



भारत सरकार / GOVERNMENT OF INDIA
रेल मंत्रालय / Ministry of Railways
दक्षिण रेलवे / Southern Railway

प्रधानकार्यालय/ Headquarters Office,
Planning Branch,
चेन्नै - 600 003/Chennai - 600 003.

No.G.275/WSSR-252021/2020-21

Dated: 14.12.2020.

DRM / MAS

Sub : Work study to review the Staff Strength at SSE / P.WAY / WJR –
MAS Division.

Ref: (1) SDGM's D.O. letter No.G.275/Annual Prog./2020-21
dated 20.08.2020.

(2) This Office letter of even No. dated 27.08.2020.

A work study on the above subject was conducted by Headquarters
Planning Branch and a report on the same is attached.

As the report is to be finalized within eight weeks, it is requested to take
expeditious action and advise this office in this regard.

A copy of the work study report may be given to organized labour.

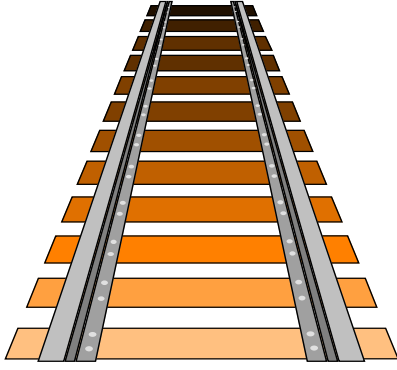
This has the approval of SDGM.

(D. JAYARAMAN)

Dy. Chief Planning Officer
for Senior Deputy General Manager.

Copy to: PCE/MAS
(Encl: One copy of the study report)

The Director (E&R)/Rly.Bd/NDLS for information.
(e - copy of the study report)



WORK STUDY TO REVIEW THE STAFF
STRENGTH OF SSE/P.WAY/WJR -
CHENNAI DIVISION

G.275/WSSR – 252021/2020- 21

SOUTHERN RAILWAY

PLANNING BRANCH

G.275/WSSR- 252021/2020-21

**WORK STUDY TO REVIEW THE STAFF
STRENGTH OF SSE/P.WAY/WJR -
CHENNAI DIVISION**

STUDIED BY

**WORK STUDY TEAM
OF
PLANNING BRANCH**

DEC 2020



(i)

INDEX

SERIAL NUMBER	CONTENTS	PAGE NUMBER
(i)	ACKNOWLEDGEMENT	1
(ii)	TERMS OF REFERENCE	
(iii)	METHODOLOGY	
(iv)	SUMMARY OF RECOMMENDATIONS	2
CHAPTERS		
I	INTRODUCTION	3 & 4
II	PRESENT SCENARIO	5 – 10
III	CRITICAL ANALYSIS	11 – 25
IV	PLANNING BRANCH REMARKS ON CO-ORDINATING OFFICER'S VIEWS	26
V	FINANCIAL SAVINGS	27
ANNEXURES		
I	SCALE CHECK STATEMENT SSE/PWAY/WJR	28



(i)

ACKNOWLEDGEMENT

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

(ii)

AUTHORITY

Annual Programme of Work Studies approved by SDGM for the year 2020-21.

(iii)

TERMS OF REFERENCE

Work study to review the staff strength at SSE/P.WAY/WJR Section - MAS Division.
G.275/WSSR- 252021/2020-21

(iv)

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/KPD & SSE/P.WAY/WJR
- (4) Analyzed the data collected and assessed the manpower requirement based on the TRMS formula of CMCNTM and ground realities.

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SUMMARY OF RECOMMENDATIONS

Sl no	Category / Vacant post	Grade pay (Rs)	No of posts
1	SSE	4600	2
2	Black smith Gr.I	2800	2
	Black smith Gr.III	1900	1
3	Carpenter Gr.III	1900	1
4	Brick layer Gr.III	1900	1
5	Welder Gr.I	2800	1
6	Painter Gr.I	2800	1
7	Track maintainer I	2800	4
8	Track maintainer II	2400	1
9	Track maintainer III	1900	19
Total			33

Total: 33 posts


CHAPTER - I**1.0 INTRODUCTION****1.1 CHENNAI DIVISION**

Chennai Division is one of the major division in Southern Railway covering the districts of Northern Tamil Nadu and Southern Andhra Pradesh. Currently it has a route length of over 697.42 kilometers. Its administrative head quarters are in Chennai, which also happens to be the headquarters of the Southern Railway. It is passenger and goods oriented division with highest earnings.

