



WORK STUDY REPORT
ON
REVIEW OF MISCELLANEOUS STAFF
WORKING UNDER SSE-'P' WAY
IN ENGINEERING DEPTT
OVER
AMBALA DIVISION
2020-21

WORK STUDY TEAM

| | | |
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Central Planning Cell,
Northern Railway,
Headquarters Office,
Baroda House, New Delhi.

EXECUTIVE SUMMARY

This study was allotted to Central Planning Cell, HQ Office on the directives of SDGM/NR ON "Review of miscellaneous staff under SSE/P Way controlled by Sr. DEN-C/UMB over Ambala Division" with a view to achieve economy and manpower productivity.

STAFF POSITION

The sanctioned and on roll strength of miscellaneous staff under SSE/P Way controlled by Sr.DEN/C/UMB over Ambala Division is as under:-

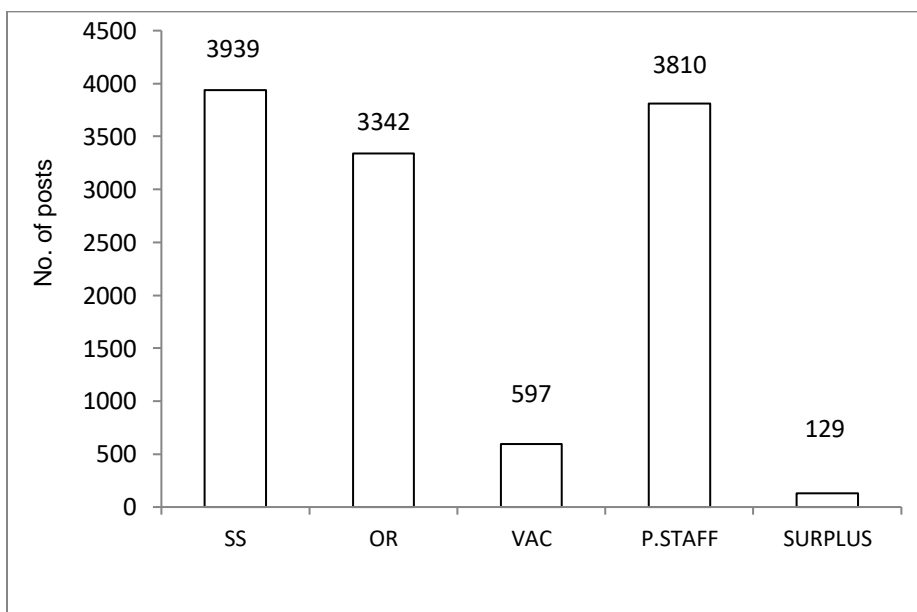
| S.N. | Category | S/S | O/R | Var. |
|-------|-----------------|------|------|------|
| 1 | Trackmaintainer | 3908 | 3322 | 586 |
| 2 | Store Kh | 31 | 20 | 11 |
| Total | | 3939 | 3342 | 597 |

No. of posts identified as surplus and recommended for surrender: -

Gr. 'C' = NIL
Gr. 'D' = 129 posts
Total = 129 posts

FINANCIAL IMPLICATIONS

Anticipated recurring savings = ₹ 375.82 lakh per annum.
Capital saving = Nil
Total = ₹ 375.82lakh per annum



I N D E X

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SYNOPSIS

Permanent way plays a vital role in safe running of trains on railway track. Indian Railway spread over the nation from North to South and East to West. A huge manpower is deployed to maintain the track within the prescribed tolerances so as to enable the trains to run at an optimum level of safety, security, reliability and punctuality.

It has become inevitable to run heavier trains at high speeds, which has necessitated introducing modernized track structure and its improvised maintenance system. Even after the introduction of improvised track and track machines for maintenance, the trackmaintainer staff are still being deployed on conventional pattern. Taking into consideration the activities based upon improvised track and mechanized maintenance as per manpower and cost norms for trackman (MCNTM) was assigned to be conducted by the Central Planning Cell, HQ Office, by SDGM/NR.

The team collected the SSE 'P' way wise staff position and activity wise workload being maintained by the staff. The team critically analyzed the data supplied by SSE P.Way and assessed the requirement of trackman staff accordingly.

The requirement of misc staff comes to 3810 posts against the sanctioned strength of 3939 posts. Hence 129 posts of trackman are identified as surplus and recommended for surrender.

The zealous acceptance and implementation of the recommendations contained therein the work study report will result in recurring saving to the tune of worth ₹ 375.82 lakh per annum to the administration.

SUMMARY OF RECOMMENDATIONS

| S. N. | Recommendations | Refer para No. | Accepting/ implementing authority. | | | | | | | | | | | | | | | | |
|-------|---|-----------------|------------------------------------|-------------|-------------|---|-----------------|-----------------|-----|---|----------|-----------------|----|-------|--|--|-----|-------|---|
| 1 | <p>It is proposed that 12 9 posts of Misc staff in Gr. ₹ 5200-20200-1800 identified as surplus under the administrative control of Sr.DEN/C/UMB over Ambala Division and recommended for surrender as under.</p> <table border="1"> <thead> <tr> <th>S No</th><th>Category</th><th>Grade in Rs</th><th>No of posts</th></tr> </thead> <tbody> <tr> <td>1</td><td>Trackmaintainer</td><td>5200-20200-1800</td><td>118</td></tr> <tr> <td>2</td><td>Store Kh</td><td>5200-20200-1800</td><td>11</td></tr> <tr> <td colspan="2">Total</td><td></td><td>129</td></tr> </tbody> </table> | S No | Category | Grade in Rs | No of posts | 1 | Trackmaintainer | 5200-20200-1800 | 118 | 2 | Store Kh | 5200-20200-1800 | 11 | Total | | | 129 | 2.6.0 | ADRM/Admn/UMB Sr.DEN/C/UMB Sr.DPO/UMB |
| S No | Category | Grade in Rs | No of posts | | | | | | | | | | | | | | | | |
| 1 | Trackmaintainer | 5200-20200-1800 | 118 | | | | | | | | | | | | | | | | |
| 2 | Store Kh | 5200-20200-1800 | 11 | | | | | | | | | | | | | | | | |
| Total | | | 129 | | | | | | | | | | | | | | | | |
| 2 | It is proposed to explore the possibilities of outsourcing the activities without compromising safety with a view to achieve economy and increased manpower productivity. | 2.7.0 | -do- | | | | | | | | | | | | | | | | |

ACKNOWLEDGEMENT

The work study team is highly grateful to Shri Karan Singh, ADRM/UMB, Sh. Rakesh Sabharwal, Sr.DEN/C/UMB and Sh. Nikhil Dhongri, Sr.DPO/UMB for their valuable guidance and other functionaries for extending full cooperation in providing requisite data/information during the conduct of study.

1.0 INTRODUCTION

1.1.0 The Permanent way is the backbone of any railway system. The safety and comfort of rail users depend upon the proper maintenance of track. The permanent way is maintained by Civil Engineering Department by deploying huge manpower. Mechanized maintenance technology is being used to maintain heavy and modernized track structure to cope up increased of faster traffic needs. to cope with heavier and faster traffic needs. By virtue of heavy/modernized track structure and mechanized maintenance of track, the workload trackman category is supposed to be reduced significantly. However, the trackmen are still being deployed arbitrarily based upon conventional pattern. Thus with the introduction of track machine, still trackmaintainer category strength either remains same or increased.

1.2.0 In view of above, SDGM/NR desired to conduct "Review of misc staff working under SSE/P Way in Engg. Deptt over UMB Division" with a view to effect optimum utilization of advance track maintenance technology thereby reducing wastage to improve productivity of organization.

1.3.0 TERMS OF REFERENCE:

The following terms of reference were adopted for conducting the study:-

1. Review of staff strength vis-à-vis existing workload.
2. Suggest ways and means to identify redundant/unproductive activities to eliminate wastages.
3. Suggest ways and means to improve the system economic in view of modernization and system development.

1.4.0 METHODOLOGY ADOPTED

The following method study and work measurement techniques of work study were applied for conducting the review:-

1. Data collection and its critical analysis to assess the factual position
2. Application of yardstick in vogue, if any
3. Held discussions at various levels.

- 2.0.0 BRIEF DESCRIPTION, STAFF POSITION, WORKLOAD, CRITICAL ANALYSIS, PROPOSED STAFF AND RECOMMENDATIONS.
- 2.1.0 BRIEF DESCRIPTION
- 2.1.1 UMB Division is an important Division of Northern Railway. It is a strategic division with trains operations point of view. It is spread over the states of Uttar Pradesh, Haryana, Punjab and Himachal Pradesh.
- 2.1.2 Permanent Way or track is the real head upon which the trains run. Track is the backbone of any railway system, which is maintained effectively by track engineers and trackmaintainer staff within the prescribed tolerances.
- 2.1.3 Modernization in railway system has become necessity of today so as to haul heavier and longer trains at faster speeds safely and conveniently to achieve better productivity and render better consumer service to rail users. Modernization of track involves use of heavier track structure, long welded rails, modern mechanized methods of track maintenance and quick renewals of track structure etc.
- 2.1.4 The Indian Railway track is mainly maintained by permanent way gangs of 10/20 men each having a beat of about 6 to 10 km. Depending upon various local/tropical/working conditions, the gangs normally carry out thorough packing of their beat every year and deep screening once in five years. Besides, trackman, mates, keymen, blacksmiths and welders are also utilized for track maintenance.
- 2.1.5. Activities carried out by departmental staff and norms.
The activities performed by departmental staff and norms as per MCNTM formula is tabulated as under:-

| | Activities | Norms |
|-----|--|---------------------------------------|
| T | Activities 'T' affected by Traffic Density | |
| T.1 | Slack attention to | |
| a. | Bad spots | 12 sleepers/head, 1/4 length |
| b. | Low joints (F for welded) Glued joints | 10 GJs attended 4 times/year |
| c. | SEJ (1 no. per km) | 6 times/year, 8SL/SEJ, 12 SL/Head. |
| d. | Minor curve realignment | As required 10% of gang length. |
| T.2 | For tie tamper work | |
| a. | Pretamping operations | (2 years cycle) 20 men/km |
| b. | Alongwith tamper | 10 men for week/gang length of 10 km. |
| c. | Post tamping operations | 28 men/km (includes boxing needed). |
| T.3 | Casual renewal of | |
| a. | Rails | 60 mandays/gang length of 10 km. |
| b. | Track sleepers | 60 mandays/gang length of 10 km. |
| c. | Fasteners (alongwith re-gauging) | 100 mandays/gang length of 10 km. |
| T-4 | Repair Welding | 12 men/failure/year |
| R | ACTIVITIES 'R' UNAFFECTED BY TRAFFIC DENSITY | |
| R.1 | Lubrication of ERCs | Keyman duty (occasional) |
| R.2 | Shallow screening (1/5 length) | 6 SL/Head |
| R.3 | Loading, leading, unloading | Inferred from field data analysis. |
| R.4 | Overhauling of level crossing | 1 LC per 1.5 km, 20 men/LC |

