

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/19-20/

475

दिनांक Dated: 04.03.2020

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)/Brajrajnagar Unit of Engineering Department in Bilaspur Division."

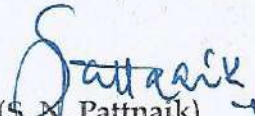
- Ref.:** (i) This office letter No. WS/Engg./BSP/19-20/1629, dated 25.07.2019.
(ii) Sr. DEN (Co)/BSP's office letter No. SECR/BSP/Engg/Gen/522/Work study/Pt.-II/276, dated 14.08.2019.
(iii) This office letter No. WS/ Engg./BSP/19-20/1861. dated 26.08.2019.
(iv) Sr. DEN (Co)/BSP's office letter No. SECR/BSP/Engg/Gen/522/Work study/Pt.-II/384, dated 22.11.2019.

The work study of SSE(P-Way)/Brajrajnagar unit of Engineering Department in Bilaspur Division had 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, elimination of LC Gates by RUB/ROB and need base requirement of manpower. Draft study report vide letter under reference was sent to DRM/BSP to furnish the remarks. In response to this, remarks on the draft report from Sr. DEN(Co)/BSP has been received and reply has been sent to Sr. DEN(Co)/BSP vide letter under reference. Further, no reply pertaining to above Study report has been received by this Office so far. Hence, the draft study report is finalized.

The work study report contains recommendation for surrender of 20 surplus vacant posts [JE-02, Track Maintainer-18] from SSE/P-Way/Brajrajnagar unit of Engineering Department in 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) 4/3/2020

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.



SOUTH EAST CENTRAL RAILWAY

WORK STUDY CELL

WORK STUDY REPORT ON

**“Review of Existing Cadre Strength
Vis-a-vis Workload of
SSE (P. WAY) UNIT/BRAJRAJNAGAR
of Engineering Department in Bilaspur Division”**

OVER S.E.C. RAILWAY



**WORK STUDY CELL
S. E C. RAILWAY
BILASPUR**

**STUDY NO.
SEC/23/2019-2020**

SOUTH EAST CENTRAL RAILWAY

Work study report on

**“Review of Existing Cadre Strength
Vis-a-vis Workload of
SSE (P. WAY) UNIT/BRAJRAJNAGAR
of Engineering Department in Bilaspur Division”**
OVER S.E.C. RAILWAY

GUIDED BY

**SRI AMIT KUMAR SINGH
SR. DY. GENERAL MANAGER**

LED BY

**SRI S. N. PATTNAIK
ASST. WORK STUDY OFFICER**

CONDUCTED BY

**SRI VIKAS KUMAR SINHA
CH. WORK STUDY INSPECTOR**

**SRI SUNIL KUMAR MISHRA
WORK STUDY INSPECTOR**

**WORK STUDY CELL
S. E. C. RAILWAY, BILASPUR**

**STUDY No.
SEC/23/2019-2020**

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SUMMARY OF RECOMMENDATIONS & SUGGESTIONS

Rec. No.	Description	Para Ref.
On the basis of direct observations and critical analysis, following recommendations and suggestions are made:		
<u>RECOMMENDATIONS:</u>		
1.	Considering the existing work load and as per details given in Para 3.2 & 3.3, the requirement of staff for SSE/P. Way/Brajrajnagar unit comes to 287 against sanction of 307 . Thus, 20 posts [JE-02, Track Maintainer-18 (vacant)] are found surplus and should be surrendered from P. Way Unit/BRJN of Engineering Department of Bilaspur Division.	3.5.1
2.	The money value resulting after surrendering of proposed vacant posts can be utilised for creation of posts required for Track Machine maintenance work as per requirement.	3.5.2
3.	Some of the existing activities of P-Way maintenance work like dweeding of track & cleaning of drain, filth removal, painting of Boards/Rails, overhauling of LC Gate and tree cutting for visibility may be outsourced up to 80% and remaining 20% may be carried out through Departmental Resources.	3.5.3
<u>SUGGESTIONS:</u>		
1.	In order to increase efficiency, a Mobile Maintenance Gang may be set up to cope up the emergency work as per need.	3.5.4
2.	Work study team suggests to implement Multi-Skilling concept for Artisan staff by imparting necessary training so that they can be utilised as Multi-tasking staff for various activities as per requirement.	3.5.5
3.	To minimize the absenteeism & to develop productive working environment, all requisite efforts such as motivation, Counseling, grievance solution, appreciation for good work and frequent interaction with the staff may be carried out at respective level.	3.5.6

CHAPTER – I

1.0 INTRODUCTION

1.1 SSE/P. WAY/BRAJRAJNAGAR UNIT/ENGINEERING DEPTT./BILASPUR DIV.:

The study of SSE (P-Way) Unit/Brajrajnagar of Engineering Department in Bilaspur Division has been undertaken to review the existing cadre strength vis-à-vis workload in view of outsourcing of some works of P-way, track maintenance through Track Machines, elimination of LC Gates by RUB/ROB and need based requirement of manpower.

SSE (P. Way)/BRJN is a field unit of Civil Engineering Department of Bilaspur Division to look after the maintenance of track and other allied works in the jurisdiction of IB-Daghora section.

Due to innovation and introduction of new technology, track maintenance by Track Machines, outsourcing activities, elimination of LC Gates by RUB/ROB and redundant activities thereon, rightsizing of manpower is necessary.

1.2 Role of Permanent Way/Engg. Deptt.:

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

Permanent Way is the major activity of the Engineering branch, which is entrusted with the periodical maintenance of track, bridges, level crossing gates and other related assets. A well maintained track is very essential for speedy, safety and efficient operation of trains. Continuous monitoring and inspection on daily basis is warranted in ensuring a reliable permanent way. The modern technologies have taken the track maintenance techniques from the era of axe and shovel to the era of modern mechanized track maintenance. The interconnection with S&T branch and TRD branch is a new development to be considered during the track maintenance. The equipments for testing the track have become sophisticated so as to not only trace the failures but also detect the failures that are likely to occur. The use of ultrasonic flow detector (USFD) equipment detects the minute hair line crack and blow holes in the rail which might develop into a rail crack and end up in train derailments. Many of the maintenance activities as of now are outsourced and there are wide scopes for outsourcing the other activities which have no bearing on safety. So it has become imperative to have a hard look at the man power requirement considering the recent development that had taken place.

1.3 Administrative structure of P. Way Organisation at Division level:

The P. Way organization is a part of Civil Engineering department at divisional level, functions under the administrative control of Sr. DEN (Co.)/BSP Officers having entrusted with a particular section comprising of sectional CPWIs/PWIs(SSE) who are in-charge of P. Way Units/depots and responsible for up-keeping of track. The track is maintained with the help of Trackman, Mate, Keyman & Artisan staff. The maintenance of track is a vital activity in the working of train in relation to safety & punctuality and it is duty of engineering department to keep up the standard of track using engineering parameters for the safe running of trains. In this way Engineering Department is the backbone of Railway system.

Permanent way maintenance is largely done by gangs consisting of Gangman/Trackman under the supervision of a Gang-mate. The gang goes down its assigned section (gang beat), inspecting track and performing normal routine maintenance. A patrolman is separately deputed to perform visual inspections along the length of a section of track by walking alongside it.

The schedule and track sections to be monitored by Gangman and Patrolmen are specified in a Patrol Charts prepared by the Divisional Engineer. These charts also

indicates when and where the drivers of trains running to schedule may expect to meet Gangman/Patrolmen and gangs carry Patrol Books in which they record the status of the track and any maintenance they perform on it.

The gang is equipped to deal with minor problems such as fixing small deviations in gauge or elevation of the rails, rearranging ballast, etc. If problems are discovered with the permanent way that cannot readily be fixed by the gang, the details are reported to the station master of one of the adjacent block stations, and temporary engineering speed restrictions are put in place for the track. Trains going through that section are then subject to caution orders issued by the stations at either end.

The Permanent Way Inspector (PWI) of a section has ultimate responsibility for the maintenance of the permanent way under his jurisdiction. The PWI and his staff undertake separate regular inspection tours of the various lines, often in a trolley. In the past manually pushed trolleys were used quite often, but their use is declining now.

