दक्षिण पूर्व मध्य रेलवे
SOUTH EAST CENTRAL RAILWAY

कार्यालय
वरिष्ठ उपमहाप्रबंधक, बिलासपुर

Office of the
Sr. Dy. General Manager, Bilaspur.
Tel.No. 64006(Rly), 07752-414229

पत्र सं. No. WS/Engg/BSP/1404 दिनांक Dated: 27.06.2019

The Divisional Railway Manager,
S.E.C. Railway,
Bilaspur.

Sub: **Work study on "Review of existing cadre strength vis-a-vis workload of SSE (P. Way) Unit/Bijuri of Engineering Department in Bilaspur Division."**

Ref.: (i) This office letter no. WS/Engg./BSP/18-19/559 dated 07.03.2019.
(ii) Sr. DEN(Co)/BSP office letter no. SECR/BSP/ Engg./Gen/522/Work Study/Pt.II/50 dated 21.05.2019.

The work study of SSE(P-Way) Unit/Bijuri of Engineering Department in Bilaspur Division has been conducted to review the existing cadre strength in view of present work load, outsourcing of some works of P-way, track maintenance through Track Machines, need base requirement and optimum utilization of manpower. Draft study report vide letter under reference was sent to DRM/BSP followed by one reminder addressed to Sr. DEN(Co)/BSP to furnish the remarks on the draft report. In response to it, Sr. DEN(Co)/BSP vide his letter dated 21.05.2019 requested to review the work study report. The remarks of Sr. DEN(Co)/BSP was examined carefully and a reply to this effect has been given vide this office letter dated 27.05.2019 with advice to implement the recommendation made by Work Study team.

The work study report contains recommendation for surrender of 28 surplus vacant posts [27-Track Maintainers and 01-ECR] out of total sanctioned of 360 of SSE (P-Way) Unit/Bijuri of Bilaspur Division. Besides this, some suggestions are also made to improve the efficiency.

Therefore in view of above, it is requested that suitable instructions may be given to concerned officers for implementation of the work Study report and copy of surrender memorandum may be sent to this office so that progress of implementation of work study can be advised to Railway Board accordingly.

This has the approval of SDGM.

(S. N. Pattnaik) 27/6/2019
Asst. Work Study Officer
For Sr. Deputy General Manager

Encl: 1 work study report.

Copy along with one copy of work study report is forwarded to:-

1) The Executive Director, E&R (ME), Railway Board for kind information.
2) Secretary/SECR for kind information of GM.
3) PCE/SECR/BSP for kind information and necessary action please.
4) Sr. DEN(Co)/BSP, Sr. DPO/BSP for kind information and necessary action.

WORK STUDY REPORT ON EXISTING CADRE STRENGTH VIS-À-VIS WORK LOAD OF SSE (P. WAY) UNIT/BIJURI

OF ENGINEERING
DEPARTMENT
IN BILASPUR DIVISION

SOUTH EAST CENTRAL RAILWAY

BILASPUR

WORK STUDY CELL

WORK STUDY REPORT ON EXISTING CADRE STRENGTH VIS-À-VIS WORKLOAD OF SSE (P. WAY) UNIT/BIJURI OF ENGINEERING DEPARTMENT IN BILASPUR DIVISION

GUIDED BY
SRI AMIT KUMAR SINGH
SR. DY. GENERAL MANAGER

LED BY
SRI S.N. PATTNAIK
ASST. WORK STUDY OFFICER

CONDUCTED BY

SRI A.C. BEHERA
CH. WORK STUDY INSPECTOR

SRI ANSHUMAN HALDER
WORK STUDY INSPECTOR

कार्यअध्ययन प्रकोष्ठ
दक्षिण पूर्वमध्य रेलवे
बिलासपुर
अध्ययन संख्या
SEC/08/2019-20

CONTENTS

SUMMARY OF RECOMMENDATIONS & SUGGESTIONS

Rec. No.	Description	Para Reference
	RECOMMENDATIONS:	
1.	Considering the existing work load, it is recommended that (as per details given in Para 3.4.1 to 3.8) the requirement of total cadre under SSE/P-Way/ BJRI unit comes to 332 against sanction of 360 staff. ***Thus 28 identified surplus vacant posts [01-ECR and 27-Track Maintainers] should be surrendered from SSE/P-Way/ BJRI unit of Engineering Department in Bilaspur Division.***	3.11.1
2.	The money value resulting after surrendering of vacant posts of Track Maintainer can be utilised for creation of posts required for Track Machine maintenance work as per need.	3.11.2
3.	The vacant post of Artisan category, Track Maintainer category should be filled up for better monitoring of contractual and departmental civil engineering works.	3.11.3
4.	Some activities of P- Way like deweeding of track & cleaning of drain, painting of Boards/Rails, overhauling of LC Gate and tree cutting for visibility may be outsourced up to 80% and rest 20% through departmental.	3.11.4
Suggestions:		
1.	Traffic Block is very crucial issue for maintenance of tracks; it was informed that due to lack of coordination between departments It is very tough task to get the block approved. Coordination between departments needs to be increased for blocks as and when required.	3.11.5
2.	Mobile Maintenance Gang may be set up to cater the emergency work as per need.	3.11.6

CHAPTER – I

1.0 Introduction:

In Railways, Engineering department is entrusted with the periodical maintenance of the Track, Bridges, Works, Level crossing gates and related areas. A well maintained track is very essential for safety, speed and efficient operation of trains. Continuous monitoring and inspection on daily basis is warranted for ensuring a reliable permanent way.

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

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

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

Sleeper holds the rails in proper position and provides the correct gauge with the help of fittings and fastenings and transfer the load to the ballast.

Ballast is placed on prepared ground known as formation, which gives a uniform level surface, provide drainage and transfers the load to larger area of formation.

Formation gives a surface, where the ballast rests and transmits the total load of the track and that of the trains moving on it to the ground below.

1.1 Characteristics of a good Track:

(i) Sound condition of rails, sleepers and fittings.
(ii) All fittings are available and properly tightened.
(iii) Adequate good quality and clean ballast under the sleepers and also around it with full shoulder width.
(iv) Wear in rails, horizontal or vertical should be within limits.
(v) Alignment of rails should be perfect, kinks or other defects should be within permissible limits.
(vi) Formation is stable with good drainage and slopes well protected by grass or stones pitching.
(vii) Longitudinal and cross levels should be in good condition and within allowable limits.

1.2 Annual programme of track maintenance

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

Period	Work
1. Post-monsoon attention. For about six months after end of monsoon.	a) Attention to run down length in the entire gang beat to restore section to good shape.
	b) One cycle of through packing from one end of the gang beat to the other end including overhauling of 1/3 to ¼ of the beat.
	c) Attention during the monsoon; For about 4 months cleaning of side drains, catch water drains, repairs to bank and picking up of slacks.
2. Pre-monsoon attention: for about 2 months prior to break monsoon.	a) Attention to track as required; picking up of slacks.
	b) Attention to side drains, catch water drains and water ways.
3. Lubrication of rail joints, gap adjustment and curve re-alignment.	Patrolling of track during heavy rains.

1.3 Need for Mechanised Maintenance:

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

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

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

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

1.4 Inspection of track:

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

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

1.5 Methods of Inspections:

Various methods adopted for inspection are as under:

(a) By Push Trolley/ Motor Trolley
(b) By Engine of a fast train
(c) By rear most vehicle of a train
(d) By Track recording Car and
(e) By Oscillograph Car and OMS instrument

1.6 Present Scenario:

In present days of modernization, the traditional method of performing P. Way activities related to up-keepings of Railway track has been upgraded by improvising the P. Way Assets (such as introduction of PSC Sleeper, utilization of modern Tools & plants etc.) and by adopting the latest technology/Work culture (such as introduction of Mechanized Maintenance, implementing Outsourcing, elimination of redundant activities etc.). Being Modernization in railway system has become necessity of today so as to haul heavier and longer trains at faster speeds safely and conveniently to achieve better productivity and render better consumer service to rail users. Modernization of track involves use of heavier track structure, long welded rails, modern mechanized methods of track maintenance and quick renewals of track structure etc.

1.7 Benchmarking:

As per Railway Board's instructions, the manpower is to be brought down at the level of IRABM. As per latest Benchmarking of Manpower Productivity Ratios Report of September'2018 issued by the Director (E&R)/ Railway Board, the IR Benchmark of P. Way Department is 0.77 Men per ETKM whereas Benchmark of P. Way Department of Bilaspur Division is 1.04 which is higher than IR Benchmark manpower ratio. The current IR Average Benchmark of Engineering Gatemen as per Benchmarking report, Sep'2018 issued by Railway Board is 2.30 Men per Gate whereas Benchmarking of Gateman of Bilaspur Division is 2.76 Men per Gate which is above than IRABM.