| | | |
|-----|---|--|
| R.5 | Watching caution spots and misc. | Inferred from field data analysis. |
| R.6 | Tree cutting for visibility | -do- |
| R.7 | Lubrication of rails in curves | -do- |
| R.8 | Accident relief & carcass removal in run over case. | -do- |
| R.9 | Bridge sleeper attention and renewal. | -do- |
| R.1 | Pre monsoon attention, such as cleaning of drains and water ways, cess repairs, deweeding of track and attention to cuttings and trolley refuges. | Referred from field data analysis. |
| R.1 | Creep pulling (approaches of bridge turnout) | -do- |
| R.1 | Rectifying damage to L/C posts and gates. | -do- |
| M | ACTIVITIES 'M' | |
| M.1 | Monsoon patrolling | Total no. of patrol man in 24 hrs. No. of days for which patrolling is required. |
| M.2 | Hot weather patrolling | 30xlength of LWR in km |
| M.3 | Cold weather patrolling | 12 x length of LWR |
| M.4 | Vulnerable locations | Total no. of stationery watchman no. of days for which locations is watched. |
| M.5 | Waterman duty | No. of beatx1 man/ beatx294 |
| M.6 | Site store chowkidar | No. of site store x shifts x 365 |
| M.7 | Rest Givers to gate keepers (No. of manned level x-ing. | Xingx2x365- S/S of gate keeper x 294 |
| 'S' | ACTIVITIES SITE SPECIFIC | |
| S1 | Tunnel maintenance = length of tunnel in km x no. of line in tunnel)x1.2 x 294 | |
| S2 | Bridge structure maintenance =(length of bridge in km. x no. of line on bridge) 1.1 x 294 | |
| S3 | Long girder bridge maintenance = $6 \times 4 \times 4 / 56 = 0.64 \times$ total lineal water way. | |
| S4 | Extra for very sharp curve= (Length of track in km x 1 x 294) | |
| S5 | Extra for very bad formation =(Length of bad formation meter x 10 x 4 x 3/200) | |
| S6 | Look out man duty= length of poor visibility/length of gang length x 294 | |
| S7 | Fog signal man duty Ist year IInd Year IIIRD year Avg. | |
| S8 | Filth removal= 1 man /beat | |
| S9 | Security patrolling Ist Year IInd Year IIIRD Year Avg. | |

2.1.6

Activities that can be outsourced

During the conduct of study, the activities which can be outsourced on contract basis was discussed at various levels. The work done on contractual basis is economical and better in quality when compared with departmental staff. Indian Railway has out sourced certain activities in some departments like cleaning of coaches, cleaning of drains, platform surface cleaning, washing line cleaning, picking up slag/rag/poly bag from railway lines, cleaning work in Medical Department, box porter work in mechanical/operational departments etc. Some activities in P.Way can be outsourced which will not only improve economy but also increase productivity and standard of work. The activities which can be outsourced are listed below:-

Lubrication of elastic rail clips (ERCs)

1. Shallow screening.
2. Loading, leading and unloading of material
3. Cleaning of drains and waterways.
4. Heavy cess repair and attention to cuttings and trolley refuges.
5. Rectifying damage of L/C posts and gates.
6. Painting of weld collars and rails.
7. Destressing LWR when planned with track renewed.
8. USFD testing.
9. Creep pulling and overhauling of turn outs.
10. Reconditioning of tongue rails and crossings.
11. Unloading ballast.
12. Muck removal from yard.

2.1.7

This study is limited to review the trackmaintainer staff working under SSE (P.Way) controlled by Sr. DEN-C/UMB over UMB Division. The head quarters station of SSE (P.Way) under their respective ADENs are given below:-

| ADEN | SSE/ P Way |
|-------------|---------------------------------|
| UMB | Ambala Cantt (UMB) |
| | Ambala Cantt (USFD UMB) |
| | Ambala Cantt (UMB TD) |
| CDG | Chandigarh (CDG) |
| | Sahibzada Ajit Singh ngr (SASN) |
| RPJ | Rajpura (RPJ) |
| SML | Shimla (SML) |
| | Kalka (KLK) |
| PTA | Patiala (PTA) |
| | Dhuri (DUI) |
| | Uklana (UKN) |
| SIR | Sirhind (SIR) |
| | Roop Nagar (RPAR) |
| | Doraha (DOA) |
| SRE | Saharanpur (SRE) |
| | Yamuna Nagar (YJUD) |
| JUDW | Jagadhri Workshop (JUDW) |
| BTI | Bathinda (BTI) |
| | Bathinda USFD BTI |
| | Barnala (BNN) |
| | Abohar (ABS) |

2.2.0

STAFF POSITION

During the course of study, the team collected the staff position from Divisional Headquarters office. The detailed staff position is depicted as annexure No.II in the report and the summarized position of the trackmaintainer staff is tabulated below:-

| S. No | ADE N | SSE/P Way | Total | | |
|-------|-------|-----------|-------|------|-----|
| | | | S/S | O/R | Vac |
| 1 | UM B | UMB | 325 | 281 | 44 |
| | | USFD UMB | 50 | 50 | 0 |
| | | UMB TD | 29 | 27 | 02 |
| 2 | CDG | CDG | 228 | 190 | 38 |
| | | SASN | 83 | 68 | 15 |
| 3 | RPJ | RPJ | 233 | 190 | 43 |
| 4 | SKL | SML | 120 | 123 | -3 |
| | | KLK | 124 | 175 | -51 |
| 5 | PTA | PTA | 222 | 266 | -44 |
| | | DUI | 306 | 221 | 85 |
| | | UKN | 227 | 246 | -19 |
| 6 | SIR | SIR | 288 | 251 | 37 |
| | | RPAR | 304 | 170 | 134 |
| | | DOA | 234 | 111 | 123 |
| 7 | SRE | SRE | 229 | 216 | 13 |
| 8 | JUD W | YJUD | 207 | 187 | 20 |
| | | JUDW | 44 | 37 | 7 |
| 9 | BTI | BTI | 243 | 210 | 33 |
| | | USFD BTI | 09 | 09 | 0 |
| | | BNN | 243 | 172 | 71 |
| | | ABS | 191 | 142 | 49 |
| Total | | | 3939 | 3342 | 597 |

The above table reveals that the on roll strength of Misc staff is **3342** posts against the sanctioned strength of **3939** and **597** posts are lying vacant under Sr.DEN/C/UMB over UMB Division.

2.3.0

WORKLOAD

During the course of study, the team collected the workload in terms of track kilometer being maintained by track maintenance staff and also the mandays per year for activity M & S as per MCNTM norms. The effective working days in one year are taken as 294 days.

The depot wise workload in terms of the kilometer is depicted as Annexure III in the report and the summarized position of the same is tabulated below:-

| SN | ADEN | SSE (P.Way) | Track kilometer | | | Annual GMT | Average |
|----|------|----------------|---|-----------------------------|---------|--|---------|
| | | | On PRC sleeper in KM | On other lay outs in Km. | Total | | |
| 1 | UMB | UMB | SRE-UMB-57.4 UMB-RPJ-5.4 DUK -16.6 UMB-KLK-3.3 | 152.92 | 235.62 | SRE-UMB-32.35 UMB-RPJ-62.72 DUK -32.25 UMB-KLK-6.43 | |
| | | UMB-USFD | - | - | - | - | |
| | | TD/UMB | - | - | - | - | |
| 2 | CDG | CDG | 73.0 | 27.00 | 100.00 | 6.431 | |
| | | SASN | 47.00 | 1.80 | 48.8 | 2.22 | |
| 3 | RPJ | RPJ | M/L 103.507 B/L 23.0 | 98.97 | 225.477 | M/L 65.72 B/L 8.94 | |
| 4 | SML | KLK | BG-1.69 | 34.23 NG-48.72 | 84.64 | BG=6.43 NG=0.52 | |
| | | SML | NG-50.22 On steel sleeper | 8.53 | 58.75 | 0.52 | |
| 5 | PTA | PTA | 67.06 | 26.347 | 93.407 | 8.94 | |
| | | DUI | LDH-DUI-55.8 DUI-JHL-63.96 | 34.350 | 154.11 | LDH-DUI -9.67 DUI-JHL -3.07 | |
| | | UKN | 84.691 | 7.747 | 92.438 | 3.07 | |
| 6 | SIR | SIR | M/L 26.473 SIR-NLDM-39.0 | 23.04 | 88.503 | M/L 57.54 SIR-NLDM-9.52 | |
| | | RPAR | 72.13 | 59.98 | 132.11 | 9.52 | |
| | | DOA | 86.48 | 22.76 | 109.24 | 42.70 | |
| 7 | SRE | SRE | 54.909 | 76.59 | 131.499 | 32.25 | |
| | | YJUD | 93.089 | 25.347 | 118.436 | 32.25 | |
| 8 | JUDW | JUDW | - | 74.70 | 74.70 | JUDW W/SHOP ONLY | |

2.4.0 CRITICAL ANALYSIS

The modernization of track has resulted in introduction of modern infrastructure, equipments and devices etc. involving heavy costs in commissioning but on the other hand wastages of manpower specially manual labour viz utilization of trackman is still persisting. In this dynamic age, the track maintenance are being used exclusively and intensively not only to minimize the working expenses but also to improve safety standards. To economize the track maintenance system due to effect of various modernizations of tracks assessing requirement of trackman has become imperative.

Certain categories of different deptt in which store khallasi also exists, has been declared redundant by the Rly board and as per directive issued by GM/NR letter No. 803-E/surrender of posts/MPP*2017 dt 08.02.2017. These categories are reducing slightly day by day and there is no fresh intake. This category also falls in non safety category.

Consequently, SDGM/NR desired to conduct a study on "Review of misc staff over UMB Division" with a view to improve economy and manpower productivity. The team collected relevant data/information from respective SSE (P.Way) offices and assessed the requirement of trackman as per MCNTM norms.

2.5.0 REQUIREMENT OF MISCELLANEOUS STAFF & YARDSTICK

The team collected the workload in terms of track kilometers and mandays per year for various activities i.e. T, R, M & S etc. from respective SSE (P.Way) offices working under Sr. DEN-C/UMB over UMB Division. The work study team has considered the GMT, Track kilometers, other layout and MCNTM committee formula while calculating the requirement of staff.

The activities 'T' for machine maintenance track kilometers

$T = 80 + 2.3 \times \text{GMT mandays/km/year}$

$R = 159 \text{ mandays/km/year}$

The activities T & R for manual track taken as

$T = 223 + 8.24 \text{ GMT mandays/km/year}$

$R = 159 \text{ mandays/km/year}$

The activities R for running yard line and non running yard line

$R \text{ for mechanized and running yard line} = 177 \text{ mandays/km/yr}$

$R \text{ for non running yard line} = 297 \text{ mandays/km/yr.}$

As per MCNTM formula.

