

WORK STUDY TO REVIEW THE STAFF
STRENGTH AT SSE/P.WAY/MVLK
TIRUVANANDAPURAM / DIVISION

No : G.275/WSSR – 751718/2017 - 18

SOUTHERN RAILWAY

PLANNING BRANCH

G.275/WSSR- 751718/2017-18

WORK STUDY TO REVIEW THE
STAFF STRENGTH AT SSE/P.WAY/TVC
TIRUVANANDAPURAM DIVISION

STUDIED BY

WORK STUDY TEAM
OF
PLANNING BRANCH

MAY 2018



(i)

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ACKNOWLEDGEMENT

The work study team sincerely acknowledges the valuable guidance and co-operation extended by ADEN/QLN & SSE/P.WAY/MVLK in completing the study in time.

(ii)

TERMS OF REFERENCE

Work study to review the staff strength at SSE/P.WAY/MVLK Section of TVC Division.

(iii)

METHODOLOGY

The work study team has applied the following techniques in conducting the work study.

- (1) Collection and compilation of Data.
- (2) Observation of present system of working.
- (3) Interaction with ADEN/QLN & SSE/P.WAY/MVLK
- (4) Analyzed the data collected and assessed the manpower requirement based on the TRMS formula of CMCNTM and ground realities.

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(iv)

SUMMARY OF RECOMMENDATIONS :

Recommendations No.1

02 posts (vacant post) of SSE (GP Rs.4600/-) found surplus and the same may be surrender and credited to the vacancy bank.

Recommendation No.2

04 posts (vacant post) of Tech Blacksmith – I(GP Rs.2800/-) , Tech Carpenter(GP Rs. 1900/-), Tech Brick layer(GP Rs. 1900) & Lascar(GP Rs.1800/-) found surplus and the same may be surrender and credited to the vacancy bank.

Total 06 posts

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CHAPTER - I

1.0 INTRODUCTION

1.1 THIRUVANANTHAPURAM DIVISION

Thiruvananthapuram Division was formed 2nd October of 1979 carving out from Madurai and Olavakkode (present Palakkad) Divisions. It is passenger oriented Division with second highest passenger earnings in Southern Railway.

1.2 The SSE/P.WAY/MVLK is a field unit of Civil Engineering department of Southern Railway to look after the maintenance of track and other auxiliary works.

1.3 Permanent Way is the major activity of the Engineering branch which is entrusted with the periodical maintenance of tracks, bridges, LC gates and other assets. A well maintained track is very essential for speedy, safety and efficient operation of trains. Continuous monitoring and Inspection is warranted daily in ensuring a reliable permanent way.

1.4 The modern technologies led the track maintenance techniques from the era of pick axe & shovel to the era of modern mechanized Track maintenance. The interconnection with S&T and TRD branches is a new development in the team work. The equipments for testing the track have become sophisticated not only in detecting the failures but also in preventive check. It will be worth mentioning the use of Ultrasonic Flaw Detector (USFD) equipment which detects even the minute air crack and blowholes in the rail which might develop into a rail crack leading to derailments.

1.5 The magnitude of out source in maintenance activities paved way for a meticulous calculation to arrive at the manpower requirement in commensurate with the major developments taken place in the field of track maintenance.

1.6 The manpower requirements of SSE/P.WAY/MVLK is arrived based on the TRMS formula of MCNTM, approved by Railway Board vide letter No. 95/CE-

1/CWS/2/Vol.II/Pt.II dt.06.03.2006 which recommends to incorporate the effects of modernization once in 5 years such as introduction of more number of shoulder ballast cleaners, improving rail-weld technology, better design of SEJs, maintenance free level crossing track structure.

- 1.7 Substantial investments on Track machines over the years to improve the quality of Track structure and curtailment in the need of its annual maintenance led to the reduction in the number of staff deployed on the track maintenance activities.



CHAPTER – II

2.0 PRESENT SCENARIO

2.1 Organization:

The Engineering department of TVC division is under the control of Sr.DEN/Co-ord/TVC. The Permanent Way section of MVLK which is managed by SSE is under the direct & general control of ADEN/QLN & DEN/North/TVC respectively.

