man days per km. The percentage reduction for 'T' and 'R' activities, on recommended outsourcing, comes to 20.63% and 56.14% respectively for **Main lines**.

Total manpower put together in 'T' & 'R' activities for **Main Lines** (20 GMT), reduces from 313 in MCNTM to 182 Man days per km after additional outsourcing of recommended activities, which brings a reduction of 41.85%.

The combined reduction percentage of 'T' & 'R' activities for **Main lines** will vary for different GMT sections. However, same percentage reduction can be applied for different GMTs (other than 20 GMT), for activities 'T' & 'R' separately, at the said rates of 20.63% and 56.14% respectively.

- (ii) Similarly, in respect of maintenance of **running yard lines** requirement of Manpower decreases from 177 in MCNTM to 84 Man days per km.

*The reduction in Manpower in (i) and (ii) above shall be subject to additional funds being made available in revenue demand 4B-200, as brought out, herein under (B) & (C) below.*

It may be noted that no such reduction in manpower in 'T' & 'R' activities in Main Lines and running yard lines, in (i) and (ii) above, in the categories of Gang Mates, Keymen, Gatekeepers, Artisans, Trolleyman, Storechaser, Watchman for the P.Way sections Main depot and staff of the USFD team etc. will apply.

- (iii) In the MCNTM Report in 'M' activities, cold weather patrolling has been considered for 60 days only, with a beat of 5 track km per patrol man, while as per Annexure -X B (Para 9.1.2(ii) of LWR Manual, the beat specified is only two track km per Patrolmen. Further in actual practice, this patrolling has to be done for 3 to 4 months. Thus the requirement of cold weather patrolling has gone up by more than 4 folds. Since the increase is quite significant, the Committee recommends that this should be taken into account, on actual basis, considering beat of 2 track Km as per LWR Manual while calculating the required gang strength every year as per the formula proposed as under:-

Man days required =  $Lw \times D/2$ , where  $Lw$  is length of LWR track in track Km and  $D$  is number of days requiring cold weather patrolling, instead of  $Lw \times 12$  as given in the MCNTM Report.

*Shelina*  
24/11/2019

- (B) The entire requirement of extra funds for the above recommended additional outsourcing under Revenue B 200, PU 32, comes to approximately **Rs.1,16,826** per km in the case of maintenance of **main lines** machine packed (20 GMT line) and **Rs.1,01,969** per km for maintenance of **running yard lines**, as per the calculations shown in Para 10, Tables-III and IV, considering the average basic cost per man day of Rs. 487 (Total cost Rs. 743.22) at the current level of **year 2019**.

The Committee, specifically recommends that the said proposed reduction in manpower in A(i) & (ii) above by outsourcing, with reference to MCNTM, shall be contingent upon clear assured provision of above said additional funds essentially required to maintain the track, in safe and satisfactory condition.

- (C) The approximate financial implication of additional activities of outsourcing recommended by the Committee comes to the order of **Rs.1052.24 crores** for **main lines** machine packed, 20 GMT line, (Rs.1,16,826.2 per km x 90068.90 km) and **Rs.81.5 crores** for machine maintained **running yard lines** (Rs.101969.30 per km x 7992.5 km), i.e. **Grand Total of Rs.1133.74 crores**. For this, additional assured and dedicated funding, under revenue, would essentially be required to maintain the track in safe condition as the activity recommended for outsourcing is in replacement of the departmental working, in equivalent man days, and no expenditure cut of any kind should be imposed on this. It is proposed that for this purpose, a separate PU under B 200 should be created. The Committee further recommends that the funds to be provided for this purpose under new PU, B 200, should not be permitted to be re-appropriated, diverted to any other sub head or PU, for any other activities other than track maintenance.
- (D) Above norms of Manpower should be followed for creation of posts and outsourcing in respect of new lines, gauge conversions, doublings and additional lines, etc. as well. There should be no surrender from Track Maintainer category for creation of these posts for new assets, after the above proposed reduction in Manpower due to additional outsourcing.
- (E) Creation of manpower required for track machines for mechanization shall be done without matching surrender from trackman, as after the above proposed reduction, it will not be possible to give matching surrender from Trackman. Similarly, there will be no scope for further reduction in manpower for neutralisation of cost of restructuring of track maintainers.
- (F) On reduction of manpower, with proposed additional outsourcing of recommended activities of 'T' & 'R', it should be ensured that the vacancies in the Track Maintainer category do not exceed by more than 5% at any time. For this, timely induction of suitable candidates in the cadre should be ensured by putting a proper mechanism in place.
- (G) There are a number of scattered works of maintenance of track on main lines, loops and Points & Crossings etc. including special attention, which are not susceptible to measurements and checks. It is recommended that a team of 20 labour per SSE/P.Way/In-charge should be made available through outsourcing as per item No.131270 of new USSOR 2019. This will take care of several small activities vital for maintenance of track spread over entire jurisdiction. For this, requirement of additional funds is already covered in what has been suggested for additional outsourcing in Para (C) above.

*Shukla*  
24/11/19

726019/2020/CE-I  
(H)

- Fixed Time Corridor Blocks of adequate duration every day, in each section, should be legislated and enforced for efficient utilisation of precious resources of track machines, manpower etc. If exact time of block is known at least one day in advance the available manpower can more gainfully be utilized elsewhere and for other works beyond the block duration.
- (I) A review of the yardsticks and norms recommended by this Committee may be re-visited after 5 years as by that time full mechanisation of track activities is expected to be completed.
- (J) Committee is of the view that Recommendations of the Committee should be implemented in toto, and not selectively for few isolated recommendations, to avoid any implications on safety.

While the Committee has exercised due care in framing the report any inadvertent error that might have crept in because of paucity of time may please appropriately be modified while considering this report.

  
(Ashish Bansal)

Member & Chief Track Engineer  
Northern Railway

  
(Shalini Darbari)

Member & FA & CAO/FG  
Northern Railway

  
(A.K. Agrawal)

Convenor & Principal Chief Engineer  
Central Railway

  
(Ajay Goyal)

Member & Director  
IRICEN/Pune

## Annexures

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GOVERNMENT OF INDIA  
रेलमंत्रालय (MINISTRY OF RAILWAYS)  
रेलवे बोर्ड (RAILWAY BOARD)

Anne 1

No. ERB-I/2019/23/49

\*\*\*\*\*

New Delhi, dated 12.12.2019

ORDER

Ministry of Railways (Railway Board) have decided to constitute a Committee to review MCNTM formulae. The Committee will consist of the following by name:-

- |  |              |
|--|--------------|
| (i) Shri A. K. Agarwal, PCE/Central Railway      | ....Convener |
| (ii) Shri Ajay Goyal, Director/IRICEN            | ....Member   |
| (iii) Shri Ashish Bansal, CTE/Northern Railway   | ....Member   |
| (iv) Mrs S. Darbari, FA&CAO/F&G/Northern Railway | ....Member   |

2. The Terms of Reference of the Committee will be as under:-

- (i) Assessment of manpower requirement of different activities covered in 'T' and 'R' of MCNTM formulae for maintenance of Main lines with and without mechanization of activities especially shallow screening and unloading/loading of material.
- (ii) Assessment of requirement of manpower for maintenance of running yard lines
- (iii) List out activities which can be outsourced along with the requirement of funds under revenue for such outsourced activities.