1.4 Present Scenario:

Track maintenance in Indian railway has undergone a rapid change during the past 20 years due to continuous developments in various track components viz sleepers, Rails and fastenings. The use of machines both for mechanized track maintenance as well as track laying has increased substantially in recent past with the introduction of heavy track structures to meet the challenges of growing traffic and changed socio-economic conditions. Simultaneously, with the help of mechanization higher quality standard can be achieved.

1.5 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. Mechanization of Track Maintenance.
- IV. Identifying redundant/unproductive activities to eliminate wastages.
- V. Suggesting ways and means to improve the working system economically in view of modernization and system improvement.

1.6 Details of SSE/P. Way Unit/Brajrajnagar in Bilaspur Division:

The Engineering (P. Way) Department /Bilaspur Division is divided into fifteen SSE (P. way) units and these Units are further sub-divided into various no. of sectional DTM Gang to execute the related works.

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

S#	Item	Particulars
1.	Section	Double/Third Line (BG section)
2.	Jurisdiction	IB-DAO.
3.	Length (KM)	45 KM (515/03-560/01), (45 km-UP/L, 45 km-DN/L, 24 km-3 rd Line)
4.	ETKM	261.456
4.	Total No. of Sectional Gang under the P- Way Unit	08 DTM + 01 MP/Store Gang
5.	Jurisdiction of one DTM Gang	6-7 Km
6.	No. of Engineering LC Gates	04
7.	Engg. Store	02 (P-Way unit/BRJN & HGR)

1.7 **Methodology:**

The following methodology has been adopted for conducting the study:

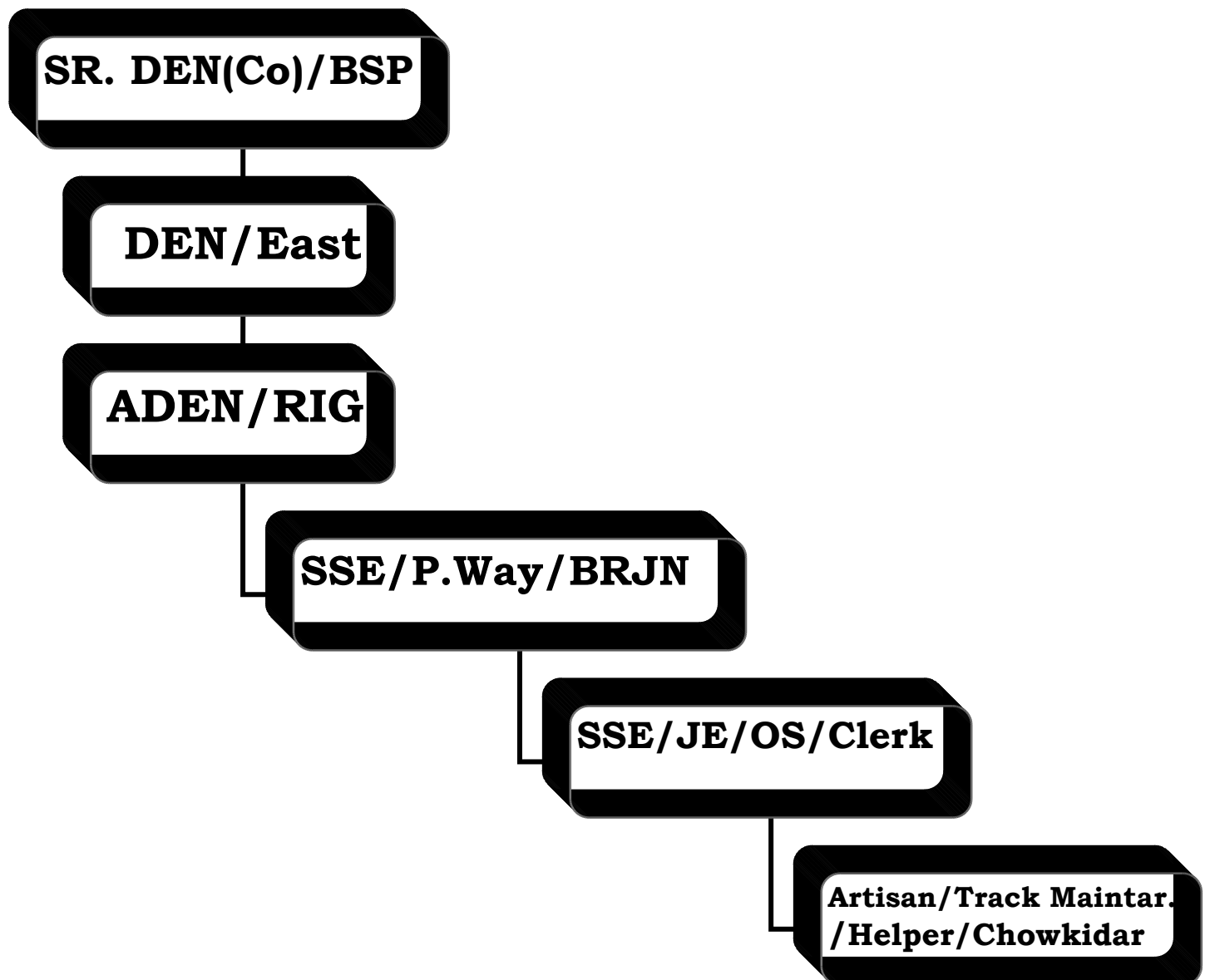
- (i) Unit visit
- (ii) Collection of relevant field data,
- (iii) Examination of records,
- (iv) Direct observations regarding working of staff,
- (v) Interaction with Supervisors and staff,
- (vi) Critical Analysis.
- (vii) Assessment of Need based requirement of staff.

1.8 **Sample DTM Gang:**

In order to make the critical assessment more feasible & justifiable , one DTM namely DTM No.-02 operated under SSE/ P. Way/BRJN unit having the highest sanctioned and on roll strength have been taken as Sample DTM for conducting the Work Study.

1.9 **Organizational structure:**

The Organizational structure of Engineering Department (P. Way-Unit)/BSP at Divisional level is as under:



CHAPTER-II

2.0 OBSERVATIONS :

2.1 Staff Position:

The cadre position of SSE (P. Way) Unit/Brajrajnagar of Engineering Department in Bilaspur Division as furnished vide Sr. DPO/BSP Office L. No. E/SA/Engg/Misc/Cadre/Position dated 07.12.2018 and as per data collected is given below:

S#	Category/ Design.	GP/Level	Sanc.	Actual	Vacancy
1	SSE (P. Way)	4600/L-7	07	03	04
2	JE (P. Way)	4200/L-6	04	04	00
3	Ch. OS	4600/L-7	00	00	00
4	OS	4200/L-6	01	00	01
5	Sr. Clerk	2800/L-5	01	01	00
6	Jr. Clerk	1900/L-2	00	00	00
Sub Total			13	08	05
1	Technician MCM (EBS)	4200/L-6	01	00	01
2	Technician MCM(HM)	4200/L-6	00	00	00
3	Technician MCM(Grinder)	4200/L-6	01	01	00
4	Technician MCM(Painter)	4200/L-6	00	00	00
5	Technician Gr.-I (EBS)	2800/L-5	01	00	01
6	Technician Gr.-I (H/Man)	2800/L-5	00	00	00
7	Technician Gr.-I (ECR)	2800/L-5	01	01	00
8	Technician Gr.-I (E.C.R)	2800/L-5	00	00	00
9	Technician Gr.-I (Welder)	2800/L-5	01	01	00
10	Technician Gr.-II (EBS)	2400/L-4	00	00	00
11	Technician Gr.-II (H/Man)	2400/L-4	00	00	00
12	Technician Gr.-II (Painter)	2400/L-4	00	00	00
13	Technician Gr.-II (Welder)	2400/L-4	00	00	00
14	Technician Gr.-III (EBS)	1900/L-3	00	00	00
15	Technician Gr.-III (H/Man)	1900/L-4	00	00	00
16	Technician Gr.-III (ECR)	1900/L-2	00	00	00
17	Technician Gr.-III (Painter)	1900/L-2	00	00	00
18	Technician Gr.-III (Welder)	1900/L-2	00	00	00
19	Grinder	1900/L-2	00	00	00
20	Luter	1900/L-2	01	01	00
21	Track Maintainer-I	1800/L-1	18	14	04
22	Track Maintainer-II	1800/L-1	37	21	16
23	Track Maintainer-III	1800/L-1	63	59	04
24	Track Maintainer-IV	1800/L-1	168	129	39
25	Helper/Peon	1800/L-1	00	00	00
26	Chowkidar	1800/L-1	02	01	01
Sub Total			294	228	66
Grand Total			307	236	71

2.2 Comparative Staff strength of SSE (P- Way) unit /BRJN:

The comparative staff strength of SSE(P. Way)/BRJN unit of last 03 years as per data collected is given below:

S#	Year	Sanction	Actual	Vacancy
1	01.04.2017	307	246	61
2	01.04.2018	307	242	65
3	01.06.2019	307	236	71

2.3 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 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(upgraded to JE post)-**

They supervise the works carried out by Gang Mate.