2.2 The brief outline of regular activities at P.WAY /MVLK is as under

- Picking of slacks
- Through packing
- Lubrication of Rail joints
- Clearing of water drains, side drains
- Waterways of bridges
- Casual renewal of Rails
- Casual renewal of Sleepers
- Opening & examining and overhauling of LC gates
- Attention to Points & Crossings

Activities other than regular duties

- Loading and unloading of materials
- Monsoon patrol
- Repair of bridges
- Stock verification
- Repair of ash pits, water columns, CC aprons etc
- Resurfacing of Points & crossings
- Complete realignment of curves
- Deep screening
- Painting of bridges
- Watching of materials
- Complete renewal of Points & crossing

2.3 The actual staff strength of SSE/P.WAY/MVLK as on JAN 2018 is 252 including SSE, JEs, Ministerial staff & Track men's as against the sanctioned strength of 266.

2.4 The entire section is maintained by 08 gangs as detailed below:

Gang No.	HQ	Jurisdiction		Strength (TM+TW)
		From	To	
1	CNGR UP & DN	89/850	96/325	6
2	CYN UP & DN	96/325	102/910 102/860	11
3	MVLK UP & DN	102/860	109/260	9
4	KYJ UP & DN	109/260 109/260 98/100 98/100	115/650 115/650 99/430 99/430	14
5	OCR UP & DN	115/650	122/260	8
6	KPY UP & DN	122/260	128/650	18
7	KPY(2) UP & DN	128/650	134/910	14
8	STKT UP & DN	134/910	141/250	10
			Total	90

2.5 The stations coming under this Jurisdiction of PWAY/MVLK Section is detailed below :

- Sastankotta(STKT)
- Karunagapalli(KPY)
- Ochira(OCR)

- Kayankulam(KYJ)
- Mavelikara(MVLK)
- Chengannur(CNGR)

2.6 The present Sanction and actual staff of SSE/P.WAY/MVLK including supervisors ministerial staff & track men categories are as under:-

Sl. No.	Designation	SAN	ACT	VAC	EXC
1.	Sr.Section Engineer Sr.Section Engineer/Special works	4 0	2 2	2 0	-- 2
2	Junior Engineer	2	1	1	--
3	OS/Works	1	0	1	--
4	OS/PB	1	1	0	--
5	Tech. Blacksmith I	1	0	1	--
6	Tech. Carpenter	1	0	1	--
7	Tech. Brick layer	1	0	1	--
8	Tech. Welder	1	1	0	--
9	Tech. Painter III	1	1	0	--
10	Blacksmith	1	1	0	--
11	Lascar	1	0	1	--
12	Blacksmith Khalasi	0	1	0	1
13	STM Helper	2	2	0	--
14	SNP	0	1	0	1
15	Track maintainer I	15	14	1	--
16	Track maintainer II	30	31	0	1
17	Track maintainer III	55	50	5	--
18	Track maintainer IV	149	141	8	--
19	Trainee Trackman	0	1	0	1
20	Substitute Trackmen	0	1	0	1
24	Store watchman	0	1	0	1
	Total	266	252	22	8

2.7 **Level crossing gates:**

There are 44 manned level crossing gates under the jurisdiction of SSE/P.WAY/MVLK, out of which 34 are Engineering LC gates and 10 are Operating gates. Roster followed by Engineering LC's manned gates is here under :

09 LC gates - 08 hrs

25 LC gates - 10 hrs.

2.8 **List of Rail/Weld failures during the last three years.**

Sl no	Date	Location	UP/DN	Weld/Rail failures
1	23/01/15	98/486	Up	Weld
2	13/03/15	121/268	Up	Rail
3	29/11/15	129/0 -1	Up	Rail
4	17/01/16	140/7-8	Up	Rail
5	02/02/16	138/5-6	Up	Rail
6	03/11/16	134/7-8	Up	Rail
7	03/01/17	121/973	Dn	Weld
8	11/03/17	118/388	Up	Weld
9	24/06/17	98/640	Up	Glued joint
10	25/06/17	138/5-4	Up	Rail
11	30/06/17	137/7-8	Dn	Rail
12	25/07/17	114/0-100	Up	Rail
13	05/08/17	129/8-9	Dn	Weld
14	09/10/17	137/463	Dn	Weld
15	01/12/17	121/192	Up	Weld
16	17/12/17	138/043	Dn	Weld
17	04/01/18	107/684.7	Up	Weld
18	19/01/18	92/804	Up	Rail