3. The tenure of the Committee will be three months from the date of its constitution.

4. The Headquarters of the Committee will be at New Delhi.

5. Civil Engineering-I branch, Railway Board will be the Nodal branch for functioning of the Committee. Therefore, submission of report of the Committee for consideration of Railway Board, implementation of its recommendations and all related issues including Parl. Questions, RTI cases and other formalities with regard to the Committee, shall be dealt with by Civil Engineering-I branch, Railway Board.

The Convener and Members of the Committee will draw TA/DA as per extant rules.

(Vijay Kumar)

Under Secretary (Estt)-I  
Railway Board

The General Managers, all Indian Railways (including Metro & CORE) Construction and PUs.

The Director General, RDSO/Lucknow and NAIIR/Vadodara.

PS/MT, EDPS/MT, EDPG/MOS(R) & Addl. PS/MT.

ED/MT, PS/MT, PS/MT, PS/MT to CRB, FC, ME, MRS, MS, MTR, MT, MST, NMM, Secy., All  
OS/MT, IS(G), JS, JS(E), JS(P), JS(D), ED/INP, Dir(Tele), Dir(A), DS(P), US(Q&M), US(A)I  
& US(X&Y&Z).

Chief, Commissioner of Railway Safety, 16-A, Ashok Marg, Lucknow.

Chief, Central Railway, New Delhi.

Chief, Accounts Officer, Railway Board

Chief, General Manager, IRCA, IRPF, AIRPF

Chief, General Manager, ARI & NRI

Chief, General Manager, MRS & RSES Association, Rail Bhawan, New Delhi

Chief, General Manager, IRCA, New Delhi

Chief, General Manager, IRCA



2 (2)  
Annex 2

**Government of India  
Ministry of Railways  
(Railway Board)**

New Delhi, Dated 12-12-2019

Additional Member/Committee MCNTM

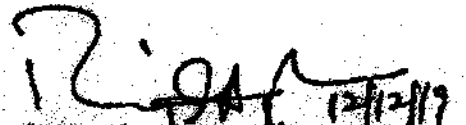
Shri A. K. Agarwal, PCE/Central Railway.....(Convener)  
Shri Ajay Goyal, Director/IRICEN.....(Member)  
Shri Ashish Bansal, CTE/Northern Railway.....(Member)  
Mrs S. Darbari, FA&CAO/F&G/Northern Railway....(Member)

**Sub: Review of MCNTM Formulae on 16.12.2019.**

**Ref: Board's Letter No.ERB-I/2019/23/49 dated 09-12-2019.**

With reference to above, a presentation is to be made by the Committee on the above subject to Railway Board at 11:30 on 16-12-2019. The Committee is also required to submit their final Report by Thursday, 19-12-2019 positively.

Kindly make it convenient to attend.

  
(Piyush Agarwal) 12/12/19

Additional Member Planning  
Railway Board

**Copy to:-**

- i) OSD to CRB for information to CRB.
- ii) PPS to ME for information to ME.
- iii) Secretary Railway Board.
- iv) General Manager/Central Railway.
- v) General Manager/Northern Railway.

## Sanctioned Strength and on Roll Position

Designation	Sanctioned Strength	On Roll
Mate	11685	8523
Keymen	14273	11223
Trackmen	185615	149243
Gate-men	35776	30318
Trolley-men	16723	13824
Other Categories	6665	
Total	270737	

## LC Summary GK

Annex 4

Total LC	20622
Engineering Gates	14829
Gates with 1 GK	2040
Gates with 2 GK	9338
Gates with 3 or more GK	3451

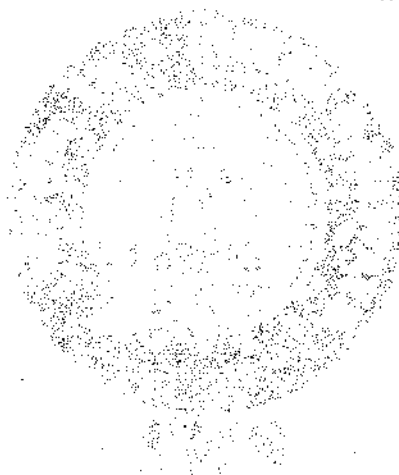
## LC Manpower requirement

Details	Nos	Regular GK required	LR		RG	
Total LC	20622		%	Nos	%	Nos
Engineering Gates	14829					
Gates with 1 GK	2040	2040	40%	816	12.5%	255
Gates with 2 GK	9338	18676	40%	7470	12.5%	2335
Gates with 3 or more GK	3451	10353	17.5%	4141	12.5%	1294
GK required		31069		12428		3884
Total incl Reg, RG, LR				47380		

Indian Railways  
For Financial Year : 2018-2019

Reporting Date: 14/12/2019

Sr.No.	Railway	Rail Testing	Weld Testing	SEJ Testing	Turnout Testing	TOTAL
		(in rail kilometers)				
1	Central Railway	37503.3	2161.5	354.6	888.5	40907.9
2	East Central Railway	38077.1	870.7	386.1	757	38090.9
3	East Coast Railway	28639	1521.8	281.1	519.5	28941.4
4	Eastern Railway	18284.5	1438.6	354.6	803.8	18889.7
5	Metro Railway	0	0	0.3	0.8	1
6	North Central Railway	41381.6	1587.7	310.3	633.5	43893.1
7	North Eastern Railway	9120.8	747.4	193.6	448.5	10510.3
8	North Western Railway	18138	1113.5	283	632.3	20144.7
9	Northeast Frontier Railway	8518.9	813	303.5	516.3	10151.7
10	Northern Railway	47110.2	2954.5	656.6	1349.3	52070.6
11	South Central Railway	40019.8	4381.6	488.4	737	45606.4
12	South Eastern Railway	20980.1	819.5	302.4	671.5	22753.4
13	South Western Railway	8014.9	828	195	439	9478.9
14	Southeast Central Railway	24848.3	1428.4	221.9	489	27088.6
15	Southern Railway	16921	1696	382.1	905.5	19674.7
16	West Central Railway	28838.5	1182.7	294.1	562.3	30877.6
17	Western Railway	25930.6	2033.8	402.1	921.8	29288.4
TOTAL		408392.4	25554.8	5339.8	11275.3	448562.1