(iii) **Mate:-**

He is assigned with the work as per prescribed system of track maintenance. To carry out the task allotted to him either verbally or through gang chart/diary efficiently. He will ensure the tools & equipment as prescribed are available at site of work, ensure safety of the track for safe passage of trains and he is ensured to report any unsafe condition immediately to his superior, inspect the whole gang length once a week & to conduct on the spot supervision regarding track condition.

(iv) **Keyman:-**

The keyman inspects his entire beat by foot once a day, both the tracks and bridges to 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/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, Gatekeeper, painting of board etc.

(vi) **Trolley man:-**

These staff are engaged for operation of Trolley available with SSE/JE and assist Supervisor.

(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.

2.4 Working Hours of Trackman & Office:

Period		Timing
March-June:	→	6.30-11.30 & 15.00-18.00
July-October :	→	07.30-12.30 & 14.00-17.00
November-February	→	07.00-12.00 & 14.00-17.00
Office	-	07.00-11.00 & 13.00-17.00

2.5 Classification of Track Maintenance Activities as per MCNTM report:

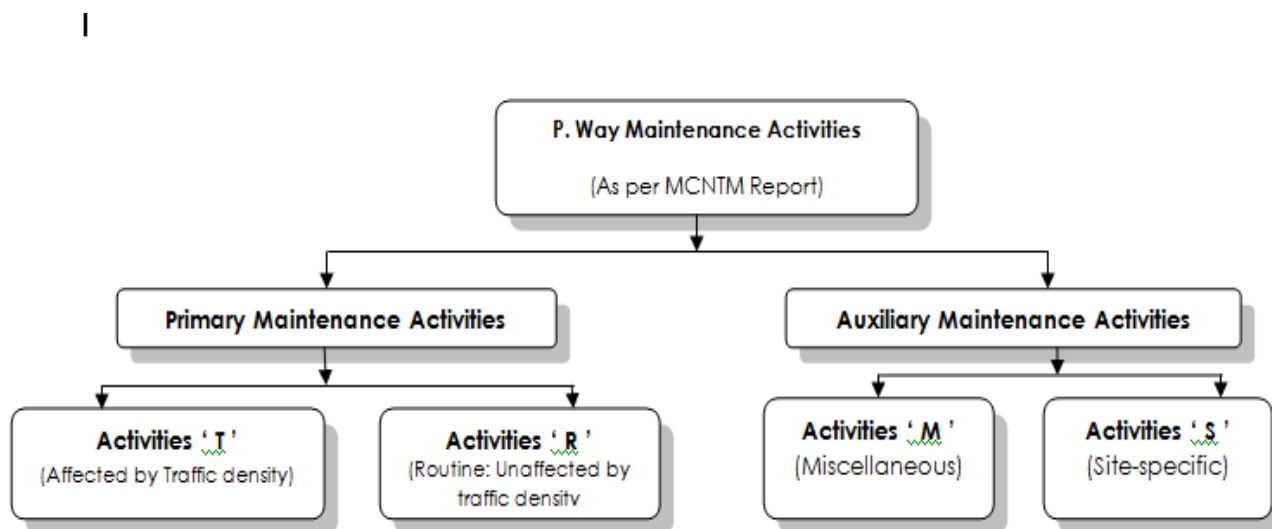
The Rational Formulae (MCNTM):

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 **Manpower and Cost Norms for Track Maintenance**" (**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.

- 2.6** 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 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	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 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	Sub-activities: M1. Monsoon patrolling M2. Hot weather patrolling for LWR track 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)	Sub-activities: S1. Tunnel maintenance S2. Bridge substructure maintenance 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

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	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 colla R15. Emergency attention R16. Extra assistance to Keymen &B/Smith R17. Extra work in night blocks R18. Extra assistance for S&T items		soon as found necessary.
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2.7 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 than 12 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 (Man days utilized in past 3 years for this duty)
S.10	Watching of water level in suburban section (mostly in Mumbai area)

2.8 Average Percentage Break-Up of P- Way work under the jurisdiction of SSE/P. Way/ Brajrajnagar executed by Departmental & Contractual : This is based on the data provided by SSE/P. Way/BRJN.

S#	Activities	Avg. % Break-up of P-Way works	
		Departmental	Contractual
1	Attention to bad spots	50	50
2	Attention to low joints	85	15
3	Attention to SEJ	80	20
4	Attention to minor curve realignment	80	20
5	Pretamping operations	05	95
6	Along with tamper	10	90
7	Post tamping operations	05	95
8	Casual renewal of rails	60	40
9	Casual renewal of sleepers	60	40
10	Renewal of fasteners (along with regauging)	60	40
11	Repair Welding	80	20
12	Lubrication of ERC	50	50
13	Shallow screening	20	80
14	Loading, leading, unloading	10	90
15	Overhauling of level crossing	10	90
16	Watching caution spots and misc.	100	-
17	Tree cutting for visibility	100	-
18	Lubrication of rails in curves	100	-
19	Accident relief and carcass removal in run over case	100	00
20	Bridge sleeper attention and renewal	30	70
21	Pre-monsoon attention such as cleaning of drains and water ways, cess repair, deweeding of track and attention to cuttings and trolley refuges	50	50
22	Creep pulling (approaches of bridge and turnout)	70	30
23	Rectifying damage to LC posts and gates	95	5
24	Monsoon patrolling	100	-
25	Hot weather Patrolling	100	-
26	Cold weather Patrolling	100	-
27	Vulnerable location	100	-
28	Waterman duty	100	-
29	Site store chowkidar	100	-
30	Gate Keeping at Level crossing	100	-
31	Tunnel maintenance	100	-
32	Bridge structure maintenance	100	-
33	Long girder maintenance	100	-
34	Extra for very sharp curve	90	10
35	Extra for very bad formation	70	30
36	Look outman duty	100	-
37	Fog signalman duty	100	-
38	Filth removal	100	-
39	Security Patrolling	100	-
40	Painting & Writing work	90	10

2.9 Direct Observations of 01 DTM Gang of SSE (P. Pay) Unit/BRJN of Bilaspur Division:
During field observation and discussion held with Supervisor/staff, it is found that two Gang are clubbed into one DTM and working jointly for better output.

2.9.1 Sectional data of sample DTM:

Sectional data of 01 sample DTM i.e. DTM-02 of SSE(P. Way) unit/BRJN as provided by SSE are given as under:

Item	DTM No.-02
Division	Bilaspur
Unit	SSE/P. Way/BRJN
Track Maintenance	Mechanized
Jurisdiction	521/11-527/27
DTM/Gang length	06Km
TKM	06 KM + 01 Yard
RYL	-
GMT	UP-72, DN-72
No. of curves	2
Degree of curve	1.25-5
Length of curve	1590 m
Station yard	01
L/C Gate	01
Distressing Temp.	-
Rail Temperature	50-52
Stationary Patrolling	Yes

2.9.2 DTM/Gang-wise Cadre Position & Jurisdiction under SSE(P. Way)/BRAJRAJNAGAR Unit (As on JUNE-'2019):

S#	DTM No.	Section/Jurisdiction/Name	HQ/STN.	Sanction	Actual	Vacancy
1	1	KM.-515/3-521/11	IB	36	30	06
2	1A	KM.-514/31-523/01	KM.516/19-21JSG	18	14	04
3	2	KM.-521/11-527/27	BRJN	58	47	11
4	3	KM.-527/27-534/05	BRJN	31	27	04
5	4	KM.-534/05-540/21	BPH	33	29	04
6	5	KM.-540/21-547/05	HGR	24	17	07
7	6	KM.-547/05-553/11	HGR	34	28	06
8	7	KM.-553/11-560/01	DAO	28	18	10
9	11A	MP GANG	BRJN	12	07	05
10	F/1	FEMALE GANG*	BRJN	12	06	06
Total				286	223	63
<i>*Presently 06 TM are deployed for Track Maintenance work along with DTM Gang as per need</i>						