2.9 **Other particulars of the section**

Sl no	Details	Particulars
1	No of Gang Units	08
2	Jurisdiction	89/850 – 141/250(QLN – KTYM) & 98/100 – 99/430(ALLP – KYJ) Totally 105 kms both Up & Dn line
3	Line	Double line section "E" Route
4	Stations between jurisdiction	STKT, KPY, OCR, KYJ, MVLK, CNGR
5	Welding techniques	Alumino Thermit
6	Level crossings	44(Eng – 34, Tfc – 10)
7	Duty hours of Track man & Gate keepers	GKs – 10 hrs at 25 LCs, GKs – 8 hrs at 9
8	Whether Thermal censoring thermo meter provided	Yes
9	SNP	01 Post in T. Maintainer IV
10	Maximum speed of the trains	90 KMPH
11	Activities outsourced/proposed	NIL
12	Total no's of trains	36 pair CNGR – TVC daily 19 pair via ALLP – TVC
13	Speed restrictions	NIL
14	Total Route KMS	105 KMS

2.10 There are 43 major bridges in addition to 240 minor bridges available in this section and more than 3 degree curves is 13 in both UP & DN directions.

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CHAPTER III

3.0 CRITICAL ANALYSIS

- 3.1 Previously, Permanent Way Gang strength was calculated based on special committee report of 1979. As many changes in track maintenance practices, methodologies, advanced techniques and use of machineries inducted in P.Way maintenance during late 1990s led to study the requirement of work load Vs man power requirement. A committee had been formed to suggest a Rational formula for the same. The committee on Manpower and Cost Norms for Track Maintenance (MCNTM) had submitted its report in 2001 and the same was approved by Railway Board in the year 2006.

The Rational Formulae have been evolved by the MCNTM Committee by collecting the field data over 14 Non Suburban sections and 3 High Density Suburban sections through direct interaction with field Engineers on seven zonal railways and after carrying out critical analysis of the data by adoption of a **zero based approach**.

3.2 EXTRACT OF MCNTM REPORT

- ❖ The committee recommends that a review should be made once in 5 years so as to evolve reduction factors to be applied for yardstick of manpower requirement of SWR/LWR tracks.
- ❖ The committee has evolved the Rational Formulae based on average productivity of individual gangmen. Gang strength should be adjusted by an annual review carried out as on 1st April by continuously adopting the input data and by utilizing the software `MANPOWER`. Indian Railway Institute of Civil Engineering (IRICEN), Pune is the custodian of this software, making amendments from time to time and incorporating the review of this Formulae once in five years.
- ❖ As referred in Para 0.25 of MCNTM Report, the Performance unit of ETKM (Equated Track kilometre) hitherto accepted, will be replaced as

EMKM (Equated Manpower Kilometre). EMKM is defined as numerically equal to 0.6 times of the number of gang men required for the section for all the activities in TRMS as per rational formula.

- ❖ In future, ECKM (Equated Cost Kilometre) can be evolved based on the Rational Formulae as Performance unit for track maintenance cost.
- ❖ Whenever Annual review of gang strength for Activities `T` and `R` is undertaken, it is necessary to reassess the manpower requirement for activities `M` and `S` due to the developments effected from time to time in the fields of `M` & `S` such as:
 - Number of monsoon patrol beats adjusted as per changed train service.
 - Vulnerable locations eliminated due to works carried out.
 - Level crossings replaced by ROB & RUB.
 - No. of stores depots reduced.
 - Jurisdiction of gang lengths reorganized.

The list is only indicative and not exhaustive.

3.3 **External factors**

Certain external factors have also got a bearing on the man power requirements especially under R, M & S activities.

- a. The improvements in road transport and vehicles
- b. The improved availability of water, residence, etc.
- c. The substitution of manual checking / testing / inspection due to the use of machines like USFD, WILD, etc.
- d. The longevity ensured due to mechanized laying of track and construction / Inspection methods
- e. The supervisory element of work in the contracts

Keeping in view of the objectives of MCNTM report which was evolved by studying the conditions existed during 1996-2000, when the concept of

mechanization was in the initial stage, the Work study has made an attempt to commensurate with the technological improvements, as the MCNTM Report itself is issued way back in 2000, though implemented in 2006.

