EASTERN RAILWAY

WORK STUDY REPORT
ON
REVIEW OF STAFF STRENGTH VIS-À-VIS WORKLOAD OF TRACKMAINTAINER IN PWAY UNITS UNDER ENGINEERING DEPARTMENT OVER SDAH DIVISION

(STUDY NO. WSER-3/20-21)

(Submitted on: 26.05.20)

Study conducted by: Sri S.K. Mandal, CPLI
Study guided by: Sri S. Chandra, AEO.

BY

GM'S EFFICIENCY CELL
EASTERN RAILWAY
KOLKATA

CONTENTS

ACKNOWLEDGEMENT

The study team is thankful to Dy. CE(G)/HQ/E.RLY, Sr. DEN (Co-Ord.)/SDAH and all other concerned staff at HQ & Division unit in engineering department for their heartiest co-operation and guidance in conducting the subject work study successfully.

TERMS OF REFERENCE

The subject work-study has been conducted based on the following terms of references –

i) Existing sanctioned strength and MOR of Trackman in SDAH division.

ii) Activities of Trackman.

iii) Activities of Track Machines.

iv) Outsourcing in track maintenance activities.

METHODOLOGY

In conducting the subject work study, the study team has applied the following methodology.

i) The study team recorded the existing system of working.

ii) A threadbare discussion was made with the supervisors and staff concerned.

iii) Implementations of mechanized maintenance of track.

iv) Outsourcing of Track maintenance.

SUMMARY OF RECOMMENDATION

It is recommended by the study team that 20% of the existing vacancy i.e. 20% of 580 posts = 116 posts of track maintainer should be surrendered from the existing sanctioned strength of 4528.

CHAPTER-I

1.0 **Introduction:**

1.1 The Indian Railways is among the world's largest rail networks. The Indian Railways route length network is spread over 1,23,236 km, with 13,452 passenger trains and 9,141 freight trains from 7,349 stations plying 23 million travellers and 3 million tonnes (MT) of freight daily. India's railway network is recognised as one of the largest railway systems in the world under single management.

Civil Engineering department or commonly known as Engineering department of the Railways specifically performs or holds responsibility of the following three different kinds of works.

i) To upkeep the railway track under the supervision of PWI or Sr. Section Engineer (P Way)

ii) To upkeep the building, sewage, water system etc under the supervision of IOW OR Sr. Section Engineer (Works).

iii) To upkeep the bridges under the supervision of BRI or Sr. Section Engineer (Bridge).

Track maintenance in the railway has undergone a sea change during the past 30 years due to continuous developments in various track components viz. sleepers, fastenings and long welded rails. The use of the 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. Being fit for modern heavy track structure and giving quality output far superior than what one can achieve manually, a complete mechanization of track maintenance has become inevitable. Similarly, at present track relaying is being done manually as well as by machines, but the quality and progress of machines has outplayed what we achieve manually.

1.2 With the introduction of heavy concrete sleeper tracks on Indian Railways, the use of Track machines has become inevitable. Numbers of gang men are reducing day by days and numbers of track machines are increasing progressively. Once upon a time the concept of track maintenance without gang men was a dream only. Now a day's gang men are deployed for any other job other than actual track maintenance. Time is going to come when Indian Railway Track will be maintained by Track machines only and other engineering staff will be there to help these machines. Recent development in this regard indicates such happening in coming next few years only.

1.3 Today, Indian Railways have a large fleet of different types of new generation track machines. However due to growing traffic density, axle loads and speeds on the Indian Railways, the deployment of further new generation high performance sophisticated track machines is to be thought of on Indian Railway.
Modern railway track structure on Indian Railway matches with the world-class railway track structure with PSC sleepers, 60 Kg 90 UTS rails, fan shaped turnouts, LWR/CWR, elastic fastenings etc. The sleeper density varies from 1660 to 1310 sleepers per kilometer. With the Uni-gauge policy of Indian Railway the entire MG/NG track is being converted in BG at a very fast pace.