1.8 SSE/P. Way Units in Bilaspur Division:

There are fifteen P-Way units under Engineering department in Bilaspur Division. The locations of P-Way unit are at Brajarajnagar, Raigarh, Baradwar, Korba, Champa, Bilaspur, Khongsara, Pendra, Anuppur, Shahdol, Birsingpur, Umaria, Bijuri, Baikunthpur and Manendragarh.

1.9 Details of SSE/P. Way Unit/ Bijuri:

The jurisdictions along with the no. of DTM/Gangs existing under SSE/P. Way/ BJRI Unit are given as under:

S#	Item	Particulars
1.	Section	APR-BJRI (Double Line)
2.	Jurisdiction	868/11-917/11
3.	Length (KM)	259.707
4.	Total No. of DTM/Gang under the P- Way Unit	DTM-04 & Store Gang-01 *(Previously 08 DTM + 2 Gang)
5.	Jurisdiction of one Gang	6-8 Km
6.	No. of Engineering LC Gates	04

1.10 Merger of DTMs/Gangs of SSE/P. Way Unit/ Bijuri in Bilaspur Division:

Vide Sr. DEN(Co.)/BSP's letter No. SECR/ENG/BSP/Gen/Cadre/Pt.-VII/56 dated 31.05.2018, the 08 DTMs and 02 gangs are merged as follows. Effect on gang working and difficulties arising due to changed scheme is closely monitored and analyzed by ADEN/DEN/Sr. DEN.

Before merging			After merging		
DTM/Gang No	Jurisdiction	DTM/Gang HQ	DTM/Gang No	Jurisdiction	DTM/Gang HQ
DTM 1AB	868/11-13 to 875/23-25	870/20-22	DTM 1AB	868/11-13 to 881/23-25 and CLF-MZH By-pass line	MZH
DTM 2AB	875/23-25 to 881/23-25	MZH			
DTM 3AB	881/23-25 to 887/23-25	DRSN	DTM 2AB	881/23-25 to 897/21-23	HRV
DTM 4AB	887/23-25 to 893/11-13	HRV			
DTM 5AB	893/11-13 to 899/15-17	HRV	DTM 3AB	897/21-23 to 908/11-13 and Govinda sdg.	KTMA
Gang 44	0GC/0-3GC/11	KTMA			
DTM 6AB	899/15-17 to 905/11-13	KTMA			
DTM 7AB	905/11-13 to 911/19-21	BATL			
DTM 8AB	911/19-21 to 917/11-13	BJRI	DTM 4AB	908/11-13 to 917/11-13 and RBH sdg.	BJRI
Gang 45	0BR/1-5BR/11	BJRI			
Store Gang	Entire Jurisdiction	BJRI	Store Gang	Entire Jurisdiction	BJRI
Artisan Staff			Artisan Staff		

1.11 Terms of Reference:

The following terms of reference were adopted for conducting the study:-

I. Review of staff strength vis-à-vis existing workload.
II. Outsourcing activities.
III. Identifying redundant/unproductive activities to eliminate wastages.
IV. Suggesting ways and means to improve the standard in view of modernization and system improvement.

1.12 Methodology Adopted:

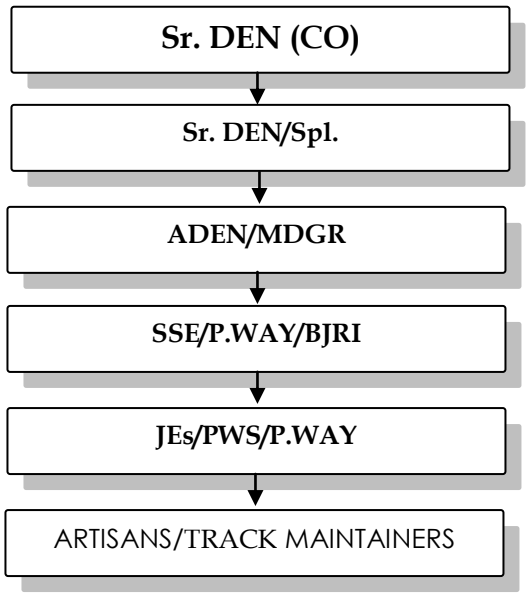
The work study team conducted a review of need based requirement of Engg. P. Way staff at Bijuri Unit of Bilaspur Division having total sanctioned strength is **360,** Actual strength is **249** and vacancy is **111.**

The work-study team has adopted the following technique to complete the study:-

- ❖ Verification of Data provided by Engineering Branch in detail with reference to quantum of work load.
- ❖ Direct observations regarding working of staff and discussion in details with officer/ Supervisor /Staff.
- ❖ Assessment of staff requirement and utilization of existing Manpower in other activities.
- ❖ Critical analysis of the data collected.
- ❖ Making recommendations for need base staff in the modern context.
- ❖ Work out financial implication involved in saving as a result of surplus staff.

1.13 Organisational Chart of Engineering Department (P.WAY):

P. Way organization is a part of Engineering department at divisional level, functions under the administrative control of Sr. DEN (Co)/Bilaspur. Officers having entrusted with a particular section comprising of sectional CPWIs/PWIs/PWSs (P. Way) are in-charge of P. Way Units and are responsible for up-keeping of track**.**



CHAPTER-II

2.0 OBSERVATIONS :

Consolidated Staff strength Unit wise:

The consolidated cadre strength of various SSE (P. Way) Unit of Bijuri as furnished vide Sr. DEN/Co. office & as per data provided by SSE (P. Way)/BJRI is given below:

Category	S#	Designation	Scale	GP	Sanctioned	Actual	Vacancy
Supervisory	1	SSE	9300-34800	4600	4	3	1
	2	JE	9300-34800	4200	3	4	-1
	SUB TOTAL				**07**	**07**	**0**
Ministerial	3	Jr .Clerk	5200-20200	1900	0	0	0
	4	OS	9300-34800	4200	1	1	0
	SUB TOTAL				**1**	**1**	**0**
Artisan	5	Painter-I	5200-20200	2800	1	0	1
	6	Painter-III	5200-20200	1900	0	1	-1
	7	Welder-II	5200-20200	2400	1	0	1
	8	Grinder-I	5200-20200	2800	1	0	1
	9	Luter-MCM	9300-34800	4200	0	1	-1
	10	Luter - I	5200-20200	2800	0	1	-1
	11	Luter - III	5200-20200	1900	1	0	1
	12	ECR-I	9300-34800	2800	1	0	1
	13	EBS- I	5200-20200	2800	1	1	0
	14	EBS- II	5200-20200	1900	1	0	1
	15	Chowk1dar	5200-20200	1800	2	3	-1
	SUB TOTAL				**09**	**07**	**02**
Track Maintainer	16	Track Maintainer-I	5200-20200	2800	21	12	9
	17	Track Maintainer-II	5200-20200	2400	43	8	35
	18	T rack Maintainer-III	5200-20200	1900	78	59	19
	19	Track Maintainer-IV	5200-20200	1800	201	155	46
	SUB TOTAL				**343**	**234**	**109**
TOTAL					**360**	**249**	**111**

2.2 Duties of P. Way staff

The duties of P. Way staff category-wise are as under:

(i) SSE/JE (P. Way):-

SSE/JE(P. Way) perform their duties in office as well as in field units which are broadly mentioned as follows:

Inspections and maintenance of track in his jurisdiction in a safe condition for traffic. Inspections and maintenance of Engg. L/C Gate in his jurisdiction. Accountal, procurement and periodical verification of stores & tools required for regular maintenance. Execution of new/sanctioned works including zonal works. Measurements and bills pertaining to p. way works including correspondence, if any. Periodical inspection of new works and inspections as specified in Engineering Manual.

(ii) PWS:-

They supervise the works carried out by Gang Mate.

(iii) Mate:-

He is assigned for the work that the prescribed system of track maintenance is adhered to and the task allotted to him either verbally or through gang chart/diary are carried out efficiently, ensure the tools & equipment as prescribed available at site of work, ensure his length of line is kept safe for the passage of trains and any unsafe condition is reported immediately, inspect the whole gang length once a week for on the spot supervision regarding track condition.

