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/1403 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/Baikunthpur of Engineering Department in Bilaspur Division."**

Ref.: (i) This office letter no. WS/Engg./BSP/18-19/393 dated 13.02.2019.
(ii) Sr. DEN(Co)/BSP office letter no. SECR/BSP/ Engg./Gen/522/Work Study/Pt.II/49 dated 21.05.2019.

The work study of SSE(P-Way) Unit/Baikunthpur 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 44 surplus vacant posts of Track Maintainers out of total sanctioned of 320 of SSE (P-Way) Unit/Baikunthpur 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.

27/6/2019
(S. N. Pattnaik)
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/BAIKUNTHPUR OF ENGINEERING DEPARTMENT IN BILASPUR DIVISION

कार्यअध्ययन प्रकोष्ठ
दक्षिण पूर्वमध्य रेलवे

SOUTH EAST CENTRAL RAILWAY

BILASPUR

WORK STUDY CELL

WORK STUDY REPORT ON EXISTING CADRE STRENGTH VIS-À-VIS WORKLOAD OF SSE (P. WAY) UNIT/BAIKUNTHPUR 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/07/2019-20

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SUMMARY OF RECOMMENDATIONS & SUGGESTIONS

Rec. No.	Description	Para Reference
	RECOMMENDATIONS:	
1.	Considering the existing work load, as per details given in Para 3.4.1 to 3.8, the requirement of total cadre under SSE/P-Way/BRH unit comes to 276 against sanction of 320 staff. ***Thus it is recommended that 44 identified surplus vacant posts of Track Maintainer should be surrendered from SSE/P-Way/BRH 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 upto 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:

Civil Engineering infrastructure is the largest static infrastructure of Indian Railways comprising of track, bridges, land, etc. Civil engineering department of Indian Railways manages and maintains all these infrastructures.

The P. Way organization is a part of Civil Engineering department at divisional level, functions under the administrative control of Sr. DEN (Co). Officers having entrusted with a particular section comprising of sectional CPWIs/PWIs 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 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 being 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, deweeding of track, replacement of damaged sleepers, 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) for 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.

1.1 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.

1.2 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.

1.3 Details of SSE/P. Way Unit/ Baikunthpur in Bilaspur Division:

The Engineering (P. Way) Department /BSP Division is divided into seventeen SSE (P. way) units and these Units are further sub-divided in to various no. of Gang sections to execute the related works. The jurisdictions along with the no. of DTM/Gangs existing under SSE/P. Way/BRH Unit are given as under:

S#	Item	Particulars
1.	Section	Double Line/Single Line (BG section)
2.	Jurisdiction	951/4-1043/16, DTL/1014-967D/8,1218/10-2KC/25
3.	Length (KM)	259.707
4.	Total No. of DTM/Gang under the P- Way Unit	Gang-18 Store Gang-01
5.	Jurisdiction of one Gang	6-8 Km
6.	No. of Engineering LC Gates	06

1.3 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.

1.4 Methodology Adopted:

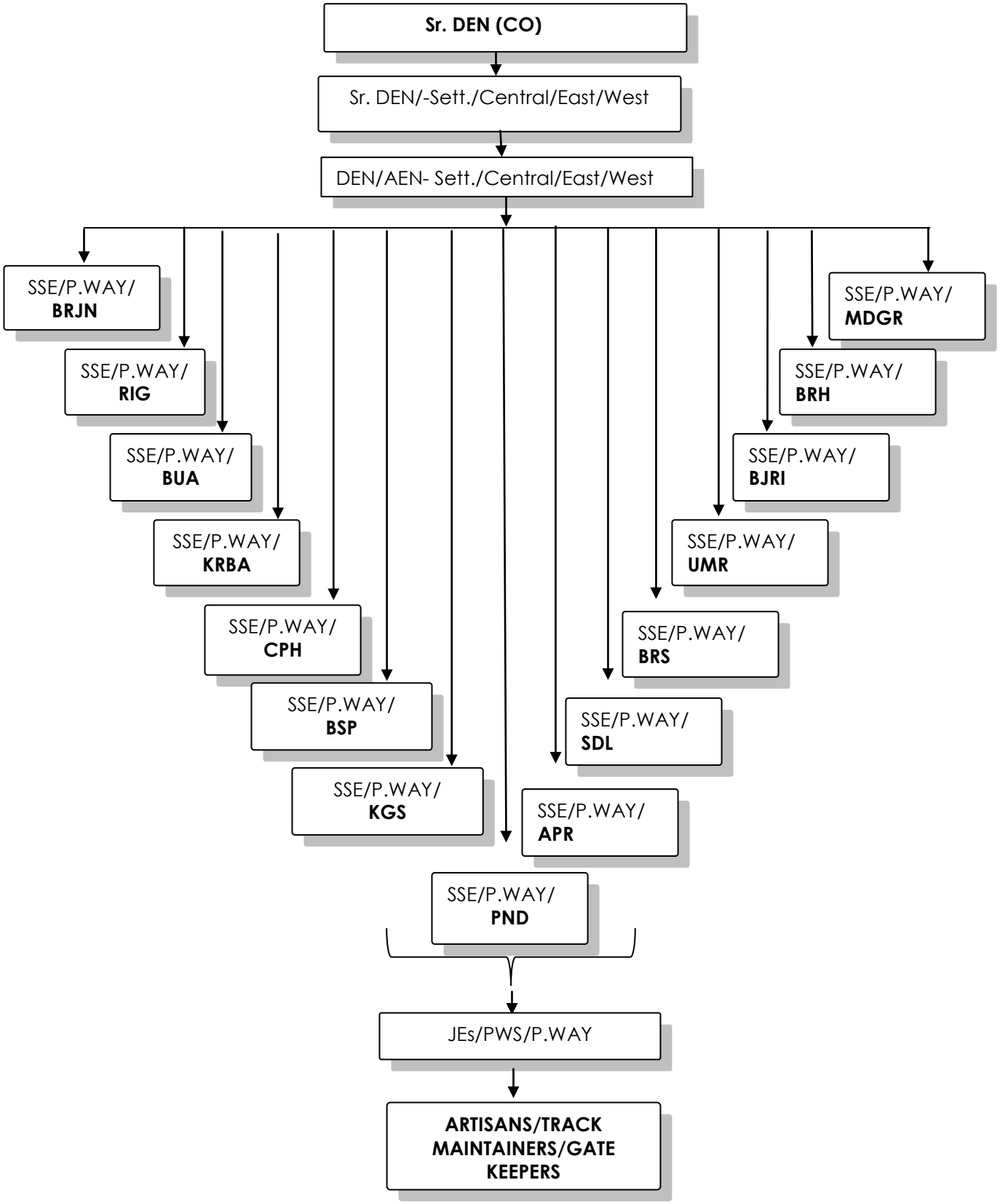
The work study team conducted a review of need based requirement of Engg. P. Way staff at Baikunthpur Unit of Bilaspur Division having total sanctioned strength is **320,** Actual strength is **244** and vacancy is **76.**