3.4 **Utilization of Track machines in MVLK section**

The following are the types of track machines worked in this section during the last two years.

- BCM – Ballast Cleaning Machines
- CSM – Continuous Action Tamper
- DTS – Dynamic Track Stabilizer
- UNIMAT – Points and crossings tamping machine
- UTV – Utility Track Vehicle
- BRM – Ballast Regulating Machine

3.5 As per the new rational formula, the track maintenances are categorized as under:

- i) Primary Maintenance
- ii) Auxiliary Maintenance

i) Primary Maintenance Activities

These activities are directly related to P.WAY maintenance, further classified as:

a) Activities "T" (affected by traffic density)

These are arrived at achieving safety and acceptable running quality, commensurate with the loads and speeds carried.

b) 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 operating and for achieving reliability and long life of assets.

ii) **Auxillary Maintenance Activities**

These are related to up keep of P.WAY section as a whole, needs man power based on localized problems, special features and geographical nature of P.Way section, further classified as

a) **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 man days requirements to out put is rationally stipulated for each sub activity.

b) **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 the past experience.

3.6 The sub-activities of "T" & "R" are broadly classified on the type of track.

i) **Machine Packed Track (Non-suburban)**

ii) **Manually Packed Track (Non-Suburban)**

iii) **Machine Packed Track (High Density Suburban)**

P.WAY/MVLK comes under the Machine Packed Track (Non Sub-urban) category.

The sub-activities "T" of that particular type of track is listed as under:

Machine Packed Track (Non- Suburban)

T₁ : Slack attention to
 i) Bad spots
 ii) Low joints
 iii) SEJs
 iv) Minor curve attention

T₂ : For Tie tamper working
 i) Pre – tamping operations
 ii) Along with tamper.
 iii) Post Tamping attention.

- T₃ : Casual Renewal of
- i) Rails
 - ii) Sleepers
 - iii) Fasteners (Including attentions)
- T₄ I) Repair Welding

Activity 'R' Machine Packed track (Non- Suburban)

- R1 Lubrication of ERCs.
- R2 Shallow Screening (1/5 Lth).
- R3 Loading, Leading & Unloading.
- R4 Overhauling of LCs.
- R5 Watching Caution spot and 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 and renewal.
- R10 Pre-monsoon attention such as cleaning of drains and waterways, cess repairs, de-weeding of track and attention to cuttings and trolley refuges.
- R11 Creep Pulling
- R12 Rectifying damage to LC posts and gates

Sub-activities of 'M' (Common for all types of track)

- M1 Monsoon patrolling.
- M2 Hot weather patrolling for LWR track.
- M3 Cold Weather Patrolling for LWR track
- M4 Watching of vulnerable locations.
- M5 Gate Keepers at Engineering LCs.
- M6 Rest giving for Keymen.
- M7 Waterman duty (To serve the gang)

M8 Store Watchman duty (at isolated location of P.Way material stores)

Sub-activities of 'S' (Common for all types of track)

- S1 Tunnel maintenance.
- S2 Bridge substructure maintenance.
- S3 Long girder bridges maintenance.
- S4 Extra workload due to very sharp curves, deep cutting and Steep gradients.
- S5 Maintenance of track on extremely bad formation.
- S6 Lookout man duty (for the safety of gangs).
- 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 and when found necessary.

3.7 The norms for each sub-activity of T, R, M, S is arrived based on the site and local conditions. A software has been designed to arrive the man days for T,R,M,S. The man power requirement is determined by dividing the total man days of T, R, M, S by 294 working days derived as follows.

One year = 365 days

Sundays = 52 days

Public holidays = 9 days

Casual leave = 10 days

Total No. of Holidays = 71 days

Available man days per year = $365 - 71 = 294$ days

Man days requirement for T is decided as $(80 + 2.3 \text{ GMT}) (1 + A + B + C)$ per year per km and Man days for "T" will be 166 per year per

km for non-suburban mechanized track and $(115 + 2.3 \text{ GMT}) (1 + A + B + C)$ for sub-urban mechanized track.

Where A = Formation factor

(0 for stable, 0.1 for bad and 0.2 for very bad soil).