24 web  
me km

Amne

RB/ CE-I/ 1/ 2006

GOVERNMENT OF INDIA  
MINISTRY OF RAILWAY  
(RAILWAY BOARD)

No. 95/CE-I/GNS/2 Vol.II-Pt.II

N.Delhi, Dated: 03/06-03-2006

The All GMs/POEs/CAOs & CE(Co-ord)  
of all Indian Railways  
( as per list attached)

**Sub.: Manpower for track maintenance/ Rational formulae.**

Presently P-way gang strength is being calculated based on Special Committee report of 1979. Over the years there has been many changes in track maintenance practices as also the recruitment methodology of the gangman. In view of this Board had set up another committee under the convenership of Sh. Gopalakrishna, (the then CAO/C/NFR & later as AGM/SR) to go into the whole issue of track maintenance and to suggest a Rational Formulae for the same. The Committee has since submitted (Vol. I & II) its report which has been examined in Board's office. Board has approved this report for calculating the gang strength based on Rational formulae.

2. The report consists of two volumes; Volume I and Volume II and the sample calculations for arriving at the gang strength is based on a computer software. The report has been approved by the Board with the following observations/modifications to some paras:

(i) **Para 0.12/8.10- "Heavy repairs to track including lifting".**

To avoid ambiguity, this para has been defined as lifting of the track more than 2 inches and casual renewal exceeding 250 sleepers per km would be termed as "Heavy repairs to track, including lifting".

(ii) **Para 0.16-**

(a) Railway should explore the possibility of utilizing the decategorised staff in alternative jobs before removing such a staff from service.

(b) Proper safeguard should be ensured in the system to prevent deliberate medical decategorisation of the staff for shifting them to lighter duties or even removal.

(c) The recognized Unions should also be consulted before implementing the recommendations at (ii)(a) & (ii)(b).

(iii) **Para 0.7.8/4.6.2**

A uniform alignment factor of 0.25 has been provided for more than 2 degree curve for BG track, more than 4 degree curve for MG track and more than 7 degree curve for NG track. PCE/CE (Coordination) may obtain the feedback from the field whether this factor needs to be linearly increased for steeper curves. If yes, the Railway should suggest the same.

(iv) **Para 0.11 Sub-activity S 5/6.3.5 -- Bad formation**

There is a typographical error. Bad formation should be defined as where four or more attentions are needed in a year instead of 12.

(v) **Para 4.3.4**

For machine packed track, there is a typographical error in the formula. Figure 303 should be replaced by 239.

(vi) **Para 4.10.3 – Number of working days**

The number of mandays taken as 290 should be replaced by 294 as 290 days were calculated based on Casual Leave being 15. Since now CLs have been reduced to 11, therefore the number of working days should increase to 294 days/annum

(vii) **Table 1 (Volume II) Item 1.2 B**

Requirement of Mandays for working with tampers should be 3 instead of 6. And therefore the total mandays required should be 424 instead of 427 for maintaining 1km of machine packed track (BG).

(viii) **Para 8.6**

Mandays lost on account of absenteeism for more than what can be accounted by 12.5% leave reserve can be taken care of by deploying contractual agency wherever necessary, keeping in mind the prevalent labour laws and with the personal approval of PCE/CE (Coordination). The issue is being deliberated separately in consultation with legal Dte. & outcome thereof will be advised separately.

(ix) **Para 8.7**

Following should be added in the end of para:

For major yards, by separating the work of cleaning of yard, handling of materials and other miscellaneous works, for maintenance, operation of track, a part gang can be separated which can be manned by gangwoman. Further, gangwoman may be put on lighter duties such as "Look out or water" duties.

(x) **Para 8.9**

Board's decision on provision of 2% trainee reserve will be communicated separately.

(xi) **Para 8.10**

(a) Sub-item 10 should be read as: "Loading and unloading of P-way materials in bulk and loading and unloading of heavy materials".

(b) Sub-item 11, the wording should be changed to "Loading and unloading of P-way materials for other than casual renewals at isolated locations (in the normal course of day-to-day maintenance)".

(xii) **Table P1-Vol.II -Output and frequency of shallow screening (overhauling of track)**

Instead of 6 sleepers per man per day assumed by the committee for the above activity, it should be 4 in view of more ballast to be handled in heavy PSC sleeper track.

(xiii) **Para 5 – High Density Sub-urban Section**

Gang strength given by the committee mainly caters for Bombay suburban section where night work is resorted to. However, there are sub-urban sections in other metro cities where night working has not been resorted to due to heavy mail/express and goods traffic during the night. Daylight hours in morning and evening time cannot be utilized for track maintenance on account of heavy suburban traffic thereby reducing effective time available for track maintenance considerably. Therefore, PCEs can suggest a separate table for working out the mandays keeping the ground realities in view for the suburban section on approaches of such metro towns where the train density is more than 5 trains per hour at least for 2 hours in the morning and one hour in the evening. The revised calculation can be sent to Railway Board for their approval.

(xiv) **Table under para 6.5.1 (vol.I)**

The value of factor 'm' should also be taken as 2 for areas infested with terrorist activities as has been taken for areas infested with wild animals.

3. This issue with the concurrence of the Finance Dte. of the Ministry of Railways.

*N.K. Sinha*

(N.K. Sinha)

EDCE(G)

No. 95/CE-I/GNS/2 Vol.II-Pt.II

N.Delhi, Dated: 03/03/2006

Copy to: Dy. Comptroller & Auditor General of India (Flys), Room No. 224, Rail Bhawan N. Delhi.

*N.K. Sinha*

For Financial Commissioner (Flys)

Copy to :Director/IRICEN, IRICEN should arrange necessary training courses for calculating the gang strength based on rational formulae as contained in the present report of Committee on Manpower and Cost Norms for Track Maintenance.

*N.K. Sinha*

(N.K. Sinha)

EDCE(G)



**NAME : UMESH CHAND GUPTA****DESIGNATION: Sr Section Engineer****HQ: DADAR (W)****DIVISION : MUMBAI****WESTERN RAILWAY****PLACE : MUMBAI****DATE :17-12-19****Review of MNCT formula 2000****CHANGE FROM 2000 TO 2019:-****T.2 Activity**

- a. Pre-tamping attention
  - b. Along with tamper
  - c. Post tamping attention
- } Can be outsourced 50 %

**EXTRA: 1) ENHANCEMENT OF PASSENGER SAFETY.**

From year 2000 to 2019 these are some following changes:-

- a) Life of rails on major bridge approaches, leading and landing rail of crossing is reduced by 50% from 800GMT to 400GMT.
- b) Life of switches reduced by 75% (200 GMT), SEJ by 50% (400 GMT), Glued joint by 50% (400 GMT) and CMS Crossing (300 GMT). For rail fittings like GRSP (RUBBER PAD), Liner and ERC renewal was condition based but now it is periodical based on GMT.
- ❖ THESE MENTIONED ABOVE ACTIVITIES ARE CARRIED OUT TRACKMAINTAINERS WHICH IS NOT INCLUDED IN MNCT FORMULA. AS A RESULT MORE TRACKMEN ARE NEEDED.