- 1.2 The SSE/P.WAY/WJR 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 outsource 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/WJR is arrived based on the TRMS formula of CMCNTM, 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 MAS division is under the control of Chief Project Manager/MAS. The Permanent Way section of WJR which is managed by SSE is under the direct & general control of ADEN/KPD & Sr.DEN/West/MAS respectively. Jurisdiction of PWAY/WJR is MLPM (Excl) – MCN (Incl) and WJR – RPT between Kms 72.66 – 113.77 & Kms 0.00 – 6.71.

2.2 The brief outline of regular activities at P.WAY /WJR 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
- Ensuring availability of materials
- Complete renewal of Points & crossing

2.3 The actual staff strength of SSE/P.WAY/WJR as on SEP 2020 is 181 including SSE, JEs, Ministerial, Track maintainer & Artisans staff as against the sanctioned strength of 217.

2.4 The entire section is maintained by 7 gangs as detailed below:

Gang/ Unit No.	Jurisdiction	Key man Numbers	Key man Jurisdiction
Unit 1	72/22 – 79/22--- CTRE	1 2	72/22 – 76/22 – 4KM 76/22 – 79/22 – 3KM
Unit 2	79/22 – 87/02--- MDVE	3 4	79/22 – 83/22 – 4KM 83/22 – 87/02 – 3.8KM
Gang 5	87/02 – 90/22--- SHU	5	87/02 – 90/22 – 3.2KM
Unit 3	90/22 – 97/02--- TUG	6 7	90/22 – 94/02 – 3.8KM 94/02 – 97/02 – 3KM
Unit 4	97/02 – 103/22--- Old LC No.45	8 9	97/02 -100/10 – 3.08KM 100/10 – 103/22 – 3.12KM
Unit 5	103/22 – 107/02--- WJR	10	103/22 – 107/02 – 3.8KM
Unit 6	107/02 – 113/22--- MCN	12 13	107/02 – 110/10 – 3.08KM 110/10 – 113/22 – 3.12KM

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

- Chitteri (CTRE)
- Anvarthikanpettai (AVN)
- Mahendravadi (MDVE)
- Sholingur (SHU)
- Thalangai (TUG)
- Walajah Road (WJR)
- Ranipet (RPT)
- Mukundarayapuram (MCN)

2.6 The present sanction and actual staff of SSE/P.WAY/WJR including Supervisors Ministerial staff & Track men categories are as under: -

Sl. No.	Designation	SAN	ACT	VAC	EXC
1	Sr. Section Engineer	5	2	3	-
2	Junior Engineer	3	3	-	-
3	Ministerial	2	1	1	-
4	Tech. Blacksmith I	3	1	2	-
	Tech. Blacksmith II	-	1	-	1
	Tech. Blacksmith III	1	-	1	-
5	Tech. Carpenter III	1	-	1	-
6	Tech. Brick layer III	1	-	1	-
7	Tech Welder I	2	-	2	-
	Tech Welder III	-	2		2
8	Tech. Painter I	1	-	1	-
	Helper	-	1	-	1
9	Track maintainer I	21	17	4	-
10	Track maintainer II	41	40	1	-
11	Track maintainer III	41	14	27	-
12	Track maintainer IV	95	99	-	4
	Total	217	181	44	8

2.7 Level crossing gates:

There are 7 manned level crossing gates under the jurisdiction of SSE/P.WAY/WJR, out of which 6 are Engineering LC gates (2 - Special class, 1 - A class, 2 – B1 & B2 & 1 – C class) and 1 are Operating LC gates.

Roster followed by Engineering LC's manned gates is here under:

1 LC gate no.37 – 10 hrs. roster

5 LC gates - 12 hrs. (EI roster)

2.8 List of Rail/Weld failures from Nov 2019 to till date

Sl no	Date	Location	UP/DN	Weld/Rail failures
1	4/11/19	78/534.20 – 546	DN	IMR Weld
2	18/11/19	94/208.05 – 214.15	DN	Defective weld
3	20/11/19	88/411.20 – 421.32	DN	Weld failure
4	26/11/19	112/991.48 – 113	DN	Defective weld
5	29/11/19	113/277.65 – 287.60	DN	Defective weld
6	4/12/19	100/989.80 – 997	UP	Weld failure
7	8/12/19	78/613.10 – 619.70	UP	Weld failure
8	18/12/19	90/296.35 – 310.60	DN	Crossing failure
9	2/1/20	79/492.45 – 498.95	UP	Rail failure
10	25/1/20	113/411.25 – 423.95	UP	Rail failure
11	15/2/20	80/70.2 – 76.9	UP	Rail failure
12	29/2/20	94/128.70 – 140.25	UP	Weld failure
13	4/3/20	79/434.96 – 447.25	UP	Rail failure
14	20/6/20	83/667.70 – 680.25	DN	Rail failure
15	30/6/20	102/296.50 – 303.10	DN	IMR weld
16	11/7/20	77/330.12 – 340.48	UP	Defective weld
17	13/7/20	81/306.35 – 312.88	DN	Weld failure