B = Alignment factor (0 to 0.25 for 1° to 2° curves)

C = Rain fall factor (0 for 150-300 cm & 0.2 for 300 cm & above rain fall)

3.8 **Corrections required in TRMS worksheet:**

The total of 'T' activities is shown as 14743.05 whereas in the summary it is shown as 17838.46 man days on the pretext of correction for shallow screening. But shallow screening is coming under regular activities (R) and hence the difference of 3095.41 man days is to be deducted from 'T' activity.

Similarly the actual total of the 2 items under 'R' activity is only 17699.99 whereas the summary column has taken as 24050.28 man days leading to a difference of 6350.29 and if 3095.41 mandays is added for the correction in shallow screening, the calculation will be 20795.40 man days for 'R' activity.

In fact, the four sub activity under 'T' has come down due to technological improvements in Track maintenance, welding etc.,

T1- slack attention to

a) Bad spots – This will be done whenever any disturbance/jerk noticed during official, OMS inspection and Loco pilots the same will be attended by track men.

b) Low joints – In SSE/P.WAY/MVLK section the main line is LWR.

Low joints happen only in yards the same rectified once in two months by track men.

c) SEJ's - Once in 15 days this will be attended by track men within their gangs jurisdiction.

- d) Minor curve attentions done in this section by the concerned gang jurisdiction

T2- for Tie Tamper working

- a) Pre tamping operations
- b) Along with tamper
- c) Post tamping operations

No contract exists and carried out by Department through mechanized mode and manual work by track men.

T-3 Casual Renewal of

- a) Rails – In PWAY/MVLK section Double line with LWR track and in yards only rails having joints and damages the same will be rectified by departmental staffs.
- b) Sleepers – In this section through sleeper renewal done through departmentally if required.
- c) Fasteners along with re-gauging – This will be renewed occasionally when ever any damage occurs, regular maintenance not done in this section.

T-4 Repair welding

18 Rail/Weld failures occurred in the last three years in this section and the same attended by Trained track man.

In consideration of the above facts the man days required for 'T' activities are 14743.05 is allowed as it is.

3.9 'R' activities

For R activities 24050.28 man days is arrived in TRMS calculation. But, the column total is only 17699.99, thereby having the difference of 6350.29. Even if the man days for shallow screening (3095.41 man days) is included it will be 20795.40 man days only.

3.10 Discussion on activities under 'R'

R1 - Lubrication of ERCs-

Done by Key man 20 sleepers per day per men.

R2 -Shallow screening(1/5th of Length)

Done by Track machine unit staffs once in three years for cleaning the ballast and also this activity is not a regular one.

R3 -Loading, Leading, Unloading

This activity is occasionally done whenever necessary for the particular materials taking from ERS/Depot and for consumables from GOC/Depot through deputing some track mans.

R4 -Overhauling of LC gates

This will be done by Black smith. As per yard stick one black smith has to attend/maintain 10 LC's. Hence the available blacksmith is allowed for rectifying the same.

R5 -Watching of caution spots & misc.

In this section no cautions spots, only vulnerable locations are there for that sufficient man days is allowed in M activity.

R6 -Tree cutting for visibility

Once or Twice in a month done by departmental staffs.

R7 -Lubrication of Rails in Curves

Done by Track man for lubrication and tight fittings once in 15 days for more than 2 degree curves.

R8 -Accident Relief and carcass renewal in run over cases

As per SSE statement this will happen occasionally, the same managed with the existing Track maintainer.

R9 -Bridge, Sleeper attention & Renewal

From the statement of SSE the sleeper renewal is very rare but attention should be required for painting of fixtures(fittings), tighten of bolts & nuts once in a 15 days.

R10 -Pre-monsoon attention such as clearing of drains and waterways, cess repair, de-weeding of track and attention to cuttings & Trolley refuges

This is done through track man during Pre and Post monsoon period only.

R11 -Creep pulling approaches to bridges, turnout.

This activity done in this section by the gang staffs.

R12 -Rectifying damage to LC posts and gates.

As per SSE statement R12 connected with LC damage attendance will happen occasionally in this section the same attended by Black smith. Hence the available Blacksmith and Blacksmith khalasi is allowed for this activity.

3.11 While observing the above activities pertaining to 'R', most of them is a rare activity, hence 40% of man days is reduced in R activity and remaining 60% is allowed(60% of R activity 20795.40 is 12477.24)

3.12 'M' activity**M1-Monsoon patrolling- 2736 man days**

M1 - Monsoon patrolling $\Sigma (D \times b \times s \times m)$ 1 to N

N = No. of beat lengths

D = No. of days of M. Patrol in an year

b = No. of beats

s = No. of shifts

m = No. of men (1 normally, 2 as per DRM's special

orders for areas affected with wild animals / terrorists.)