2.9.3 Site observations of 01 sample DTM Gang under SSE(P. Way)/BRJN unit:

The position of 01 sample DTM gang of SSE(P. Way)/BRJN) unit during field visit on 25.06.2019 is summarized as under:

A. **DTM No.- 02/SSE/P. Way/BRJN:**

During visit on 25.06.2019, as per cadre position available with Mate of DTM -02, it has been observed that there are actual 47 Staff including Mate/Keymen are on-Rolled on Muster Sheet against the sanctioned cadre strength of 58 of this DTM and the available Staff were deployed to rectify Weld Failure & to carry out ERC Greasing work on this very date. The status/deployment of all the 47 On-Rolled Staff nominated under this DTM (DTM-02) is as under:

S#	Duty/Utilization of Staff		No. of Staff deployed
1	No. of staff deployed for ERC Greasing work	→	09
2	No. of staff deployed for rectification of Weld Failure	→	05
3	No. of staff deployed for additional Key Man duty (BRJN & IB)	→	02
4	No. of staff deployed for permanent Key Man duty	→	02
5	No. of staff deployed in Welding Team	→	08
6	No. of staff deployed for Trolley man duty	→	08
7	No. of staff deployed for Painting work	→	02
8	No. of staff absent from duty	→	04
9	No. of long absent staff from duty	→	02
10	No. of staff deployed for TSR Protection work	→	01
11	No. of staff deployed for lubrication of Switches	→	01
12	No. of staff deployed for monitoring Contractual work	→	01
13	No. of staff deployed in USFD (RIG) work	→	01
14	No. of staff deployed for Mate duty	→	01
TOTAL		→	47

2.10 Daily Work Progress of 01 Sample DTM Gang under SSE (P. Pay) Unit/Brajrajnagar of last one year:

The daily work progress of 01 sample DTM i.e. DTM-02 under SSE(P. Way) unit/BRJN of last one year (APRIL-18 to MARCH-19) as provided by SSE(P. Way)/BRJN are given below:

2.10.1 Daily Work Progress of DTM No. 02/BRJN of last one year (Jan'2018 - Dec'2018:

APRIL-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.04.2018	Rest	R	01	10
02.04.2018	Bridge maintenance work	L	01	18
03.04.2018	Attended Block for Rail renewal	L	02	19
04.04.2018	Bridge maintenance work	L	01	20
05.04.2018	Sleeper renewal work	01	02	19
06.04.2018	Sleeper renewal work	01	02	19
07.04.2018	Packing work	01	02	18
08.04.2018	Rest	R	02	04
09.04.2018	Dressing work	01	02	20
10.04.2018	Dressing work	01	02	21
11.04.2018	Packing work	01	01	20
12.04.2018	Track Fitting work	01	02	18
13.04.2018	Packing work	R	02	19
14.04.2018	Dressing work	01	01	21
15.04.2018	Rest	01	01	15
16.04.2018	Sleeper renewal work	01	01	17
17.04.2018	Rubber pad renewal work	01	02	16
18.04.2018	Packing work	01	01	17
19.04.2018	Miscellaneous work	01	02	16
20.04.2018	Fish Plate renewal work	01	02	15
21.04.2018	Reconditioning work	01	02	15
22.04.2018	Rest	R	02	08
23.04.2018	TFR work	L	02	15
24.04.2018	Track Fitting work	L	02	15
25.04.2018	Bridge maintenance work	L	01	16
26.04.2018	Bridge maintenance work	L	01	14
27.04.2018	Bridge maintenance work	L	01	17
28.04.2018	Bridge maintenance work	L	01	16
29.04.2018	Rest	R	01	14
30.04.2018	Track Fitting work	NH	01	15
TOTAL				487

May-2018

Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.05.2018	Gauging work	A	00	14
02.05.2018	Track Fitting work	A	00	13
03.05.2018	Drainage cleaning work	01	01	17
04.05.2018	SEJ packing work	01	01	18
05.05.2018	USFD Plate Fitting work	01	01	17
06.05.2018	Rest	R	02	07
07.05.2018	USFD Plate Fitting work	01	02	15
08.05.2018	USFD Plate Fitting work	01	02	16
09.05.2018	USFD Plate Fitting work	01	02	17
10.05.2018	USFD Plate Fitting work	01	02	16
11.05.2018	USFD Plate Fitting work	01	01	17
12.05.2018	USFD Plate Fitting work	01	02	18
13.05.2018	Rest	R	02	09
14.05.2018	Bridge lubrication work	01	01	24
15.05.2018	Bridge lubrication work	01	00	19
16.05.2018	Greasing work	01	00	20
17.05.2018	G/Joint Packing work	01	01	17
18.05.2018	Coal Dust cleaning work	01	02	18
19.05.2018	Coal Dust cleaning work	01	02	15
20.05.2018	Rest	R	02	03
21.05.2018	G/Joint Packing work	01	02	20
22.05.2018	Coal Dust cleaning work	01	02	19
23.05.2018	Drainage Cleaning	01	01	20
24.05.2018	Packing work	01	02	19
25.05.2018	Packing work	01	02	21
26.05.2018	G/Joint Packing work	01	02	19
27.05.2018	Rest	R	01	06
28.05.2018	Deweeding & Drainage Cleaning	01	R	16
29.05.2018	Deweeding & Drainage Cleaning	01	01	17
30.05.2018	G/Joint Packing work	01	01	19
31.05.2019	Deweeding & Drainage Cleaning	01	02	15
TOTAL				501

JUNE-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.06.2018	G/Joint Packing work	01	02	23
02.06.2018	Deweeding & Drainage Cleaning	01	02	22
03.06.2018	Rest	R	02	11
04.06.2018	Deweeding & Drainage Cleaning	01	02	19
05.06.2018	Deweeding & Drainage Cleaning	01	02	19
06.06.2018	Deweeding & Drainage Cleaning	01	02	18
07.06.2018	Xing carry & Xing renewal work	01	01	16
08.06.2018	Packing work & G/Joint carrying work	01	01	17
09.06.2018	G/Joint Packing work	01	02	15
10.06.2018	Rest	R	02	08
11.06.2018	Fitting attention Packing work	01	02	14
12.06.2018	Fitting attention Packing work	01	02	17
13.06.2018	Rubber pad fitting work	01	01	17
14.06.2018	Shallow packing work	01	02	15
15.06.2018	Shallow screening work	01	01	14
16.06.2018	Shallow packing work	NH	02	14
17.06.2018	Rest	R	02	11
18.06.2018	Shallow screening & packing work	01	02	21
19.06.2018	USFD test & Plate fitting work	01	02	21
20.06.2018	USFD test & Plate fitting work	01	02	22
21.06.2018	Shallow screening work	01	02	16
22.06.2018	Shallow screening work	01	01	20
23.06.2018	Shallow screening work	01	02	19
24.06.2018	Rest	R	02	02
25.06.2018	Shallow screening work	01	02	18
26.06.2018	Packing work	01	01	20
27.06.2018	Packing work	01	01	20
28.06.2018	Shallow screening work	01	01	20
29.06.2018	G/Joint carrying & Renewal work	N	01	21
30.06.2019	G/Joint packing & Deweeding work	01	01	19
TOTAL				509