(iv) Keyman:-

The keyman inspects by foot his entire beat once a day, both the tracks and bridges for lookout of defects like loose spikes, keys, chairs, fish bolts, fittings on grinder bridges/culverts, broken/burnt sleepers, broken plates/tie bars etc. and attend them as necessary and report it to Mate/PWS/JE.

(v) Trackman:-

They are assigned the work of track maintenance like packing, casual renewal of rail/sleeper, lubrication of rail joints, attention to point & crossing, drain cleaning, vegetation cleaning, loading/unloading of materials, patrolling, protecting line in emergency etc.

(vi) Trolley man:-

These staff are engaged for operation of Trolleys available with SSE/JE.

(vii) Black Smith:-

These staff are engaged for smithy related activities.

(viii) ECR:-

These staff are engaged for carpentry related activities as and when required. However, at present the work of Carpenter has been reduced in view of no wooden sleeper.

(ix) Welder:-

Welder are utilized for welding work

(x) Luter:-

Luter are utilized for luting during welding work.

(xi) Chowkidar:-

Chowkidar staff are utilized in EI roster as care taker in the offices, stores etc.

2.3 Classification of Track Maintenance Activities as per MCNTM report:

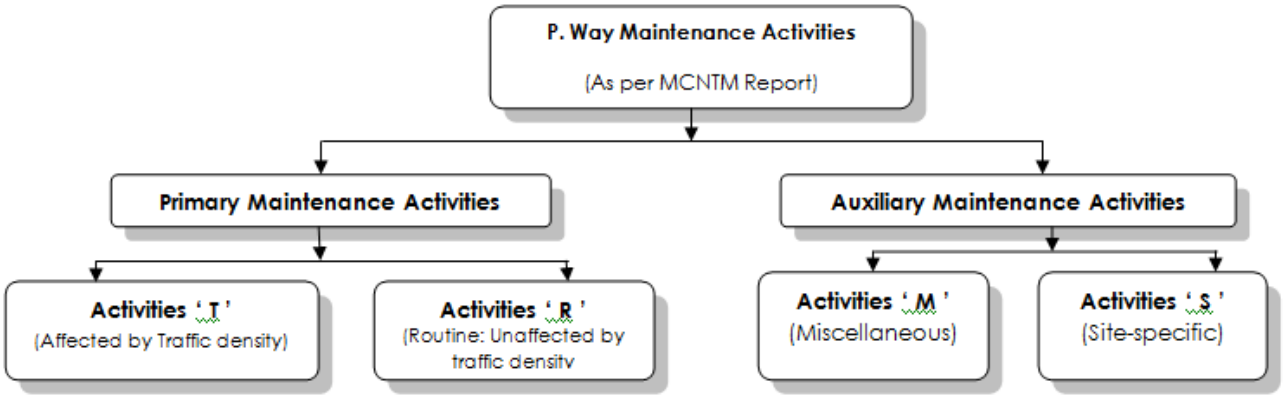
The Rational Formulae (MCNTM):

These formulae were developed because the Special Committee Formula was felt inadequate to account for differing manpower availability (skill sets, age distribution) in different regions or zones, increasing use of casual labour and private contractors for certain track maintenance activities, etc. In 1996, another committee was constituted by the Railway Board to look into this matter and to recommend changes to the Special Committee Formula.

These new Rational Formulae are much more involved, and account for a wide variety of factors in terms of the nature of the maintenance work, the type of track and traffic carried on it, the distribution of casual and contracted labour for permanent way operations, etc. The Rational Formulae are actually many different formulae, for each kind of maintenance operation, and they also specify the equivalence of different kinds of work for the purposes of computing wages and so on. The latest set of Rational Formulae was adopted in 2006 on the basis of recommendation of "The Committee on **M**anpower and **C**ost **N**orms for **T**rack **M**aintenance" (**MCNTM** Committee).

In order to cover certain gang activities left out which affect track maintenance effort and to take into account the effect of machine packing and track modernization, the Committee on Manpower and Cost Norms for Track Maintenance (MCNTM) found it more logical and rational to adopt zero based approach. The Committee recommended that the Railway may sanction Casual/Seasonal labour for all these works as and when required on the basis of volume of work.

As per MCNTM report the track maintenance activities are categorized as Primary maintenance and Auxiliary maintenance given as under:



PRIMARY MAINTENANCE ACTIVITIES:

These activities are directly related to P. Way maintenance, needing manpower based on continuous length of track, further classified as follows:

Activities T (Affected by Traffic density):
These are aimed at achieving safety and acceptable running quality, commensurate with the loads and speeds carried.

Activities R (Routine: Unaffected by traffic density):
These are for maintaining track, formation and other integrated assets, which are of routine nature, but quite important for train operation and for achieving reliability and long life of assets.

AUXILIARY MAINTENANCE ACTIVITIES :

These are related to upkeep of P. Way section as a whole, needing manpower based on localized problems, special features and geographical nature of P. Way section, further classified as follows:

Activities M (Miscellaneous):
For these activities, the quantum of work arising in the P. Way section can be assessed on a universally adoptable basis and the yardstick relating mandays requirement to output is rationally stipulated for each sub-activity.

Activities S (Site-specific):
For these activities, the quantum of work arising varies from location to location depending on site-specific features of the P.Way section and the yardstick is stipulated generally based on past experience.

2.4 The details of activities and sub-activities mentioned in MCNTM report under T, R M, & S categories are given as under:

List of activities & sub-activities under T,R,M &S as per MCNTM Report			
PRIMARY MAINTENANCE ACTIVITIES		AUXILIARY MAINTENANCE ACTIVITIES	
Activities 'T' (Affected by Traffic density):	**Activities 'R'** (Routine: Unaffected by traffic density	**Activities 'M'** (Miscellaneous)	**Activities 'S'** (Site specific)
Machine packed track (non-suburban): ***T1.Slack attention to*** a. Bad spots b. Low joints, (FP or welded), Glued joints c. SEJ (1 No. per km.) d. Minor curve realignment	**Machine packed track (non-suburban):** **R1**. Lubrication of ERCs **R2.** Shallow Screening (1/5 length) **R3.** Loading, leading, unloading **R4.** Overhauling of level crossing **R5**. Watching caution spots & Miscellaneous **R6.** Tree cutting for visibility **R7**. Lubrication of rails in curves	**Sub-activities:** **M1.** Monsoon patrolling **M2.** Hot weather patrolling for LWR track	**Sub-activities:** **S1.** Tunnel maintenance **S2.** Bridge substructure maintenance

T2. For tie tamper working a. Pre-tamping operations b. Along with tamper c. Post tamping operations ***T3. Casual Renewal of*** a. Rails b. Sleepers c. Fasteners (along with re-gauging) ***T4. Repair Welding*** **ii. Manually packed track (non-suburban):** ***T1. Through packing*** ***T2. Slack attention to*** a. Bad spots b. Low joints, insulated joints c. Minor curve realignment ***T3. Casual renewal of*** a. Rails b. Sleepers c. Fasteners (includes attention) ***T4. Creep pulling*** **iii. Machine packed track (high density suburban):** ***T1. Slack attention to*** a. Bad spots b. Low Joints c. SEJs d. Minor Curve attention ***T2. For Tie tamper working*** a. Pre-tamping attention b. Along with tamper c. Post tamping attention **T3. Casual renewal of** a. Rails b. Sleepers c. Fastenings ***T4. Repair welding***	**R8**. Accident relief and carcass removal in run-over cases **R9**. Bridge sleeper attention & renewal **R10**. Pre monsoon attention, such as clearing of drains and waterways, cess repairs, de-weeding of track and attention to cuttings and trolley refuges. **R11.** Creep pulling (approaches of bridge, turnout) **R12.** Rectifying damage to L/C posts and gates **ii. Manually packed track (non-suburban):** **R1.** Lubrication of rail joints **R2.** Shallow screening (1/5 length) **R3.** Loading, leading, unloading **R4.** Overhauling of level crossings **R5.** Watching caution spots & miscellaneous **R6.** Tree cutting for visibility **R7.** Lubrication of rails in curves **R8.** Accident relief and carcass removal in run-over cases **R9.** Bridge sleeper attention & renewal **R10.** Pre-monsoon attention such as clearing of drains and waterways, cess repairs, de-weeding of track and attention to cuttings and trolley refuges **R11.** Rectifying damage to LC posts and gates **iii. Machine packed track (high density suburban):** **R1**. Through packing **R2.** Shallow screening(1/5 length) **R3**. Loading, leading & unloading **R4**. Lubrication of ERCs(Jts.) **R5**. Overhauling of level crossings **R6**. Watching caution spots and look out men **R7**. Tree cutting **R8**. Lubrication of rails in curves **R9**. Bridge sleeper attention & renewal **R10**. Accident relief and carcass removal **R11**. Pre-monsoon attention **R12**. Creep pulling **R13**. Rectifying damage to LCs **R14**. Painting of weld collars **R15**. Emergency attention **R16**. Extra assistance to Keymen &B/Smith **R17**. Extra work in night blocks **R18**. Extra assistance for S&T items	**M3.** Cold weather patrolling for LWR track **M4.** Watching of vulnerable locations **M5.** Gate keeping at Engineering level crossings **M6.** Rest giving for keymen **M7.**Waterman duty (to serve the gang) **M8.** Store watchman duty (at isolated locations of P. Way material store)	**S3.** Long girder bridge maintenance **S4.** Extra workload due to very sharp curves, deep cuttings and steep gradients. **S5.** Maintenance of track on extremely bad formation. **S6.** Look-out man duty (for the safety of gang) **S7.** Fog signal man duty (to assist Traffic Department) **S8.** Filth removal from track (within city limits) **S9.** Security patrolling **S10.** Watching of water level in suburban section (mostly in Mumbai area) during monsoon and stopping of trains as soon as found necessary.