For this activity 2736 man days is calculated in the TRMS calculation. It is claimed that there are 12 beats in this section and monsoon patrolling is carried out from 01st June to 15th August every year. (30+31+15 = 76 days in a year). As per the statement of SSE 3 Track maintainer is deputed for one beat but as per moon soon patrolling circular only one Track maintainer to be deputed per beat.

Since the section is prone to monsoon effects, hence 2736 man days arrived in TRMS is allowed as it is.

M2 & M3 -Hot/Cold weather patrolling - 2397/863 man days.

As per SSE statement Hot whether patrolling not done in this section, hence the 2397 man days mentioned in TRMS is surplus.

Cold weather patrolling will be done only when the track temperature is 13 degree and below. But as per SSE statement this will be done during November & December month of every year for that no record is available. Anyhow considering the safety aspects, the mentioned 863 man days in TRMS for cold weather patrolling is allowed as it is.

M4-Vulnerable Locations - 608 man days

In this section, Bridge no. 148 in KMS 92/500 – 800(Major Bridge) is one of the vulnerable locations, more concentration will be given during moon soon period. Hence man days 608 mentioned is allowed as it is.

M5-Gate keeping - 18597 man days

In this section there are 44 LC gates are available out of which 10 LC's manned by operating and remaining 34 LC's by engineering department. The duty hour of gate keepers is 10 hrs in 25 LC's & 8 hrs in 9 LC's.

Man days mentioned in TRMS data for gate keeping is 18597 for manning 34 engineering LC's. As per mentioned man days only 63 gate keepers are allowed but practically 77 gate keepers/track men's needed to man 34 LC's is derived below.

Sl no	Roster Hrs	No's	Manpower	R/O
1	08	09	03	27
2	10	25	02	50
	Total	34		77

RG/LR is calculated for gate keepers in total summary sheet

Hence 77 gate keepers/track men's is required but in TRMS only 18597 man days is arrived hence the same allowed as it is.

M6-RG for Key men (1207 man days)

There are 08 gangs and it requires 08 key men. For 08 key men the RG will be 1.32 men at the rate of 1:6 ratio. Hence the required man days will be 391.02 and the remaining 815.98 man days is surplus.

M7-water man – 2352 man days

As per SSE statement waterman activity is not carried out in this section. Hence 2352 man days mentioned in TRMS found surplus.

M8- Store activity -1095 man days

In SSE/PWAY/MVLK only one stores is available the same managed by 3 store watch man looking 12 hours roster (EI roster). Hence for one locations 588 man days (2 SWM x 294 Mandays) are required and remaining 507 man days is surplus.

3.13 Hence, the total requirement for 'M' activities is as follows

Sl. No.	Activity	Man days required
M1	Monsoon patrolling	2736.00
M2/M3	Hot/Cold weather patrolling	863.00
M4	Watching vulnerable location	608.00
M5	Gate keeping	18597.00
M6	RG for Key man	391.02
M8	Store watch man	588.00
Total		23783.02

3.14 Activity 'S' – Miscellaneous

S1 -Tunnel Maintenance

No Tunnels in this section

S2 -Bridge substructure maintenance

Track maintenance only done on the bridge by track men, but the bridge structure maintenance done by SSE/Bridges. As per SSE/P.way statement this activity not done in this section hence the mentioned man days 365.29 is surplus.

S3 -Long girder Bridge maintenance

No long girder bridges in this section.

S4 - Extra maintenance due to very steep curves, deep cutting steep gradient

In this section total number of curves is 82 out of which more than 3 degree sharp curves numbers is 13. In TRMS 1483.23 man days is arrived the same is allowed as it is.

S5 - Maintenance of track on extremely bad formation

As per SSE statement the under mentioned 3 locations is extremely bad formation area, presently each location one staffs is deputed for this activity during day hours, hence for manning this extremely bad formation 882 man days is allowed and the remaining 2196 man days is surplus.