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.

1.4 Organisational Chart of Engineering Department (P.WAY) at Divisional level :

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.



1.5 Details of SSE/P. Way/ Units existing in Bilaspur Division:

The Engineering (P. Way) Department /BSP Division has been divided into fifteen SSE (P. way) units and these Units are further sub-divided into various no. of DTMs & Gangs to execute the relevant works. The jurisdictions along the no. of DTM/Gangs existing under control of these Units is given as under:

Details of existing SSE (P. Way) Units/BSP Div:						
S#	Name of P. Way Units	Jurisdiction	Length (KM)		Total no. of Engg. Gang under the Unit	
			TRACK KM	ETKM	DTM/ Gang	Store Gang
1	SSE(P. Way)/BRJN	KM.515.357 - KM.560.070 (DL KM 515.40 - 523.10 IB - JSG Bye pass 7.700 (SL)	97.126	261.456	8	1
2	SSE(P. Way)/RIG	KM.560.070 - KM.605.140 (DL)	90.140	244.283	8	1
3	SSE(P. Way)/BUA	KM.605.140 - KM.653.300 (DL	96.320	216.862	8	1
4	SSE(P. Way)/KRBA	NEW SECOND LINE (10.47 KM) (DL) KM.665.250 - KM.673.300=8.05 KM.673.300 - KM.710.500 =37.20 (DL) KM 710.500 - KM 714.00 = 3.50 (SL) KM.660.990 - 669/C/4-6 (SL) CPH BYE PASS=4.94	97.860	260.976	9	1
5	SSE(P. Way)/CPH	KM.653.300 - KM.666.300=13.000 (DL) KM.666.300 - KM.692.150 = 25.85 (TL) KM. 657.490 - 660.990 = 3.50 (SL)	107.050	255.971	9	1
6	SSE(P. Way)/BSP	KM.692.150 - KM.716.970 = 24.820 (TL) KM.716.970 - KM.722.000 = 5.03 (DL) BSP - KTE) KM 719.862 - KM 721.000 = 1.138 (SL) (CHORD LINE) KM.716.809 - KM.721.950 = 5.141(BYE PASS)	90.799	327.363	11	1
7	SSE(P. Way)/KGS	KM.720.240 - KM.760.000 = 39.76 (DL) KM.760.000 - KM.783.600 = 23.60 (SL) KM.783.600 - KM.796.600 = 13.00 (DL)	129.120	314.772	6 DTM + 8 Gang	1
8	SSE(P. Way)/PND	KM 796.600 - KM 808.000 = 11.40 (DL) KM 808.000 - KM 868.300 = 60.30 (SL) KM 864.100 - KM 865.100 = 1.00 (SL) CLF - MZH Bye pass line.	84.100	202.524	13	1
9	SSE(P. Way)/APR	KM.868.300 - KM.907.100 (DL)	77.600	212.423	6	1
10	SSE(P. Way)/SDL	KM.907.100 - KM.945.600 (DL)	77.000	203.428	5	1
11	SSE(P. Way)/BRS	KM.945.600 - KM.986.625 (DL)	82.050	213.183	6	1
12	SSE(P. Way)/UMR	KM.986.625 - KM.1028.600 (DL)	83.950	196.566	6	1
13	SSE(P. Way)/BJRI	KM.868.300 - KM.917.300 = 49.00 (DL) KM.865.100 - KM.876.900 (SL) = 5.150 CLF- MZH New Bye Pass KM 916.300 - KM 922.555 (SL)-BJRI-RBH =4.749	107.899	284.029	8 DTM + 2 Gang	1
14	SSE(P. Way)/BRH	KM. 951.270 - KM 1045.480 = 94.21 (SL) KM. 952.100 - KM 962.500 = 10.400 (SL)	103.940	285.637	18 Gang	1
15	SSE(P.Way)/ MDGR	KM.917.300 - KM.926.500 = 9.200 (DL) KM.926.500 - KM.955.760 = 29.260 (SL) KM.926.000 - KM 951.270 = 24.77 (SL)	72.070	211.653	14 Gang	1
TOTAL			**1397.024**	**3691.126**	**145 (DTM+Gang) ***	**15**
Total No. of DTM (after merging existing Gang into DTM)					**124**	**15**