1.4 Indian Railway is facing tremendous financial crunch after implementation of 7th Pay Commission. Operating ratio is gradually increasing. Though Indian Railway is not a business organization but to survive, it is always essential to make the organization in profit i.e. operating ratio should be less than 100. The "Operating Ratios" from 2016-17 to 2019-20 shown in the corporate plan booklet published by the Eastern Railway are given below –

Year	Operating Ratio
2016-2017	165.25
2017-2018	181.15
2018-2019	185.98
2019-2020	159.65 (Proposed)

1.5 In view of the above, Rly Board issued nos. of circulars, orders, etc to minimize expenses and increase earnings to Zonal Railways to achieve better Operating Ratio. The Zonal Railways also implement various measures for financial discipline.
At this juncture, the role of Railway Efficiency & Research Directorate is also very important in connection with the productivity without hampering normal progress and activity by employing technique of 'Rationalizing/ Rightsizing of Man-Power' and eliminating diminishing categories/redundant activities. The Railway has also invested huge amount in capital expenditure to improve its infrastructure by adopting new technology time to time.

1.6 **Scope of the study:**

As the main objective of Indian Railway is to improve the operating Ratio of railway, the GM's Efficiency Cell always pays attention to curtail manpower from different wings of different departments that are found excess in all respect based on the justification drawn by the study team during period of physical observation and as a result, the productivity is increased by decreasing the inputs i.e. by surrendering the excess manpower. The prime aim of conducting the subject work study is to assess **the revised requirement of Trackman in Engineering Department in SDAH division consequent upon the changed scenario in maintenance activities by deploying more and more Track machines and outsourcing of different track maintenance activities.**

CHAPTER-II

2.0 **EXISTING SCENARIO & CRITICAL ANALYSIS:**

2.1 All P. Way units in SDAH division are under the overall control of Sr.DEN/Co-Ord/SDAH and under direct supervision of concerned DEN & AEN. Each P. Way unit is functioning directly under supervision of SSE/P. Way in regard to maintenance of Railway track after consideration of safety rules.

Track or Permanent Way is the single costliest asset on Indian Railways. It basically consists of rails, sleepers, fittings and fastening ballast and formation.

2.2 An annual programme for regular track maintenance works to be done by the existing gangs is drawn out. This annual programme is divided in three periods such as post monsoon attention for period of six months after the end of monsoon, Pre-monsoon attention for period of two months prior to break of monsoon and attention during monsoon for a period of four months.
The twelve months cycle of maintenance works are shown as under.

1. Trough packing
2. Systematic overhauling
3. Picking up of slacks

Through packing consists of following works being done systematically in the order given below:

- Opening of road
- Examination of rails, sleepers and fastenings.
- Squaring of sleepers
- Alignment of track
- Gauging of track
- Packing of sleepers
- Repacking of joint sleepers
- Boxing ballast section and dressing etc.

Systematic overhauling of track should normally commence after completion of one cycle of through packing. It consists of the following operations in sequence:

- Shallow screening and making up of ballast section
- Replacement of damaged or broken fittings
- All items including in through packing
- Making up the cases
- Adjustment of gap after joint gap survey and also adjustment of creep.

Picking up slacks- Slacks are normally those particular points in the track where running is bad due to poor maintenance.

In addition to the above manual maintenance works, the gangs attend the emergency work as well as accidental cases as and when required.

2.3 PRESENT SYSTEM OF MECHANIZED TRACK MAINTENANCE:

As per the instructions laid down in Para 228 of IRPWM three-tier system of track maintenance shall be adopted on sections nominated for mechanized maintenance. This mechanized system of track maintenance shall consist of the following 3 tiers of maintenance:

(i) On track machines unit (OMU)
TTM, BCM, FRM, DGS, BRM, etc. for planned on track maintenance.

(ii) Mobile maintenance units (MMU)

MMU-I: Rail cum road vehicle based, for spot tamping, welding, de-stressing, casual renewal etc.

MMU-II: Road vehicle based, for reconditioning of turnouts, repair of small track machines.