2.9 Other particulars of the section

Sl no	Details	Particulars
1	No of Gang Units	7
2	Jurisdiction	MLPM – MCN & WJR - RPT Kms 72.66 – 113.77 & Kms 0.00 – 6.71.
3	Line	Double line section “E” Route
4	Stations between jurisdiction	CTRE, AVN, MDVE, SHU, TUG, WJR, RPT & MCN
5	Welding techniques	Alumino Thermit
6	Level crossings	7 (Eng – 6, Tfc – 1)

7	Duty hours of Track man & Gate keepers	GKs – 12 hrs at 5 LCs, GK – 10 hrs at 1 LCs
8	Whether Thermal censoring thermo meter provided	Yes
9	SNP	2 in Track maintainer – IV
10	Maximum speed of the trains	105 Kmph for Passenger & 75 Kmph for Goods trains
11	Activities outsourced/proposed	Ancillary works in connection with TWR, Removal of vegetation's, jungle & bushes in the midsection, Through Rail renewal, pre & post tamping works done through contract.
12	Total number of halt trains	14 pairs of Express & Passenger trains
13	Speed restrictions	Kms 98/4 – 104/4 sectional speed, Kms 104/18 – 20 turn out taking off from curve
14	Total Route Kms	101.80 Kms

2.10 There are 179 minor bridges & 5 RUBs available in this section and more than 3 degree curves is NIL in both UP & DOWN directions.

2.11 List of Contract works done in SSE/PWAY/WJR section

1. Ancillary works in connection with TWR (Through weld renewal) – 16.440 KM between KM 113 .00 – 123.800.
2. TFR (Through fitting renewal) of 52 kg/60kg track from KM 77.00 – 80.00, 87.00 – 89.200 & 107.400 – 111.500 on down line and KM 94.600 – 103.000 on UP line.
3. AJJ – JTJ section, Removal of vegetation's, jungles & bushes at midsection alongside tracks and in between tracks.
4. AJJ – JTJ section TRR(P) (Through rail renewal (primary)) – 4.90 KM with 60KG rail in UP line at KM 88/900 – 90/230, KM 93/000 – 94/570.
5. AJJ – JTJ section, CTR(P) (Complete track renewal (primary)) – 0.578KM, TRR(P) – 7.75KM, TRR(P) – 1.80KM, on UP & Down line in AJJ – JTJ section, TRR(P) – 1.50KM, on UP line and Pre/Post tamping works in connection with TBR (Through ballast renewal) on UP & Down lines in AJJ – RU sections.

6. AJJ – JTJ section – Essential urgent works to eliminate deficiencies on track in SSE/PWAY/WJR section in ADEN/KPD sub division.
7. Shallow screening work.
8. Lifting and Packing of tracks and squaring of sleepers.
9. First round and second round packing of points & crossings.
10. Greasing of ERC clips and pandrol clips.
11. Opening of LC gates by removing paving blocks/slaps, removing ballast up to sleeper level.
12. Loading, Leading & Unloading of P.Way materials by dip lorry.
13. De-weeding of ballasts cess.
14. Fixing of fish plates at defective welds.
15. Casual renewal of Rails & Sleepers.

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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

1. 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.
2. The committee has evolved the Rational Formulae based on average productivity of individual gang men. 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.
3. 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.

4. In future, ECKM (Equated Cost Kilometer) can be evolved based on the Rational Formulae as Performance unit for track maintenance cost.
5. 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 & LUS.
 - 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 T, R, M & S activities.