For Narrow Gauge (NG)- $R = 153 \text{ mandays/km/year}$, Activity $T + R = 271 \text{ mandays/km/year}$ for NG Yardstick(Manual packed)

2.5.1 SSE/P.Way/Ambala:

Gang strength as per MCNTM formula:-

| | GMT | Track in km | |
|--|--------|-------------|---------------|
| Annual Avg.GMT for Section SRE-UMB | 32.350 | 57.400 | Length of LWR |
| Annual Avg.GMT for Section UMB-RPJ | 62.720 | 5.400 | Length of LWR |
| Annual Avg.GMT for Section DUK | 32.250 | 16.600 | |
| Annual Avg.GMT for Section UMB-KLK | 6.430 | 3.300 | |
| Total track in kilometer | | 82.700 | |
| Track on other layout including Running yard line etc. in km | | 152.920 | |

Mandays/km/yr. for mechanized track

For activity 'T'

i. Annual Avg.GMT for Section SRE-UMB:

$$80+2.3*GMT = 80+2.3*32.35$$

$$154.175 \text{ mandays/km/yr}$$

$$154.175*57.4$$

$$8849.65 \text{ mandays/yr}$$

For activity 'R' 159*Track on PRC (Mech) 159*57.4

$$9126.6 \text{ for } 57.4 \text{ track km Mandays/yr.}$$

ii Annual Avg.GMT for Section UMB-RPJ:

$$80+2.3*GMT = 80+2.3*62.72$$

$$224.26 \text{ mandays/km/yr}$$

$$224.26*5.4$$

$$1211.0 \text{ mandays/yr}$$

For activity 'R' 159*5.4 Track on PRC (Mech)

$$858.6 \text{ for } 5.4 \text{ track km Mandays/yr.}$$

iii Annual Avg.GMT for Section DUK:

$$80+2.3*GMT = 80+2.3*32.25$$

$$154.175 \text{ mandays/km/yr}$$

$$154.175*16.6$$

$$2559.30 \text{ mandays/yr}$$

For activity 'R' 159*16.6 Track on PRC (Mech)

$$2639.4 \text{ for } 16.6 \text{ track km Mandays/yr.}$$

iii Annual Avg.GMT for Section UMB-KLK

$$80+2.3*GMT = 80+2.3*6.43$$

$$94.79 \text{ mandays/km/yr}$$

$$94.79*3.3$$

$$312.8 \text{ mandays/yr}$$

For activity 'R' 159*3.3 Track on PRC (Mech)

$$524.7 \text{ for } 3.3 \text{ track km Mandays/yr.}$$

Activity 'R' for Other Layout and running yard lines

$$177*152.92 = 27066.84 \text{ mandays/yr}$$

Total Activity 'T' : 8849.65+1211.0+2559.30+312.80 = **12932.76** Mandays/yr.

Total activity 'R' for mechanized 9126.6+858.6+2639.4+524.7+27066.84 = **40216.14** mandays/yr

Activity miscellaneous 'M'

Length of LWR

82.7 KM

i Monsoon patrolling

$$30 \text{ days} * 8 \text{ beats} * 2 \text{ men} * 2 \text{ shifts}$$

960

ii Hot weather patrolling

$$30*82.7$$

2481

iii Cold weather patrolling

$$12*82.7$$

992.4

iv Vulnerable locations

$$2*2*30$$

120

v Site store chowkidar

$$2*2*365$$

1460

vi Rest giver gate keepers

$$(LC*2*365-SS*294)$$

$$3*2*365-6*294 =$$

426

Total M

6439.4

Activity site specific 'S':-

i Tunnel maintenance

--

ii Bridge structure maintenance

--

iii Long Girder Bridge maintenance

$$0.64 * \text{water ways in mtrs} * \text{no of bridge}$$

--

iv Extra for every sharp curve

$$4.5 \text{ km} * 365$$

1642

v Extra for bad formation

--

vi Look out man duty

$$4*60 \text{ days}$$

240

vii Fog signal men duty

900

viii Filth removal

--

Total S

2801

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|-----------|----------|--------|------|-----------------|--------------------------|
| 12932.976 | 40216.14 | 6439.4 | 2801 | 62389.52 | 212.21 |

Total 212.21

Gateman 6

A gang for misc work 20

A gang for other misc work like

keyman, trolleyman, mate, etc 37

Store Kh 2

Total 277.21

LR @ 12.5% 34.65

Proposed staff 311.86 Say 312

Sanctioned strength 325.00

Surplus Posts 325-312= 13

2.5.2 SSE/P.Way/Ambala/USFD:

SSE/USFD/UMB is functioning for detecting of flaw, crack in the track and joints build up by the thermit welding plant. Their schedule and frequency of checking is fixed keeping in view the aspect of GMT. For the ease of work, UMB division is divided into USFD-I, II, II & IV supervised by the SSE/USFD in their respective jurisdiction. The checking detail as per USFD manual is as under

Workload:

| S No | SSE/USFD | Section | GMT | Frequency of testing | | Total Testing Of Track in km |
|------|----------|-----------|----------------|----------------------|------------|------------------------------|
| 1 | UMB-I | UMB-RPJ | 72.96 - 58.47 | 1.5 - 2.0 | -- | 865 |
| | | RPJ-SIR | 62.89 - 52.19 | 1.5 -2.0 | -- | |
| | | SIR-LDH | 44.37 - 41.03 | 2.0 - 2.0 | -- | |
| | | UMB-RPJ | 72.96 - 58.47 | 1.5 - 2.0 | Loop Lines | |
| | | RPJ-SIR | 62.89 - 52.19 | 1.5 -2.0 | | |
| | | SIR-LDH | 44.37 - 41.03 | 2.0 - 2.0 | | |
| 2 | UMB-II | KLK-SML | 0.52 - 0.52 | -- | -- | 945 |
| | | SRE-UMB | 33.52 - 30.98 | -- | -- | |
| | | MB-SRE | 36.55 - 24. 96 | -- | -- | |
| | | DLI-SRE | 11.40 - 10. 09 | -- | -- | |
| 3 | UMB-III | SIR-LDH | 44.37 - 41.03 | 2.0 - 2.0 | | 904 |
| | | SIR-LDH | 41.03 | 2.0 -2.0 | Loop Lines | |
| | | RPJ-DUI | 17.85 | 4 | -- | |
| | | SIR-NLDM | 19.4 | 4 | -- | |
| | | NLDM-AADR | 4.4 | 27 | -- | |
| | | API-DUI | 17.19 | 4 | -- | |
| | | SIR-NLDM | 19.4 | 4 | Loop Lines | |

Proposed requirement of staff:

At present 50 Trackmaintainer staff are working under SSE/USFD to cope up the existing work load. This matter was discussed at various level and the SSE I/C of USFD apprised the work study team that the existing on roll staff strength including LR is sufficient to cope up the existing work load. The work study team is of the opinion that the existing system hold good and may continue.

2.5.3 SSE/P.Way/Ambala/Track Depot:

Track depot UMB is functioning as a store for various SSE/P Way over UMB division and procure material as per need of the entire division related to P Way. The material list is hereby attached as annexure No V in the work study report. At present 29 Trackmaintainer are sanctioned to cope up the existing workload. The requirement of trackmaintainer staff discussed at various level, found sufficient and may continue.

2.5.4 SSE/P.Way/Chandigarh:

| | | | |
|--|---|------------------------|----------------|
| Gang strength as per MCNTM formula:- | GMT | Track in km | |
| Annual Avg.GMT | 6.43 | | |
| Track on PRC in kilometer | | 73.00 | Length of LWR |
| Track on other layout including Running yard line etc. in km | | 27.00 | |
| Total track in kilometer | | 100.00 | |
| Mandays/km/yr. for mechanized track | | | |
| For activity 'T' | | | |
| Annual Avg.GMT: | | | |
| $80+2.3*GMT= 80+2.3*6.43$ | 94.789 mandays/km/yr | | |
| $94.789*73$ | 6919.6 mandays/yr | | |
| For activity 'R' $159*Track\ on\ PRC\ (Mech)\ 159*73$ | 11607 for 73 track km Mandays/yr. | | |
| Activity 'R' for Other Layout and running yard lines $177*27=4779\ mandays/yr$ | | | |
| Total Activity 'T' : = 6919.6 Mandays/yr. | | | |
| Total activity 'R' for mechanized $11607+4779 = \mathbf{16386}$ mandays/yr | | | |
| Activity miscellaneous 'M' | | | |
| Length of LWR | 73 km | | |
| i Monsoon patrolling | $30days*8beats*4men*2\ shifts$ | | 1920 |
| ii Hot weather patrolling | $30*73$ | | 2190 |
| iii Cold weather patrolling | $12*73$ | | 876 |
| iv Vulnerable locations | $2*2*30$ | | 120 |
| v Site store chowkidar | $2*2*365$ | | 1460 |
| vi Rest giver gate keepers | $(LC*2*365-SS*294)$ | $3*2*365-6*294=$ | 426 |
| Total M | | | 6992 |
| Activity site specific 'S':- | | | |
| i Tunnel maintenance | | | -- |
| ii Bridge structure maintenance | | | -- |
| iii Long Girder Bridge maintenance | $0.64*water\ ways\ in\ mtrs*no\ of\ bridge\ 0.64*200*1$ | | 128 |
| iv Extra for every sharp curve | | $2.953\ km*294=868.18$ | |
| v Extra for bad formation | | | -- |
| vi Look out man duty | $4*60\ days$ | | 240 |
| vii Fog signal men duty | | | -- |
| viii Filth removal | | | -- |
| ix Security patrolling | | | -- |
| Total S | | | 1236.18 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|--------|-------|-------------|---------|-----------------|--------------------------|
| 6919.6 | 16386 | 6992 | 1236.18 | 31533.78 | 107.26 |

Total 107.26

| | | |
|--|------------|---------|
| Gateman | 12 | |
| A gang for misc work | 30 | |
| A gang for other misc work like keyman, trolleyman, mate etc | 40 | |
| Total | 189.26 | |
| LR @ 12.5% | 23.66 | |
| Proposed staff | 212.92 | Say 213 |
| Sanctioned strength | 228.00 | |
| Surplus Posts | 228-213=15 | |

2.5.5 SSE/P.Way/SAS Nagar:

| | | | |
|--|--------------------------------------|----------------------|----------------|
| Gang strength as per MCNTM formula:- | GMT | Track in km | |
| Annual Avg.GMT | 2.22 | | |
| Track on PRC in kilometer | | 47.00 | Length of LWR |
| Track on other layout including Running yard line etc. in km | | 1.80 | |
| Total track in kilometer | | 48.80 | |
| Mandays/km/yr. for mechanized track | | | |
| For activity 'T' | | | |
| Annual Avg.GMT: | | | |
| $80+2.3*GMT= 80+2.3*2.2$ | 85.06 mandays/km/yr | | |
| 85.06*47 | 3997.82 mandays/yr | | |
| For activity 'R' 159*Track on PRC (Mech) | 159x47 | 7473 for 47 track km | Mandays/yr. |
| Activity 'R' for Other Layout and running yard lines | 177x1.8=318.6 mandays/yr | | |
| Total Activity 'T' : = 3997.82 Mandays/yr. | | | |
| Total activity 'R' for mechanized | 7473+318.6= 7791.6 mandays/yr | | |
| Activity miscellaneous 'M' | | | |
| Length of LWR | 47 km | | |
| i Monsoon patrolling | 8*30days*2*4 | | 1920 |
| ii Hot weather patrolling | 30x47 | | 1410 |
| iii Cold weather patrolling | 12x47 | | 564 |
| iv Vulnerable locations | 2*2*30 | | 120 |
| v Site store chowkidar | 2x2x365 | | 1460 |
| vi Rest giver gate keepers | (LC*2*365-SS*294) | 3*2*365-6*294= | 426 |
| Total M | | | 5900 |
| Activity site specific 'S':- | | | |
| i Tunnel maintenance | | | -- |
| ii Bridge structure maintenance | | | -- |
| iii Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge | 0.64*315*1 | 201 |
| iv Extra for every sharp curve | 2.953 km*294*1 man | | 868.18 |
| v Extra for bad formation | | | -- |
| vi Look out man duty | 4*60 days | | -- |
| vii Fog signal men duty | | | -- |
| viii Filth removal | | | -- |
| ix Security patrolling | | | -- |
| Total S | | | 1069.18 |

| | T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|--|---------|--------|-------------|---------|-----------------|--------------------------|
| | 3997.82 | 7791.6 | 5900 | 1069.18 | 18758.6 | 63.80 |

| | | |
|---------------------|--------|-----------|
| Total | 63.8 | |
| Gateman | 6 | |
| Total | 69.8 | |
| LR @ 12.5% | 8.73 | |
| Proposed staff | 78.53 | Say 79 |
| Sanctioned strength | 83.00 | |
| Surplus Posts | 83-79= | 04 |