JULY-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.07.2018	Rest	R	02	02
02.07.2018	Deweeding work	01	01	18
03.07.2018	Rail Renewal work & Deweeding work	01	01	18
04.07.2018	Deweeding work	01	02	18
05.07.2018	Deweeding work	01	02	19
06.07.2018	Deweeding work	01	02	18
07.07.2018	Deweeding work	01	02	21
08.07.2018	Track Rail carrying & Renewal work	01	02	11
09.07.2018	Deweeding work	01	02	17
10.07.2018	Packing work	01	01	20
11.07.2018	Packing work	CR	02	19
12.07.2018	Rail renewal work	01	01	23
13.07.2018	Deweeding work	01	02	23
14.07.2018	Glued Joint fitting work	01	02	20
15.07.2018	Rest	R	02	06
16.07.2018	Deweeding work	01	00	22
17.07.2018	Deweeding work	01	02	22
18.07.2018	Ballast Cleaning work	01	02	22
19.07.2018	Ballast Cleaning work	01	02	23
20.07.2018	Ballast Cleaning work	01	02	20
21.07.2018	Ballast Cleaning work	01	02	23
22.07.2018	Rest	R	02	08
23.07.2018	SEJ Fitting & Packing work	01	01	19
24.07.2018	Deweeding work	01	01	17
25.07.2018	Ballast Cleaning work	01	01	22
26.07.2018	Ballast Cleaning work	01	01	17
27.07.2018	Deweeding work	01	01	22
28.07.2018	Deweeding work	01	02	19
29.07.2018	Rest	R	02	06
30.07.2018	SEJ Fitting & Packing work	LAP	02	13
31.07.2018	Packing work	LAP	02	19
TOTAL				547

AUGUST-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.08.2018	Rail carrying work	LAP	02	19
02.08.2018	Packing work	LAP	01	19
03.08.2018	Ballast filling work	01	01	16
04.08.2018	Ballast filling work	01	01	20
05.08.2018	Rest	R	00	08
06.08.2018	Xing loading & fitting work	01	01	14
07.08.2018	Gauging work	01	01	17
08.08.2018	Gauging work	01	02	14
09.08.2018	Gauging work	01	02	15
10.08.2018	Ballast filling work	01	02	16
11.08.2018	Xing loading & fitting work	R	02	17
12.08.2018	Rest	01	01	09
13.08.2018	Xing loading & fitting work	01	02	17
14.08.2018	Xing loading & fitting work	01	02	18
15.08.2018	Sleeper changing work	01	02	17
16.08.2018	Gauging work	01	01	17
17.08.2018	Xing loading & fitting work	01	02	17
18.08.2018	Sleeper changing work	R	01	18
19.08.2018	Rest	01	02	06
20.08.2018	Drainage Cleaning work	01	01	16
21.08.2018	Sleeper changing work	01	02	19
22.08.2018	Packing work	01	02	18
23.08.2018	Packing work	01	01	19
24.08.2018	Packing & Sleeper changing work	01	02	20
25.08.2018	Packing work	01	02	21
26.08.2018	Packing work	R	01	19
27.08.2018	Rest	L	02	12
28.08.2018	Packing work	L	02	18
29.08.2018	Shallow screening work	01	02	19
30.08.2018	Shallow screening work	01	02	20
31.08.2018	Shallow screening work	01	02	20
TOTAL				515

SEPTEMBER-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.09.2018	Shallow screening work	01	02	19
02.09.2018	Rest	R	00	16
03.09.2018	G/Joint & SEJ Packing work	NH	01	23
04.09.2018	Shallow screening work	01	01	15
05.09.2018	Greasing & Lubrication work	01	00	17
06.09.2018	Greasing & Lubrication work	01	01	20
07.09.2018	Dressing & Packing work	01	01	20
08.09.2018	Packing work	01	02	20
09.09.2018	Rest	R	02	07
10.09.2018	Packing work	01	02	21
11.09.2018	Shallow screening work	01	02	17
12.09.2018	Shallow screening work	01	02	18
13.09.2018	Shallow screening work	01	02	19
14.09.2018	Pre-Tempering work	CL	00	16
15.09.2018	Lubrication work	01	00	16
16.09.2018	Rest	01	02	09
17.09.2018	Attended Machine Packing work	01	02	21
18.09.2018	Post-Tempering work	01	02	20
19.09.2018	Attended Machine Packing work	01	02	20
20.09.2018	Attended Machine Packing work	01	02	19
21.09.2018	Attended Machine Packing work	01	02	19
22.09.2018	Post-Tempering work	R	00	19
23.09.2018	Joint-Lubrication work	01	02	17
24.09.2018	Rest	01	02	15
25.09.2018	ERC Greasing work	01	00	20
26.09.2018	ERC Greasing work	01	02	20
27.09.2018	G/Joint carrying work	01	02	22
28.09.2018	Sleeper changing work	01	02	17
29.09.2018	Packing work	CR	02	20
30.09.2018	Rest	R	01	03
TOTAL				525

OCTOBER-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.10.2018	Sleeper renewal work	L	01	22
02.10.2018	Glued Joint carrying work	NH	00	18
03.10.2018	Sleeper carrying & changing work	01	00	22
04.10.2018	Welding work	01	02	17
05.10.2018	Welding work	01	02	19
06.10.2018	Welding work	01	02	19
07.10.2018	Rest	R	02	03
08.10.2018	Welding work	01	01	20
09.10.2018	Welding work	01	02	19
10.10.2018	Welding work	01	01	19
11.10.2018	Welding work	01	02	21
12.10.2018	Welding work	01	02	22
13.10.2018	Welding work	01	01	22
14.10.2018	Rest	R	02	02
15.10.2018	Welding work	01	02	19
16.10.2018	Welding work	01	02	18
17.10.2018	Welding work	01	01	17
18.10.2018	Welding work	01	02	17
19.10.2018	Welding work	01	02	13
20.10.2018	Welding work	01	02	15
21.10.2018	Rest	R	02	03
22.10.2018	Welding work	01	02	15
23.10.2018	Welding work	01	02	18
24.10.2018	Welding work	01	02	20
25.10.2018	Rail carrying work	01	02	19
26.10.2018	Rail carrying work	01	02	19
27.10.2018	Xing renewal work	01	01	19
28.10.2018	Rail changing work	01	02	14
29.10.2018	G/Joint carrying work	01	02	19
30.10.2018	Welding work	CR	02	14
31.10.2018	Packing work	LAP	02	22
TOTAL				526

NOVEMBER-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.11.2018	Deweeding work	01	02	21
02.11.2018	Packing work	01	01	19
03.11.2018	Packing work	01	02	20
04.11.2018	Rest	R	02	06
05.11.2018	G/Joint Packing work	01	02	19
06.11.2018	Joint renewal work	01	02	20
07.11.2018	Joint renewal work	01	02	19
08.11.2018	SEJ Packing work	01	02	19
09.11.2018	G/Joint Packing & Deweeding work	01	00	19
10.11.2018	Deweeding work	01	02	18
11.11.2018	Rest	R	02	08
12.11.2018	Track fitting work	01	02	19
13.11.2018	G/Joint Carrying & renewal work	01	02	17
14.11.2018	G/Joint Carrying & renewal work	01	02	17
15.11.2018	G/Joint Carrying & renewal work	01	02	18
16.11.2018	SEJ packing work	01	02	20
17.11.2018	Stock rail carrying & changing work	01	01	21
18.11.2018	Rest	R	01	07
19.11.2018	Packing & SEJ Sleeper changing work	01	01	20
20.11.2018	ERC Greasing work	01	00	20
21.11.2018	Sleeper & Packing work	01	02	20
22.11.2018	ERC Greasing work	01	02	20
23.11.2018	Packing & Sleeper changing work	01	02	20
24.11.2018	Packing & Sleeper changing work	01	02	22
25.11.2018	Rest	R	02	05
26.11.2018	Packing & Sleeper changing work	01	02	20
27.11.2018	Xing & Sleeper changing work	01	02	24
28.11.2018	ERC Greasing work	01	02	24
29.11.2018	ERC Greasing work	01	02	22
30.11.2018	ERC Greasing work	01	02	24
TOTAL				548