**2) SWITCHING OVER OF ACTIVITIES FROM WITHOUT BLOCK TO PROTECTION OF BLOCK.**

Now many non- block activities such as preparation of renewals, drilling of holes are being done in protection of traffic block. As a result output has fallen to 50% and requirement of track maintainer is doubled.

  
**UMESH CHAND GUPTA****SSE (P.WAY)- DADAR, MUMBAI DIVISION****- WESTERN RAILWAY****(9004497222)**



### **R Activity**

R.2 Shallow screening	}	Can be outsourced 100%
R.4 Lubrication of ERCs & (Jts.)		
R.14 Painting of weld collars		
R.12 Creep pulling	→	Not required

### **R 19 LADING, LEADING, UNLOADING AND STACKING OF (P.WAY) MATERIALS.**

In year 2000 when MNCT formula was derived, transportation of (p.way) materials was done by railway wagons. Railway wagons used to load and unload materials at site. Now transportation is done by Agency through trailers and loading and unloading is done only where there is proper road approach. For shifting materials to work site UTV is used and 07 No. of track maintainers are employed for this.

As a result the activities which were considered in year 2000 is still continuing in year 2019 and 7 track maintainers are deployed on UTV as EXTRA for loading, leading and unloading and stacking of materials.

❖ FOR THIS ACTIVITY IT IS SUGGESTD THAT A GAND OF 15 MEN (OUTSOURCED) TO BE ENGAGED FOR THIS ACTIVITY.


### **In my section there is :**

01 sse (p.way)- incharge

04 sse (p.way)- sectional

18 LR/ Special work pwi<sup>s</sup>

Provision of trolley man/ box boy is only for incharge and sectional. PWI<sup>s</sup> 18 numbers of more men needed for this activity.

  
 UMESH CHAND GUPTA  
 SSE (P.WAY)- DADAR, MUMBAI DIVISION  
 WESTERN RAILWAY  
 (9004497222)

CENTRAL RAILWAY

SSE (P/WAY)'S OFFICE  
KALYAN

Date:-17/12/2019

**Sub:-Calculation of man power based on actual consumption in the section of SSE (P/Way) KYN "W" dt 17/12/2019 at CSMT.**

&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;&lt;&gt;

R/ Sir,

Kind attention following points as under

- 1) All track machine work in traffic block and track protection man required every machine minimum 3 staff for protection.
- 2) Loading & unloading of Rail/sleeper/P.way material by UTV machine is required minimum man power 9 Nos of staff (02 Trackman on BFR, 02 Trackman for providing rail camp/chain to caught rail/sleeper, 02 Trackman for Rail/sleeper Straighting) also UTV machine work in traffic block hence 3 protection man required. (as per G & SR)
- 3) During stock verification by store department ISA with PWI foot by foot survey for new and old material for counting and measuring p.way material hence 6 Nos of trackman required for 60day (02 trackman protection, 03 trackman for measurement and 1 trackman handling for P/way tools.)
- 4) In my section 08 Nos supervisor sanction 01 no In charge PWI, 03 Nos. sectional PWI and 04 Nos. LR/special work PWI. The Trolleyman is sanction for sectional PWI and incharge PWI but 04 Nos LR/special work PWI have no any trolleyman sanction. Hence 04 trackman are utilized as trolleyman.
- 5) In busy sub-urban section to attend the emergency during 16/24, 0/8 every station 06 trackman are deputed in two shifts in my section 03 station (DW/Dombivli/THK) Hence 18 nos trackman are deputed for emergency work in 365 days.
- 6) In busy sub-urban section and heavier track structure (01mtr.long fish plate / Joggle fish plate) and frequency of train operation two to five minutes hence Keymen not work safely alone therefore additional accompany one trackman is deputed. In my section 13 Keymen post are sanction hence extra 13 trackmen are deputed.
- 7) In busy sub-urban section, the frequency of train is very high hence the output of work is 50% to comparison to non sub-urban section. Mostly work is carried out in night traffic block Two to Three Hours Hence total output of trackman is only 50% done.
- 8) fueling of Diesel for Track machine (Unimate, Duomatic, UTV, FRM, BCM etc.) Four to Six trackmen are deployed from fuel pump to Yard.
- 9) PWI depot have 03 watchman and every sectional PWI office also  $03 \times 03 = 09$  watchman required.
- 10) Criteria for renewal of track structure (Glued Joint, Pt and Xing, SEJ, USFD Flaw) is based on GMT hence renewal work frequency is very high that is also not consider for assessment for trackman.

SSE (P/Way) KYN "W"

Central Railway

O/o.SSE/P.WAY/KLBG

Date:-17/12/2019

To,  
Hon'ble  
PCE/Central Railway  
Mumbai-CSMT

Sub:-Observation & suggestion over MCNTM formula of Gang  
strength calculations.,

\*\*\*\*\*

Respected Sir,

A) In "T" activities

- 1.1 Slack attention to bad spots, low joints (FP or welded), Glued joints, SEJ, minor curve realignment, picking up of slack in T/out, attention to bridge approaches—Cannot be out sourced for route >20GMT since agency is not able to do throughout the year these activity, as contractual labour will not come before & after Diwali, Holi etc occasions for month long.
- 1.2 Pre, during & post tamping activities can be outsourced 50% only as some time agency fails to supply manpower then our departmental gang staff shall be utilized. So 100% outsourcing is not possible.
- 1.3 Casual renewal of rail/crossing/GJ /SEJ/Switch/Sleeper/fittings cannot be done by outsourcing as it is scattered, occasional/emergent situations.
- 1.4 Repair welding cannot be outsourced as it is unwarranted work.
- 1.5 For USFD testing—man power support is not required, since they are having their own setup of khalasis and trackman.

B) In "R" activities

- 2.1 Lubrication of ERC's can be outsourced 100% since it is not emergent work directly affects traffic.
- 2.2 Shallow screening including ballast profiling (boxing) to be outsourced 100% with or without FRM & BRM, since this also doesn't affect traffic directly.
- 2.3 Loading, leading & unloading of P.WAY materials shall be outsourced 50% as agency cannot supply manpower throughout year, so in absence of agency's manpower, our Gang staff has to be utilized.
- 2.4 Overhauling of LC--- cannot be outsourced since normally it is done after monsoon or at the time of Machine tamping, so then agency's manpower may not come at unwarranted situation for this isolated work. Hence this is to be done 100% by departmental staff.