2.5.6 SSE/P.Way/Rajpura:

Gang strength as per MCNTM formula:-

Annual Avg.GMT

Track on PRC in kilometer

Track on PRC in kilometer branch line

Track on other layout including Running yard line etc. in km

Total track in kilometer

Mandays/km/yr. for mechanized track

For activity 'T' for main line

Annual Avg.GMT:

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 55.62$

207.926×94.25

For activity 'R' $159 \times \text{Track on PRC (Mech)} = 159 \times 94.25$

For activity 'T' for branch line

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 8.94$

100.562×23

For activity 'R' 159×23

Activity 'R' for Other Layout and running yard lines

$177 \times 61.23 = \mathbf{10837.71}$ mandays/yr

Total Activity 'T' : $= 19594.025 + 2312.92 = \mathbf{21906.94}$ Mandays/yr.

Total activity 'R' for mechanized $14985.75 + 3657 + 10837.71 = \mathbf{29480.46}$ mandays/yr

Activity miscellaneous 'M'

Length of LWR 126.507 km

| | | | |
|-----|-------------------------|--|--|
| i | Monsoon patrolling | | 200 |
| ii | Hot weather patrolling | 30×117.250 | 3517.5 |
| iii | Cold weather patrolling | 12×126.507 | 1518.08 |
| iv | Vulnerable locations | -- | -- |
| v | Site store chowkidar | $1 \times 2 \times 365$ | 730 |
| vi | Rest giver gate keepers | $(LC \times 2 \times 365 - SS \times 294)$ | $2 \times 2 \times 365 - 4 \times 294$ 284 |
| | Total M | | 6249.58 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|--|--------------------------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | -- |
| iii | Long Girder Bridge maintenance | $0.64 \times \text{water ways in mtrs} \times \text{no of bridge}$ | $0.64 \times 736 \times 1$ 471 |
| iv | Extra for every sharp curve | $1.0 \text{ km} \times 294 \times 1 \text{ man}$ | 294 |
| v | Extra for bad formation | | -- |
| vi | Look out man duty | $4 \times 60 \text{ days}$ | -- |
| vii | Fog signal men duty | | -- |
| viii | Filth removal | | -- |

ix Security patrolling 26

| Total S | | | | | 791.00 |
|----------|----------|----------------|-----|-----------------|--------------------------|
| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
| 21906.94 | 29480.46 | 6249.58 | 791 | 58427.98 | 198.73 |

Total 198.73
 Gateman 4
 Total 202.73
 LR @ 12.5% 25.34
 Proposed staff 228.07 Say 228
 Sanctioned strength 233.00
 Surplus Posts 233-228= 05

2.5.7 SSE/P.Way/Shimla:

Gang strength as per MCNTM formula:-

GMT Track in km

Annual Avg.GMT

0.52

Track on Steel Sleeper in kilometer

50.22

Track on other layout including Running yard line etc. in km

8.53

Total track in kilometer

58.75

For activity 'T' for mechanized track = Nil

Mandays/km/yr. for manual maintenance of N/G track

For activity 'R' 271*Track 271*50.22 13609.62 for 50.22 track km Mandays/yr.

Activity 'R' for Other Layout and running yard lines 153*8.53 1305.09 Mandays/yr.

Total activity 'R' for manual maintenance 13609.62+1305.09=14914.71

Activity miscellaneous 'M'

Length of LWR

Nil

| | | |
|-----------------------------|-------------------|-------------------|
| i Monsoon patrolling | 2*30*16 | 960 |
| ii Hot weather patrolling | | -- |
| iii Cold weather patrolling | | -- |
| iv Vulnerable locations | | 640 |
| v Site store chowkidar | 1x2x365 | 730 |
| vi Rest giver gate keepers | (LC*2*365-SS*294) | 6*2*365-4*294 852 |
| Total M | | 3182 |

Activity site specific 'S':-

| | | |
|------------------------------------|--------------------------------------|---------------|
| i Tunnel maintenance | | 522 |
| ii Bridge structure maintenance | | 100 |
| iii Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge | 0.64*200*1 -- |
| iv Extra for every sharp curve | 1.0 km*294*1 man | 3455 |
| v Extra for bad formation | | 90 |
| vi Look out man duty | | 100 |
| vii Fog signal men duty | | -- |
| viii Filth removal | | -- |
| ix Security patrolling | | 30 |

Total S **4297.00**

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----|----------|------|------|-----------------|--------------------------|
| -- | 14914.71 | 3182 | 4297 | 22393.71 | 76.17 |

Total 76.17
 Gateman 12

| | | |
|--|-----------|-----------|
| A gang for misc work | 7 | |
| A gang for other misc work like keyman, trolleyman, mate etc | 10 | |
| Total | 105.17 | |
| LR @ 12.5% | 13.15 | |
| Proposed staff | 118.32 | Say 118 |
| Sanctioned strength | 120.00 | |
| Surplus Posts | 120-118 = | 02 |

2.5.8 SSE/P.Way/Kalka:

Gang strength as per MCNTM formula:-

| | GMT | Track in km |
|---|----------------------------|-------------|
| Annual Avg.GMT | 6.43 | |
| Track on PRC in kilometer | | 1.69 |
| Track on other layout including Running yard line etc. in km BG | | 34.23 |
| Track on Steel Sleeper in kilometer | | 48.72 |
| Total track in kilometer of BG/NG | | 84.64 |
| Mandays/km/yr. for mechanized track | | |
| For activity 'T' for BG | | |
| Annual Avg.GMT: | | |
| $80 + 2.3 * \text{GMT} = 80 + 2.3 * 6.43$ | 94.789 mandays/km/yr | |
| $94.789 * 1.69$ | 160.19 mandays/yr | |
| For activity 'R' for B/G | | |
| 159 mandays/km/yr*1.69 | 268.71 man days/yr | |
| Activity 'R' for BG 177*34.23 | 6058.71 man days/yr | |
| Total Activity 'R' for BG Other Layout and running yard lines | 6327.42 man days/yr | |
| For NG 48.72 km | | |
| For activity 'R' for manual maintenance of NG 271man days/km/yr= $271 * 48.72 = 13203.12$ | | |
| Total activity 'R' $6327.42 + 13203.12 =$ | 19530.54 | |

Activity miscellaneous 'M'

| | | |
|------------------------------------|--------------------------------------|-------------------------|
| Length of LWR | NIL | |
| i Monsoon patrolling | 15*120 | 1800 |
| ii Hot weather patrolling | | -- |
| iii Cold weather patrolling | | -- |
| iv Vulnerable locations | 2*4*30 | 200 |
| v Site store chowkidar | 1x2x365 | 730 |
| vi Rest giver gate keepers | (LC*2*365-SS*294) | $3 * 2 * 365 - 6 * 294$ |
| 426 | | |
| Total M | | 3156 |
| Activity site specific 'S':- | | |
| i Tunnel maintenance | | 1220 |
| ii Bridge structure maintenance | | 120 |
| iii Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge | -- |
| iv Extra for every sharp curve | | 2205 |
| v Extra for bad formation | | 100 |

| | | |
|---------|---------------------|----------------|
| vi | Look out man duty | 100 |
| vii | Fog signal men duty | 31 |
| viii | Filth removal | -- |
| ix | Security patrolling | -- |
| Total S | | 3776.00 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|--------|----------|------|------|-----------------|--------------------------|
| 160.19 | 19530.54 | 3156 | 3776 | 26622.73 | 90.55 |

| | | |
|--|-----------|-----------|
| Total | 90.55 | |
| Gateman | 6 | |
| A gang for misc work | 6 | |
| A gang for other misc work like keyman, trolleyman, mate etc | 8 | |
| Total | 110.55 | |
| LR @ 12.5% | 13.82 | |
| Proposed staff | 124.37 | Say 124 |
| Sanctioned strength | 124.00 | |
| Surplus Posts | 124-124 = | 00 |

2.5.9 SSE/P.Way/Patiala:

Gang strength as per MCNTM formula:-

Annual Avg.GMT

Track on PRC in kilometer

Track on other layout including Running yard line etc. in km

Total track in kilometer

Mandays/km/yr. for mechanized track

For activity 'T' for main line

Annual Avg.GMT:

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 8.94$

100.502×67.06

For activity 'R' $159 \times \text{Track on PRC (Mech)} = 159 \times 67.06$

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 8.94$

100.562×23

Activity 'R' for Other Layout and running yard lines

Total Activity 'T' : = **6739.66** Mandays/yr.

Total activity 'R' for mechanized $10662.57 + 4663.42 =$ **15325.96** mandays/yr

Activity miscellaneous 'M'

Length of LWR 67.06 km

| | | | |
|---------|-------------------------|-------------------|---------------------|
| i | Monsoon patrolling | | 1780 |
| ii | Hot weather patrolling | 30x67.06 | 3795.21 |
| iii | Cold weather patrolling | 12x67.06 | 804.72 |
| iv | Vulnerable locations | | -- |
| v | Site store chowkidar | 2x2x365 | 1460 |
| vi | Rest giver gate keepers | (LC*2*365-SS*294) | 8*2*365-16*294 3488 |
| Total M | | | 11327.93 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|--|----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | -- |
| iii | Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge 0.64*286.27*1 | 183.21 |
| iv | Extra for every sharp curve | 1 curve*6.23 km*294 | 1831.62 |
| v | Extra for bad formation | | -- |
| vi | Look out man duty | | 1200 |
| vii | Fog signal men duty | | -- |
| viii | Filth removal | | -- |
| ix | Security patrolling | | -- |
| | Total S | | 3214.83 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|---------|----------|----------|---------|-----------------|--------------------------|
| 6739.66 | 15325.96 | 11327.93 | 3214.83 | 36608.38 | 124.52 |

Total 124.52

Gateman 16

A gang for misc work 25

A gang for other misc work like
keyman, trolleyman, mate etc 25

Total 190.52

LR @ 12.5% 23.82

Proposed staff 214.34 Say 214

Sanctioned strength 222.00

Surplus Posts 222-214 **-08**

2.5.9 SSE/P.Way/Dhuri:

Gang strength as per MCNTM formula:-

GMT Track in km

Annual Avg.GMT

Track on PRC in Km LDH-DUI section

9.67 55.800 Length of LWR

Track on PRC in Km DUI-JHL section

6.14 63.960

Track on other layout including Running yard line etc. in km

34.350

Total track in kilometer

154.110

Mandays/km/yr. for mechanized track

LDH-DUI section:

For activity 'T' for main line

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 9.67$

102.241 mandays/km/yr

102.241×55.8

5705.048 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x55.8

8872.2 for 55.80 track km Mandays/yr.