2.5 As per MCNTM report, the following track maintenance works can be earmarked for execution through contracts**:**

Table –A: List of activities that can be executed through contract system

S#	Activities
1	Formation treatment works
2	Collection of ballast, training out of ballast by material train, leading ballast stack to track, insertion of ballast in track and profiling.
3	Deep - screening of ballast in track, carrying out manually or by deploying BCM in which case manpower support is provided by contractor.
4	Introduction of sub ballast and ballast layer.
5	Heavy repairs to track including lifting.
6	Complete realignment of curved track.
7	Through renewal of rails, sleepers and fasteners.
8	Complete renewals of points & crossing, SEJs, traps, etc.
9	Resurfacing of machines and switch rails.

10	Loading and unloading of P. Way materials in bulk.
11	Lorrying 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, repairs depots and workshops of Engineering, Mechanical, Electrical and S&T departments.

Table –B: List of activities for machine packed track to be maintained departmentally

Activities under 'T' (Affected by traffic density):	
T.1	Slack attention to; a) Bad spot b) Low joints (FP or welded) & Glued joints c) SEJ d) Minor curve alignment.
T.2	For tie tamper working; a) Pre-tamping operations b) Along with tamper c) Post tamping operations.
T.3	Casual renewal of; a) Rails b) Sleepers c) Fasteners along with re-gauging.
T.4	Repair welding.
Activities under 'R' (Unaffected by traffic density):	
R. 1	Lubrication of ERCs.
R.2	Shallow Screening (1/5 length)
R.3	Loading, leading, unloading
R.4	Overhauling of level crossing
R.5	Watching caution spots &Miscellaneous
R.6	Tree cutting for visibility
R.7	Lubrication of rails in curves
R.8	Accident relief and carcass removal in run over cases
R.9	Bridge sleeper attention & renewal.
R.10	Pre monsoon attention, such as clearing of drains and water ways, cess repairs, de-weeding of track and attention to cuttings and trolly refuges.
R.11	Creep pulling (Bridge approaches/Turn-out)
R.12	Rectifying damage to L/C posts and gates.
Activities under 'M':	
M.1	Monsoon patrolling.
M.2	Hot weather patrolling of LWR track
M.3	Cold weather patrolling of LWR track
M.4	Watching vulnerable locations.
M.5	Gate keeping at level crossings
M.6	Rest giving for Key man
M.7	Waterman duty
M.8	Store-watchman duty at isolated location of P.way material store.
Activities under 'S' (Site specific):	
S.1	Tunnel maintenance(Subject to works/bridge staff not being available for this work)
S.2	Bridge sub-structure maintenance (Subject to works/bridge staff not being available)
S.3	Long girder bridge maintenance (No. of bridges each having more than 150m lineal waterway)
S.4	Extra workload due to very sharp curve, deep cuttings and steep gradients.
S.5	Maintenance of track on extremely bad formation.

	(No. of locations where track needs more than12 attentions in a year)
S.6	Look-out man duty (for the safety of gang)
S.7	Fog signal man duty to assist Traffic Deptt(Man days utilized in past 3 years for this)
S.8	Filth removal from track (within city limits)
S.9	Security patrolling(Mandays utilized in past 3 years for this duty)
S.10	Watching of water level in suburban section (mostly in Mumbai area)

2.6 Average %-Break-Up of present Track Maintenance work executed by Departmentally & Through Contract:-

(Percentage Break-UP)

S#	Activities	Being carried out by (in %-age)	
		Departmental	Contractual
1	Attention to bad spots	100	00
2	Attention to low joints	100	00
3	Attention to SEJ	90	10
4	Attention to minor curve realignment	100	00
5	Pre-tamping operations	50	50
6	Along with tamper	Not Applicable	
7	Post tamping operations	40	60
8	Casual renewal of rails	70	30
9	Casual renewal of sleepers	40	60
10	Renewal of fasteners (along with re-gauging)	100	00
11	Repair Welding	50	50
12	Lubrication of ERC	00	100
13	Shallow screening	50	50
14	Loading, leading, unloading	40	60
15	Overhauling of level crossing	50	50
16	Watching caution spots and misc.	100	00
17	Tree cutting for visibility	100	00
18	Lubrication of rails in curves	100	00
19	Accident relief and carcass removal in run over case	100	00
20	Bridge sleeper attention and renewal	40	60
21	Premonsoon attention such as cleaning of drains and water ways, cess repair, deweeding of track and attention to cuttings and trolley refuges	40	60
22	Creep pulling (approaches of bridge and turnout)	100	00
23	Rectifying damage to LC posts and gates	100	00
24	Monsoon patrolling	100	00
25	Hot weather Patrolling	100	00
26	Cold weather Patrolling	50	50
27	Watching Vulnerable location	100	00
28	Waterman duty	100	00
29	Site store chowkidar	100	00
30	Gate Keeping at Level crossing	100	00
31	Tunnel maintenance	Not Applicable	
32	Bridge structure maintenance	Not Applicable	
33	Long girder maintenance	Not Applicable	
34	Extra for very sharp curve	100	00
35	Extra for very bad formation	100	00
36	Look outman duty	100	00
37	Fog signalman duty	Not Applicable	
38	Filth removal	100	00
39	Security Patrolling	100	00
40	Painting & Writing work	20	80

2.7.1 Sectional data of sample gangs:

Sectional data of 01 sample gang (DTM No.3AB) of SSE(P-Way) unit Bijuri as provided by SSE are summarized as under:

Items	DTM/3AB (SSE/P. Way/BJRI)
Division	BSP
Jurisdiction	897/21-23 to 908/11-13 and KTMA-GVD siding
Gang length	11 Km and KTMA siding
TKM (M/L)	11 TKM
GMT	UP 36.71/DN 16.83
Poor visibility	No
LWR length	16.64 TM
No. of curves	UP 05/DN 07
Degree of curve	Max^{n} 03^{o}
Length of curve	UP 1780 Mtr/ DN 2240 Mtr
Girder bridge	02
Length of G/Bridges	UP 6 X 60 feet/ DN 6 X 60 feet
Station yard	KTMA yd
L/C Gate	04
Distressing Temp.	42 ^{0}C
Rail Temperature	42 ^{0}C
Stationary Patrolling	During Monsoon 01 batch

2.7.2 Cadre Position & Jurisdiction of DTM/Gang under SSE(P. Way)/BJRI :

S #	DTM/ Gang No.	Km.	Sanction Track Maintainer					Actual Track Maintainer					Vacancy				
			I	II	III	IV	Total	I	II	III	IV	Total	I	II	III	IV	Total
1	1AB	868/11-13 to 881/23-35 and CLF-MZH line	5	9	13	39	**66**	6	2	10	26	**44**	-1	7	3	13	**22**
2	2AB	881/23-35 to 897/21-23	5	10	14	40	**69**	1	1	5	34	**41**	4	9	9	6	**28**
3	3AB	897/21-23 to 908/11-13 and KTMA-GVD siding	5	8	10	58	**81**	4	1	5	54	**64**	1	7	5	4	**17**
4	4AB	908/11-13 to 917/11-13 and BJRI-RBH assisted siding	6	11	19	49	**85**	3	3	16	37	**59**	3	8	3	12	**26**
5	Store Gang	SSE(P.Way)/ BJRI	0	1	2	7	**10**	0	0	1	2	**3**	0	1	1	5	**7**
	Trolly man		0	2	7	3	**12**	0	1	7	0	**8**	0	1	0	3	**4**
	Gate keeper		0	2	13	5	**20**	0	0	14	1	**15**	0	2	-1	4	**5**
Total			**21**	**43**	**78**	**201**	**343**	**14**	**8**	**58**	**154**	**234**	**7**	**35**	**20**	**47**	**109**

2.7.3 **Level Crossing Position under SSE(P. Way)/BJRI** : There are 04 Engineering gates under the jurisdiction of SSE/P-Way/ BJRI.