Page 1 of 4

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SSE/P.WAY  
KLBG

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4/16

(2)

- 2.5 Watching caution spots & miscellaneous like store/ office--- it is a must as it involved safety of track & store/ office. So outsourcing is not advisable.
- 2.6 Tree cutting for visibility - this work is also emergent type, hence cannot be outsourced.
- 2.7 Lubrication rail in gauge face, crossover, T/out should be done by extra man to be given to keyman including slide chair oiling fortnightly.
- 2.8 Accident relief & carcass lifting—cannot be outsourced, as it is unwarranted work.
- 2.9 Bridge sleeper attention & renewal—is also sensitive work & for this petty & risky work normally no agency deploys manpower, but in view safety railway cannot wait for agency, so to be done by departmental staff.
- 2.10 Pre monsoon activities —Clearing water ways, side drain cleaning desilting in drain & bridges, attention to cutting & trolley refugees & dweeding of major yards can be outsourced for 75% and 25% departmental staff shall be used in situation of non available of agency's manpower.
- 2.11 Creep pulling has become obsolete--- No need of man power.
- 2.12 Rectifying damage to LC—no need of manpower, as in manned LC GK is responsible for nothing defaulter's vehicle number. However that revenue collected form fine shall be used for repairing. Already S&T department fixed their rates.
- 2.13 Painting of weld collars, opening of JFP for O & G shall be outsourced & it has become part of 'T' activity 1.2/a, so no additional man required Lubrication of rail joints (FP) - To be done under block due to increased traffic as against rule of IRPWM/ para 169/7 by keyman but it is not possible as in CMS Xing after opening of FP traffic cannot be passed as it require 15MT jack required to lift PSC T/out heavy track for which along Keyman with one man is almost impossible , like wise opening on girder bridge also sometimes all bolts cannot be restored, then urgent caution order may have to be imposed. So this work require manpower under supervision of PWI only.
- 2.14 Fixing of caution order boards is also an emergent & unwarranted work—so this cannot be outsourced.

### C). In 'M' activities

- 3.1 Boxing of ballast twice a year required and it should be made 50% in shallow screening & 50% post tamping activities. This work can be made 100% by outsourcing. But existing rates are not workable, as it

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SSE (Rout)  
KUS

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5/16

consumes heavy manpower normally agency reluctant to do. For example in C.R N.S. rate of Rs.2500/Km with LAR of +200% it comes to Rs.7500/Km equals to a manpower of 7500/Rs.400 of labour wage=18.75 say 19 mandays. In field for perfect dressing one man can do =12m, then for a Km=83 mandays required as against our 19 mandays for present rate.

3.2 Destressing shall be outsourced 100%.

3.3 Hot weather patrolling—cannot be outsourced since trackman only by experience can detect probability of unusual.

3.4&3.5 Cold weather patrolling & monsoon patrolling—one extra companion with railway's patrolmen should be given, as he help in bringing heavy JFP's/01Mtr FP with clamp from 500m long distance in case of fracture. Patrolman alone bringing heavy JFP/ 1mtr FP from 500m lead and fastening to broken rail ends in a very difficult task, more over security point of view companion will help a lot. (JFP 52kg—38.03Kg; 60Kg = 46.00Kg & 1mtr FP 52kg =53.10kg; 63.70Kg excluding clamps which are about 10kg)

Now a days if we call companion only for cold weather patrolling are not ready, so such men should be utilised for other work during non patrolling duration (after CWP & Monsoon patrolling period). By this way they get continuous job guarantee & feel ownership / responsibility. Like this companion will help patrolman in Cold weather & monsoon in protecting the train etc.

3.6 Posting of watchman @ vulnerable locations – cannot be outsourced but help of technological method like warning of water raising in major & important bridges may give alerts to mobile of concerned. In such case watchman can be dispensed, but failure of bank, w/ walls or any structure's unusual—watchman is the only solution.

#### D. In 'S' activities.

4.1 Attention to corrosion prone area – not required in non suburban area.

4.2 Security patrolling – Cannot be outsourced, since sensitive matter.

4.3 Relieving to staff – it is mandatory for scouts & guides /TA/sports/ so department staff required.

4.4 Additional Mate/Water man— Manpower by outsourcing is not advisable. Gang while working in critical conditions in section water not be available then a separate man is required to fetch the same. Additional mate is required in absence of regular Mate/Keyman to control gang staff & to extract work from them.

4.5 Picking up of rags—in my section KLBG station is having halt about 50trains in 24hrs which contributes rags (plastic bag, cup, plate) & paper, cloth waste on approach of station on both end so for cleaning

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SSE (Pam)  
KLBG

cont'd to 4

7/6/16

/clearing the same men required. This can be outsourced yard approaches.

### General observation

1. In formula tracks are classified as machine packed & non machine packed, but it is not necessary since now-a-days we are having tamping machines which can tamp all lines which will reduce mandays/manual efforts in track maintenance.
2. Most 'T' R, M & 'S' activities can be outsourced from 50% to 100% extent as already commented in above paras item wise.
3. Painting activity not counted in MCNTM formula
  - a. Painting to bridges for bridge tablet, HFL, DL, Channel sleeper.
  - b. Painting to post of HM, KM, Grade post, beat board, curve board, LWR board, posts of bridge, W, LC boards, Station & parameter in web of rail for curve, turnouts, plain track, TMS chainages for all assets, fog posts, warning boards for tress passers this item shall be 100% outsourced.
4. Support to USFD in needed since their setup is different & can be outsourced USFD itself to an extent of 50 to 75% under supervision of Railway's.
5. Rail painting in corrosion prone area can be made 100% outsourcing.
6. Now-a-days no non PRC track, hence all are PRC track only to maximum extent.
7. For carrying out non measurable activities (below mentioned) a team of 25men from agency to be given to each sectional PWT's for carrying scattered, little amount as per schedule rate.

For example

- (i) Excavation of 1M<sup>3</sup> in deep cutting of 8m & on plain ground differs in manpower, but if we keep same rate then agency will not be ready for typical situation for same volume @ same rate.
- (ii) Lifting of MBC from side drain of deep cutting & hauling from deep cutting is quit differs from plain area.
- (iii) Cutting of tree obstructing signal visibility.
- (iv) Minor repair to bridge - pointing in ordinary wall is easier than pointing to high face wall/ arch barrel, repair of broken wall of 1m long about 0.5m<sup>3</sup>. For this small work also agency has to engage mason.

Like this so many activities will come during track maintenance which cannot be measured accordingly to SOR, for such situations even like rag picking, worst drain cleaning, typical naala cleaning etc..