- The improvements in road transport and vehicles
- The improved availability of water, residence, etc.
- The substitution of manual checking / testing / inspection due to the use of machines like USFD, WILD, etc.
- The longevity ensured due to mechanized laying of track and construction / Inspection methods
- 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 WJR 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) Auxiliary 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 output 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/WJR 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)

- T 1 : Slack attention to
 - i) Bad spots
 - ii) Low joints
 - iii) SEJs
 - iv) Minor curve attention
- T 2 : For Tie tamper working
 - i) Pre – tamping operations
 - ii) Along with tamper.
 - iii) Post Tamping attention.
- T 3 : Casual Renewal of
 - i) Rails
 - ii) Sleepers
 - iii) Fasteners (Including attentions)
- T 4 : 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 Key men.
- 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

3.8 Man days of T & R activity in TRMS worksheet

The total of 'T' activities is shown as 16554.59 whereas in the summary it is shown as 19407.23 man days its includes shallow screening. But shallow screening is coming under regular activities (R) hence the difference of 2852.64 man days is deducted from 'T' activity and added in R activity.

Similarly, the actual total of the 2nd items under 'R' activity is only 16186.20 whereas the summary column has taken as 21447.94 man days leading to a difference of 5261.74 and if 2852.64 man days is added for the correction in shallow screening, the calculation will be 19038.84 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 officials OMS inspection and oscillations noticed by the Loco pilots while running. The same attended by Track maintainer of the concerned gang.
- b) Low joints – In SSE/P.WAY/WJR section all the main lines are LWR.
Low joints only happen in yards, points & crossings the same maintained by the gang staffs once in two months.
- c) SEJ's - Glued joints done once in a month within their gang's jurisdiction staff.
- d) Minor curve attentions done in this section by the concerned gang jurisdiction staff.

T2- for Tie Tamper working

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

As per SSE/Pway/WJR statement the above said works done once in 2 years by track machines by utilizing contract staff and the same monitoring by the departmental staff.

T3 - Casual Renewal of

- a) Rails renewal in main line, yards and points will be done by the contract staff along with gang staff, if the GMTs crosses 100.
- b) Sleepers renewal done through contractors if required.
- c) Fasteners along with re-gauging – This is not a regular activity the same will be done when ever any damage occurs by gang staff.

T4 Repair welding

As per SSE/P.way/WJR records 17 Rail/Weld failures were found from Nov 19 to till date the same was attended by contractor staff with the welding materials supplied by the department.

In T activity the TI, T2, T3 & T4 done by both departmental and contract staff. But as per SSE statement the maximum works in T activity related to safety done by the departmental staff only and also a new line from WJR – RPT around 6 kms is handed over to this P.way/WJR section. Hence for safety aspects the mentioned man days as 16554.59 in TRMS is allowed based on existing work load and need basis.

3.9 'R' activities

For R activity is only 16186.20 whereas the summary column has taken as 21447.94 man days leading to a difference of 5261.74 and if 2852.64 man days is added for the correction in shallow screening, the calculation will be 19038.84 man days for 'R' activity.

3.10 Discussion on activities under 'R'

R1 - Lubrication of ERCs-

Done once in 2 years through contract staff.

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

Done by Track machines through contract staffs once in 2 years and also this activity is not a regular one.

R3 - Loading, Leading, Unloading

This activity is occasionally done whenever requirement of stores taken from GSD/PER, EWS/AJJ and Diesel from AJJ depot by deputing some track maintainers.

R4 - Overhauling of LC gates

This will be done by contract staff once in two years wherever required.

R5 - Watching of caution spots & misc.

In this section presently 2 cautions spots available and the same manned by gang staff i.e. LC 34 in kms 73/27 -25 and LC 39 in kms 83/23 – 25 due to construction of LUS (Limited user's subway). The existing caution spots is not a permanent one, once the work is completed the cautions will be withdrawn.

R6 - Tree cutting for visibility

This activity done by the contract staff every 6 months.

R7 - Lubrication of Rails in Curves

As per SSE statement this activity not done in this section.

R8 - Accident Relief and carcass renewal in run over cases

This activity is done by the GRP with the assistance of gang staff.

R9 -Bridge, Sleeper attention & Renewal

As per SSE statement 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 by the concerned gang jurisdiction staffs.

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

This activity done through contract staff with the assistance of gang staff during Pre and Post monsoon period only.

R11 -Creep pulling approaches to bridges, turnout.

As per SSE statement creep pulling not done in this section.

R12 -Rectifying damage to LC posts and gates.

As per SSE statement LC No. 37 & 47 is in problem and regular damages occurs due to vehicle hits, hence this activity is to be more concentrated by the concerned gang staffs along with blacksmith & welder.

In the above 12 activities 6 activities done by the contract staff with the monitoring of departmental staff and the remaining 6 activities done by departmental staff exclusively, hence for safety aspects 80% of man days 19038.84 i.e. 15231.07 is allowed on need basis.