(iii) Sectional gangs (SG) Regular track maintenance activities such as patrolling, pre & post tamping attention, attention to loops & bridge approaches, greasing of ERC & fish plated joints, minor cess repair and assistance to OMU & MMU

The mechanized maintenance of track implies the deployment of track machines for day to day track maintenance works, normally being done by manual labor. The system has also enabled the P. Way men to maintain the modern track more economically and effectively to cater for higher speeds and heavier axle loads. There is no doubt that for modern track structure having LWR and concrete sleepers, the mechanical maintenance of track are considered a technical necessary. Now-a-days, the major track maintenance works are carried out by contractual agencies and track machines. At present the different types of track machines are working over Eastern Railway. The type of machine vis-à-vis output/effective hours is detailed as under:

Type of Machine	**Output/Effective hour**
CSM	1.2 KM
TXP	1.6 KM
DUOMATIC	0.78 KM
UNIMAT	1T/O per 1 Hr block
MPT	1T/O per 1 Hr block
BCM	0.2 km
FRM	0.4 km
PQRS	0.2 KM
T-28	1 T/O per 3 Hrs block
BRM	1.5-3 km as per site condition
DGS	0.45 KM

2.4 **TRACK MAINTENANCE ACTIVITIES:**

Track maintenance means the total process of maintenance and renewal required to ensure that the track meets safety and quality standards at minimum cost. For keeping any asset in the good fetal it is utmost necessary to monitor the health of the asset and to maintain it to the required level**.**
Activities involved in the track maintenance are as follows:

1. Tamping of track for correction of track geometry;
   - Tamping of plain track.
   - Tamping of turnouts.

2. Need based spot attention;

   - Attention to bad spot generally on approaches of bridges, level crossing and at turnouts.
   - Packing of glued joints, welded joints.
   - Attention of switch expansion joints (SEJ).
   - Minor rectification of alignment.

   - Casual renewal of track components viz. rail, sleeper, fittings etc.
   - Systematic over-hauling.
   - Ballast profiling.
   - Emergency repairs viz. rectification of rail /weld fractures etc.
   - Distressing of LWR tracks.
   - Transportations, loading and unloading of P. Way material.
   - Ultrasonic testing of rails.
   - Lubrication of elastic rail clips.
   - Maintenance of level crossings;
   - Overhauling of level crossing
   - Improving visibility by removing trees, bushes etc.
   - Maintenance of road surface.

   - Patrolling
   - Monsoon patrolling.
   - Hot weather patrolling.
   - Cold weather patrolling
   - Security patrolling
   - Key man daily patrolling

   - Manning caution and speed restriction boards.
   - Tree cutting for improved visibility.
   - Lubrication of rails and fish plated joints
   - Resurfacing of switches and crossings
   - Pre monsoon attention to drains /waterways
   - Pulling back of creep and gap adjustment
   - Attention to level crossings
   - Periodic deep screening
   - Rail welding

- Rail cutting /drilling and chamfering
- Minor cess repairs
- Rail grinding

2.5 P. Way units of Engg. Department perform the above activities to maintain the track structure in good condition. The study team has conducted the subject work study on the activities performed by the Trackman who are the prime for the above maintenance activities. Due to introduction of modern track machines, the activities of the Trackman categories have gradually been reduced.

2.5.1 Unit wise sanctioned and men on roll position of the Track maintainer as on 01.05.2020 is tabulated below-

Unit wise Sanctioned strength, Men on Roll & Vacancy Position of Track maintainers