Unit	S#	Section	LC No	Location	Duty Roster
SSE/P-Way/B	1	MZH-HRV	AB-5	884/16-18	8 Hrs.
	2	HRV-KTMA	AB-8	894/18-20	8 Hrs.
	3	HRV-KTMA	AB-9	896/16-18	8 Hrs.
	4	BJRI-RBH	AB-19	4BR/14-15	8 Hrs.

2.7.4 **Push Trolley Position under SSE(P. Way)/ BJRI :**

Sr.No.	Designation	MT/PT	Headquarter	Existing Numbers	New Allotted Numbers
1	JE (Pway) KTMA	PT	KTMA	61	BSP 58
2	Sr. SE (Pway) BJRI	PT	BJRI	59	BSP 59
3	JE (Pway) BJRI (W)	PT	BJRI	60	BSP 60

2.7.5 **Stores under SSE(P. Way)/BJRI :** There are one Stores under SSE/P-Way/ BJRI. There are 1146 Store items (both Stock and Non-Stock) present in each Store. In the year 2018-19, materials received from Track, DSD/BSP and other P-Way units is 518 times, and materials issued for Work site is 1805 times in a year. Existing average 10 Track Maintainers per day are utilized for Store items handling and record maintenance purpose.

The staffs deployed in Store section are dealt with loading/unloading of store items, arranging in proper order, maintaining of concerning registers, transporting of materials to the site etc. Materials consumed in track is 34 times. Besides it, 3-4 staffs per day are deployed to look after the movable store items at site.

2.7.6 Performance of Track Machine in the jurisdiction/ SSE(P. Way)/BJRI :

Sectional Tamping Details
Section : Anuppur Jn-Boridand Jn
Line : UP Location : 868 km 300 m to 917 km 247 m Track Length : 47.13 km
Line : DN Location : 868 km 300 m to 917 km 247 m Track Length : 47.874 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
DN	868	300	870	900	2600	01/2016	CSM
DN	871	0	871	400	400	04/2013	UNIMAT
DN	871	400	872	961	1427	04/2013	CSM
DN	872	961	873	490	464	01/2016	WST
DN	873	490	874	780	1280	05/2017	WST
DN	874	780	874	934	154	04/2013	MPT
DN	874	934	875	959	960	07/2018	MPT
DN	875	959	875	1000	41	04/2013	MPT
DN	876	300	876	500	200	12/2015	UNIMAT
DN	876	500	877	160	646	11/2015	UNIMAT
DN	877	160	877	385	225	11/2017	UNIMAT
DN	877	385	877	520	135	12/2015	UNIMAT
DN	877	520	877	800	280	09/2012	MPT
DN	877	800	878	300	450	11/2015	CSM
DN	878	300	880	195	1843	01/2016	CSM
DN	880	300	880	325	25	05/2017	MPT
DN	880	325	880	830	505	06/2018	MPT
DN	880	830	881	190	334	05/2017	MPT
DN	881	190	881	538	348	01/2016	WST
DN	881	538	883	160	1567	01/2016	CSM
DN	883	160	883	220	60	03/2013	CSM
DN	883	800	884	550	718	01/2016	CSM
DN	884	663	885	210	498	05/2017	WST
DN	886	120	887	200	1026	01/2016	CSM
DN	887	890	889	330	1357	04/2016	WST
DN	889	330	889	370	40	01/2016	WST
DN	890	710	891	400	846	11/2017	UNIMAT
DN	891	400	891	827	427	11/2015	UNIMAT
DN	891	827	891	1050	223	03/2013	MPT
DN	891	1106	892	319	214	11/2017	UNIMAT
DN	892	319	892	370	51	01/2016	UNIMAT
DN	892	600	894	100	1203	05/2017	WST
DN	894	100	894	550	450	04/2016	WST
DN	894	550	894	600	50	03/2013	WST
DN	894	600	895	700	1087	11/2015	MPT
DN	895	700	895	750	50	03/2013	MPT
DN	895	750	896	290	587	03/2013	WST
DN	896	290	897	320	859	05/2017	WST
DN	897	320	897	400	80	03/2013	WST
DN	897	400	898	200	767	03/2017	WST
DN	898	200	899	550	1306	04/2016	WST
DN	899	550	899	650	100	03/2013	WST
DN	900	65	900	990	925	03/2013	WST

Sectional Tamping Details
Section : Anuppur Jn-Boridand Jn
Line : UP Location : 868 km 300 m to 917 km 247 m Track Length : 47.13 km
Line : DN Location : 868 km 300 m to 917 km 247 m Track Length : 47.874 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
DN	901	75	903	645	2624	03/2013	WST
DN	903	829	903	943	114	01/2016	MPT
DN	903	943	906	504	2605	03/2013	MPT
DN	906	504	906	907	403	12/2015	MPT
DN	907	620	907	623	3	12/2015	MPT
DN	907	623	907	695	72	01/2016	MPT
DN	908	130	908	720	590	10/2015	WST
DN	909	670	911	35	1365	04/2013	WST
DN	911	715	913	425	1736	11/2015	MPT
DN	914	234	914	362	128	01/2016	MPT
DN	914	662	914	740	78	01/2016	MPT
DN	914	953	915	200	254	01/2016	CSM
DN	915	1070	916	560	648	11/2015	MPT
UP	869	625	870	0	-625	01/2016	WST
UP	870	0	870	250	250	05/2017	UNIMAT
UP	870	250	870	550	300	12/2017	UNIMAT
UP	870	550	872	492	1702	05/2017	WST
UP	872	492	875	720	3227	04/2017	WST
UP	875	720	875	950	230	04/2013	WST
UP	876	200	876	400	200	12/2015	UNIMAT
UP	876	460	876	550	90	12/2015	UNIMAT
UP	877	191	877	367	176	08/2018	MPT
UP	877	367	877	410	43	11/2017	UNIMAT
UP	877	410	877	650	240	01/2016	WST
UP	877	650	880	648	3001	04/2017	WST
UP	880	648	880	950	302	05/2017	WST
UP	880	950	883	340	2431	04/2017	WST
UP	883	340	883	900	560	03/2017	WST
UP	883	900	884	650	774	04/2017	WST
UP	884	650	884	800	150	03/2017	WST
UP	884	800	884	881	81	03/2017	UNIMAT
UP	884	881	887	80	2212	12/2017	UNIMAT
UP	887	80	887	940	860	03/2017	UNIMAT
UP	887	940	888	250	317	03/2017	WST
UP	888	250	888	395	145	02/2017	WST
UP	888	395	888	450	55	04/2016	WST
UP	888	450	889	300	844	04/2017	WST
UP	889	300	889	810	510	05/2017	UNIMAT
UP	889	810	890	258	456	12/2017	MPT
UP	890	258	890	583	325	06/2018	CSM
UP	890	583	890	1004	421	07/2018	CSM
UP	891	200	891	1000	800	03/2013	WST
UP	892	0	892	95	95	04/2013	MPT
UP	892	95	892	160	65	08/2018	MPT
UP	892	160	892	264	104	12/2017	MPT