3.11 'M' activity

M1-Monsoon patrolling- 1560 man days

In this activity 1560 man days is mentioned. It is claimed that there are 6 beats in this section and monsoon patrolling is carried out from 01st October to 30th November of every year ($30+31 = 61$ days in a year) during 17.00hrs – 00.00 – 08.00hrs.

Presently 2 Track maintainer is deputed per shift for one beat due to hilly and forest region by the SSE.

Normally 1 Track maintainer per beat, 2 as per DRM's special orders for areas affected with wild animals / terrorists.

PWAY/WJR section is covered with hilly and forest areas, hence on need basis mention man days in TRMS (1560) is allowed as it is for safety of gang.

M2 & M3 -Hot/Cold weather patrolling-2570.85/1028.34 man days.

Hot whether patrolling will be done only when td (de-stressed temperature) + 25 degree exceeds, but normally in our zone td not exceeded 40 degrees. SSE states as per CPM/MAS instruction, hot whether patrolling is done during 1st April to 31st May by deputing three staff per gang for safety aspect, hence on need basis 1281 man days is allowed (7 gangs x 61 days x 3 T.Man – 1281 man days) and the remaining 1289.85 man days found excess to the requirement.

Cold weather patrolling will be done only when the track temperature is minus 30 degrees and below. SSE states this activity is done during 1ST DEC – 31ST JAN by deputing two staff per gang for safety aspect, hence 1302 man days is allowed (7 gangs x 62 days x 3 T.Man – 1302 man days) but in TRMS only 1028.34 man days mentioned and the same is allowed as it is on need basis.

M4- Vulnerable Locations - 120 man days

As per SSE statement, no vulnerable locations in this section, hence 120 man days mentioned in TRMS is found excess to the requirement.

M5- Gate keeping - 1601 man days

In this section there are 7 LC gates available out of which 6 LC's manned by engineering and remaining 1 LC's by operating department. The duty hour of gate keepers in engineering LCs is here under

Sl no	Roster Hrs	No's of gates	Manpower/shift	Required staffs
1	10	1	3	3
2	12	5	2	10
Total		6	5	13

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

Hence 13 gate keepers are required as per existing work load is 3822 man days but in TRMS only 1601 man days is mentioned and the same is allowed as it is.

M6- RG for Key men - 1065 man days

For 7 gangs 7 key man is available in this jurisdiction, RG for key men will be at the rate of 1:6 ratio. Hence the required man days will be 588 (294 man days x 2 key men) and the remaining 477 man days is excess to the requirement.

M7- Water man – 4410 man days

As per SSE statement waterman activity is not carried out in this section. Hence 4410 man days mentioned in TRMS found excess to the requirement.

M8- Store activity - 3285 man days

In SSE/PWAY/WJR only one stores location is available, the same managed by 2 store watch man looking after EI roster (12hrs roster). Hence for one location 588 man days only (2 Store Watchman x 294 Man days) required and remaining 2697 man days is excess to the requirement.

3.12 Hence the total requirement for 'M' activities is as follows

Sl. No.	Activity	Man days required
M1	Monsoon patrolling	1560
M2	Hot weather patrolling	1281
M3	Cold weather patrolling	1028.34
M5	Gate keeping	1601
M6	RG for Key man	588
M8	Store watch man	588
Total		6646.34

3.13 Activity 'S' – Miscellaneous

S1 - Tunnel Maintenance

No Tunnels in this section

S2 - Bridge substructure maintenance – 184.40 Man days

Track maintenance only done on the bridges, but the bridge structure maintained by SSE/Bridges & SSE/Works. As per SSE/P.way statement this activity not done in this section, hence the mentioned man days is excess to the requirement.

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 no deep curves and in TRMS also no man days mentioned for this activity.

S5 - Maintenance of track on extremely bad formation – 492 man days

As per SSE statement the under mentioned locations is extremely bad formation area, hence the man days mentioned in the TRMS is allowed as it is.

SHU – 90/500 – 900 both UP & DN line due to Bad soil.

S6 - -Look out man duty (for the safety of gang) – 534.97 Man days

For Standard cuttings & trolley movements in 3 degree curves look out man is required, hence 534.97 man days mentioned in TRMS is allowed as it is for safety of gang.

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

This activity not done in this section.

S8 - -Filth removal from track (within city limits) – 1470 Man days

Filth removal in yards and stations done by the Health Inspector through cleaning contract and all the trains available with bio – toilets system, hence as per SSE statement this activity not done in this section, hence 1470 man days mentioned in TRMS is found excess to the requirement.