Unit	Track Maintainer-I			Track Maintainer-II			Track Maintainer-III			Track Maintainer-IV			Total		
	S/S	MOR	Vacancy	S/S	MOR	Vacancy	S/S	MOR	Vacancy	S/S	MOR	Vacancy	S/S	MOR	Vacancy
SDAH	30	30	0	60	59	1	60	57	3	151	108	43	301	254	47
CP	23	13	10	46	39	7	46	60	-14	117	82	35	232	194	38
BP	34	21	13	67	60	7	67	78	-11	168	111	57	336	270	66
TD/BLH	3	3	0	6	5	1	6	7	-1	13	11	2	28	26	2
BRP	55	52	3	109	102	7	109	108	1	274	248	26	547	510	37
SPR	29	25	4	59	62	-3	59	58	1	146	91	55	293	236	57
BGA	25	22	3	49	49	0	49	49	0	122	84	38	245	204	41
RHA	38	32	6	75	67	8	75	83	-8	187	163	24	375	345	30
KNJ	35	31	4	71	48	23	71	93	-22	177	143	34	354	315	39
BQG	54	35	19	109	60	49	109	139	-30	272	230	42	544	464	80
NH	36	29	7	71	66	5	73	66	7	193	143	50	373	304	69
KPA	35	30	5	71	69	2	71	73	-2	176	163	13	353	335	18
BT	48	25	23	97	67	30	97	136	-39	234	218	16	476	446	30
BNJ	44	33	11	87	98	-11	87	73	14	219	207	12	437	411	26
TOTAL	**489**	**381**	**108**	**977**	**851**	**126**	**979**	**1080**	**-101**	**2449**	**2002**	**447**	**4894**	**4314**	**580**

2.6 The work load of P-way units in terms of ETKM is tabulated below-

Unit wise break up of Track KM & ETKM in SDAH division						
Unit	Main Line	Running Loop+P&C	Marshalling Yard+P&C	Other Siding+ P&C	Total Track KM	ETKM
SDAH	37.990	20.545	52.510	1.130	112.175	149.24
BP	81.180	12.924	11.226	6.920	112.250	172.97
CP	16.530	5.980	53.640	0.600	76.750	73.05
TD-BLH	0	0	0	6.865	6.865	2.75
NH	64.921	7.125	55.880	16.050	143.976	182.02
KPA	68.431	11.672	58.470	17.640	156.213	185.61
RHA	138.070	12.153	8.970	5.008	164.201	239.99
KNJ	161.480	12.832	0	5.105	179.417	255.71
BQG	173.900	27.501	2.621	0	204.022	320.64
BT	115.480	20.273	19.750	0	155.503	204.85
BNJ	145.149	14.805	4.218	1.280	165.452	227.21
BGA	74.859	20.410	42.112	6.521	143.902	179.65
SPR	95.560	6.015	8.010	4.460	114.045	159.25
BRP	192.687	22.683	7.754	0	223.124	277.65
TOTAL	**1366.237**	**194.918**	**325.161**	**71.579**	**1957.895**	**2630.59**

2.7 The conventional track has yielded its place to new modern track of concrete sleepers with elastic fastenings which does not tolerate manual maintenance. Every year about 3000 km of our track are getting replaced by concrete sleepers track. There is high strength and reliability on the performance of these tracks. By and large these tracks should not require frequent attention provided they are machine packed properly and the ballast and formation are sound. The high performance of modern track can be reaped fully only when management of machine maintenance is sound. The thrust of introduction of mechanized track maintenance in the Indian Railways was to improve the quality of track maintenance and to cut down track maintenance time.

2.7.1 The effect of modernization of track has increased volume of traffic, higher speeds and heavier axle loads demanding heavy track structure which requires Machine maintenance. During physical observation, the study team observed that major track maintenance work is performed by Track Machines and for this purpose a separate TMO (Track Machine Organization) wing has been introduced in Railways. The departmental gang basically assists pre & post Machine operation and minor maintenance work mentioned in the previous para.

The type of machines vis-à-vis performance/progress in 2019-2020 in SDAH division is as under:

Details of Track Machine working in SDAH Division and their performance in 2019-20		
Sl. No.	Name of Track Machine & No.	Progress
1	BCM (331)	65.12 TKM
2	BCM (370)	16.13 TKM
3	BRM (PBR-06)	812.5 TKM
4	CSM (920)	225.7 TKM
5	DTS (338)	428.1 TKM
6	FRM (1881)	26.51 TKM
7	FRM (1908-56411)	26.83 TKM
8	UNIMAT (8262)	540 Nos Turn out & 37.08 TKM
9	UTV (200702029)	6750 Nos of Loads
10	WST (8050)	367.60 TKM
11	WST (8143)	565.2 TKM