DECEMBER-2018				
Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.12.2018	Nut-Bolts Greasing work	01	02	21
02.12.2018	Rest	R	02	06
03.12.2018	Packing work	LAP	01	18
04.12.2018	Rail Carrying & renewal work	LAP	01	21
05.12.2018	Packing work	01	02	19
06.12.2018	Nut-Bolts Greasing work	01	02	22
07.12.2018	Xing Packing & Gauging work	01	01	18
08.12.2018	Rail carrying and G/Joint packing work	01	01	18
09.12.2018	Rest	R	02	07
10.12.2018	Nut-Bolts Greasing work	01	02	20
11.12.2018	Nut-Bolts Greasing work	01	01	19
12.12.2018	Packing work	01	02	21
13.12.2018	Welding work & SEJ Fitting work	01	02	15
14.12.2018	Packing work	01	02	16
15.12.2018	Sleeper Packing work	01	01	18
16.12.2018	Rest	R	02	07
17.12.2018	Fitting work	01	01	18
18.12.2018	Fitting & Gauging work	01	01	19
19.12.2018	Xing Carrying & changing work	01	02	21
20.12.2018	Coal dust & Gauging work	01	01	23
21.12.2018	Sleeper carrying & changing work	01	01	21
22.12.2018	Xing carrying & G/Joint carrying work	01	02	21
23.12.2018	Rest	R	02	22
24.12.2018	Rail carrying & welding work	01	02	05
25.12.2018	Greasing work	01	02	18
26.12.2018	Gauging work	01	01	16
27.12.2018	Packing work	01	01	17
28.12.2018	Sleeper carrying & changing work	01	02	15
29.12.2018	Sleeper carrying & changing work	01	02	14
30.12.2018	Rest	R	02	06
31.12.2018	G/Joint Packing work	01	02	17
TOTAL				519

JANUARY-2019

Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.01.2019	Sleeper carrying & changing work	01	02	19
02.01.2019	G/Joint fitting & Packing work	LAP	01	18
03.01.2019	Sleeper carrying & changing work	01	01	20
04.01.2019	S/Rail & T/Rail renewal work	01	02	20
05.01.2019	SEJ Sleeper carrying & changing work	01	02	19
06.01.2019	Rest	R	02	08
07.01.2019	SEJ Sleeper carrying & changing work	LAP	01	20
08.01.2019	G/Joint & SEJ Sleeper carrying work	LAP	01	23
09.01.2019	Rail carrying & ERC Greasing work	LAP	02	23
10.01.2019	Rail carrying & ERC Greasing work	LAP	01	23
11.01.2019	SEJ Sleeper carrying & changing work	LAP	02	23
12.01.2019	S/Rail & T/Rail renewal work	LAP	02	25
13.01.2019	S/Rail & T/Rail renewal work	R	02	14
14.01.2019	ERC Greasing work	01	02	13
15.01.2019	SEJ loading /unloading work	01	02	15
16.01.2019	Dressing & Greasing work	CL	01	16
17.01.2019	ERC Greasing work	CL	01	18
18.01.2019	Dressing work	CL	02	18
19.01.2019	SEJ carrying & changing work	CL	02	05
20.01.2019	Rest	R	01	07
21.01.2019	ERC Greasing work	01	01	19
22.01.2019	SEJ Sleeper carrying & changing work	01	02	19
23.01.2019	SEJ Sleeper carrying & changing work	01	01	19
24.01.2019	SEJ Sleeper carrying & changing work	01	02	17
25.01.2019	SEJ Sleeper carrying & changing work	01	02	19
26.01.2019	SEJ Sleeper carrying & changing work	01	02	22
27.01.2019	Rest	R	02	06
28.01.2019	SEJ Sleeper carrying & changing work	LAP	01	16
29.01.2019	ERC Greasing work	LAP	01	20
30.01.2019	ERC Greasing work	01	01	20
31.01.2019	ERC Greasing work	01	02	20
TOTAL				544

FEBRUARY-2019				
Date	Work Performed (Track Maintenance work including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.02.2019	S/Rail & T/Rail renewal work	01	02	20
02.02.2019	ERC Greasing work	01	02	16
03.02.2019	Rest	R	02	05
04.02.2019	ERC Greasing work	01	02	17
05.02.2019	ERC Greasing work	01	02	20
06.02.2019	ERC Greasing work	01	01	20
07.02.2019	ERC Greasing work	01	02	30
08.02.2019	Xing Carrying & renewal work	01	02	26
09.02.2019	G/Joint Carrying & renewal work	01	02	27
10.02.2019	Rest	R	02	11
11.02.2019	ERC Greasing work	01	02	25
12.02.2019	ERC Greasing work	01	00	26
13.02.2019	ERC Greasing work	01	00	25
14.02.2019	ERC Greasing work	01	01	25
15.02.2019	Xing loading /unloading work	01	02	23
16.02.2019	Sleeper carrying & Changing work	LAP	02	28
17.02.2019	Rest	LAP	01	16
18.02.2019	Gauging work	LAP	02	24
19.02.2019	G/Joint carrying & renewal work	LAP	01	25
20.02.2019	Sleeper renewal work	LAP	01	27
21.02.2019	Greasing work	LAP	02	24
22.02.2019	G/Joint Packing work	LAP	02	29
23.02.2019	G/Joint Packing work	LAP	02	29
24.02.2019	Rest	R	02	11
25.02.2019	G/Joint Packing work	01	02	23
26.02.2019	Sleeper renewal work	01	02	24
27.02.2019	Deweeding work	01	02	26
28.02.2019	Packing work	01	02	26
TOTAL				628

MARCH-2019

Date	Work Performed (Track Maintenance including Patrolling, Watchman, Attending Machine work, Along with Artisan, Greasing Work & Key Man)	Mate	Key Man	Track Man
01.03.2019	Dressing work	01	01	24
02.03.2019	Xing renewal work	01	02	26
03.03.2019	Rest	01	02	20
04.03.2019	Rail carrying work	CR	02	11
05.03.2019	SEJ Sleeper renewal work	01	02	24
06.03.2019	SEJ Sleeper renewal work	01	02	22
07.03.2019	SEJ Sleeper renewal work	01	02	22
08.03.2019	SEJ Sleeper renewal work	01	01	25
09.03.2019	Rail carrying work	01	01	26
10.03.2019	Rest	01	01	12
11.03.2019	SEJ Sleeper renewal work	01	02	25
12.03.2019	SEJ T/R & S/R renewal work	01	02	26
13.03.2019	SEJ Packing work & Rail Stacking work	01	02	21
14.03.2019	G/Joint carrying & Packing work	01	01	20
15.03.2019	G/Joint renewal work	01	02	18
16.03.2019	ERC greasing work	01	02	18
17.03.2019	Rest	R	01	03
18.03.2019	Track fitting work	01	00	14
19.03.2019	Dressing work	01	01	18
20.03.2019	Dressing work	01	01	17
21.03.2019	Track fitting work	NH	02	17
22.03.2019	Dressing work	CR	02	17
23.03.2019	Rail & Sleeper carrying & dressing work	CL	02	17
24.03.2019	Rail & Sleeper carrying & dressing work	R	02	17
25.03.2019	Rail & Sleeper carrying & dressing work	01	02	22
26.03.2019	Rail & Sleeper carrying & dressing work	01	02	21
27.03.2019	Rail & Sleeper carrying & dressing work	01	00	08
28.03.2019	Rail & Sleeper carrying & dressing work	01	01	21
29.03.2019	Xing packing work	CL	01	20
30.03.2019	Xing packing work	CL	01	20
31.03.2019	Rest	R	00	06
TOTAL				578

2.11 Position of LC Gate under SSE/P. Way/Brajrajnagar unit/BILASPUR Div.:

S#	L C Gate No.	Class of Gate	No. of Shift	No. of staff deployed	Medical Classification of G/K
1	LC-260	Spl.	03 Shift (06-14.00, 14.00-22.00 & 22.00-06.00 Hrs.)	04	A-3
2	LC-261	Spl.	03 Shift (06-14.00, 14.00-22.00 & 22.00-06.00 Hrs.)	04	A-3
3	LC-267	A	03 Shift (06-14.00, 14.00-22.00 & 22.00-06.00 Hrs.)	04	A-3
4	LC-276	B	03 Shift (06-14.00, 14.00-22.00 & 22.00-06.00 Hrs.)	04	A-3

2.12 Position of Trolley under SSE/P. Way/BRJN unit/BILASPUR Div.:

Nominated for	No. of Trolley	Status	No. of T/man deployed	Avg. frequency of trolley movement per month
In-charge	01	Working	04	20-22
Sectional SSE/BRJN	01	Working	04	20-25
Sectional SSE/HGR	01	Working	04	20-25