***Details of DTM/Gangs:-**

- Total No. of DTM + Gang over BSP Div. = 103 DTM + 42 Gang (i.e. say 21DTM)
  Thus, Total No. of DTM in BSP Div = 103 + 21 = 124 DTM
- Total No. of of Store Gang = 15 excluding DTM.
- The jurisdiction of one **DTM** for **D/L** is 6-7 Km (Up line-06 + Dn line-06), i.e 12-13 km.
- The jurisdiction of one **Gang** for **S/L** is 6-7 Km.
- Hence, 02 Gang (existing in S/L section) may be treated as one DTM for assessment of total no. of DTM over BSP Div.

CHAPTER-II

2.0 OBSERVATIONS :

Consolidated Staff strength Unit wise:

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

2.1 SSE/P. Way/BRH:

Category	S#	Designation	Scale	GP	Sanctioned	Actual	Vacancy
Supervisory	1	SSE	9300-34800	4600	04	03	01
	2	JE	9300-34800	4200	02	04	-02
	SUB TOTAL				**06**	**07**	**-01**
	3	OS	9300-34800	4200	01	01	00
	SUB TOTAL				**01**	**01**	**00**
Artisan	4	Painter-I	5200-20200	2800	00	00	00
	5	Welder- II	5200-20200	2800	01	00	01
	6	EBS- I	5200-20200	2800	01	00	01
	7	EBS- II	5200-20200	2400	00	01	-01
	8	Chowk1dar	5200-20200	1800	02	01	01
	SUB TOTAL				**04**	**02**	**02**
Track Maintainer	9	Track Maintainer-I	5200-20200	2800	20	22	-02
	10	Track Maintainer-II	5200-20200	2400	38	33	05
	11	T rack Maintainer-III	5200-20200	1900	70	62	08
	12	Track Maintainer-IV	5200-20200	1800	181	117	64
	SUB TOTAL				**309**	**234**	**75**
TOTAL					**320**	**244**	**76**

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:

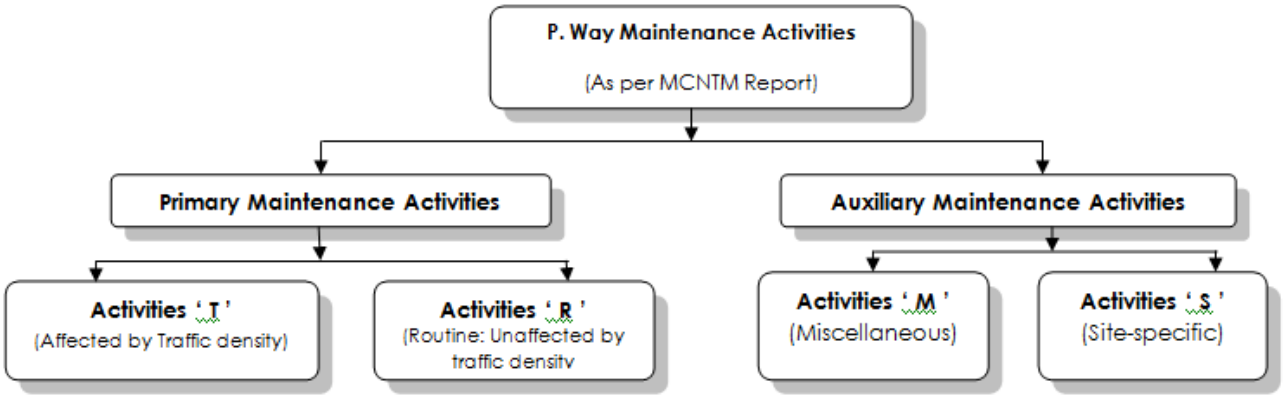
The Rational Formulae (MCNTM):

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 Field Observation of DTM/Gang of SSE (P. Pay) Unit of SSE(P. Way)/BRH under ADEN/MDGR of BSP Div.:

2.7.1 Sectional data of sample gangs:

Sectional data of 01 sample gang (Gang No.25) of SSE(P-Way) unit Baikunthpur as provided by SSE are summarized as under:

Items	Gang/25 (SSE/P. Way/BRH)
Division	BSP
Jurisdiction	951/4-957/17
Gang length	6.5 Km
TKM (B/L)	6.5 Km
RYL	-
GMT	29.32
Poor visibility	957/4-17
LWR length	6.338 Km
No. of curves	4
Degree of curve	5^0
Length of curve	1894 mtr.
Girder bridge	0
Length of G/Bridges	-
Station yard	1
L/C Gate	-
Distressing Temp.	42°C
Rail Temperature	(4° - 60°)
Stationary Patrolling	1