2.7.2 It is discussed in previous chapter that in past with older track structure manual maintenance was relevant, however with the introduction of concrete sleeper and LWR/CWR there is no alternative to maintain the track with Track Machines. In Eastern Railway, presently main lines/passenger lines are maintained by machines and yard lines, loop lines are maintained manually. Moreover, it is also noticed that, major maintenance works under P. Way units have been given to private agency. Now the contractual work has been processed through special work and yearly contract basis i.e. Zonal work. Besides of the above, some of the major maintenance works are executed by the department track machines. Existing gang are deployed to cater the regular maintenance work such as lubrication of rails, greasing of ERTC, patrolling works and slack packing etc etc. as per routine programme made by sectional PWI. The following item of works is carried out by the department gang.

- Through fittings renewal (TFR)
- Ballasting
- Formation treatment
- Through bridge treatment renewal (TBTR)
- Strengthening of major bridge approach
- Painting of rail/painting of weld
- Toc load measurement
- Distressing
- Renewal of points and crossing
- Renewal of diamond crossing
- Through weld renewal
- Deep screening
- Through rail renewal (primary/secondary)
- Through sleeper renewal (primary/secondary)

2.8 **Utilization of Trackman.**

At present all yard lines and loop lines are maintained by departmental gang. Besides this all miscellaneous work as described in para 2.7.2 are carried out by the Track man. It is prescribed that a Track Machine should be worked in every alternate year in a particular section. But, in SDAH & HWH division a dense population is residing nearby railway line and their through movement over track makes the track parameter disturbed. Hence manual maintenance is essentially required in between machine operation in suburban section. After introduction of more and more Track machines and heavier track structure, the railway Board has guided the zonal railway to ascertain the requirement of trackman on the basis of Rational Formulae which have been evolved by the MCNTM committee rather than Special Committee Formula which is in vogue.

2.8.1 **List of items of works to be executed by Permanent Way Gangs.**

- Overhauling of 1/3 of gang beat which includes through packing of this length.
- Systematic through packing to cover the full gang beat in addition to item above.
- Picking up of slacks, generally one round before monsoons and one round during monsoons.
- Lubrication of rail joints.
- Minor attention to cess.
- Cleaning of catch water drains, side drains and water ways of bridges.
- Casual renewals of rails and sleepers.

- Adjustment of minor creep.
- Opening, examining and overhauling of level crossings.
- Special attention to points and crossings.
- Miscellaneous petty items i.e. renewal of bridge timbers, clearing weeds from track, cleaning station yards, etc.

2.8.2 Items of works beyond the scope of permanent way gangs. These have to be done through contractual agency or by engaging casual labour.

- Loading and unloading of materials.
- Lorrying out of materials other than for casual renewal of rails and sleepers.
- Monsoon patrolling.
- Security or special patrolling.
- Repairs to bridges.
- Cleaning of goods sheds/platform shelters.
- Stock verifications.
- Attention to ash pits, water columns, C.C. aprons, etc.
- Painting of rails in station yards and in corrosive areas such as East Coast lines.
- Deep screening of ballast.
- Resurfacing of points and crossings.
- Watching of materials.
- Painting of bridges.
- Heavy repairs to track including lifting.
- Complete renewal of points and crossings.

2.9 Presently 13 PWI units over Sealdah Division are working to make the track in safe running of traffic. **However, the study team has critically analyzed the work load catered by the track maintainer of every PWI units to assess the need-based requirement of track maintainer after considering percentage of work load outsourced and also percentage of workload carried out by the machines.**

2.10 Manual maintenance of Track has already been discussed in the physical chapter. But this type of manual maintenance has been changed due to modernization of track. This consists of following four heads.