Sectional Tamping Details
Section : Anuppur Jn-Boridand Jn
Line : UP Location : 868 km 300 m to 917 km 247 m Track Length : 47.13 km
Line : DN Location : 868 km 300 m to 917 km 247 m Track Length : 47.874 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
UP	892	264	892	754	490	01/2018	UNIMAT
UP	892	754	892	928	174	12/2017	UNIMAT
UP	892	928	893	140	-9	05/2017	UNIMAT
UP	893	140	893	610	470	01/2018	UNIMAT
UP	893	610	893	670	60	05/2017	UNIMAT
UP	893	670	894	28	330	01/2018	UNIMAT
UP	894	28	894	298	270	05/2017	MPT
UP	894	298	895	800	1514	06/2018	MPT
UP	895	800	895	850	50	04/2016	WST
UP	895	850	895	853	3	04/2016	MPT
UP	895	853	896	580	814	06/2018	MPT
UP	896	580	896	601	21	04/2016	CSM
UP	896	601	897	962	1190	07/2018	CSM
UP	897	962	898	20	25	04/2016	CSM
UP	898	20	898	417	397	12/2015	CSM
UP	898	417	898	444	27	01/2016	MPT
UP	898	444	899	186	710	08/2018	MPT
UP	899	186	899	187	1	06/2018	MPT
UP	899	187	899	907	720	07/2018	MPT
UP	900	490	900	500	10	04/2012	MPT
UP	900	500	900	720	220	12/2015	MPT
UP	900	720	901	39	290	04/2012	UNIMAT
UP	901	39	901	79	40	01/2016	UNIMAT
UP	901	79	901	250	171	04/2012	UNIMAT
UP	901	250	901	633	383	01/2016	UNIMAT
UP	901	633	901	749	116	04/2012	WST
UP	901	749	902	38	313	01/2016	WST
UP	902	38	902	40	2	04/2012	CSM
UP	902	40	903	965	1946	12/2015	WST
UP	903	965	904	520	540	01/2016	WST
UP	904	520	905	204	684	12/2015	WST
UP	905	204	905	680	476	12/2015	MPT
UP	905	680	905	740	60	01/2016	MPT
UP	905	740	905	850	110	12/2015	WST
UP	905	850	906	360	510	12/2015	CSM
UP	906	360	907	583	1223	12/2015	MPT
UP	907	583	907	645	62	01/2016	MPT
UP	907	645	908	840	1195	12/2015	WST
UP	908	848	911	64	2216	12/2015	WST
UP	911	130	913	140	1979	12/2015	WST
UP	913	140	913	868	728	12/2015	MPT
UP	913	868	913	982	114	01/2016	MPT
UP	913	982	915	480	1504	12/2015	MPT
UP	915	540	915	775	235	12/2015	CSM
UP	915	920	915	950	30	12/2015	UNIMAT

Sectional Tamping Details
Section : Anuppur Jn-Boridand Jn
Line : UP Location : 868 km 300 m to 917 km 247 m Track Length : 47.13 km
Line : DN Location : 868 km 300 m to 917 km 247 m Track Length : 47.874 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
UP	915	950	916	33	240	04/2013	UNIMAT
UP	916	33	916	35	2	12/2015	UNIMAT
UP	916	35	916	600	565	04/2013	WST
Total					80990		

Sectional Tamping Details
Section : Bijuri-Rajnagar Block Hut
Line : SL Location : 916 km 700 m to 922 km 220 m Track Length : 5.4 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	920	700	921	900	1195	01/2016	MPT
Total					1195		

Sectional Tamping Details
Section : Chulha-Mauhari Byepass
Line : SL Location : 865 km 100 m to 876 km 800 m Track Length : 11.19 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	865	100	871	20	5423	04/2013	CSM
SL	871	20	872	960	1940	01/2016	CSM
SL	872	960	875	500	2581	04/2013	CSM
SL	875	500	875	650	150	09/2012	CSM
Total					10094		

2.8 Performance of sample DTM No. 3AB under SSE (P. Way) Unit/BJRI:

Vide Sr. DEN(Co.)/BSP's letter No. SECR/ENG/BSP/Gen/Cadre/Pt.-VII/56 dated 31.05.2018, the DTM 3AB is formed by merging of 01 Gang and 2 ½ DTM. Hence, monthly work progress of sample DTM No.3AB for last 06 months (July'18- December'18) is taken for assessment as given below:

2.8.1 Monthly Work Progress of DTM 3AB (July 2018):-

Activities (JULY 2018)	Trackmen
Sleeper Carrying	12
clearance Of Catch Water Drain	13
Material Chasing	4
Material Stacking/Collection	4
On Keyrnan Duty	56
Overhauling/Shallow Screening	64
With Keyman	1
Patrolling-Security	2
Reconditioning Of Toung Rail/ Stock Rail / Crossings	11
Assisting In Office Work	67
Training/Ic/Rc	19
Casual Rail Renewal	8
Cleaning , Dressing ,Boxing Of Ballast	32
P & C Attention/Overhauling	13
Slack Attention To Joints	32
Through Padding/Attention	84
With Welding Team	1
Clearance Of Side Drain	8
Emergency Attention	6
Loading Leading Unloading Of P Way Material	8
Material Chasing	4
Material Stacking/Collection	21
On Keyman Duty	66
On USFD Work	28
Providing Joggled Fish Plate	4
Rail Dolly/Diplorry Work	10
Shallow Screening	69
Work Site Protection	38
Grass Cutting In Track / Jungle Clearance	7
Watchman	52
With Artisan	24
With Welding Team	1
Emergency Attention	2
Material Chasing	8
On Keyman Duty	31
Grass Cutting In Track / Jungle Clearance	9
Store Watchman Duty	1
Watchman	6

Activities (JULY 2018)	Trackmen
Miscellaneous work	423
Total Man-days	**1249**

2.8.2 Monthly Work Progress of DTM 3AB-KTMA (August 2018):-

Activities	Trackmen
Material Stacking/Collection	4
On Keyman Duty	54
With Keyman	1
Work Site Protection	14
Assisting In Office Work	18
Grass Cutting In Track / Jingle Clearance	18
Patrolling-Monsoon	57
With Artisan	6
Assisting In Office Work	18
Grass Cutting In Track / Jungle Clearance	18
Patrolling-Monsoon	57
With Artisan	6
Casual Sleepers Renewal	16
Cleaning , Dressing ,Boxing Of Ballast '	17
P & C Attention/Overhauling	10
Rail Carrying	8
Recoupment Of Fittings & Fastenings -	22
Slack Attention Se;	22
Slack Attention To Joints	12
Through Packing/Attention	8
With Welding Team	1
Emergency Attention	19
Loading Leading Unloading Of P Way Material	4
Material Chasing	4
On Keyman Duty	77
On USFD Work	27
Providing Joggled Fish Plate	33
Rail Dolly/Diplorry Work	44
Trolley Refuge Repair Work	4
Work Site Protection	24
Grass Cutting In Track /Jungle Clearance	14
On Trolley Duty	2
Patrolling-Monsoon	75
Watchman	30
With Artisan	30
Emergency Attention	4
Material Chasing	4
Material Stacking/Collection	3
On Keyman Duty	23
Trolley Refuge Repair *Work*	1
Grass Cutting In Track / Jungle Clearance	11
Watchman	9
With Artisan	2
Miscellaneous work	467
Total Man-days	**1298**

2.8.3 Monthly Work Progress of DTM 3AB-KTMA (September 2018):-

Activities	Trackmen
On Keyrnan Duty	52
Assisting office work	34
Grass Cutting In Track / Jungle Clearance	4
Patrolling-Monsoon	24
Casual Sleeper Renewal	17
Cleaning , Dressing ,Boxing Of Ballast	34
P & C Attention/Overhauling	16
Rail Carrying	19
Slack Attention Sej	24
Slack Attention To Joints	6
Sleeper Carrying	17
Squaring/Spacing Adjustment of Sleepers	9
Through packing /Attention	82
With welding Team	3
Distressing	51
Emergency attention	3
Material Chasing	2
Material Stacking/Collection	14
On Keyrnan Duty	95
On USFD work	25
Trolly Refuge Repair work	5
Work site Protection	41
Grass Cutting In Track / Jungle Clearance	2
Patrolling-Monsoon	44
Watchman	6
With Artisan	21
Emergency Attention	6
Material Chasing	12
Material Stacking/Collection	6
On Keyrnan Duty	29
Trolley Refuge Repair work	8
Grass Cutting In Track / Jungle Clearance	8
Watchman	5
Miscellaneous work	410
Total Man-days	**1134**

2.8.4 Monthly Work Progress of DTM 3AB-KTMA (October 2018):-

DUTY OCT 18	Trackmen
Casual Sleepers Renewal	12
P & C Attention/Overhauling	13
Slade Attention Bad Spots	10
Welding Of Rails	3
Visual Examination Of JFP	23
Distressing	185
Material Standing/Collection	2
On Keyman Duty	64
With Keyman	1
Working With Contract Lobour as Spl. Work	11
Patrolling-Security	20
Work Site Protection	58
Assisting In Office Work	19
Grass Cutting In Track / Jungle Clearance	5
Cleaning , Dressing ,Boxing Of Ballast	24
Lubrication Of Plate Screws	44
P &C Attention/Overhauling	20
With Welding Team	8
Visual Examination Of JFP	21
Distressing	261
Emergency Attention	5
Lubrication Of Rail Joints	5
Lubrication Of SEJ	26
Material Chasing	13
Material Stacking/Collection	9
On Keyman Duty	81
On USFD Work	31
Providing Joggled Fish Plate	4
Trolley Refuge Repair Work	6
Work Site Protection	10
Grass Cutting In Track /Jungle Clearance	4
watchman	1
With Artisan	21
With Welding Team	6
Emergency Attention	5
Material Chasing	14
Material Stacking/Collection	11
On Keyman Duty	31
Trolley Refuge Repair Work	2
Grass Cutting In Track / Jungle Clearance	8
Store Watchman Duty	2
Watchman	1
With Artisan	4
Miscellaneous work	113
Total Man-days	**1217**