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

S#	Gang No.	Km.	HQ	Sanction	actual	Vacancy
1	48	953T/5-6/959T/10	DTL	14	08	06
2	49	959T/10-967D/10	TGH	19	11	08
3	50	1018/10-KC/2/25	KD	12	07	05
4	51	Multi Purpose Gang	BRH	27	20	07
5	25	951/4-957/17	DTL	16	12	04
6	26	957/17-964/1-2	NGE	17	13	04
7	27	964/1-2—970/9	BRH	18	14	04
8	28	970/9-976/16	BRH	18	15	03
9	29	976/16-983/6-7	KTO	14	13	01
10	30	983/6-7—989/13	KTO	16	13	03
11	31	989/13-996/5	SPDR	17	10	07
12	32	996/5-1002/8-9	SJQ	14	12	02
13	33	1002/8-9—1009/2	SJQ	19	15	04
14	34	1009/2-1012/4	KJZ	15	12	03
15	35	1012/4-1017/13	KJZ	22	15	07
16	36	1017/13-1024/21	BSPR	15	14	01
17	36A	1024/21-1031/5	BSPR	14	12	02
18	36B	1031/5-1037/10	KLPG	11	09	02
19	36C	1037/10-1043/16	ABKP	11	09	02
Total				**309**	**234**	**75**

2.7.3 **Level Crossing Position under SSE(P. Way)/BRH :** There are 06 Engineering gates under the jurisdiction of SSE/P-Way/BRH. 04 Track Maintainers are utilized in 08 hrs shift (01 TM/shift + 01 RG/LR) per LC gate.

Unit	S#	Section	LC No	Location	Duty Roster
SSE/P-Way/BRH	1	BRH-KTO	AB-43	970/15-16	8 Hrs.
	2	KTO-SJQ	AB-58	993/3-4	8 Hrs.
	3	KTO-SJQ	AB-65	1004/4-5	8 Hrs.
	4	KJZ-BSPR	AB-69	1016/4-5	8 Hrs.
	5	BSPR-KLPG	AB-72	1025/11-12	8 Hrs.
	6	TGH-D/HILL	TGH-2	966/T/2-3	8 Hrs.

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

Sr.No.	Designation	MT/PT	Headquarter	Existing Numbers	New Allotted Numbers
1	Sr. SE(Pway) BRH	MT	56	BSP 65	Sr. SE(Pway) BRH
2	JE (Pway) BRH	PT	57	BSP 66	JE (Pway) BRH
3	JE (Pway) KJZ	PT	58	BSP 67	JE (Pway) KJZ
4	JE (Pway) ABKP	PT	-	BSP 68	JE (Pway) ABKP

04 Track Maintainers are utilized in normal section (Sl. No.-1& 4) and 06 Track Maintainers are utilized in ghat section(Sl. No.-2 and 3) for Push Trolley activity.

2.7.5 **Stores under SSE(P. Way)/BRH :** There are one Stores under SSE/P-Way/BRH. There are 1111 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 42 times, and materials issued for Work site is 24 times in a year.

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)/BRH :

Sectional Tamping Details between Section : Boridand Jn-Daritola Jn Line : SL Location : 951 km 270 m to 952 km 467 m Track Length : 1.197 km							
Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	951	270	951	910	640	01/2019	CSM
SL	951	910	952	0	90	08/2012	CSM
Total					730		

Sectional Tamping Details between Section : Darritola Jn-ABKP Line : SL Location : 952 km 467 m to 1043 km 948 m Track Length : 92.482 km							
Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	952	467	953	52	585	08/2012	WST
SL	953	52	955	50	2145	12/2015	WST
SL	955	50	955	520	470	08/2012	WST
SL	955	520	958	170	2556	12/2015	CSM
SL	958	170	958	600	430	12/2015	WST
SL	958	600	958	800	200	08/2012	WST
SL	959	50	959	110	60	06/2012	WST
SL	959	110	959	820	710	12/2015	WST
SL	959	820	959	840	20	07/2012	WST
SL	959	840	959	870	30	06/2012	UNIMAT
SL	959	970	959	980	10	05/2012	UNIMAT
SL	959	980	959	990	10	06/2012	WST
SL	959	990	960	350	377	12/2015	UNIMAT
SL	960	350	960	430	80	08/2012	CSM
SL	960	430	964	250	3831	12/2015	CSM
SL	964	250	964	910	660	01/2016	CSM
SL	964	910	966	970	2096	12/2015	CSM
SL	966	970	966	980	10	04/2012	CSM
SL	966	980	967	52	90	04/2012	UNIMAT
SL	967	52	967	800	748	04/2013	CSM
SL	967	800	972	30	4146	12/2015	CSM
SL	972	30	972	540	510	01/2016	CSM
SL	972	540	973	970	1379	12/2015	CSM
SL	973	970	976	920	2942	12/2015	WST
SL	976	920	978	80	1171	05/2017	WST
SL	978	80	979	300	1232	12/2015	WST
SL	979	300	980	580	1288	05/2017	WST
SL	980	580	981	780	1212	05/2017	CSM
SL	981	780	983	210	1408	07/2018	CSM
SL	983	210	983	910	700	05/2017	CSM
SL	983	910	983	990	80	03/2013	WST
SL	983	990	984	140	176	12/2015	UNIMAT
SL	984	140	984	210	70	08/2012	UNIMAT
SL	984	210	984	760	550	09/2012	MPT
SL	984	760	984	850	90	10/2015	UNIMAT
SL	984	850	984	970	120	12/2015	UNIMAT
SL	984	970	984	980	10	10/2015	MPT