2.10.1 Heavier Track Structure:

- Use of wear resistant 90 UTS rails and heavier rail sections i.e. 50 KG/60 KG to increase the service of life.
- Use of PSC sleepers, elastic fastenings and rubber pads and increased the ballast cushion and sleeper density resulting minimum maintenance.
- Use of LWR/CWR and SEJs to provide smooth and fast rail travel.
- Use of curved switches of 1 in 8½ & 1 in 12 on Fan shape3d layout for higher speed potentials.

2.10.2 Modern track maintenance methods.

(i) Improved in convention maintenance.
(ii) Directed Track maintenance.
(iii) Measured shovel packing.
(iv) Mechanical maintenance.

2.10.3 Modern Methods of Track Renewal and Track Laying.

(i) Use of PQRS to get increased output of track renewals with better standards of Track parameters.

2.10.4 Modern Methods of Track Inspection and Track monitoring.

(i) Portable accelero meter to record horizontal and vertical accelerations.
(ii) Ampler car for recording track parameters.
(iii) Track recorded –cum-research car including use of computers.
(iv) Ultrasonic testing of rails and use of SPURT car for detection of rail flaws.

The effect of modernization of track has increased volume of traffic, higher speeds and heavier axle loads demand heavy track structure which can provide better service and require less maintenance.

2.10.5 In view of the above, others manual maintenance work catered annually by the sectional gang are stated herein under.

- Cleaning of longitudinal and cross drains.
- Deseeding and cleaning of jungle in between or outside the Main/Loop line track.
- Gang engaged during hot and cold weather patrolling.
- Lubrication of rail joints.
- Greasing of ERC.
- Attention to bridge approach/Level Crossing/Pts. & Xing.
- Packing of glued joints and switch expansion joints (SEJ).
- Repairing of case after rainy season.
- Scattered renewal of rails and sleepers as and when required.
- Painting of rails/weld collars.
- Pre/Post tamping operation made by existing gang.
- Gang also engaged for design mode operation.
- Measurement of rail temperature during maximum hot/cold period.

2.10.6 Existing gang also engaged in emergency work as well as store work in association with contractual agency are as under.

- Loading/Unloading of materials (in Rail/Sleepers etc.) in the main line.
- Placement of Lay out such as 1 in 8½ or 1 in 12 in the M/Line, Loop line or Yard line.
- Conversion of new rail i.e. 52 KG from old rails i.e. LWR from SWR.
- To take action as well as repair the track and restore the traffic at the time of accidents or derailments.
- Mechanical maintenance of track by the help of different track machines under traffic block.

- To attend the maintenance failure at night time (i.e. Rail fracture, SEJ fracture or Points & Crossings failure etc. etc.)

- Patrolling of line during heavy rains, storms.

- Procurement of p-way materials from divisional store i.e. TD/KAN.

- Unloading of p-way materials including small fittings at sectional store.
- Stacking of p-materials in the store.

- Involvement of trackman at the time of disposal of scrap.

2.11 It is observed that various small track machines are utilized for maintenance of Track by the departmental gang. These small track machines are more effective in precession work and are useful to withstand the present need of the track. The list of small track machines used by the departmental gang in SDAH division is listed below.

Availability of small track machines in SDAH division

Sl. No.	Name of small track machines.	Availability of machines (Nos)	Machines in working condition. (Nos)
1	Abrasive rail cutter	141	105
2	rail cutting wheel Abrasive Disc.	702	594
3	Rail drilling machine	46	38
4	Heavy duty Hydraulic Extractor for jammed ERC	2	2
5	Hydraulic rail jam crow heavy duty	13	3
6	Weld Trimmer power pack version	5	5
7	Rail profile weld grinder	5	5
8	Toe load measuring device (Mech.)	29	20
9	Electronic Toe load measuring device	12	4
10	Hydraulic jack 15 tone	217	208
11	Hydraulic jack 8 tone	444	436
12	Hydraulic sleeper spacer	6	2
13	Portable DC welding Generator	12	5
14	light wt. rail cum road trolly	14	9
15	Self-propelled light weight trolly	7	4
16	Hydraulic rail tensor	5	2
17	Hacksaw blade for cutting rail	1111	975
18	Chamfering kit (manual)	194	190
19	Chamfering kit (battery operated)	134	82
20	Magnetic base type rail thermometer	348	239
21	Cordless train speed logger	12	10