DUI-JHL section:

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 6.14$

94.122 mandays/km/yr

94.122×63.96

6020.043 for 63.96 km mandays/yr

Activity 'R' 159*63.96

10169.64 mandays/yr

Track on other layout including Running yard line etc. in km

177×34.35 6079.95 mandays/yr

Total Activity 'T' : = 5705.048+6020.043 = **11725.523** Mandays/yr.

Total activity 'R' for mechanized 8872.2+10169.64+6079.95=25121.79mandays/yr

Activity miscellaneous 'M'

Length of LWR 119.76 km

i Monsoon patrolling 3592.8

ii Hot weather patrolling 30x119.76 3592.8

iii Cold weather patrolling 12x119.76 1437.12

| | | | | |
|----|-------------------------|-------------------|----------------|-----------------|
| iv | Vulnerable locations | | | -- |
| v | Site store chowkidar | 2x2x365 | | 1460 |
| vi | Rest giver gate keepers | (LC*2*365-SS*294) | 8*2*365-16*294 | 1136 |
| | Total M | | | 11218.72 |

Activity site specific 'S':-

| | | | | |
|------|--------------------------------|--------------------------------------|---------------|----------------|
| i | Tunnel maintenance | | | -- |
| ii | Bridge structure maintenance | | | 1200 |
| iii | Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge | 0.64*365.28*2 | 467.4 |
| iv | Extra for every sharp curve | 2 curve*km*365*1 | | 730.00 |
| v | Extra for bad formation | | | 900 |
| vi | Look out man duty | | | 1200 |
| vii | Fog signal men duty | | | 1515 |
| viii | Filth removal | | | -- |
| ix | Security patrolling | | | 900 |
| | Total S | | | 6912.40 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|-----------|----------|----------|--------|-----------------|--------------------------|
| 11725.523 | 25121.79 | 11218.72 | 6912.4 | 54978.433 | 187.00 |

Total 187

Gateman 16

A gang for misc work 20

A gang for other misc work like
keyman, trolleyman, mate etc 32

Total 255

LR @ 12.5% 31.88

Proposed staff 286.88 Say 287

Sanctioned strength 306.00

Surplus Posts 306-287=**19**

2.5.10 SSE/P.Way/Uklana:

Gang strength as per MCNTM formula:-

GMT Track in km

Annual Avg.GMT S/L

Track on PRC in Km

3.07 84.691 Length of LWR

Track on other layout including Running yard line etc. in km

7.747

Total track in kilometer

92.438

Mandays/km/yr. for mechanized track

For activity 'T'

80+2.3*GMT= 80+2.3x6.14

94.122 mandays/km/yr

94.122*84.691

7971.286 mandays/yr

Activity 'R' 159*Track on PRC (Mech) 159x84.691

13465.87 for 84.691 track km Mandays/yr.

Track on other layout including Running yard line etc. in km

177*7.747 1371.22 mandays/yr

Total Activity 'T' : = **7971.286** Mandays/yr.

Total activity 'R' for mechanized 1371.22+13465.87 =**14837.09** mandays/yr

Activity miscellaneous 'M'

Length of LWR

84.691 km

i Monsoon patrolling

450

ii Hot weather patrolling

30x84.691

2540.73

iii Cold weather patrolling

12x84.691

1016.292

| | | | | |
|----|-------------------------|-------------------|-----------------|-----------------|
| iv | Vulnerable locations | | | 156 |
| v | Site store chowkidar | 2x2x365 | | 1460 |
| vi | Rest giver gate keepers | (LC*2*365-SS*294) | 10*2*365-20*294 | 1420 |
| | Total M | | | 7043.022 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|-------------------|----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | -- |
| iii | Long Girder Bridge maintenance | | 122 |
| iv | Extra for every sharp curve | 2 curve*km*365*1= | 730.00 |
| v | Extra for bad formation | | 180 |
| vi | Look out man duty | | 652 |
| vii | Fog signal men duty | | 430 |
| viii | Filth removal | | -- |
| ix | Security patrolling | | -- |
| | Total S | | 2114.00 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|----------|----------|------|-----------------|--------------------------|
| 7971.286 | 14837.09 | 7043.022 | 2114 | 31965.398 | 108.73 |

Total 108.73

Gateman 20

A gang for misc work 25

A gang for other misc work like
keyman, trolleyman, mate etc 42

Total 195.73

LR @ 12.5% 24.47

Proposed staff 220.20 Say 220

Sanctioned strength 227.00

Surplus Posts 227-220=**07**

2.5.11 SSE/P.Way/Sirhind:

Gang strength as per MCNTM formula:-

| | GMT | Track in km | |
|--|--------|-------------|---------------|
| Annual Avg.GMT Main Line | 57.540 | 26.473 | Length of LWR |
| Section SIR-NLDM | 9.520 | 39.000 | Length of LWR |
| Section SMRL | 2.220 | 55.950 | Length of LWR |
| Total LWR in kilometer | | 121.423 | |
| Track on other layout including Running yard line etc. in km | | 27.660 | |

Total track in kilometer 270.506

Mandays/km/yr. for mechanized track

i. Main Line:

80+2.3*GMT= 80+2.3x57.54

212.342*26.473

Activity 'R' 159*Track on PRC (Mech) 159x26.4731 **4209.207** for 26.473 track km Mandays/yr.

ii. Section SIR-NLDM:

For activity 'T'

80+2.3*GMT= 80+2.3x9.52

101.16*39.0

Activity 'R' 159*Track on PRC (Mech) 159x39.0

Track on other layout including Running yard line etc. in km

212.342 mandays/km/yr

5621.33 mandays/yr

101.16 mandays/km/yr

3945.24 mandays/yr

6201 for track 39.0 km Mandays/yr.

177*23.03

4076.31

mandays/yr

iii. Section SMRL:

$$80+2.3*GMT= 80+2.3*2.2$$

85.106 mandays/km/yr

$$85.106*55.95$$

4761.68 mandays/yr

Activity 'R' 159*Track on PRC (Mech) 159x55.95 **8896.05** for track 55.95 km Mandays/yr.

Track on other layout including Running yard line etc. in km 177*4.63 **819.51** mandays/yr

Total Activity 'T' : = 5621.33+ 3945.24+4761.68 = **14322.25** Mandays/yr.

Total activity 'R' for mechanized 4209.207+6201+4076.31+8896.05+819.51 = **24202.077** mandays/yr

Activity miscellaneous 'M'

Length of LWR 121.423 km

| | | | |
|-----|-------------------------|-------------------|------------------------|
| i | Monsoon patrolling | 2*22*30 | 1320.000 |
| ii | Hot weather patrolling | 30x121.423 | 3642.690 |
| iii | Cold weather patrolling | 12x121.423 | 1457.076 |
| iv | Vulnerable locations | | -- |
| v | Site store chowkidar | 2x2x365 | 1460.000 |
| vi | Rest giver gate keepers | (LC*2*365-SS*294) | 6*2*365-12*294=852.000 |
| | Total M | | 8731.766 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|------|-----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | -- |
| iii | Long Girder Bridge maintenance | | 1528.000 |
| iv | Extra for every sharp curve | | 5230.000 |
| v | Extra for bad formation | | 410.000 |
| vi | Look out man duty | 6*30 | 180.000 |
| vii | Fog signal men duty | | -- |
| viii | Filth removal | | -- |
| ix | Security patrolling | | 152.000 |
| | Total S | | 7500.000 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|-----------|----------|------|-----------------|--------------------------|
| 14322.25 | 24202.077 | 8731.766 | 7500 | 54756.093 | 186.25 |

| | |
|--|------------|
| Total | 186.25 |
| Gateman | 12 |
| A gang for misc work | 5 |
| A gang for other misc work like keyman, trolleyman, mate etc | 10 |
| For Container Depot | 30 |
| Total | 243.25 |
| LR @ 12.5% | 30.41 |
| Proposed staff | 273.66 |
| Sanctioned strength | 288 |
| Surplus Posts | 288-274=14 |
| | Say 274 |

2.5.12 SSE/P.Way/Doraha:

Gang strength as per MCNTM formula:-

GMT

Track in km

Annual Avg.GMT

42.7

Track on PRC in kilometer

86.480 Length of LWR

Track on other layout including Running yard line etc. in km

22.760

Total track in kilometer 109.240
Mandays/km/yr. for mechanized track
For activity 'T' for main line
Annual Avg.GMT:
 $80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 42.7$ 178.21 mandays/km/yr
 178.21×86.48 15411.60 mandays/yr
For activity 'R' 159*Track on PRC (Mech) 159x86.48 13750.32 for 86.48 track km Mandays/yr.
Activity 'R' for Other Layout and running yard lines 177x22.76 4028.52 Mandays/yr.
Total Activity 'T' : = **15411.60** Mandays/yr.
Total activity 'R' for mechanized 13750.32+4028.52= **17778.84** mandays/yr

Activity miscellaneous 'M'

Length of LWR 86.48 km

| | | | |
|-----|-------------------------|----------|----------------|
| i | Monsoon patrolling | | 90 |
| ii | Hot weather patrolling | 30x86.48 | 2594.4 |
| iii | Cold weather patrolling | 12x86.48 | 1037.76 |
| iv | Vulnerable locations | | -- |
| v | Site store chowkidar | 1x2x365 | 730 |
| vi | Rest giver gate keepers | | -- |
| | Total M | | 4452.16 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|---|----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | 210 |
| iii | Long Girder Bridge maintenance | 0.64*water ways in mtrs*no of bridge 0.64*200*1 | 140 |
| iv | Extra for every sharp curve | 1.0 km*294*1 man | -- |
| v | Extra for bad formation | | -- |
| vi | Look out man duty | | 1070 |
| vii | Fog signal men duty | | -- |
| viii | Filth removal | | -- |
| ix | Security patrolling | | -- |
| | Total S | | 1420.00 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|---------|----------|---------|------|-----------------|--------------------------|
| 15411.6 | 17778.84 | 4452.16 | 1420 | 39062.6 | 132.87 |