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	984	980	985	200	174	01/2016	CSM
SL	985	200	986	750	1544	07/2018	CSM
SL	986	750	987	180	456	02/2013	CSM
SL	987	180	987	620	440	12/2015	MPT
SL	987	620	987	970	350	02/2018	MPT
SL	987	970	988	410	412	12/2015	CSM
SL	988	410	989	30	614	01/2019	CSM
SL	989	30	989	636	606	02/2019	CSM
SL	989	636	993	960	4391	07/2018	CSM
SL	993	960	994	410	399	06/2018	CSM
SL	994	410	995	790	1370	06/2018	MPT
SL	995	790	997	100	1326	05/2018	MPT
SL	997	100	997	490	390	02/2018	MPT
SL	997	490	998	900	1391	05/2018	MPT
SL	998	900	999	10	136	02/2018	MPT
SL	999	10	999	710	700	12/2015	MPT
SL	999	710	999	900	190	12/2015	CSM
SL	999	900	1001	100	1194	03/2017	CSM
SL	1001	100	1001	875	775	03/2017	MPT
SL	1001	875	1003	500	1627	07/2018	MPT
SL	1003	500	1003	740	240	02/2017	MPT
SL	1003	740	1004	700	995	05/2018	MPT
SL	1004	700	1004	1000	300	07/2018	MPT
SL	1004	1000	1005	50	35	05/2018	MPT
SL	1005	50	1005	850	800	07/2018	MPT
SL	1005	850	1005	940	90	12/2015	MPT
SL	1005	940	1005	950	10	02/2018	MPT
SL	1005	950	1008	550	3636	07/2018	MPT
SL	1008	550	1008	577	27	05/2018	MPT
SL	1008	577	1009	100	540	07/2018	MPT
SL	1009	100	1009	110	10	05/2018	MPT
SL	1009	110	1009	180	70	07/2017	MPT
SL	1009	180	1009	280	100	02/2013	CSM
SL	1009	360	1009	375	15	07/2017	CSM
SL	1009	375	1011	430	2021	02/2019	CSM
SL	1011	430	1011	500	70	08/2012	CSM
SL	1011	900	1013	785	1876	02/2019	CSM
SL	1013	785	1014	540	812	11/2015	CSM
SL	1014	610	1016	300	1647	11/2015	CSM
SL	1016	300	1018	540	2255	01/2016	CSM
SL	1018	540	1018	800	260	02/2019	CSM
SL	1018	800	1018	830	30	07/2017	CSM
SL	1018	830	1018	870	40	02/2019	CSM
SL	1018	870	1018	890	20	07/2017	CSM
SL	1018	890	1018	920	30	11/2015	CSM
SL	1018	920	1019	720	749	01/2016	CSM
SL	1019	720	1019	772	52	01/2016	MPT
SL	1019	772	1019	930	158	07/2017	CSM
SL	1019	930	1020	650	732	02/2019	CSM
SL	1020	650	1021	960	1336	12/2015	CSM

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	1021	960	1022	0	25	02/2013	WST
SL	1022	0	1022	660	660	12/2015	WST
SL	1022	660	1022	880	220	02/2013	WST
SL	1023	20	1023	600	580	12/2015	CSM
SL	1023	600	1023	910	310	12/2015	MPT
SL	1023	910	1024	650	707	01/2016	MPT
SL	1024	650	1025	40	456	12/2015	MPT
SL	1025	40	1025	580	540	01/2016	MPT
SL	1025	580	1025	650	70	12/2015	CSM
SL	1025	650	1026	90	449	11/2015	CSM
SL	1026	90	1026	450	360	11/2015	WST
SL	1026	450	1027	150	725	11/2015	MPT
SL	1027	150	1027	550	400	07/2017	MPT
SL	1027	550	1028	700	1122	11/2015	WST
SL	1028	700	1029	160	519	11/2015	MPT
SL	1029	160	1029	600	440	07/2017	MPT
SL	1029	600	1030	170	569	11/2015	WST
SL	1030	170	1030	520	350	11/2015	MPT
SL	1030	520	1030	860	340	07/2017	MPT
SL	1030	860	1031	360	479	11/2015	WST
SL	1031	360	1031	500	140	02/2013	WST
SL	1031	500	1033	80	1551	11/2015	WST
SL	1033	80	1033	600	520	12/2015	WST
SL	1033	600	1033	700	100	11/2015	WST
SL	1033	700	1033	920	220	02/2013	WST
SL	1034	220	1034	940	720	12/2015	WST
SL	1034	940	1034	960	20	02/2013	WST
SL	1035	150	1035	180	30	02/2013	WST
SL	1035	180	1035	540	360	12/2015	WST
SL	1035	540	1036	310	780	11/2015	WST
SL	1036	669	1040	732	4014	03/2017	CSM
SL	1040	732	1041	840	1138	03/2017	MPT
SL	1041	840	1042	720	822	07/2017	MPT
SL	1042	720	1042	730	10	03/2017	MPT
SL	1042	730	1043	610	849	11/2015	CSM
Total					90238		

Sectional Tamping Details between Section : Darritola Jn-Tigerhill
Line : SL Location : 952 km 100 m to 962 km 500 m Track Length : 10.614 km