2.8.5 Monthly Work Progress of DTM 3AB-KTMA (November 2018):-

Activities	Trackmen
Casual Sleepers Renewal	8
Glued Joint Renewal	14
Points XIng/SEJ Renewal	38
Pre Block Activities	7
Rail Carrying	14
Recoupment Of Fittings & Fastenings	13
Slack Attention Insulated loots	14
Slack Attention Bad Spots	16
TFR	6
TRR	8
With Welding Team	26
Visual Examination of JFP	25
Distressing	29
Material Stacking/Collection	8
On Keyman Duty	58
Assisting In Office Work	16
Grass Cutting In Track / Jungle Clearance	19
Patrolling-Cold Weather	163
Training/Ic/Rc	7
Casual Rail Renewal	18
Casual Sleepers Renewal	16
Cleaning , Dressing ,Boxing Of Ballast	33
P & C Attention/Overhauling	7
Points Xing/SEJ Renewal	6
Rail Carrying	6
Through Packing/Attention	13
TRR	14
With Welding Team	12
Visual Examination Of JFP	28
Emergency Attention	7
Lubrication Of Erc	13
Lubrication Of Rail Joints	7
Material Stacking/Collection	4
On Keyman Duty	68
On USFD Work	26
Work Site Protection	1
Grass Cutting In Track / Jungle Clearance	1
On Helper Duty On Vehicle	3
Patrolling-Cold Weather	195
Training/Ic/Rc	10
With Artisan	23
With Welding Team	2
Emergency Attention	2
Material Chasing	8
Material Stacking/Collection	2
On Keyman Duty	30
Work Site Protection	1
Grass Cutting In Track / Jungle clearance	2
Patrolling-Cold Weather	23
Watchman	2
Miscellaneous work	36
Total Man-days	**1108**

2.8.6 Monthly Work Progress of DTM 3AB- KTMA(December 2018):-

Duty DEC 2018	Trackmen
Casual Fastening Renewal	11
Casual Sleepers Renewal	55
Glued Joint Renewal	9
Points Xing/Sej Renewal	35
Pre Block Activities	15
Rail Carrying	17
Recoupment Of Fittings & Fastenings	10
Slack Attention Bad Spots	21
Sleeper Carrying	34
Squaring / Spacing Adjustment or Sleepers	13
Through Packing/Attention	10
Material Chasing	4
Material Stacking/Collection .	15
On Keyman Duty	62
Bridge Maintenance	8
Work Site Protection	2
Assisting In Office Work	42
Grass Cutting In Track / Jungle Clearance	25
Patrolling-Cold Weather	123
Casual Rail Renewal	12
Casual Sleepers Renewal	20
Cleaning , Dressing ,Boxing Of Ballast -	45
P & C Attention/Overhauling	7
Points Mng/SEJ Renewal	14
Rail Carrying	34
Sleeper Carrying	18
Through Packing/Attention	48
Emergency Attention	2
Loading Leading Unloading Of P Way Material	10
Material Chasing	6
Material Stacking/Collection	11
On Keyman Duty	84
On USFD Work	22
Providing Joggled Fish Plate	14
Rail Doily/Diplorry Work -	8
Working With Contract Lobour As SpLWcrk	10
Work Site Protection	4
Patrolling-Cold Weather	155
With Artisan	23
With Welding Team -	2
Emergency Attention	4
Loading Leading Unloading Of P Way Material	1
Material Chasing	13
Material Stacking/Collection	8
On Keyman Duty	31
With Keyman	1
Work Site Protection	2
Grass Cutting In Track / Jungle clearance	6
Patrolling-Cold Weather	4
'Watchman	5
With Artisan	4
Miscellaneous work	62
Total Man-days	**1201**

CHPTER-III

3.0 CRITICAL ANALYSIS & RECOMMENDATIONS :-

3.1 The actual staff strength of SSE (P. Way) unit Bijuri in Bilaspur Division is **249** as against the sanctioned strength of **360** along with vacancies of **111**. The requirement of P. Way staff has been assessed based on the present workload, in view of mechanization of track, direct observations and discussion held with SSE/JE/PWS/Mate(P. Way). Major works of SSE(P. Way) are being carried out under Zonal contract, however the repair works like attention to bad spots, lubrication of rails, patrolling duty, attending accident relief/run over cases etc. are attended by P. Way staff. Thus, the workload of SSE(P. Way) units has reduced and as such the present review of workload has been undertaken.
Introduction of Track Machine has reduced the workload of Track Maintainers drastically. In the year 2018, about 104 Km track length maintenance was done by various Track Machines.(Para 2.7.6).

In view of above facts, the assessment of need base requirement of DTM/Gang Strength (Trackman) for SSE(P.Way) Bijuri unit in Bilaspur Division has been assessed as under:

3.2 Monthly progress of sample DTM No.3AB under SSE/P-way/ BJRI for six months(July'18-December'18) after merger of DTMs/Gangs is tabulated as follows:-

Month	Jul	Aug	Sep	Oct	Nov	Dec.	Total
Trackman- days	1249	1298	1134	1217	1108	1201	**7207**

3.3.1 Requirement of Track maintainers under SSE/P-way/BJRI:-

Summary of Track Maintainer Performance for six months (July'18- December'18) of sample DTM No. 3AB is as under:-

Type of Activity	Total Trackman utilized
Yearly utilization for total activities (T+R+ S +M)	7207
Avg. Trackman utilized per day	49

As per existing work load of above one sample DTM average Track Maintainers utilized for track maintenance per day per DTM is 7207 mandays / 147 working days* = **49** including Mate and Keyman. (*Max. Working days per year =294/2)

Average 02 Track Maintainers per day from each Gang are being utilized to meet the emergency/precautionary work like boulder/tree falling, surveying vulnerable locations, embankments, cuttings, level crossings and bridges, checking sections of track for correct distance apart and right height, surveying sections to identify maintenance needs etc. The DTM 3AB is formed by merging of 01 Gang and 2 ½ DTM which is equivalent to 06 gangs in old pattern. Hence, average Track Maintainers required to meet the emergency comes to =2x6 = 12.

Hence, average total Track Maintainers utilized per day= 49+12=61.

Average Trackman required for track maintenance / DTM including LR @ 12.5 % =61+8=69.

The total DTMs under SSE/P-Way BJRI are 04. After applying the same for total section under SSE/P-Way/BJRI, the total requirement of Trackman comes to 69x4=276.

3.3.2 Requirement of Track maintainers for LC gate activities :-

The requirement of Trackman for each Level Crossing for dealing Level Crossing gate related activities will be 03+01 LR/RG=04. Total number of LC gate in the jurisdiction of SSE/P-Way BJRI is 04 (Para-2.7.3). Hence total manpower required to deal 04 Level Crossing activities comes to 4 x 4 = **16**.

3.3.3 Requirement of Track maintainers for Push Trolley activities :-

The requirement of trackman per Push Trolley is 04+01 LR = 05. There are 03 Push Trolleys utilized under SSE/P-Way/ BJRI (Para-2.7.4).
Hence total manpower required to deal 04 Push Trolley activities comes to 03 x 5 = 15.

3.3.4 Requirement of Track maintainers for Store activities :-

There is one Store under SSE/P-Way/ BJRI. There are 1146 Store items (both Stock and Non-Stock) present in Store. The staffs deployed in Store section are dealt with loading/unloading of store items, arranging in proper order, maintaining of concerning registers, transporting of materials to the site, DS-8 of released materials and watchman duty of movable stores at site etc.(Para 2.7.5)

The requirement of Trackman for each store gang as assessed by Work Study team for dealing store/office related activities will be 08+01 LR = **09**.

So, grand total requirement of Track maintainer under SSE/P-Way BJRI comes to=276+16+15+9 =316.