2.13	<u>Position of Staff Posted under SSE/P. Way/ BRJN Unit but deployed in other Units/Offices:</u> 03 staff: working under USFD 01 staff: working under Zonal Engg. Control/BSP
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2.14	<u>Position of Un-authorized/Long Absentism Staff under SSE/P. Way/BRJN Unit:</u> ➤ 07 Track Maintainer have been absent since long (more than 05 years).
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CHAPTER-III

3.0 CRITICAL ANALYSIS & RECOMMENDATIONS :-

- 3.1** Railway Board has suggested to conduct work study of P. Way staff after introduction of small and other track machines. The actual staff strength of SSE (P. Way) unit/Brajrajnagar in Bilaspur Division is **236** against the sanctioned strength of **307** with vacancies of **71** as on 01.06.2019. These vacancies are lying since long and the regular works are being managed with existing staff. The requirement of staff has been assessed based on the present workload (Daily work progress of last one year of one sample DTM gang), in view of mechanization of track, utilization of Track Machines for track maintenance, provision of outsourcing of some activities of P. Way, direct observations and discussion held with SSE/JE/Mate(P. Way). Major works of P. Way are being carried out through contract. Repair works like slack attention to bad spots, lubrication of rails, casual renewal of Rail/Sleeper, rail/weld failure, other duty/with Artisan/Site protection/USFD work/Track Machine, patrolling duty, LC Gate Duty, deweeding of track, attending accident relief/run over cases etc. are being attended by P. Way staff. Thus, the workload of SSE(P. Way) units has been reduced considerably and as such the present review of workload is therefore undertaken. **It is observed that the average staff strength of this P-Way unit has been 242 for the last three years and the work is being managed with the existing manpower.**

As per practice, Track maintenance activities in the field are maintained either through departmental resources or contracts or a combination thereof, depending upon the situation. Activities which are intensive in nature and require more man days like; sleeper renewal, shallow screening, welding, loading/unloading, pre tamping, post tamping, LC overhauling, etc. are mostly executed through contracts/outsourcing. Activities like; slack packing, casual renewal, ballast dressing, jungle cleaning, drain cleaning, rail lubrication, bridge attention, patrolling, store watchman etc. are being maintained by Trackman. **A huge amount is being spent every year for outsourcing activities of P-Way works, hence the number of staff should be reduced from the sanctioned strength accordingly.**

Moreover, while going through the daily work progress of sample DTM Gang, it is observed that, average 20 % of available man days are being utilized for De-weeding of Track, side drain cleaning, Filth removal, painting of board/rail, tree cutting for visibility which can be outsourced up to 80% to achieve better progress and economy.

Since manpower is the biggest component of the expenditure of Indian Railway, rightsizing of manpower to reduce unit costs is an effective way to increase efficiency of Indian Railway.

In view of above facts, the assessment of need based requirement of staff for SSE(P. Way) unit/Brajrajnagar has been carried out as under:

- 3.2 Assessment of need based requirement of staff for SSE(P. Way) Unit/Brajrajnagar:**
Work study team has assessed requirement of staff for SSE/P. Way/BRJN unit by adopting two methods i.e. (i) based on mandays in Daily work progress, (ii) based on mandays for TRMS activities.5
- 3.2.1 First Method (Based on Daily Work Progress):**
Work study team has taken 01 sample DTM (DTM No.- 02) for study.
The daily work progress of **01 sample DTM Gang (DTM No.-02)** of SSE(P. Way) unit/BRJN of last one year (April'18- March'19) as provided by SSE is critically analyzed for assessment of requirement of Track Maintainer are summarized as under:

Summary of Daily work progress of DTM No.- 02 of last one year (01.04.18 to 31.03.19)

DTM No.	Year' 2018(Avg. Man days)												Total Man days
	April	May	June	July	Aug	Sep.	Oct	Nov.	Dec.	Jan.	Feb.	Mar	
DTM-2	487	501	509	547	515	525	526	548	519	544	628	578	6427

Critical Analysis:-**Sectional DTM Gang :**

As per existing work load of above 01 sample DTM Gang (DTM-02), Avg. No. of Track mandays utilized for track maintenance work per year per DTM = 6427 man days.

Number of working days per annum for P. Way Gang is 294 has been taken vide Rly. Board L. No. 95/CE-I/GNS/2 Vol.II-Pt.II, dated 06.03.2006.

Avg. No. of Trackman required per DTM Gang per day for Track maintenance work including Patrolling duty, during machine work, with Artisan/welding team, Grishing work, Keyman etc.)= $6427 \text{ mandays} \div 294 \text{ wkg. days} = 21.86$, Say **22** (excluding Mate/Keyman).

Avg. No. of Track Maintainer utilised for Mate/Keyman duty per DTM = $01+02 = \mathbf{03}$.

Hence, Total Trackman utilised per day per DTM Gang is $22 + 03 = \mathbf{25}$.

Net requirement of Track Maintainer per DTM (excluding Store gang) comes to $25 + \text{LR @ } 12.5\% = 25 + 03 = \mathbf{28}$.

The above calculation has been done as per actual work volume of DTM Gang (Daily Work progress).

The total no. of DTM Gang working under SSE/P-Way/BRJN unit =08.

After applying the same principle as a whole, the total requirement of Track Maintainer for 08 DTM Gangs will be $28 \times 08 = \mathbf{224}$.

Thus, total 224 Track Maintainer are required for 08 DTM.

Store/MP Gang:

At present 06 TM are deployed in Store Gang and utilised for SSE/P. Way/office/store related work i.e. 04 TM utilised in unit store maintenance, 02 TM utilised in the office work & assist SSE/OS. The requirement of Trackman for Store/MP Gang (as per discussion held with SSEs) for dealing store/welding team//office related activities will be $10 + 02 \text{ RG/LR} = \mathbf{12}$.

Engineering LC Gate (Gatekeeper):

Presently Trackman required for Engg. LC Gate Duty are utilised from DTM Gang of SSE (P. Way) units. There are total 04 LC Gates under SSE/P. Way/BRJN unit.

The total no. of Engg. Manned LC Gates having 03 shift is 04.

The requirement of Trackman (Gatekeeper) for LC Gate = $04 \times 3 = 12 + 04 \text{ RG/LR} = \mathbf{16}$.

The net requirement of Track Maintainer (Gatekeeper) for 04 LC Gates = 16.

Thus, present deployment of 16 Track Maintainer for Gatekeeper duty is justified.

Trolleyman:

Presently there are 03 Trolley (01 Trolley for In-charge, 01 trolley for sectional PWI/BRJN & 01 trolley for sectional PWI/HGR) under SSE-P. Way/RIG unit.

Requirement of Trackman for Trolleyman duty for this P-Way unit will be $04 \times 03 = 12 + 03 \text{ LR} = \mathbf{15}$. (Normally, per trolley 04 Trolleyman required)

Thus, present deployment of 15 Track Maintainer for Trolleyman duty is justified.

However, it is observed that average movement of a trolley in a month is 15-20 days. If the movement is planned nicely by duly coordinating with each other supervisor, it may be effectively carried out by two trolley gang. The remaining working days of Trolleyman may be utilized for other activities.

Chowkidar:

There are 02 sanctioned post of Chowkidar in this unit. At present 01 Chowkidar + 02 Trackman as RG/LR from Store Gang are utilised for chowkidar work at SSE/PW/BRJN store and office.

The requirement of Chowkidar for SSE(P-Way) Store/ BRJN will be 02 (01 in Day shift & 01 in Night shift) +01 RG/LR=03.

Thus, present deployment of 03 staff for Chowkidar duty is justified.

Total Requirement of Track Maintainer:

On being summarized of above calculation, the total requirement of Track Maintainer for DTM Gang, Store/MP Gang, LC Gate, Trolleyman duty & Chowkidar duty for SSE (P. Way)/RIG Unit will be $224+12+16+15+01=268$.

The sanctioned cadre of Track Maintainer category in SSE (P. Way)/BRJN unit is 286.

Hence, the total reduction in sanctioned cadre of Track Maintainer will be $286 - 268 = 18$.

Hence, it is recommended that 18 vacant posts of Track Maintainer identified as surplus should be surrendered from SSE/P.Way/BRJN unit of Engineering Department of Bilaspur Division.