Line	Location From		Location To		Length (in meter)	Last Tamping	Machine Type
	km	m	km	m			
SL	955	70	955	970	900	05/2012	UNIMAT
Total					900		

2.8 Performance of sample Gang No. 25 under SSE (P. Way) Unit/BRH:

Track Maintainers involved in various type of maintenance activities is mainly classified in four categories. Such are Activities affected by Traffic Density(T), Routine Activities Unaffected by Traffic Density(R), Site Specific Activities(S) and Auxiliaries Maintenance Activities (M). The monthly work progress of sample gang No.25 under SSE(P-Way)/BRH unit of last one year (January'18- December'18) are as given below:

2.8.1 Monthly Work Progress of Gang 25-DTL yard(January 2018):

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Casual Rail Renewal	4
Cleaning , Dressing ,Boxing Of Ballast	59
Rail Carrying	5
Slack Attention Bad Spots	4
Sleeper Carrying	14
With Welding Team	1
Total	**87**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Loading Leading Unloading Of P Way Material	5
Material Chasing	2
Material Stacking/Collection	16
On Keyman Duty	31
Total	**54**

Site Specific Activities(S)	
Duty	**Trackmen**
Trolley Refuge Repair Work	4
Total	**4**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Assisting In Office Work	13
Grass Cutting In Track / Jungle Clearance	17
Patrolling-Cold Weather	62
Total	**92**

Hence Total Track-Mandays utlised = 87+54+4+92 = 237

2.8.2 Monthly Work Progress of Gang 25-DTL yard(February 2018):

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Cleaning , Dressing ,Boxing Of Ballast	41
Greasing Work Of Tongue Rails, Crossings, SEJs And Fittings	2
Rail Carrying	3
Slack Attention Bad Spots	8
Unloading Of Ballast	3
With Welding Team	5
Total	**62**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Loading Leading Unloading Of P-Way Material	35
Material Chasing	6
On Keyman Duty	28
Total	**69**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Assisting In Office Work	9
Attending Trolley Refuge	7
Grass Cutting In Track / Jungle Clearance	15
Patrolling-Cold Weather	57
Total	**88**

Hence Total Track-Mandays utlised = 62+69+0+88=219

2.8.3 Monthly Work Progress of Gang 25-DTL yard(March 2018):

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Ballasting	2
Casual Rail Renewal	6
Casual Sleepers Renewal	8
Cleaning , Dressing ,Boxing Of Ballast	88
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	9
Rail Carrying	6
Slack Attention Bad Spots	6
With Welding Team	3
Total	**128**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Loading Leading Unloading Of P Way Material	8
Material Chasing	6
On Keyman Duty	28
Other Miscellaneous Works	7
Total	**49**

Site Specific Activities(S)	
Duty	**Trackmen**
Trolley Repair Work	13
Total	**13**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Attending Trolley Refuge	2
Grass Cutting In Track / Jungle Clearance	15
Painting Of Board (LWR, Curve, Jurisdiction Etc.)	8
Painting Of Gang Beat/ Level Xing/Fog Post/Fm/Curve/Ohe Mast	2
Patrolling-Cold Weather	10
With Artisan	2
Total	**39**

Hence Total Track-Mandays utlised =128+49+13+39=229

2.8.4 Monthly Work Progress of Gang 25-DTL yard(April 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Cleaning , Dressing ,Boxing Of Ballast	30
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	6
Rail Carrying	5
Slack Attention Bad Spots	15
Trr	6
With Welding Team	1
Total	**63**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Loading Leading Unloading Of P Way Material	83
Material Chasing	2
On Keyman Duty	28
Tree Cutting / Trimming For Visibility	1
Total	**114**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	4
Patrolling-Hot Weather	48
Total	**52**

Hence Total Track-Mandays utlised = 63+114+0+52=229

2.8.5 Monthly Work Progress of Gang 25-DTL yard(May 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Casual Rail Renewal	6
Cleaning , Dressing ,Boxing Of Ballast	20
Glued Joint Renewal	5
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	1
Rail Carrying	19
With Welding Team	9
Total	**60**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Clearance Of Side Drain	21
ERC Greasing	5
Loading Leading Unloading Of P Way Material	9
Material Chasing	2
Material Stacking/Collection	5
On Keyman Duty	26
Total	**68**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	10
Patrolling-Cold Weather	3
Patrolling-Hot Weather	81
Total	**94**

Hence Total Track-Mandays utlised =60+68+0+94=222.

2.8.6 Monthly Work Progress of Gang 25-DTL yard(June 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Casual Rail Renewal	4
Cleaning , Dressing ,Boxing Of Ballast	12
Gauging Work	3
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	3
Slack Attention Bad Spots	9
With Welding Team	7
Total	**38**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Clearance Of Side Drain	71
Loading Leading Unloading Of P Way Material	41
On Keyman Duty	28
Total	**140**

Site Specific Activities(S)	
Duty	**Trackmen**
Patrolling-Security	2
Total	**2**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	15
On Debit Sheet To Other Dipo	2
Patrolling-Hot Weather	25
Patrolling-Monsoon	18
With Artisan	8
Total	**68**

Hence Total Track-Mandays utlised =38+140+2+68=248.