22	Gang/Worksite remote control hooter	76	66
23	Hydraulic track lifting cum slewing device 15 t	1	0
24	GPS (Geo Positioning System) based foot plate inspection	16	11
25	Route data preparation system	2	2
26	GPS based Oscillation Monitoring system (GPS-OMS)	3	3
27	Light wt. push trolly	12	10
28	ERC inserter & extractor	2	0
29	Portable track geometry measuring system	3	3
30	Portable track geometry measuring system for points & crossings	3	3

2.12 It is also noticed that several contractual works in track maintenance work and track renewal works are going on in SDAH division. Contractual works can be broadly classified in 03 categories viz. (1) Capital work (2) Special work & (3) Zonal work. Zonal works & Special works are executed in connection with the maintenance of existing Track through revenue head. All new types of project in construction of newly linked track from one end to other end, is generally made by construction wing/ Sealdah under CAO/NKG. This type of project is known as capital work and it is processed through works programme, special work and zonal works are executed in connection with the maintenance of existing track through revenue head. A list of different contractual works which are going on in SDAH division is annexed in ANNEXURE-A.

The work contract for the year does not reveal that the work is completed within the same year. However, the study team has formulating the data of contractual work in year wise to ascertain the volume of work outsourced in the specific year. From the above ANNEXURE-A, it can be assumed that huge volume of track maintenance work has been outsourced. During discussion with concerned officials regarding the outsourcing of maintenance work, they have given clear view that short fall percentage of trackman category is required to be outsourced to cope up with the vacuum of required work force for maintenance of specified track parameter. The above list of contractual work reflects the truth that divisions have awarded the maximum contractual work where the work load is more as well as its vacancy position is higher.

2.13 A huge vacancy of Track man in SDAH divisions can be seen in para 2.5.1. It reveals that without the utilization of this trackman, divisions are maintaining the track parameter effectively. This is happening only due to engagement of contractual agency and Track machines. The work load of track man is outsourced in different volume in different divisions. Depending on the short fall of trackman, divisions are engaging contractual agency in various maintenance works as per requirement of different P. Way sections.

2.13.1 From the above facts and figures the study team thinks that the parameter of track structure of the division is well maintained even though a huge vacancy in track man

category. This is happened due to the engagement of out sourcing agencies in various track maintenance activities. On the other hand, the maintenance of track by track machines has improved the maintenance quality of track. It is assessed by the study team that approx. 20% of workload is offloaded due to engagement of track machines and outsourcing of day to day maintenance activities. The engagement of trackman on pre & post functioning of track machine is unavoidable. **Thus, t**he **study team opines that 20% of the existing vacancy of trackman (para reference 2.5.1) can be surrendered due to outsourcing of huge track maintenance activities.** Moreover, Track Machines are the future bread and butter of the Indian Railway, as the heavy track structure cannot be maintained without Track Machines. There is no other alternative to switch over to mechanized track maintenance considering the heavy track structure and depleted Track man strength which warrants the use of Track Machines.

2.13.2 **RECOMMENDATION:**

It is recommended by the study team that 20% of the existing vacancy i.e. 20% of 580 posts = 116 posts of track maintainer should be surrendered from the existing sanctioned strength of 4528.

CHAPTER-III

3.0 **FINANCIAL APPRAISAL:**

3.1 According to recommendation made in para-2.13.2 the financial savings thus achieved on account of surrendering of 116 posts of Trackman is tabulated below. For easier calculation, the bottom most GP on lower Grade pay is considered.

LEVEL	GP	PAY	MEAN PAY	D.A	NO OF POSTS	MONEY VALUE	
				17%		MONTHLY	ANNUAL
1	1800	18000-56900	37450	6367	116	Rs.5082772 /-	Rs.60993264 /-

Thus, consequent upon implementation of recommendation, **the annual savings will be Rs 60993264/- ≈ Rs.6.1 Cores.**