The sanctioned cadre of Track Maintainer category in SSE (P. Way)/BJRI unit is 343.
Hence, the total reduction in sanctioned cadre of Trackman will be 343 –316 = 27.

Hence, it is recommended that 27 identified surplus vacant posts of Track Maintainer category from SSE/P-Way/BJRI unit of Engineering Department should be surrendered.

3.4 Requirement of Supervisory staffs at SSE/P-Way/BJRI unit :-

The jurisdiction of SSE/P-Way unit Bijuri is between 868/11-917/11 (Total ETKM: 284.029).
The total section has 04 DTMs excluding 01 store gang. Previously, there were 08 DTMs and 02 gangs in the jurisdiction of SSE/P-Way/Bijuri. Vide Sr. DEN(Co.)/BSP's letter No. SECR/ENG/BSP/Gen/Cadre/Pt.-VII/56 dated 31.05.2018, the 08 DTMs and 02 gangs are merged to 04 DTMs and 01 store gangs.
Considering the work load of Supervisors, existing sanction of 07 Supervisory staff (03 SSE and 04 JE) is justified for SSE/P-Way unit Bijuri i.e. 01 SSE for overall in-charge of office and looks after day-to-day performance, 01 for periodical inspection, preparation of proposals and estimates and 05 for assisting to incharge for DTMs and Site/Routine/Auxiliary maintenance work and for special work like Track Machine/STM programme.

3.5 Requirement of Ministerial staffs at SSE/P-Way/BJRI unit :-

At present 01 OS IS utilised for dealing establishment matters of staff like preparation of Muster Roll/TA bill/ Qtr. Occupation/vacation memos, issue of pass/PTO, D&A cases, correspondence work and all works related with Stores like maintenance of DMTR/Ledger, preparation of requisition, collection/supply of material, disposal of scrap material which is justified.

3.6 Requirement of Artisan staffs at SSE/P-Way/BJRI unit :-

Painter:- Existing 01 Painter is utilized for painting work against total sanction of 01. The Work Study team is found justified requirement of 01 Painter to cover the works of of the jurisdiction of SSE/P-Way unit Bijuri.

Welder:- Welding activity is a most vital activity in P-Way unit. Work Study team is proposed 01 Welder to cover the welding activities in the jurisdiction of SSE/P-Way unit Bijuri.

Grinder:- Grinding activity is a most vital activity in P-Way unit. Work Study team is proposed 01 Grinder to cover the grinding activities in the jurisdiction of SSE/P-Way unit Bijuri.

Luter:- Existing 02 Luter are utilized for Luting work against total sanction of 01. The Work Study team is found justified the requirement of 01 Luter to cover this activity in the jurisdiction of SSE/P-Way unit Bijuri.

ECR:- Carpenter activity is a non-core activity and not directly related with train movement and safety and this activity may be outsourced .
Hence, Work Study team proposes for surrender of 01 vacant post of ECR.

Black Smith:- Existing 01 Black Smith is utilized for Smithy work against total sanction of 02. The Work Study team found justified for requirement of 02 Black Smith to cover the works in the jurisdiction of SSE/P-Way unit Bijuri.

So, grand total requirement of Artisan staffs under SSE/P-Way BJRI comes to=01+01+01+01+02=06.

3.7 Requirement of staffs for Chowkidar activities :-

Chowkidar:- Chowkidar staffs are utilized in EI roster as care taker in the offices, stores etc. Existing 02 Chowkidar is utilized for Chowkidar activity against total sanction of 02 which is found justified.

3.8 Total Requirement of staffs for SSE(P-Way)/ Bijuri:-

Section /Works	Supv. (SSE/JE)	Min. Staff (OS/Clerk	Artisan Staff (EBS/ECR/ Grinder/ Welder)	Track maintainer				Chowkidar
				Store	LC gate	Trolley	Field main.	
For Office Work :								
In-Charge of Office	01	00	00	00	00	00	00	00
Sectional In-charge	06	00	00	00	00	00	00	00
Office/Establishment work	00	01	00	00	00	00	00	00
Store work	00	00	00	08	00	00	00	00
Sub- Total Requirement of staff	**07**	**01**	**00**	**08**	**00**	**00**	**00**	**00**
For Field work:								
Welding and Smithy activities	00	00	03	00	00	00	00	00
Painting activity	00	00	01	00	00	00	00	00
Grinding and Luting activity	00	00	02	00	00	00	00	00
Level Crossing activities	00	00	00	00	12	00	00	00
Motor Trolley/Push Trolley activities	00	00	00	00	00	12	00	00
Track maintenance work	00	00	00	00	00	00	244	00
Chowkidar activity	00	00	00	00	00	00	00	02
Sub- Total Requirement of staff	**00**	**00**	**06**	**00**	**12**	**12**	**244**	**02**
Total Requirement	**07**	**01**	**06**	**08**	**12**	**12**	**244**	**02**
RG/LR	-	-	-	01	04	03	32	-
Grand Total	**07**	**01**	**06**	**09**	**16**	**15**	**276**	**02**

3.9 Category wise Requirement of Staff at P-way unit/BJRI:-

Supervisors	07
Ministerial staff	01
Artisan staff	06
Track Maintainer	316
Chowkidar	02
Total Requirement	**332**

3.10 Existing & Proposed deployment/Surrender of surplus staffs:-

Category	S#	Designation	Level	Sanctioned	Actual	Proposed	Surplus
Supervisory	1	SSE	L-7	04	03	04	00
	2	JE	L-6	03	04	03	00
	3	OS	L-6	01	01	01	00
Artisan		Painter	L-5	01	01	01	00
	4	Welder	L-5	01	00	01	00
		Grinder	L-5	01	00	01	00
		Luter	L-5	01	02	01	00
		ECR	L-5	01	00	00	01
	5	EBS	L-5	02	01	02	00
	6	Chowk1dar	L-5	02	03	02	00
Track Maintainer	7	Track Maintainer-I	L-5	21	12	21	00
	8	Track Maintainer-II	L-4	43	08	43	00
	9	T rack Maintainer-III	L-2	78	59	78	00
	10	Track Maintainer-IV	L-1	201	157	174	27
TOTAL				**360**	**251**	**332**	**28**

3.11 RECOMMENDATIONS & SUGGESTIONS:

RECOMMENDATIONS:

Assessment of requirement of DTM Strength in SSE/P-Way/ BJRI unit of Engineering (P. Way) department over Bilaspur Division which are as under:

3.11.1 Considering the existing work load, it is recommended that as per details given in Para 3.4.1 to 3.8, the requirement of total cadre under SSE/P-Way/ BJRI unit comes to 332 against sanction of 360 staff. Thus 28 identified surplus vacant posts [01-ECR and 27-Track Maintainer] should be surrendered from SSE/P-Way/ BJRI unit of Engineering Department in Bilaspur Division.

3.11.2 The money value resulting after surrendering of vacant posts of Track Maintainer can be utilised for creation of posts required for Track Machine maintenance work as per need.

3.11.3 The vacant post of SSE/JE in Supervisors category, Artisan category, Track Maintainer category should be filled up for better monitoring of contractual and departmental civil engineering works.

3.11.4 Some activities of P- Way like deweeding of track & cleaning of drain, painting of Boards/Rails, overhauling of LC Gate and tree cutting for visibility may be outsourced upto 80% and rest 20% through departmental.

Suggestions:

3.11.5 Traffic Block is very crucial issue for maintenance of tracks; it was informed that due to lack of coordination between departments It is very tough task to get the block approved. Coordination between departments needs to be increased for blocks as and when required.

3.11.6 Mobile Maintenance Gang may be set up to cater the emergency work as per need.

CHAPTER-IV

4.0 FINANCIAL EVALUATION & RESULTS:-

Savings due to surrender of 28 identified surplus posts :-

Designation	Pay Scale	Level	No. of Post to be surrendered	Mean pay	Cost per Month per staff (Mean Basic pay+ D.A. @ 07%)	Total cost per month (in ₹)	Total cost per year (in ₹)
Track Maintainer	18000-56900	L-1	27	37450	40072	1081944	**12983328**
ECR	29200-92300	L-5	01	60750	65002	65002	**780024**
			28				**137,63,352**

Hence, total recurring savings to the tune of Rs. 137,63,352 say **₹ 138 Lakhs** can be achieved by implementing the surrender of **28 vacant surplus** posts [01-ECR and 27-Track Maintainer] from SSE/P.WAY/Unit/BJRI from Engineering department of Bilaspur division and surrender Memorandum may be issued by Sr. DPO/BSP/SECR accordingly.

-x-x-x-x-