139/600 – 141/250 in bridge no. 27 down line

90/500 – 600 in bridge no. 153 both up & down line

90/500 – 600 & 90/17 – 90/17 – Yielding formation

S6 - Look out man duty (for the safety of gang)

In this section 13 deep curves(more that 3 degree) is there, during the gang working hours one look out man required for each curves but in TRMS 649.91 man days arrived the same allowed as it is .

S7 - Fog signal man duty(to assist traffic Dept)

No man days is arrived in TRMS

S8 - Filth removal from track (within city limits)

Filth removal on yards and in station tracks is done by the Health Inspector through cleaning contract and no man days arrived in TRMS for this activity

S9 - Security patrolling

As per SSE statement this activity will be done during VVIP movements and strike period by utilizing the available track men. In TRMS 680 man days arrived the same is allowed as it is.

S10 - Watching of water level in suburban

Not applicable

3.15 The man days for 'S' activities

Sl. No.	Activity	Man days required
1	Extra very sharp curves	1483.23
2	Extremely very bad formation	882.00
3	Look out man	649.91
4	Security patrolling	608.00
Total man days		3623.14

3.16 Summary of the man days of T,R,M,S

Sl. No.	Activity	Man days required
1	'T'	14743.05
2	'R'	12477.24
3	'M'	23783.02
4	'S'	3623.14
	Total man days	54626.45

Hence the man power is arrived as follows

$$54626.45/294 = 185.80 \text{ men}$$

$$RG = 16.6/100 \times 185.80 = 30.84 = 185.80 + 30.84 = 216.64$$

$$LR = 12.5/100 \times 216.64 = 27.08 + 216.64 = 243.72 \text{ men.}$$

3.17 Requirement of Trolley Man

There are three trolleys (1 Motor trolley, 2 Push trolley) are available with the SSE/PWAY/MVLK to carry out the regular track inspection and other track related activities. Trolley movements are carried out by both SSE /HQ and sub section JE's in three batches of

trolley/ track men is working with trolleys. The study takes the maximum number of trolley movements as 15 per month(including officers ADEN/DEN/DRM & Head quarters officers). Even if all the three supervisors & officers move by trolley the total requirement will be 15 days.

Further, the schedule of trolley movement of SSE is only 50% of the JEs subject to one mandatory movement in a month. Such being the case, 4 trolley men with one RG / LR is sufficient to meet the present requirement.

If the movements are well planned with the coordination among the supervisors, the trolley movement inspection can be easily fulfilled with a set of 4 trolley men.

As on date the category of Trolley man, Track mates, Key man & Track man is merged in to a single category called as Track maintainer I,II, II,IV such being the case, the calculation of Trolley men separately is not made at now. Only a skeleton strength according to the actual movement of SE/JE for the past 3 years is sufficient.

Hence the trolley gang of 5 **men** (4+ 1 LR/RG) for push trolley & other trolleys is found sufficient.

The total requirement is $243.72 + 5 = 248.72$ say 249 men.

3.18 Requirement of T.Mate,Gateman, Trackmaintainer, Trolley man

Sanction Vs Requirement

Category	Sanction	Actual	Requirement	Surplus
Gateman/ G. Mate/key man	249	236	249	00
Track maintainer – Gangs				
Trolley man				
Total	249	236	249	00

3.19 Redundant post in P.way/MVLK section

As per SSE statement the following redundant post not operated and not filled for more than 5 years in this section, hence the same recommended for surrender.

Tech – Blacksmith I – 1

Tech – Carpenter – 1

Tech – Brick layer – 1

Lascar – 1

4 Post

3.20 MVLK section available with 2 SSE against sanction of 4 and 1 JE against sanction of 2. Presently 1 SSE is in charge and another SSE is looking after sub section 1(MVLK) and 1 JE is looking after subsection 2(KPY).

Hence total requirement is 2 SSE & 2 JE and remaining 2 SSE vacant post found surplus.

Recommendations No.1

02 posts (vacant post) of SSE (GP Rs.4600/-) found surplus and the same may be surrender and credited to the vacancy bank.

Recommendation No.2

04 posts (vacant post) of Tech Blacksmith – I(GP Rs.2800/-) , Tech Carpenter(GP Rs. 1900/-), Tech Brick layer(GP Rs. 1900) & Lascar(GP Rs.1800/-) found surplus and the same may be surrender and credited to the vacancy bank.