2.8.7 Monthly Work Progress of Gang 25-DTL yard(July 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Ballasting	7
Casual Sleepers Renewal	4
Pre Block Activities	14
Slack Attention Bad Spots	23
Through Packing/Attention	19
With Welding Team	12
Total	**79**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Clearance Of Side Drain	17
Deweeding Of Track	14
Loading Leading Unloading Of P Way Material	9
On Keyman Duty	28
Providing Joggled Fish Plate	3
Total	**71**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	5
Patrolling-Monsoon	66
Total	**71**

Hence Total Track-Mandays utlised = 79+71+0+71=221

2.8.8 Monthly Work Progress of Gang 25-DTL yard(August 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Casual Sleepers Renewal	7
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	18
P & C Attention/Overhauling	3
Slack Attention Bad Spots	20
Sleeper Carrying	3
Track Mc Work	11
With Welding Team	25
Total	**87**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Clearance Of Catch Water Drain	3
Clearance Of Side Drain	2
Deweeding Of Track	5
Loading Leading Unloading Of P Way Material	5
On Keyman Duty	31
Providing Joggled Fish Plate	2
Total	**48**

Site Specific Activities(S)	
Duty	**Trackmen**
Patrolling-Security	5
Total	**5**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	9
Patrolling-Monsoon	120
Total	**129**

Hence Total Track-Mandays utlised =87+48+5+129=269

2.8.9 Monthly Work Progress of Gang 25-DTL yard(September 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Ballasting	5
Check Rail Renewal	5
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	2
Rail Carrying	4
Slack Attention Bad Spots	8
Sleeper Carrying	7
Track Mc Work	5
With Welding Team	16
Total	**52**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Deweeding Of Track	19
Loading Leading Unloading Of P Way Material	17
On Keyman Duty	30
Tree Cutting / Trimming For Visibility	3
Tree Plantation	16
Working With Contract Lobour As Spl.Work	1
Total	**86**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	15
Patrolling-Monsoon	101
Sparing To Other Dept Works	1
Total	**117**

Hence Total Track-Mandays utlised =52+86+0+117=255.

2.8.10 Monthly Work Progress of Gang 25-DTL yard(October 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	12
Rail Carrying	35
Slack Attention Bad Spots	7
With Welding Team	2
Total	**56**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Deweeding Of Track	14
Loading Leading Unloading Of P Way Material	18
Lubrication Of Rail Joints	79
Lubrication Of Rails In Curves	7
On Keyman Duty	29
With Keyman	1
Working With Contract Labor in Spl. Work	2
Total	**150**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	8
Painting Of Gang Beat/ Level Xing/Fog Post/Fm/Curve/OHE Mast	2
Watchman	1
Total	**11**

Hence Total Track-Mandays utlised =56+150+0+11=217

2.8.11 Monthly Work Progress of Gang 25-DTL yard(November 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Casual Sleepers Renewal	3
Cleaning , Dressing ,Boxing Of Ballast	28
Greasing Work Of Tongue Rails, Crossings, SEJs And Fittings	2
Slack Attention Bad Spots	6
Sleeper Carrying	2
Through Sleeper Renewal	5
Total	**46**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Deweeding Of Track	4
Loading Leading Unloading Of P Way Material	4
Lubrication Of Rail Joints	10
On Keyman Duty	28
On USFD Work	2
Total	**48**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Grass Cutting In Track / Jungle Clearance	14
On Debit Sheet To Other Dipot	4
Patrolling-Cold Weather	60
Training/Ic/Rc	9
Total	**87**

Hence Total Track-Mandays utlised =46+48+0+87=181.

2.8.12 Monthly Work Progress of Gang 25-DTL yard (December 2018):-

Activities affected by Traffic Density(T)	
Duty	**Trackmen**
Ballasting	12
Cleaning , Dressing ,Boxing Of Ballast	20
Greasing Work Of Tongue Rails, Crossings, Sejs And Fittings	4
Pre Block Activities	9
Rail Carrying	23
Slack Attention Bad Spots	3
TRR Work	9
Total	**80**

Routine Activities Unaffected by Traffic Density(R)	
Duty	**Trackmen**
Loading Leading Unloading Of P Way Material	2
Lubrication Of Erc	3
On Keyman Duty	31
With Keyman	1
Total	**37**

Site Specific Activities(S)	
Duty	**Trackmen**
Total	**0**

Auxiliaries Maintenance Activities (M)	
Duty	**Trackmen**
Patrolling-Cold Weather	75
Watchman	1
Total	**76**

Hence Total Track-Mandays utlised =80+37+0+76=193.

CHPTER-III

3.0 CRITICAL ANALYSIS & RECOMMENDATIONS :-

3.1 The actual staff strength of SSE (P. Way) unit Baikunthpur in Bilaspur Division is **244** as against the sanctioned strength of **320** along with vacancies of **76** as on 01.11.2018. The requirement of P. Way staff (Trackman) 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 Gang Strength (Trackman) for SSE(P.Way) Baikunthpur unit in Bilaspur Division has been assessed as under:

3.2 Monthly progress of sample Gang No.25 under SSE/P-way/BRH for one year (January 2018-December 2018) is tabulated as follows:-

Month	Jan.	Feb	Mar.	Apr.	May	June	Jul	Aug	Sep	Oct	Nov	Dec.	Total
Trackman - days	237	219	229	229	222	248	221	269	255	217	181	193	**2720**

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

Summary of Track Maintainer Performance for last one year (01.12.17 to 30.11.18) of sample Gang No. 25 is as under:-

Type of Activity	Total Trackman utilized
Yearly utilization for total activities (T+R+ S +M)	2720
Avg. Trackman utilized per day	09

As per existing work load of above one sample Gang, average Track Maintainers utilized for track maintenance per day per Gang is 2720 mandays / 294 working days **=09** including Mate and Keyman.