*(Signature)*  
SSE (RWS)  
RWS  
(SHIVAKUMAR)

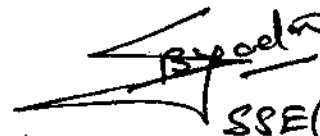
Calculation of Man power based on actual 36 (17)  
Consumption in the section of SSE (PIWAM) KYN(W) d/17.12.19  
at CSMT.

- R/Sir Kind R. Attention following points as under
- (1) All track machine ~~required~~ work in traffic block end.  
track protection men required every mile & min 3 ~~Per~~ Protection  
men required.
  - (2) UTR. mile loading & unloading minimum man power required  
for loading / unloading 6 men and 3 men for protection.
  - (3) Only sectional & Incharge PWI have trolleyman.  
but L-R & Extra PWI have not trolleyman i.e. my  
section 3 sectional PWI + one Incharge but 04 not  
other PWI which is mostly work as night ~~work~~  
~~work~~ have required 04 x 3 not trolleyman.
  - (4) During stock revariation min. 6 men required.  
for measurement of Rail / switch / tie etc.  
two to 3 months work are carried out.
  - (5) In Sub-urban section every station two  
or three emergency staff required for <sup>Attending</sup> ~~Emergency~~ ~~staff~~  
purpose.
  - (6) Fixing & refixing of Engineering C/O & speed board  
etc. staff required.
  - (7) During ~~monsoon~~ Pre monsoon Rail Flange  
under rail seat 50mm below cleaning of ballast  
extra labour required for track circuit area.
  - (8) Due to Buoy section and 1m long fish plate having  
more weight one labourer can not inspection  
the section and rectification of his beat alone  
hence one extra man required with company.
- ~~SSE (PIWAM)~~  
28/12



(9) Due to high frequency of train the activity normally can done ~~costs~~ without block, required to be done in block hence only 50% of out put got.

(10) Fueling of diesel of track machine by dumper. the man power & required for the above work.

  
SSE (P/WAY) KALYAN(W)  
(SAMAR BAHADUR YADAV)  
SSE (P/WAY) KALYAN(W)

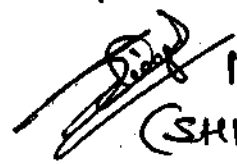
## Manpower reduction by outsourcing.

- a) ERC, plate screw greasing including removal of seized one - 100%
- b) Post-tamping, dewatering & pretamping - 50%
- c) Shallow screening → 100% or by m/c (FRM & BRM)
- d) Ballast profiling with or without shallow screening → 100%
- e) Rag picking → 100% & Deweeding in yards & section → 100%
- f) Destressing → 100%
- g) Reconditioning of points & xing → 100%
- h) Minor repair to bridges, viaduct clearance, desilting → 100%
- i) Painting of Km, Hm, Gradient post, Bridge (DL, HFL, tablet), TMS drainages, 3.6m str. for track parameter recording, Taut str., Curve str. etc.
- j) Companion to night patrolman for assisting emergency protection to train & track.
- k) Companion to keyman for assisting in doing ZMF & tightening & also for gauge face greasing in curves, xovers incl. oiling of slide chair, trimming tree branches obstructing signal visibility etc.
- l) Flangeway clearance of ballast for proper functioning track circuit in yards.
- m) Design made surveying & marking. - 80%
- n) Heavy material loading, unloading, hauling → 75%
- o) USFD testing → 100% under supervision of PWH/USFD and for scattered weldings under each ADEN one spl. PWH can comply.
- p) Premonsoon activities → 50%
- q) Weld collar painting, examination of JFF, FP with clamping - 100% under Rlys supervision.
- r) Rail painting → 100%

## Manpower Required

Required

- ① Companion to Keyman, since alone Kman can not carry 1 m long fishplate pair ( $52kg = 53.10kg$  &  $60kg = 63.70kg$ ) in case of fracture a JFP pair ( $52kg = 38.03kg$  &  $60kg = 46kg$ ) renewal of cracked from 500 to 1000 m lead length in addition to his tools. Moreover he <sup>alone</sup> can't replace PP of emergency, broken 'T' bolt of SET, ring bolts
- ② Required companion to peabollman due to above reason as well as security point of view other is better than alone.
- ③ Additional men required for store dealing work i.e. stack verification → { ~~Two~~ Two men per day for 365 days }
  - a) For sorting & stacking of scattered material with painting of class, length, lot no. stack no. of MAS
  - b) Sorting & stacking in tools, plants, dead stock, consumables.
  - c) Sorting & stacking bolt, nut & other fittings
  - d) For counting of loose fittings & keeping in bags / trays.
- ④ For attending non measurable items like - like stock verification, fueling of back m/c, toe load measurement, quarterly track measurement, design road survey, trolleyman with spl. Pwt's & other petty works of track works
- ⑤ Isolated locations extra team of 20 to 25 men with each sectional PWT's throughout the year is required and certainly will give good results / relief in track maintenance.

 17/12/19.  
(SHIVAKUMAR)  
SSE (Power) / KLB  
SURDIR - C.R. 1/16

Date: 17/12/2019

(28)

726019/2020/CE-I

- 1) Activity T :- T3 - Casual renewal में switch renewal की अलग से provision होनी चाहिए। क्योंकि switch बदलने से पहले switch को track के बाहर bench बनाकर तथा switch की setting करने के पश्चात तथा पुनः dismantling करते हैं कि पांभन्य करते हैं। अतः में switch renewal करते हैं। अतः switch की बाहर setting करने में एक से अधिक डेय लगती हैं (15 men x 3 days) अतः switch renewal की पूरी activity में 7 दिन लगता है। जिसके लिए अलग से प्रावधान होना चाहिए।
- 2) Keyman patrolling के साथ comparison को प्रावधान होना चाहिए क्योंकि Keyman को workload बढ़ गया है। Every 3 months में Jigsaw H Plate रोलिंग, free joint चेक करना, P & C slide chair को 15 डिग्री में ऑपनिंग तथा greasing, screw को opening तथा greasing करना पड़ता है। जो पहले नहीं था। साथ में free joint में अब 1m long fish plate हर जोड़ पर लगाई गई गई है जो अकेले डिमें रोलकर बापड़ कोट नहीं सकते हैं।
- 3) शीट मशीन बेडोलिंग के लिए तथा मानचून बेडोलिंग के लिए comparison को प्रावधान होना चाहिए क्योंकि travel मकान नये Reestment वाले हैं तथा अकेले जन में चल रहे हैं अकेले जोन के लिए बिल्कुल ही मना कर देते हैं।
- 4) Free Monsoon activity में Rail Flange clearance को एक सेशन में April - May - June में सभी जोड़ के लिए Rail Flange clearance को अपे कर रहे हैं क्योंकि में ही लेखा, केवल Automatic territory में आता है।
- 5) Automatic territory section होने के कारण प्रत्येक माह में Aug 10 को track failure का Cause night में हो रहा जिसमें Rail defect को ठीक करने के लिए कई डेय का travel होना लगाना पड़ता है। जिसके लिए अलग से प्रावधान होना चाहिए।
- 6) Landing rails में CMS मशीन, Bridge Approaches with bridge 50% कम life हो गई है जिसके कारण कार्य बहाल है अतः इसका प्रावधान अलग से होना चाहिए।
- 7) Overhead assets जैसे switch, GTR, SE, Conductor की life कम defunct हो गई है। अतः renewal की frequency 12/16 double हो गई है जिसके लिए प्रावधान अलग से होना चाहिए।