Supervisor Category: (San-11, Actual-07)

At present 07 Supervisors (06 SSE & 01 JE) are deployed. Considering the existing work load of Supervisors, work study team proposed 01 SSE required for overall in-charge of office, periodical inspection, preparation of proposals/estimates, 02 SSE as sectional PWI (at BRJN & HGR respectively) for supervision of track maintenance work, periodical inspection of track, Gate & contractual works in their respective jurisdiction, 01 SSE for special/LR works, 03 JE for supervising Maintenance Gang and for LR/ special works, supervision of casual work respectively. It is observed that 01 SSE/JE is required for TMS related work. Thus, 09 Supervisors are sufficient. Hence, 02 vacant post of SSE/JE are found surplus.

Ministerial staff: (San=02, Actual-02)

At present 01 Ministerial staff (Sr. Clerk) is utilised for dealing establishment matters of staff like preparation of Muster Roll/TA bill, issue of pass/PTO, D&A cases, RTI 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 not sufficient as per workload. It is felt that 01 more ministerial staff is required for smooth working.

Artisan staff (EBS/Painter/Welder/Carpenter/Leuter): (San-06, Actual-05)

At present 05 Artisan staff are utilised for smithy work, welding work, carpentry work, painting and maintenance work in section as per requirement. A lot of track maintenance work are carried out on contractual basis. Work study team suggests multiskilling for Artisan staff by imparting necessary training so that they can be utilised as Multi-tasking staff for various activities as per requirement.

Sanctioned cadre of SSE/P. Way unit/ Brajrajnagar= 307.

On Roll Staff = 236

Vacancy = 71

Staff requirement = 287

Summary of category-wise required staff:

Category	Requirement
Supervisor	09
Ministerial	02
Track Maintainer	268
Artisan	06
Chowkidar	02
Total	287

Identified Surplus Post = $307 - 287 = 20$ (vacant)

3.2.2 **Second Method (Based on Mandays for T, R, M & S Activities):**

The position of Mandays for T, R, M & S activities of SSE(P. Way)/Brajrajnagar unit of last one year (January'2018- December'2018) as provided by SSE is critically analyzed for assessment of requirement of Track Maintainer are summarized as under:

Activity	Track Manday
"T" Activities (Affected by Traffic Density)	13890
"R" Activities (Routine Activities Unaffected by Traffic Density)	10816
"S" Activities (Site-specific Activities)	3845
"M" Activities (Auxilliary Maintenance Activities)	19175
Total Mandays	47726

TRMS Calculation: Track Maintainer required as per total mandays for TRMS Activities for Track maintenance in SSE/P. Way/BRJN Unit = $47726 \text{ mandays} \div 294 \text{ wkg. days} = 162.34$, Say **163**.

Track Maintainer Required for 08 DTM Gang = $163 + \text{LR @ } 12.5\% = 163 + 21 = 184$.

Total Requirement of Track Maintainer :

On being summarized of above calculation, total requirement of Track Maintainer for DTM Gang, Store/MP Gang, LC Gate, Trolleyman duty & Chowkidar duty for SSE (P. Way)/BRJN Unit will be $184 + 12 + 16 + 15 + 01 = 228$.

Summary of category-wise required staff:

Category	Requirement
Supervisor	09
Ministerial	02
Track Maintainer	228
Artisan	06
Chowkidar	02
Total	247

Sanctioned cadre of SSE/P. Way unit/Brajrajnagar= 307.

On Roll Staff = 236

Vacancy = 71

Staff requirement = 247

Identified Surplus Post = $307 - 247 = 60$ (vacant)

3.3 **Analysis of calculation of requirement of staff for SSE/P. Way/Brajrajnagar Unit under Bilaspur Division (As per Para No. 3.2.1 & 3.2.2) :**

Work study team has assessed requirement of staff for SSE/P. Way/BRJN unit by adopting two methods i.e. (i) based on Daily work progress & (ii) based on mandays for TRMS activities. However, a positive attitude has been applied in evolving the requirement of staff vis-à-vis quantum of work in total and followed a feasible solution to the administration as well as to the employees.

On comparative analysis of applied two methods for assessment of requirement of staff for SSE/P. Way/BRJN Unit, it is found that by applying first method staff requirement comes to 287 whereas by applying second method staff requirement comes to 247.

The average actual staff strength for the last three years in this unit is 242. The entire workload of this P. Way unit are being managed with this staff strength.

Therefore, Work study team has finally taken existing workload based on daily work progress (first method) for calculation of staff requirement for P. Way/BRJN unit.

Sanctioned strength = 307

On Roll strength = 236

Vacancy = 71

Staff requirement = 287

Identified Surplus Post = 307 - 287 = 20 (vacant).

Thus, the requirement of staff (Supervisor/Ministerial staff/Track Maintainer/Artisan staff/Chowkidar) for SSE (P-Way)/BRJN unit comes to 287 against sanctioned of 307 which is 50 more than on roll staff strength and these may be filled up to cope up the work smoothly and efficiently.

Hence, 20 vacant posts [JE-02, Track Maintainer-18] are found surplus and should be surrendered.

3.4 Summary of Sanction, Present & Proposed staff strength of SSE/P-Way unit/Brjrajnagar in Bilaspur Division :

S#	Category	Sanction strength	Existing on Roll strength	Proposed Strength	No. of Surplus post to be surrendered
1.	SSE	07	03	07	00
2.	JE	04	04	02	02
3.	OS	01	00	01	00
4.	Sr. Clerk	01	01	01	00
5.	EBS	02	00	02	00
6.	ECR	01	01	01	00
7.	Welder	01	01	01	00
8.	Luter	01	01	01	00
9.	Grinder	01	01	01	00
10.	Track Maintainer-I	18	14	18	00
11.	Track Maintainer-II	37	21	37	00
12.	Track Maintainer-III	63	59	63	00
13.	Track Maintainer-IV	168	129	150	18
14.	Chowkidar	02	01	02	00
Total		307	236	287	20

3.5 RECOMMENDATIONS & SUGGESTIONS:

On the basis of above observations and critical analysis, following recommendations and suggestions are made:

RECOMMENDATION:

- 3.5.1** Considering the existing work load and as per details given in Para 3.2 & 3.3, the requirement of staff for SSE/P. Way/Brajrajnagar unit comes to **287** against sanction of **307**. Thus, **20** posts [JE-02, Track Maintainer-18 (vacant)] are found surplus and should be surrendered from P. Way Unit/BRJN of Engineering Department of Bilaspur Division.
- 3.5.2** 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.
- 3.5.3** Some of the existing activities of P- Way maintenance work like dweeding of track & cleaning of drain, filth removal, painting of Boards/Rails, overhauling of LC Gate and tree cutting for visibility may be outsourced up to 80% and remaining 20% may be carried out through Departmental Resources..

SUGGESTIONS:

- 3.5.4** In order to increase efficiency, a Mobile Maintenance Gang may be set up to cope up the emergency work as per need.
- 3.5.5** Work study team suggests to implement Multi-Skilling concept for Artisan staff by imparting necessary training so that they can be utilised as Multi-tasking staff for various activities as per requirement.
- 3.5.6** To minimize the absenteeism & develop productive working environment, all requisite efforts such as motivation, Counseling, grievance solution, appreciation for good work and frequent interaction with the staff may be initiated at respective level.

CHAPTER-IV

4.0 FINANCIAL IMPLICATIONS :-

4.1 Savings due to surrender of 20 identified surplus vacant posts :

Design	Level (7 th CPC)	G.P. (6 th CPC)	Pay Struct. (7 th CPC)	No. of Post to be surrendered	Mean pay of the level	Approx. Cost per Month per staff (Mean Basic pay+ D.A. @ 12%)	Total cost per month (in Rs.)	Total cost per year (in Rs.)
JE	L-6	4200	35400- 112400	02	73900	82768	165536	1986432
Track Maintainer -IV	Level-1	1800	18000- 56900	18	37450	41940	754920	9059040
TOTAL				20				11045472

Thus, total recurring savings to the tune of Rs. 1,10,45,472 say Rs. 110 Lakhs can be achieved due to surrender of 20 surplus vacant posts from SSE/P-Way unit/BRJN of Engineering Department of Bilaspur Division and surrender Memorandum may be issued by Sr. DPO/BSP/SECR.

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