Total 132.87

Gateman 8

A gang for misc work 30

A gang for other misc work like
keyman, trolleyman, mate etc 30

Total 200.87

LR @ 12.5% 25.11

Proposed staff 225.98 Say 226

Sanctioned strength 234

Surplus Posts 234-226=**08**

2.5.13 SSE/P.Way/Roop Nagar:

Gang strength as per MCNTM formula:-

Annual Avg.GMT

GMT

Track in km

9.52

Track on PRC in kilometer

72.130

Length of LWR

Track on other layout including Running yard line etc. in km 59.980
Total track in kilometer 132.110
Mandays/km/yr. for mechanized track
For activity 'T'
 $80+2.3*GMT= 80+2.3*9.52$ 101.90 mandays/km/yr
 $101.90*72.13$ 7350.05 mandays/yr
For activity 'R' 159*Track on PRC (Mech) 159x72.13 11468.67 for 72.13 track km Mandays/yr.
Activity 'R' for Other Layout and running yard lines 177x59.98 10616.46 Mandays/yr.
Total Activity 'T' : =**7350.05** Mandays/yr.
Total activity 'R' for mechanized 11468.67+10616.46= **22085.13** mandays/yr

Activity miscellaneous 'M'

Length of LWR 72.13 km

| | | | |
|-----|-------------------------|----------------|----------------|
| i | Monsoon patrolling | 2*8*90 | 1440 |
| ii | Hot weather patrolling | 30x72.13 | 2163.9 |
| iii | Cold weather patrolling | 12x72.13 | 865.56 |
| iv | Vulnerable locations | 6*90 | 540 |
| v | Site store chowkidar | 2x2x365 | 1460 |
| vi | Rest giver gate keepers | 6*2*365-12*294 | 852 |
| | Total M | | 7321.46 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|---------|----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | 1152 |
| iii | Long Girder Bridge maintenance | | 2520 |
| iv | Extra for every sharp curve | 10*2*12 | 240 |
| v | Extra for bad formation | | -- |
| vi | Look out man duty | 4*365 | 1460 |
| vii | Fog signal men duty | | -- |
| viii | Filth removal | | -- |
| ix | Security patrolling | | 300 |
| | Total S | | 5672.00 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|---------|----------|---------|------|-----------------|--------------------------|
| 7350.05 | 22085.13 | 7321.46 | 5672 | 42428.64 | 144.32 |

| | | |
|--|--------------------|---------|
| Total | 144.32 | |
| Gateman | 12 | |
| A gang for misc work | 18 | |
| A gang for other misc work like keyman, trolleyman, mate etc | 30 | |
| For NFL & POL siding | 30 | |
| For new section AADR | 30 | |
| Total | 264.32 | |
| LR @ 12.5% | 33.04 | |
| Proposed staff | 297.36 | Say 297 |
| Sanctioned strength | 304 | |
| Surplus Posts | 304-297= 07 | |

2.5.14 SSE/P.Way/Saharanpur:

Gang strength as per MCNTM formula:-

| | GMT | Track in km |
|--|-------|----------------------|
| Annual Avg.GMT | 32.25 | |
| Track on PRC in kilometer | | 54.909 Length of LWR |
| Track on other layout including Running yard line etc. in km | | 76.590 |
| Total track in kilometer | | 131.499 |

Mandays/km/yr. for mechanized track

For activity 'T'

$$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 32.25$$

154.175 mandays/km/yr

$$154.175 \times 54.909$$

8465.60 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x54.909 8730.53for 54.909 track km Mandays/yr.

Activity 'R' for Other Layout and running yard

$$177 \times 76.59$$

13556.43 Mandays/yr.

Total Activity 'T' : = **8465.60** Mandays/yr.

Total activity 'R' for mechanized 8730.53+13556.43 = **22286.96** mandays/yr

Activity miscellaneous 'M'

Length of LWR

54.909 km

| | | | |
|-----|-------------------------|----------------|-----------------|
| i | Monsoon patrolling | 3*8*90 | 2160 |
| ii | Hot weather patrolling | 30x54.909 | 1647.27 |
| iii | Cold weather patrolling | 12x54.909 | 658.908 |
| iv | Vulnerable locations | 5*90 | 450 |
| v | Site store chowkidar | 2x2x365 | 1460 |
| vi | Rest giver gate keepers | 6*2*365-12*294 | 852 |
| | Total M | | 7228.178 |

Activity site specific 'S':-

| | | | |
|------|--------------------------------|----------------|----------------|
| i | Tunnel maintenance | | -- |
| ii | Bridge structure maintenance | | 1152 |
| iii | Long Girder Bridge maintenance | 1*0.64*2000 mt | 1280 |
| iv | Extra for every sharp curve | 2*2*365 | 1460 |
| v | Extra for bad formation | 2*365 | 730 |
| vi | Look out man duty | 2*365 | 730 |
| vii | Fog signal men duty | | 120 |
| viii | Filth removal | | -- |
| ix | Security patrolling | | -- |
| | Total S | | 5472.00 |

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|--------|----------|----------|------|-----------------|--------------------------|
| 8465.6 | 22286.96 | 7228.178 | 5472 | 43452.738 | 147.80 |

Total 147.8

Gateman 12

A gang for misc work 10

A gang for other misc work like
keyman, trolleyman, mate etc 15

Total 184.8

LR @ 12.5% 23.10

Proposed staff 207.90 Say 208

Sanctioned strength 229

Surplus Posts 229-208=**21**

2.5.15 SSE/P.Way/Yamuna Nagar (YJUD):

| | | | |
|--|-------|-------------|---------------|
| Gang strength as per MCNTM formula:- | GMT | Track in km | |
| Annual Avg.GMT | 32.25 | | |
| Track on PRC in kilometer | | 93.089 | Length of LWR |
| Track on other layout including Running yard line etc. in km | | 25.347 | |
| Total track in kilometer | | 118.436 | |

Mandays/km/yr. for mechanized track

For activity 'T'

$$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 32.25$$

154.175 mandays/km/yr

$$154.175 \times 93.089$$

14351.99 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x93.089 14801.15 for 93.089 track km Mandays/yr.

Activity 'R' for Other Layout and running yard

lines

$$177 \times 25.347$$

4486.42 Mandays/yr.

Total Activity 'T' : = **14351.99** Mandays/yr.

Total activity 'R' for mechanized 14801.15+4486.42 = **19287.57** mandays/yr

Activity miscellaneous 'M'

Length of LWR

93.089 km

i Monsoon patrolling

$$2 \times 6 \times 90$$

1080

ii Hot weather patrolling

$$30 \times 93.089$$

2792.67

iii Cold weather patrolling

$$12 \times 93.089$$

1117.068

iv Vulnerable locations

$$2 \times 60 + 2 \times 365$$

850

v Site store chowkidar

$$2 \times 2 \times 365$$

1460

vi Rest giver gate keepers

$$4 \times 2 \times 365 - 8 \times 294$$

568

Total M

7867.738

Activity site specific 'S':-

i Tunnel maintenance

--

ii Bridge structure maintenance

$$4 \times 365$$

1460

iii Long Girder Bridge maintenance

$$1 \times 0.64 \times 1800 \text{ mt}$$

1152

iv Extra for every sharp curve

$$3 \times 365$$

1095

v Extra for bad formation

$$2 \times 365$$

730

vi Look out man duty

$$2 \times 365$$

730

vii Fog signal men duty

1920

viii Filth removal

--

ix Security patrolling

26

Total S

7113.00

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|----------|----------|------|-----------------|--------------------------|
| 14351.99 | 19287.57 | 7867.738 | 7113 | 48620.298 | 165.38 |

Total 163.2

Gateman 8

A gang for misc work 5

Total 176.2

LR @ 12.5% 22.03

Proposed staff 198.23 Say 198

Sanctioned strength 207

Surplus Posts 207-198=**09**

2.5.16 SSE/P.Way/Jagadhari Workshop:

Gang strength as per MCNTM formula:-

Annual Avg.GMT

GMT

Track in km

--

Track on PRC in kilometer

74.700

Total track in kilometer

74.700

Mandays/km/yr. for mechanized track

For activity 'T'

$80 + 2.3 \times \text{GMT} = 80 + 2.3 \times 0$

0 mandays/km/yr

--

0 mandays/yr

Activity 'R' for Other Layout and running yard lines $177 \times 74.70 = 13221.9$ Mandays/yr.

Total Activity 'T' : -- Mandays/yr.

Total activity 'R' for mechanized **13221.9** mandays/yr

Activity miscellaneous 'M'

Length of LWR

--

i Monsoon patrolling

--

ii Hot weather patrolling

--

iii Cold weather patrolling

--

iv Vulnerable locations

$3 \times 365 =$

1095

v Site store chowkidar

$1 \times 2 \times 365$

730

vi Rest giver gate keepers

--

Total M

1825

Activity site specific 'S':-

i Tunnel maintenance

--

ii Bridge structure maintenance

--

iii Long Girder Bridge maintenance

--

iv Extra for every sharp curve

--

v Extra for bad formation

--

vi Look out man duty

--

vii Fog signal men duty

--

viii Filth removal

--

ix Security patrolling

--

Total S

0.00

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----|---------|------|---|-----------------|--------------------------|
| -- | 13221.9 | 1825 | 0 | 15046.9 | 51.18 |

Total 51.18

Gateman 2

A gang for misc work 5

A gang for other misc work like
keyman, trolleyman, mate etc 5

Total 63.18

LR @ 12.5% 7.90

Proposed staff 71.08 Say 71

Sanctioned strength 44

Surplus Posts $44 - 71 = -27$ Shortage

2.5.17 SSE/P.Way/Bathinda:

| | | |
|--|------|-------------|
| Gang strength as per MCNTM formula:- | GMT | Track in km |
| Annual Avg.GMT DUI-BTI section | 7.51 | 14.000 |
| Annual Avg.GMT BTI-SGMR section | 4.95 | 48.959 |
| Track on PRC in kilometer | | 62.959 |
| Track on other layout including Running yard line etc. in km | | 68.357 |
| Total Track | | 131.316 |

Mandays/km/yr. for mechanized track

For activity 'T' DUI-BTI section:

$$80+2.3*GMT = 80+2.3*7.51$$

97.273 mandays/km/yr

$$97.273*14.0$$

1361.822 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x14

2226 for 14.0 track km Mandays/yr.

For activity 'T' BTI-SGMR section:

$$80+2.3*GMT = 80+2.3*4.95$$

91.385 mandays/km/yr

$$91.385*48.959$$

4474.12 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x48.959

7784.481 for 48.959 track km Mandays/yr.

Activity 'R' for Other Layout and running yard lines 177x68.357 12099.189 Mandays/yr.

Total Activity 'T' : =1361.822+4474.12= **5835.942** Mandays/yr.