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.

Hence, average total Track Maintainers utilized per day= 09+02=11.

Average Trackman required for track maintenance / gang including LR @ 12.5 % =11+1=12.

The total gangs under SSE/P-Way BRH are 18. After applying the same for total section under SSE/P-Way/BRH, the total requirement of Trackman comes to 12x18=216.

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 BRH is 06 (Para-2.7.3). Hence total manpower required to deal 06 Level Crossing activities comes to 6 x 4 = **24**.

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 04 Trolleys [01 Motor Trolley and 03-Push Trolley] utilized under SSE/P-Way/BRH (Para-2.7.4).
Hence total manpower required to deal 04 Push Trolley activities comes to 04 x 5 = 20.

3.3.4 Requirement of Track maintainers for Store activities :-

There is one Store under SSE/P-Way/BRH. There are 1111 Store items (both Stock and Non-Stock) present in each 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 04+01 LR = **05**.

So, grand total requirement of Track maintainer under SSE/P-Way BRH comes to 216+24+20+5 =265

The sanctioned cadre of Track Maintainer category in SSE (P. Way)/BRH unit is 309.
Hence, the total reduction in sanctioned cadre of Trackman will be 309 –265 = 44.

Hence, it is recommended that 44 identified surplus vacant posts of Track Maintainer category from SSE/P-Way/BRH unit of Engineering Department should be surrendered.

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

The jurisdiction of SSE/P-Way unit Baikunthpur is between 951/4-1043/16, DTL/1014-967D/8, 1218/10-2KC/25 (Total ETKM: 285.637). The total section has 19 Gangs including 01 store gang.
Considering the work load of Supervisors, existing sanction of 06 Supervisory staff (04 SSE and 02 JE) is justified for SSE/P-Way unit Baikunthpur i.e. 01 SSE for overall in-charge of office and monitoring the performance of gangs, periodical inspection, preparation of proposals and estimates and 05 SSE/JE for assisting to incharge 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/BRH 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/BRH unit :-

Welder:- Welding activity is a most vital activity in P-Way unit. Work Study team is proposed 01 Welder to cover the works of 18 Gangs of the jurisdiction of SSE/P-Way unit Baikunthpur.

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

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

3.7 Requirement of staffs for Chowkidar activities :-

Chowkidar:- Chowkidar staff 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 for SSE(P-Way)/ Baikunthpur:-

Section /Works	Supv. (SSE/JE)	Min. Staff (OS/Clerk	Artisan Staff (EBS/ 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	05	00	00	00	00	00	00	00
Office/Establishment work	00	01	00	00	00	00	00	00
Store work	00	00	00	04	00	00	00	00
Sub- Total Requirement of staff	**06**	**01**	**00**	**04**	**00**	**00**	**00**	**00**
For Field work:								
Welding and Smithy activities	00	00	02	00	00	00	00	00
Level Crossing activities	00	00	00	00	18	00	00	00
Motor Trolley/Push Trolley activities	00	00	00	00	00	16	00	00
Track maintenance work	00	00	00	00	00	00	198	00
Chowkidar activity	00	00	00	00	00	00	00	02
Sub- Total Requirement of staff	**00**	**00**	**02**	**00**	**18**	**16**	**198**	**02**
Total Requirement	**06**	**01**	**02**	**04**	**18**	**16**	**198**	**02**
RG/LR	-	-	-	01	06	04	18	-
Grand Total	**06**	**01**	**02**	**05**	**24**	**20**	**216**	**02**

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

Supervisors	06
Ministerial staff	01
Artisan staff	02
Track Maintainer	265
Chowkidar	02
Total Requirement	**276**

3.10 Existing & Propsed 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	02	04	02	00
	3	OS	L-6	01	01	01	00
Artisan	4	Welder	L-5	01	00	01	00
	5	EBS	L-5	01	01	01	00
	6	Chowk1dar	L-5	02	01	02	00
Track Maintainer	7	Track Maintainer-I	L-5	20	22	20	00
	8	Track Maintainer-II	L-4	38	33	38	00
	9	T rack Maintainer-III	L-2	70	62	70	00
	10	Track Maintainer-IV	L-1	181	117	137	44
TOTAL				**320**	**244**	**276**	**44**

3.11 RECOMMENDATIONS & SUGGESTIONS:

RECOMMENDATIONS:

Assessment of requirement of Gang Strength in SSE/P-Way/BRH 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/BRH unit comes to 276 against sanction of 320 staff. Thus 44 identified surplus vacant posts of Track Maintainer should be surrendered from SSE/P-Way/BRH 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 44 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	44	37450	40072	1763168	**21158016**
			44				**211,58,016**

Hence, total recurring savings to the tune of ₹ 211,58,016 say **₹ 212 Lakhs** can be achieved by implementing the due to surrender of **44 vacant surplus** posts of Track Maintainer from SSE/P.WAY/Unit Baikunthpur from Engineering department of Bilaspur division and surrender Memorandum may be issued by Sr. DPO/BSP/SECR accordingly.

-x-x-x-x-