Continue from page. 1

- 8) JVR of Heavy P. Way के समय काफी manpower standing, collecting, leading के लिए लगाना पड़ती है। जिसके लिए manpower की व्यवस्था अलग से करनी चाहिए।
- 9) Casual renewal of rails का काम काफी बड़ा गमा है, प्रत्येक Section में प्रति 1km 2 rail का आवश्यक होगा - चाहिए।
- 10) प्रत्येक Section में sectional J.E./SSE तथा mechanic के अलावा वारिक के J.E./SSE के पाठ प्रिलिमिनरी भी होना है और उन्हें ब्लॉक लेने तथा डिडालने के लिए प्रति ब्लॉक एक प्रिलिमिनरी स्टेशन पर 2500 रु. पड़ता है जिसके लिए आवश्यक होगा - चाहिए।



SSE (P.W) MHD

(RADHESHYAM SINGH)

SSE (P.W) MHD

BRC DIVN - (WR)

MO. NO - 9724098216

Date: 17.12.19

Place: Mumbai

23

as Machine packed track (HD Suburban)

T. 1. Slack attention to

a. Bad spot:

b. Low Joint

c. SEJ.

d. minor curve attention

} must be done by Department only.

T. 2: For tie tamper working.

a. Pre tamping

b. Along with tamper

c. Post tamping attention

} 50% may be outsourced.

T. 3.  
Extra

d. SEJ renewal

e. Switch & Xing renewal.

f. Lubrication of slide chair.

g. Inspection of JP welds.

• Due to high frequency of train the activity normally can be done with out block required to be done in block only hence the output reduced about 50%.

• During stock verification a gang of about 10 men used for a period of 3 months for shorting out material.

• In my section there are 01 SSE in charge 04 SSE Sectional and 10 LR SSE/JE working but trolley men are available for incharge and Sectional only. These LR/special SSE/JEs are to be work in blocks hence T/men are being used for trolley men.

Continued on Page 2

*Umesh Chandra Gupta*  
Umesh Chandra Gupta 14/16  
SSE Pawan Dore W.R.

- G.3.10: watching of water level in suburban  
Sections: →

mandays reqd per year = No of locations  $\times 2 \times 120$

This is being used from 01 June to 30 Sept.

Urish Chaudhary

Urish Chaudhary  
SSE P.W.D. D.D. W.R.

Date. 17.12.19  
Bombay. (25)

Note :-

1. During deployment of Track Machines on track in full engg block. 02 trackman required for its protection.
2. When we use UTV for carting of material from section it requires minimum 06 person for its working as 03 on the ground and 03 on BFR. Also 02 trackman required for its protection.
3. During verification of store (heavy pway) every year minimum 07/8 track maintainers required for one to two months. every day.
4. There are nos of sites operated at a time and each PWT need one additional trackman for put up and cancelation of block. except Incharge/sectional PWT.
5. Each keyman need companion as work load of keyman increased due to quarterly examination of Joggled Fish plate, Ordinary Fish plate. At present one meter long fish plates are being used and its self weight is 60 kg per pair. which is not possible to examine alone.
6. Maintenance of tracks in yard is very difficult and need frequent attention for gauging due to GFN liners which deteriorate frequently and gauging required frequently.
7. Dummy switch renewal complete assembly need setting outside of track for its proper housing and after that its renewal done. All the activities of switch renewal needs min. 80 persons.
8. During premonsoon attention all track circuited area need 50 mm Rail flangy clearance and it need @ 60 PRC per trackman.

Pathi

Pranod Kumar Tripathi  
SSE(PW) ADI  
9724093228

7/16



Rail Change less than 13 m Report Period : 01/12/2018 -  
30/11/2019

Number of instances

S No	Rly	Div	
1	CR	BSL	3244
2	CR	CSMT	1670
3	CR	NGP	3873
4	CR	PA	1149
5	CR	SUR	2816
6	ECOR	KUR	3862
7	ECOR	SBP	1589
8	ECOR	WAT	4399
9	ECR	DHN	1807
10	ECR	DNR	884
11	ECR	MGS	3427
12	ECR	SEE	1604
13	ECR	SPJ	237
14	ER	ASN	2609
15	ER	HWH	2974
16	ER	MLDT	956
17	ER	SDAH	2080
18	NCR	JHS	2291
19	NCR	AGC	1575
20	NCR	ALD	4059
21	NER	IZN	617
22	NER	BSB	1719
23	NER	LJN	759
24	NFR	APDJ	2674
25	NFR	KIR	2768
26	NFR	LMG	2092
27	NFR	RNY	1052
28	NFR	TSK	7362
29	NR	DLJ	3473
30	NR	FZR	1845
31	NR	LKO	3811
32	NR	MB	4729
33	NR	UMB	3066
34	NWR	AIL	662
35	NWR	BKN	1901
36	NWR	JP	1679
37	NWR	JU	11279
38	SCR	BZA	5199
39	SCR	GNT	794
40	SCR	GTL	2558
41	SCR	HYB	521
42	SCR	NED	1314
43	SCR	SC	2909
44	SECR	BSP	7782
45	SECR	NAG	4313
46	SECR	R	2364

47	SER	ADA	1473
48	SER	CKP	3068
49	SER	KGP	4050
50	SER	RNC	728
51	SR	MAS	846
52	SR	MDU	1020
53	SR	PGT	1469
54	SR	SA	3690
55	SR	TPJ	557
56	SR	TVC	1136
57	SWR	MYS	1948
58	SWR	SBC	955
59	SWR	UBL	868
60	WCR	BPL	5444
61	WCR	JBP	7408
62	WCR	KTT	5675
63	WR	ADI	3333
64	WR	BCT	2905
65	WR	BRC	3375
66	WR	BVP	768
67	WR	RJT	1865
68	WR	RTM	1878
INDIAN RAILWAY			