Total activity 'R' for mechanized 2226+7784.481+12099.189 = **22109.67** mandays/yr

Activity miscellaneous 'M'

| | | |
|-----------------------------|-----------|----------------------|
| Length of LWR | 62.959 km | |
| i Monsoon patrolling | 3*6*90 | 1620 |
| ii Hot weather patrolling | 30x62.959 | 1888.77 |
| iii Cold weather patrolling | 12x62.959 | 755.508 |
| iv Vulnerable locations | 2*4*60 | 480 |
| v Site store chowkidar | 2x2x365 | 1460 |
| vi Rest giver gate keepers | | 12*2*365-24*294=1704 |
| Total M | | 7908.278 |

Activity site specific 'S':-

| | | |
|------------------------------------|---------|------|
| i Tunnel maintenance | | -- |
| ii Bridge structure maintenance | 4*365 | 1460 |
| iii Long Girder Bridge maintenance | | -- |
| iv Extra for every sharp curve | 2*3*365 | 2190 |
| v Extra for bad formation | 2*9*60 | 1080 |
| vi Look out man duty | 2*365 | 730 |
| vii Fog signal men duty | 4*3*60 | 720 |
| viii Filth removal | | -- |
| ix Security patrolling | | -- |

Total S **6180.00**

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|----------|----------|------|-----------------|--------------------------|
| 5835.942 | 22109.67 | 7908.278 | 6180 | 42033.89 | 142.97 |

Total 142.97

Gateman 24

A gang for misc work 20

A gang for other misc work like

| | | |
|------------------------------|----------|-----------|
| keyman, trolleyman, mate etc | 10 | |
| For NFL/BTI siding | 10 | |
| Total | 206.97 | |
| LR @ 12.5% | 25.87 | |
| Proposed staff | 232.84 | Say 233 |
| Sanctioned strength | 243 | |
| Surplus Posts | 243-233= | 10 |

2.5.18 SSE/P.Way/Bathinda USFD:

SSE/BTI is functioning for detecting of flaw, crack in the track and joints build up by the thermit welding plant. Their schedule and frequency of checking is fixed keeping in view the aspect of GMT. The checking detail as per USFD manual is as under

| GMT | Frequency |
|---|------------------------|
| Up to 5 | 24 month |
| > 5 up 8 | 12 month |
| > 8 up to 12 | 09 month |
| > 12 up 16 | 06 month |
| > 16 up 24 | 04 month |
| > 24 up 40 | 03 month |
| > 40 up 60 | 02 month |
| > 60 up 80 | 1.5 month |
| > 80 | 01 month |
| Aluminium Thermit welding (ATW Testing) | |
| Acceptance Test | Immediately after test |
| First Periodic test | 01 yr |
| Further tests | Based on GMT |
| Up to 15 | 60 month |
| > 15 up to 30 | 48 month |
| > 30 up to 45 | 36 month |
| > 45 | 24 month |

Workload:

Following is the jurisdiction of SSE/USFD/BTI

| | | | |
|----------|---------------------|---|------------------|
| DLI-BTI | 79.1 - 173.38 km | } | Total 964.642 km |
| BTI-SGMR | 79.1 - 125 km | | |
| LDH-DUI | 4.0 - 61.990 km | | |
| DUI-JHL | 61.990 - 127.120 km | | |
| JHL-HSR | 1.16 - 99.40 Km | | |

Proposed requirement of staff: At present 09 Trackmaintainer staff are deputed to cope up the existing work load. This matter was discussed at various level and the SSE I/C of USFD apprised the work study team that the existing on roll staff strength including LR is sufficient to cope up the existing work load. The work study team is of the opinion that the existing system hold good and may continue.

2.5.19 SSE/P.Way/Barnala:

| | | |
|--|------|-------------|
| Gang strength as per MCNTM formula:- | GMT | Track in km |
| Annual Avg.GMT | 7.51 | |
| Track on PRC in kilometer | | 92.400 S/L |
| Track on other layout including Running yard line etc. in km | | 9.550 |
| Total Track | | 101.950 |
| Mandays/km/yr. for mechanized track | | |

For activity 'T':

$$80+2.3*GMT= 80+2.3*15.02$$

114.546 mandays/km/yr

$$114.54*92.40$$

10584.05 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159*92.40

14691.6 for 92.40 track km Mandays/yr.

Activity 'R' for Other Layout and running yard lines 177*9.55

1690.35 Mandays/yr.

Total Activity 'T' : = **10584.05** Mandays/yr.

Total activity 'R' for mechanized 14691.6+1690.35= **16381.95** mandays/yr

Activity miscellaneous 'M'

Length of LWR

92.40 km

i Monsoon patrolling

3*4*60

720

ii Hot weather patrolling

30*92.40

2772

iii Cold weather patrolling

12*92.40

1108.8

iv Vulnerable locations

2*6*60

720

v Site store chowkidar

2*2*365

1460

vi Rest giver gate keepers

12*2*365-24*294=1704

Total M

8484.8

Activity site specific 'S':-

i Tunnel maintenance

--

ii Bridge structure maintenance

4*365

1460

iii Long Girder Bridge maintenance

0.64*2200 mt

1408

iv Extra for every sharp curve

2*4*365

2920

v Extra for bad formation

2*9*60

1080

vi Look out man duty

2*365

730

vii Fog signal men duty

4*3*60

720

viii Filth removal

--

ix Security patrolling

--

Total S

8318.00

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|----------|--------|------|-----------------|--------------------------|
| 10584.05 | 16381.95 | 8484.8 | 8318 | 43763.8 | 148.86 |

Total 148.86

Gateman 24

A gang for misc work 14

A gang for other misc work like
keyman, trolleyman, mate etc 20

Total 206.86

LR @ 12.5% 25.86

Proposed staff 232.72 Say 233

Sanctioned strength 243

Surplus Posts 243-233=**10**

2.5.20 SSE/P.Way/Abohar:

Gang strength as per MCNTM formula:-

GMT

Track in km

Annual Avg.GMT

4.915

Track on PRC in kilometer

86.000 S/L

Track on other layout including Running yard line etc. in km

17.200

Total Track

103.200

Mandays/km/yr. for mechanized track

For activity 'T':

$$80+2.3*GMT= 80+2.3*9.83$$

102.609 mandays/km/yr

$$102.609*86.0$$

8824.374 mandays/yr

For activity 'R' 159*Track on PRC (Mech) 159x86.0

13674 for 86.0 track km Mandays/yr.

Activity 'R' for Other Layout and running yard lines

$$177*17.20$$

3044.4 Mandays/yr.

Total Activity 'T' : = **8824.374** Mandays/yr.

Total activity 'R' for mechanized 13674+3044.40 = **16718.40** mandays/yr

Activity miscellaneous 'M'

Length of LWR

86 km

i Monsoon patrolling

$$3*4*60$$

720

ii Hot weather patrolling

$$30*86.0$$

2580

iii Cold weather patrolling

$$12*86.0$$

1032

iv Vulnerable locations

$$2*6*30$$

360

v Site store chowkidar

$$2*2*365$$

1460

vi Rest giver gate keepers

$$9*2*365-18*294=1278$$

Total M

7430

Activity site specific 'S':-

i Tunnel maintenance

--

ii Bridge structure maintenance

$$2*365$$

730

iii Long Girder Bridge maintenance

--

iv Extra for every sharp curve

$$2*2*365$$

1460

v Extra for bad formation

$$2*4*60$$

480

vi Look out man duty

--

--

vii Fog signal men duty

--

--

viii Filth removal

--

ix Security patrolling

--

Total S

2670.00

| T | R | M | S | Total (T+R+M+S) | Calculated Gang Strength |
|----------|---------|------|------|-----------------|--------------------------|
| 8824.374 | 16718.4 | 7430 | 2670 | 35642.774 | 121.23 |

Total 121.23

Gateman 18

A gang for misc work 15

A gang for other misc work like keyman, trolleyman, mate etc 12

Total 166.23

LR @ 12.5% 20.78

Proposed staff 187.01 Say 187

Sanctioned strength 191

Surplus Posts 191-187=**04**

2.6.0 ADEN WISE AND SSE/P.Way wise, the summarized position of existing S/S proposed staff and surplus/required position of trackmaintainer over UMB Division is given below:-

| AEN | SSE/ P Way | S/S | Proposed staff | Surplus (+) Shortage (-) |
|-------|--------------------------|-------------|----------------|-----------------------------|
| UMB | Ambala Cantt (UMB) | 325 | 312 | 13 |
| | Ambala Cantt (USFD UMB) | 50 | 50 | 0 |
| | Ambala Cantt (UMB TD) | 29 | 29 | 0 |
| CDG | Chandigarh (CDG) | 228 | 213 | 15 |
| | Sahibzada AS ngr (SASN) | 83 | 79 | 4 |
| RPJ | Rajpura (RPJ) | 233 | 228 | 5 |
| SML | Shimla (SML) | 120 | 118 | 2 |
| | Kalka (KLK) | 124 | 124 | 0 |
| PTA | Patiala (PTA) | 222 | 214 | 8 |
| | Dhuri (DUI) | 306 | 287 | 19 |
| | Uklana (UKN) | 227 | 220 | 7 |
| SIR | Sirhind (SIR) | 288 | 274 | 14 |
| | Roop Nagar (RPAR) | 304 | 297 | 7 |
| | Doraha (DOA) | 234 | 226 | 8 |
| SRE | Saharanpur (SRE) | 229 | 208 | 21 |
| | Yamuna Nagar (YJUD) | 207 | 198 | 9 |
| JUDW | Jagadhri Workshop (JUDW) | 44 | 71 | -27 |
| BTI | Bathinda (BTI) | 243 | 233 | 10 |
| | Bathinda USFD BTI | 9 | 9 | 0 |
| | Barnala (BNN) | 243 | 233 | 10 |
| | Abohar (ABS) | 191 | 187 | 4 |
| Total | | 3939 | 3810 | 129 |

The above table reveals that the proposed requirement of trackman comes to **3810** against the sanctioned strength of **3939** posts thus **129** posts of misc. staff (Trackmaintainer 118 & store Kh 11) are identified as surplus and recommended for surrender.

RECOMMENDATION NO.1

It is proposed that 129 posts of misc staff in Gr. ₹ 5200-20200-1800 identified as surplus under the administrative control of Sr.DEN/C/UMB over Ambala Division and recommended for surrender as under.

| S No | Category | Grade in Rs | No of posts |
|-------|-----------------|-----------------|-------------|
| 1 | Trackmaintainer | 5200-20200-1800 | 118 |
| 2 | Store Kh | 5200-20200-1800 | 11 |
| Total | | | 129 |

2.7.0 During the conduct of work study, it was discussed at various levels and apprised that the work done on contractual basis is economical and better in quality when compared with departmental staff. Some activities like Shallow screening, Loading, leading and unloading of material, Cleaning of drains and waterways, Heavy cess repair and attention to cuttings and trolley refuges, Rectifying damage of L/C posts/ gates, Painting of weld collars and rails, Destressing LWR when planned with track renewal, USFD testing, Creep pulling and overhauling of turn outs, Reconditioning of tongue rails and crossings, Unloading ballast, Muck removal from yard and lubrication of Elastic Rail Clips (ERCs) can be outsourced which will not only be economical but also increase productivity and standard of work.

RECOMMENDATION NO.2

It is proposed to explore the possibilities of outsourcing the activities without compromising safety with a view to achieve economy and increased manpower productivity.

2.8.0

GENERAL OBSERVATIONS

During the conduct of study, the team was apprised that there is shortage of track maintenance machines in the division which should be procured immediately. On some branch line some of the track is still on steel sleeper which is not only uncomfortable to the rail users but also the journey is time consuming. The track with steel sleepers should be renewed with PRC sleeper so that punctuality and speed can be maintained in the section.