S9 - Security patrolling – 576 Man days

As per SSE statement this activity will be done during VVIP movements and strike period by utilizing the available track men. Hence for this activity 576 man days mentioned in TRMS the same is allowed as it is for safety of section.

S10 - Watching of water level in suburban

Not applicable

3.14 The man days for 'S' activities

Sl. No.	Activity	Man days required
S5	Extremely bad formation	492.00
S6	Look out man duty	534.97
S9	Security patrolling	576.00
Total man days		1602.97

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

Sl. No.	Activity	Man days required
1	'T'	16554.59
2	'R'	15231.07
3	'M'	6646.34
4	'S'	1602.97
	Total man days	40034.97

Hence the man power is arrived as follows

$$40034.97/294 = 136.17 \text{ men arrived}$$

$$RG = 16.6/100 \times 136.17 = 22.6 = 136.17 + 22.6 = 158.77$$

$$LR = 12.5/100 \times 158.77 = 19.84 + 158.77 = 178.61. \text{ Say } 179 \text{ men}$$

3.16 Requirement of Trolley Man

There are two trolleys (1 Motor trolley, 1 Push trolley) are available with the SSE/PWAY/WJR to carry out the regular track inspection and other track related activities. Trolley movements are carried out by both SSE /HQ and sub section SSE/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 & Headquarters 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 sub section SSE/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.

Hence 5 Trolley men (4 + 1 LR/RG) is sufficient for both push trolley & mechanized trolleys.

The total requirement is $179 + 5 = 184$ men

3.17 Requirement of SSE/JEs, Artizans staff, T.Mate, Gateman, Track maintainer, Trolley man

Sanction Vs Requirement

Category	Sanction	Actual	Requirement	Surplus
SSE/JEs	217	181	184	33
Artisans staffs				
Track maintainer I, II, III & IV				
Total	217	181	184	33

Recommendations :

Sl no	Category / Vacant post	Grade pay (Rs)	No of posts
1	SSE	4600	2
2	Black smith Gr.I	2800	2
	Black smith Gr.III	1900	1
3	Carpenter Gr.III	1900	1
4	Brick layer Gr.III	1900	1
5	Welder Gr.I	2800	1
6	Painter Gr.I	2800	1
7	Track maintainer I	2800	4
8	Track maintainer II	2400	1
9	Track maintainer III	1900	19
Total			33

The above said 33 Posts (vacant post) found surplus and the same may be surrender and credited to the vacancy bank.

१२१२

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

The draft work study report for this study was sent through e-office to ADEN/KPD (Co-ordinating officer) on 11.11.2020 to offer his remarks. Normally a period of 15 days is allowed to offer Co-ordinating officer remarks. In this case even after 28 days the remarks have not been received. Hence the work study report is released without the remarks of Co-ordinating officer.

१२१२

CHAPTER – V**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 / Vacant post	Grade pay (Rs)	No of posts	Money value (Rs)	Total annual savings (Rs)
1	SSE	4600	2	104888	2517312
2	Black smith Gr.I	2800	2	68040	1632960
	Black smith Gr.III	1900	1	46536	558432
3	Carpenter Gr.III	1900	1	46536	558432
4	Brick layer Gr.III	1900	1	46536	558432
5	Welder Gr.I	2800	1	68040	816480
6	Painter Gr.I	2800	1	68040	816480
7	Track maintainer I	2800	4	68040	3265920
8	Track maintainer II	2400	1	59696	716352
9	Track maintainer III	1900	19	46536	10610208
Total			33		21492576



Annexure I**SANCTION, ACTUAL, VACANCY & EXCESS STATEMENT OF SSE/PWAY/WJR**

Sl. No.	Designation	SAN	ACT	VAC	EXC
1	Sr. Section Engineer	5	2	3	-
2	Junior Engineer	3	3	-	-
3	Ministerial	2	1	1	-
4	Tech. Blacksmith I	3	1	2	-
	Tech. Blacksmith II	-	1	-	1
	Tech. Blacksmith III	1	-	1	-
5	Tech. Carpenter III	1	-	1	-
6	Tech. Brick layer III	1	-	1	-
7	Tech Welder I	2	-	2	-
	Tech Welder III	-	2		2
8	Tech. Painter I	1	-	1	-
	Helper		1	-	1
9	Track maintainer I	21	17	4	-
12	Track maintainer II	41	40	1	-
13	Track maintainer III	41	14	27	-
14	Track maintainer IV	95	99	-	4
	Total	217	181	44	8