- Number of instances

Annex 9/1

**SUMMARY OF AT WELDING CARRIED OUT AT SITE ON INDIAN  
RAILWAY BETWEEN 01-12-2018 TO 30-11-2019**

CR	BSL	9425
CR	CSTM	3607
CR	NGP	8155
CR	PA	3897
CR	SUR	6288
ECR	DNR	4306
ECR	MGS	6101
ECR	SEE	4267
ECR	SPJ	1061
ECR	DHN	6721
ECOR	KUR	11154
ECOR	SBP	6156
ECOR	WAT	11530
ER	ASN	4965
ER	HWH	7498
ER	MLDT	3819
ER	SDAH	7482
NCR	AGC	4165
NCR	ALD	11772
NCR	JHS	6768
NER	BSB	3896
NER	IZN	1506
NER	LJN	6526
NWR	ALL	3432
NWR	BKN	3831
NWR	JP	7011
NWR	JU	4957
NFR	APDJ	4411
NFR	KIR	6255
NFR	LMG	3493
NFR	RNY	2353
NFR	TSK	2517
NR	DLI	11043
NR	FZR	4450
NR	LKO	8918
NR	MB	13064
NR	UMB	5597
SCR	BZA	9904
SCR	GNT	1975
SCR	GTL	7841
SCR	HYB	2620
SCR	NED	2659
SCR	SC	8637
SER	ADA	5319
SER	CKP	7585
SER	KGP	10612
SER	RNC	2238

SUMMARY OF AT WELDING CARRIED OUT AT SITE ON INDIAN  
RAILWAY BETWEEN 01-12-2018 TO 30-11-2019

SWR	MYS	2725
SWR	SBC	6364
SWR	UBL	3399
SECR	BSP	11778
SECR	NAG	9184
SECR	R	5256
SR	SA	4116
SR	MAS	5108
SR	MDU	5699
SR	PGT	4870
SR	TPJ	4342
SR	TVC	7167
WCR	BPL	7671
WCR	JBP	10078
WCR	KTU	6303
WR	ADI	8163
WR	BCT	7664
WR	BRC	6577
WR	BVP	1280
WR	RJT	2383
WR	RTM	6609

Annex 9/2

**Departmental Welder Performance Analysis Report**  
**Indian Railways**  
**Period : 01/12/2018 - 17/12/2019**  
**Main Line Only**

Railway	No. of Welders	Main Line	Other than Main line	Total Welds
CR	233	26782	3284	30046
ECOR	159	20861	1718	22577
ECR	100	12787	5006	17793
ER	103	7189	2350	9539
NCR	187	19104	2452	21556
NER	60	5744	716	6460
NFR	142	14801	3324	17925
NR	272	32126	2927	35053
NWR	151	15250	2096	17346
SCR	317	24779	7096	31875
SECR	165	16597	2777	19374
SER	145	13435	3390	16825
SR	214	22622	7849	30471
SWR	101	10680	751	11431
WCR	169	14540	2763	17303
WR	217	20081	2318	22399
<b>Total</b>	<b>2735</b>	<b>277178</b>	<b>50795</b>	<b>327973</b>

## Location wise details of Accidents on Engineering Account ( 01/04/2016 to 30/09/19)

Railway	Mid Section	Yard	Grand Total	Remarks
CR	7	6	13	MID section- CSTM(6), Pune Yard- CSTM(3), Kalyan(2), Miraj
ER	2	2	4	MID section- HWH, SDAH Yard- HWH(2)
ECR	5	8	13	MID section- DHN(3), MGS, DNR Yard- Patna, SPJ(2), Sasaram, Dehri-on-Son, Piprahan, Gaya, Nanpara Jn.
ECOR	4	0	4	MID section- WAT(2), KUR(2)
NR	12	8	20	MID section- FZR, DLI(3), MB(5), LKO(2), UMB Yard- Varanasi, Unnao, New delhi(4), Akbarpur, Shakur
NCR	1	3	4	MID section- JHS Yard- Barhan Jn., Manikpur, Raja-ki-mandi
NER	2	3	5	MID section- LJN(2) Yard- Hardattpur, Kushmahi yard, Domingarh
NFR	5	0	5	MID section- KIR, APDJ, TSK, LMG(2) Yard-
NWR	2	1	3	MID section- JU, BKN Yard- Marwar Jn.
SR	2	8	10	MID section- TVC(2) Yard- Mangaluru jn., Chennai Egmore, Ernakulam Jn, Tiruchchirappalli Jn., Shoranur Jn., Arakkonam JN, Mayiladuturai Jn., Chennai
SCR	1	0	1	MID section- SC
SER	2	2	4	MID section- ADRA, KGP Yard- Ranchi, Porbotonia
SECR	1	2	3	MID section- R Yard- Urkura, Kumhari
SWR	1	1	2	MID section- MYS Yard- Baiyyappanahalli A
WR	1	4	5	MID section- BCT Yard- Ratlam(2), Ujjain Jn., Mahim south
WCR	1	0	1	MID section- JBP
Konkan	1	0	1	MID section- RN
Total	50	48	98	

Annex II

**SUMMARY OF WORKS CARRIED OUT AT GLUED  
JOINTS (CREATION / REMOVAL ETC) ON INDIAN  
RAILWAY BETWEEN 01-12-2018 TO 30-11-2019**

CR	BSL	915
CR	CSTM	264
CR	NGP	702
CR	PA	193
CR	SUR	655
ECR	DNR	587
ECR	MGS	1205
ECR	SEE	737
ECR	SPJ	70
ECR	DHN	727
ECOR	KUR	1382
ECOR	SBP	430
ECOR	WAT	1144
ER	ASN	814
ER	HWH	1577
ER	MLDT	561
ER	SDAH	627
NCR	AGC	304
NCR	ALD	1545
NCR	JHS	954
NER	BSB	293
NER	IZN	170
NER	LJN	411
NWR	ALL	397
NWR	BKN	447
NWR	JP	526
NWR	JU	1660
NFR	APDJ	112
NFR	KIR	542
NFR	LMG	1677
NFR	RNY	147
NFR	TSK	154
NR	DLI	917
NR	FZR	255
NR	LKO	940
NR	MB	1411
NR	UMB	985
SCR	BZA	1189
SCR	GNT	187
SCR	GTL	617
SCR	HYB	138
SCR	NED	89
SCR	SC	943
SER	ADA	709
SER	CKP	879
SER	KGP	1312
SER	RNC	205

11/2

SUMMARY OF WORKS CARRIED OUT AT GLUED  
JOINTS (CREATION / REMOVAL ETC) ON INDIAN  
RAILWAY BETWEEN 01-12-2018 TO 30-11-2019

SWR	MYS	143
SWR	SBC	365
SWR	UBL	357
SECR	BSP	1845
SECR	NAG	655
SECR	R	860
SR	SA	483
SR	MAS	435
SR	MDU	260
SR	PGT	428
SR	TPJ	249
SR	TVC	444
WCR	BPL	1123
WCR	JBP	960
WCR	KTU	1145
WR	ADI	925
WR	BCT	769
WR	BRC	956
WR	BVP	210
WR	RJT	744
WR	RTM	911