FINANCIAL IMPLICATIONS

After the implementation of the work study recommendations following are the financial implications.

| SN | Category | Grade Rs. | Refer Recom. No. | No. of surplus posts | Monthly value per posts ₹ | Anticipated annual recurring saving ₹ |
|----|-----------------|---------------------|------------------------|----------------------------|------------------------------------|--|
| 1 | Trackmaintainer | 5200-20200 +1800 | 1 | 118 | 24278 | 34377648- |
| 2 | Store Khallasi | 5200-20200 +1800 | 1 | 11 | 24278 | 3204696 |
| | | Total | | 129 | | 37582344/- |

No. of posts identified as surplus: -

Group 'C' = NIL posts

Group 'D' = 129 posts

Total = 129 posts

Anticipated recurring saving = ₹ 375.82 lakh per annum

Capital saving _ Nil

Total saving = ₹ 375.82 lakh per annum

4.0.0 PRODUCTIVITY

4.1.0 The total annual expenditure on the sanctioned strength of misc staff working under SSE/P.Way controlled by Sr.DEN/C/UMB over UMB Division is tabulated as under:-

| S N | Category | Pay Scale + Grade Pay | Monthly value per posts in ₹ | Sanctioned strength | Total annual expenditure in ₹ |
|-------|------------------|-----------------------|------------------------------|---------------------|-------------------------------|
| 1 | T-maintainer-I | 5200-20200+2800 | 39371 | 110 | 51969720 |
| 2 | T-maintainer-II | 5200-20200+2400 | 34398 | 398 | 164284848 |
| 3 | T-maintainer-III | 5200-20200+1900 | 26852 | 1051 | 338657424 |
| 4 | T-maintainer-IV | 5200-20200+1800 | 24278 | 2349 | 684348264 |
| 5 | Store Kh | 5200-20200+1800 | 24278 | 31 | 9031416 |
| Total | | | | 3939 | 1248291672 |

The above table reveals that Ambala division is expending ₹ 1248291672/- on the sanctioned posts of 3939 misc staff every year.

4.1.2. The annual expenditure on the proposed misc staff working under SSE/P.Way controlled by Sr.DEN/C/UMB.

| S N | Category | Pay Scale + Grade Pay | Monthly value per posts in ₹ | Proposed strength | Total annual expenditure in ₹ |
|-------|------------------|-----------------------|------------------------------|-------------------|-------------------------------|
| 1 | T-maintainer-I | 5200-20200+2800 | 39371 | 110 | 51969720 |
| 2 | T-maintainer-II | 5200-20200+2400 | 34398 | 398 | 164284848 |
| 3 | T-maintainer-III | 5200-20200+1900 | 26852 | 1051 | 338657424 |
| 4 | T-maintainer-IV | 5200-20200+1800 | 24278 | 2231 | 649970616 |
| 5 | Store Kh | 5200-20200+1800 | 24278 | 20 | 5826720 |
| Total | | | | 3810 | 1210709328 |

The above table reveals that after the implementation of the work study report, the expenditure on the proposed staff will come to ₹ 1210709328/-. Therefore the expenditure will be reduced from ₹ 1248291672/- to ₹ 1210709328/-.

WORK STUDY REPORT DETAILED CHART

Department : - Engineering

Name of study: - Review of P. Way staff working under SSE/P. Way controlled by Sr.DEN/C/UMB over Ambala Division.

Activity Centre: - UMB, USFD UMB, UMB TD, CDG, SASN, RPJ, SML, KLK, PTA, DUI, UKN, SIR, DOA, RPAR, SRE, YJUD, JUDW, BTI, USFD BTI BNN and ABS

| S N | Sub activity | Brief description of workload | Actual staff deployed | Work Study recommendation | Representative workload |
|--------|--|--|-----------------------------------|--|---|
| 1 | UMB, USFD UMB, UMB TD, CDG, SASN, RPJ, SML, KLK, PTA, DUI, UKN, SIR, DOA, RPAR, SRE, YJUD, JUDW, BTI, USFD BTI BNN and ABS | Maintenance of track through various maintenance practices, security hot/cold patrolling, bad spots, welding, black smithy, watching and vulnerable locations etc. | S/S= 3939 O/R=3342 Vac =597 | S/S =3939 posts Proposed staff= 3810 Surplus posts Gr 'C' = Nil Gr 'D' = 129 | To maintain the track maintenance by adopting various activities of maintenance as per MCNTM formula. |

LIST OF ANNEXURES

| S.N. | Description | Annex. No. |
|------|--|------------|
| 1 | Letter of authority No. 16-CP/06/2020-21 dt. 18.03.2019. | I |
| 2 | Statement showing category wise, the sanctioned strength of P. Way staff working under SSE/P. Way controlled by Sr.DEN/C/UMB over Ambala Division. | II |
| 3 | Statement showing workload of track kilometer being maintained by the track maintainer staff working under SSE/P. Way controlled by Sr.DEN/C/UMB over Ambala Division. | III |

STATEMENT SHOWING SSE/P WAY WISE SANCTION, ON ROLL & VACANCY POSITION OF MISCELLANEOUS STAFF OVER UMB DIVISION

| S. No | ADEN | SSE/P Way | Store Kh | | | Trackmaintainer | | | Total | | |
|-------|------|-----------|----------|-----|-----|-----------------|------|-----|-------|------|-----|
| | | | S/S | O/R | Vac | S/S | O/R | Vac | S/S | O/R | Vac |
| 1 | UMB | UMB | 3 | 2 | 1 | 322 | 279 | 43 | 325 | 281 | 44 |
| | | USFD UMB | -- | -- | -- | 50 | 50 | 0 | 50 | 50 | 0 |
| | | UMB TD | 4 | 3 | 1 | 25 | 24 | 1 | 29 | 27 | 2 |
| 2 | CDG | CDG | -- | -- | -- | 228 | 190 | 38 | 228 | 190 | 38 |
| | | SASN | -- | -- | -- | 83 | 68 | 15 | 83 | 68 | 15 |
| 3 | RPJ | RPJ | 3 | 2 | 1 | 230 | 188 | 42 | 233 | 190 | 43 |
| | | DOA | 3 | 2 | 1 | 231 | 109 | 122 | 234 | 111 | 123 |
| 4 | SML | SML | -- | -- | -- | 120 | 123 | -3 | 120 | 123 | -3 |
| | | KLK | -- | -- | -- | 124 | 175 | -51 | 124 | 175 | -51 |
| 5 | PTA | PTA | 2 | 1 | 1 | 220 | 265 | -45 | 222 | 266 | -44 |
| | | DUI | -- | -- | -- | 306 | 221 | 85 | 306 | 221 | 85 |
| | | UKN | 2 | 1 | 1 | 225 | 245 | -20 | 227 | 246 | -19 |
| 6 | SIR | SIR | 2 | 2 | -- | 286 | 249 | 37 | 288 | 251 | 37 |
| | | RPAR | 2 | 2 | -- | 301 | 168 | 133 | 304 | 170 | 134 |
| 7 | SRE | SRE | 2 | 1 | 1 | 228 | 215 | 13 | 229 | 216 | 13 |
| 8 | JUDW | YJUD | 2 | 1 | 1 | 204 | 186 | 18 | 207 | 187 | 20 |
| | | JUDW | 2 | 1 | 1 | 43 | 36 | 7 | 44 | 37 | 7 |
| 9 | BTI | BTI | 2 | 1 | 1 | 241 | 209 | 32 | 243 | 210 | 33 |
| | | USFD BTI | -- | -- | -- | 9 | 9 | 0 | 9 | 9 | 0 |
| | | BNN | 2 | 1 | 1 | 241 | 171 | 70 | 243 | 172 | 71 |
| | | ABS | -- | -- | -- | 191 | 142 | 49 | 191 | 142 | 49 |
| Total | | | 31 | 20 | 11 | 3908 | 3322 | 586 | 3939 | 3342 | 597 |

Statement showing workload of track kilometer being maintained by the track maintainer staff working under SSE/P. Way controlled by Sr.DEN/C/UMB over Ambala Division

| SN | ADEN | SSE (P.Way) | Track kilometer | | | Annual GMT | Average |
|----|------|-------------|---|--------------------------|---------|--|---------|
| | | | On PRC sleeper in KM | On other lay outs in Km. | Total | | |
| 1 | UMB | UMB | SRE-UMB-57.4 UMB-RPJ-5.4 DUK -16.6 UMB-KLK-3.3 | 152.92 | 235.62 | SRE-UMB-32.35 UMB-RPJ-62.72 DUK -32.25 UMB-KLK-6.43 | |
| | | UMB-USFD | - | - | - | - | |
| | | TD/UMB | - | - | - | - | |
| 2 | CDG | CDG | 73.0 | 27.00 | 100.00 | 6.431 | |
| | | SASN | 47.00 | 1.80 | 48.8 | 2.22 | |
| 3 | RPJ | RPJ | M/L 103.507 B/L 23.0 | 98.97 | 225.477 | M/L 65.72 B/L 8.94 | |
| 4 | SML | KLK | BG-1.69 | 34.23 NG-48.72 | 84.64 | BG=6.43 NG=0.52 | |
| | | SML | NG-50.22 On steel sleeper | 8.53 | 58.75 | 0.52 | |
| 5 | PTA | PTA | 67.06 | 26.347 | 93.407 | 8.94 | |
| | | DUI | LDH-DUI-55.8 DUI-JHL-63.96 | 34.350 | 154.11 | LDH-DUI -9.67 DUI-JHL -3.07 | |
| | | UKN | 84.691 | 7.747 | 92.438 | 3.07 | |
| 6 | SIR | SIR | M/L 26.473 SIR-NLDM-39.0 | 23.04 | 88.503 | M/L 57.54 SIR-NLDM-9.52 | |
| | | RPAR | 72.13 | 59.98 | 132.11 | 9.52 | |
| | | DOA | 86.48 | 22.76 | 109.24 | 42.70 | |
| 7 | SRE | SRE | 54.909 | 76.59 | 131.499 | 32.25 | |
| | | YJUD | 93.089 | 25.347 | 118.436 | 32.25 | |
| 8 | JUDW | JUDW | - | 74.70 | 74.70 | JUDW W/SHOP ONLY | |

Salient features of work study report No. 16-CP-06/WS/2020-21

Sub: "Review of Misc staff working under SSE 'P' way controlled by Sr. DEN-C over Ambala Division"

1. Staff Position:

| | | |
|------|-------------------------------------|--------|
| i) | Sanctioned strength | = 3939 |
| ii) | On roll strength | = 3342 |
| iii) | Vacancy | = 597 |
| iv) | Proposed staff | = 3810 |
| v) | Identified as surplus for surrender | = 129 |

2. The work study team has considered the GMT, Track kilometers, other layout and MCNTM committee formula while calculating the manpower.

3. Some of the track maintenance activities like thorough packing, deep screening, screening of ballast, tempting and lining work of track, spot tempting of concrete sleeper, tempting of newly laid turn outs, special SEJ, Glued joints, level crossing and curves etc; being maintained by track machines which was previously being done by trackmaintainer staff. Use of track machines has reduced the workload of track maintainer staff to great extent.

4. Extra cushion has been provided for other miscellanies activities and for Keyman, mate, trolleyman, gateman etc

Financial implication:

| | |
|------------------------------|---------------------------|
| Anticipated recurring saving | = ₹ 375.82 lakh per annum |
| Capital saving | = Nil |
| Total saving | = ₹ 375.82 lakh per annum |