4.0 PLANNING BRANCH'S REMARKS ON CO-ORDINATING OFFICER'S VIEWS

The draft work study report for this study was handed over to ADEN/QLN Coordinating Officer on 09/05/2018 to offer his remarks. A remainder letter was also sent to him on 31/05/2018 for remarks on or before 07/06/2018. Normally a period of 15 days is allowed to offer Coordinating officer remarks. In this case even after 40 days the remarks have not been received. Hence the work study report is being released without the remarks of Coordinating officer.

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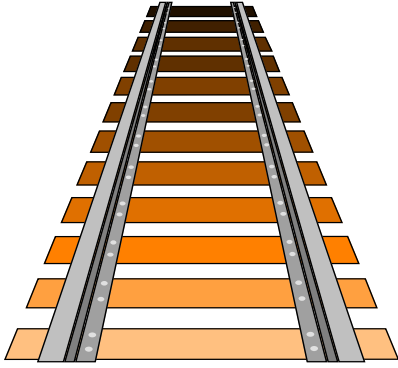
5.0 FINANCIAL SAVINGS

5.1 If the recommendations made in the study report are implemented, the annual recurring financial savings will be as under:

Sl no	Category	No. of posts	Grade Pay (Rs.)	Money value (Rs.)	Annual Savings (Rs.)
1	SSE	02	4600	98332.5	2359980
2	Tech Blacksmith I	01	2800	63787.5	765450
3	Tech Carpenter	01	1900	43627.5	523530
4	Tech Bricklayer	01	1900	43627.5	523530
5	Lascar	01	1800	39322.5	471870
	Total	06			4644360

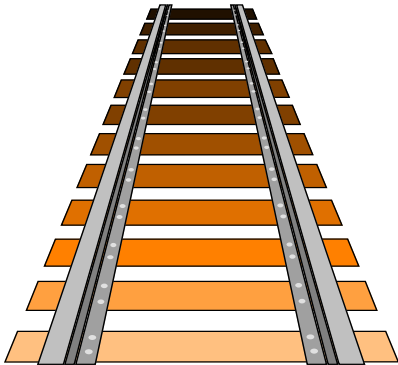
Annexure I**SANCTION, ACTUAL, VACANCY & EXCESS STATEMENT OF
SSE/PWAY/MVLK SECTION AS ON JAN 2018**

Sl. No.	Designation	SAN	ACT	VAC	EXC
1.	Sr.Section Engineer Sr.Section Engineer/Special works	4 0	2 2	2 0	-- 2
2	Junior Engineer	2	1	1	--
3	OS/Works	1	0	1	--
4	OS/PB	1	1	0	--
5	Tech. Blacksmith I	1	0	1	--
6	Tech. Carpenter	1	0	1	--
7	Tech. Brick layer	1	0	1	--
8	Tech. Welder	1	1	0	--
9	Tech. Painter III	1	1	0	--
10	Blacksmith	1	1	0	--
11	Lascar	1	0	1	--
12	Blacksmith Khalasi	0	1	0	1
13	STM Helper	2	2	0	--
14	SNP	0	1	0	1
15	Track maintainer I	15	14	1	--
16	Track maintainer II	30	31	0	1
17	Track maintainer III	55	50	5	--
18	Track maintainer IV	149	141	8	--
19	Trainee Trackman	0	1	0	1
20	Substitute Trackmen	0	1	0	1
24	Store watchman	0	1	0	1
	Total	266	252	22	8



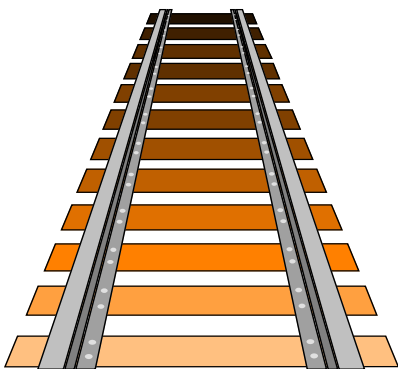
**WORK STUDY TO REVIEW THE STAFF
STRENGTH AT SSE/P.WAY/MVLK
TIRUVANANDAPURAM / DIVISION**

No : G.275/WSSR – 751718/2017 - 18



**WORK STUDY TO REVIEW THE STAFF
STRENGTH AT SSE/P.WAY/MVLK
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