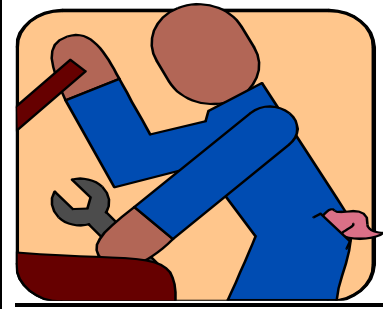


No.G.275/WSSR – 351718/2019-20



WORK STUDY TO REVIEW
THE STAFF STRENGTH
AT EWS/AJJ

SOUTHERN RAILWAY

PLANNING BRANCH

G.275/WSSR-351718/2019-20

WORK STUDY TO REVIEW
THE STAFF STRENGTH
AT EWS/AJJ

STUDIED BY

WORK STUDY TEAM
OF
PLANNING BRANCH

AUGUST - 2019



(i)
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ACKNOWLEDGEMENT

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Again, the study team thankful to **AXEN/EWS & SSE/Planning/PCO** the Co-ordinating Officer and Co-ordinating Supervisor respectively who has rendered great co-operation in analyzing the data and thoroughly discussed the pros and cons, for proper completion of the study in time.

The work study team thankful to **SSE/Planning/PCO** (Co-ordinating Supervisor), other supervisors and staff for giving data in completion of the study.

(ii)
AUTHORITY

Annual Program of work studies for the year 2019-20.

(iii)
TERMS OF REFERENCE

Work study to review the staff strength vis-à-vis workload at Engineering Workshops and Flash Butt Welding shop– Arakkonam.

(iv)
METHODOLOGY

The following methodologies have been adopted in carrying out the study.

1. Collection and compilation of data.
2. Interaction with officers, supervisors and staff.
3. Personal observation by the study team.
4. Application of Allowed time norms and need base where ever required.

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(iv)
SUMMARY OF RECOMMENDATIONS

Recommendation No.1

One post of Sr.Tech in GP Rs. 4200/-, 25 posts of Tech-I in GP Rs. 2800 and 2 posts of Tech-II in GP Rs. 2400/- are found excess to the requirement of Machine Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-28 posts)

Recommendation No.2

One post of Sr.Tech in grade pay Rs. 4200, 20 posts of Tech-I in GP Rs. 2800/- and 3 posts of Tech-II in GP Rs. 2400/- are found excess to the requirement of Black Smithy Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-24 posts)

Recommendation No.3

A) One post of Sr.Tech in GP Rs. 4200/-, 15 Posts of Tech.Gr.I in GP Rs. 2800/-, 3 posts of Tech-II and 2 posts of Tech – III are found excess to the requirement in Fitter Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total – 21 posts)

B) One post of Sr.Tech in GP Rs. 4200/-, 14 Posts of Tech.Gr.I in GP Rs. 2800/-, 3 posts of Tech-II and 1 posts of Tech – III are found excess to the requirement in Signal Fitter Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total -19 posts)

(Net Total- 21+19 = 40 posts)

Revised Recommendation No.4

12 posts of Tech.Gr.I in GP Rs. 2800/-are found excess to the requirement of Welding Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-12 posts)

Recommendation No.5

3 posts of Sr.Tech. in GP Rs. 4200/ and 2 posts of Tech.Gr.I in GP Rs. 2800/- are found excess in Tinker Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-5 posts)

Recommendation No.6

One post of Sr.Tech. in GP Rs. 4200/ and 7 posts of Tech.Gr.I in GP Rs. 2800/- are found excess to the requirement of Painter Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-8 posts)

Recommendation No.7

Two posts of Tech.Gr.I in GP Rs. 2800/- is found excess to the requirement of Loading Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-2 posts)

Revised Recommendation No.8

NIL

Recommendation No.9

5 posts of SSE in GP Rs. 4600/- is found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank.

(Total-5 posts)

Recommendation No.10

2 posts of Tech. Gr-I in GP Rs. 2800/- is found excess to the requirement of PCO-Staff (Progressman & Planner) and the same may be surrendered and credited to the Vacancy Bank.

(Total-2 posts)

Revised Grand Total – 126 posts (All vacant posts)

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CHAPTER – I

1.0 INTRODUCTION

- 1.1 The present Engineering Workshops, Arakkonam was originally established at Royapuram, started as a points and crossing repair shop by the erstwhile MSM Railway around the year 1885 and later shifted to more spacious surroundings to the present location around the year 1900, situated 1.0 kms from Arakkonam Railway Station. The work shop covered area is 4 hectares against the total area of 20.43 hectares.

This workshop mainly caters to the track and bridge components for the Civil Engineering department of Southern Railway & South Western Railway (Open line & Construction). In addition, the requirement of the other Railways (Open line & Construction) is also met with based on the demands.

The another important track work as Rail weld joints by Flash Butt welding Plant functioning under EWS was established in the year 1965. The FBW Plant caters to the needs of Welded Rail Panels for Southern Railway as well as South Western Railway. The covered area is 0.8 hectare against the total area of 27.48 hectares.

1.2 Salient Statistical data of EWS/AJJ:

Total area	20.43 Hectares
Covered area	4 Hectares
Total No. of Machineries available	216
Sanctioned strength as on 01.06.19	747
Actual strength as on 01.06.19	382
Vacancies	365
Re-Engagement staff	42

- 1.3 EWS is mainly intended to cater to the growing demands of Civil Engineering Department. In addition to meeting the needs of home railway, the requirement of other railways are also met with. Some of the important items manufactured are

1.3.1 Track items

- a) Built up crossings (presently stopped)
- b) Curved switches
- c) Switch expansion Joints and improved version (presently stopped)
- d) Joggled Fish Plates
- e) Combination Fish Plates (presently stopped)
- f) Glued insulated joints
- g) Flash Butt Welded Rail Panels presently stopped by department weld)
- h) Steel channel sleepers (presently stopped)

1.3.2 Bridge Items

- a) Riveted type plate girders
- b) Welded type plate girders
- c) Shadow type girders
- d) Semi – through girders
- e) Open web girders (presently manufacturing through contract)

1.3.3 Light Structures

- a) Passenger platform shelters (presently fabricated at GOC)
- b) Foot over Bridge (presently fabricated at GOC)
- c) Steel Cribs (completely stopped)

1.3.4 Trolleys

- a) Push trolleys
- b) Motor Trolleys (presently stopped)
- c) Dip lorries (presently stopped)
- d) Rail dollies (presently stopped)

1.3.5 **Mechanical department items**

- a) Conversion of wagons
- b) Door cotter – long and short
- c) Top plate for side bearer spring
- d) Air hose carriers
- e) New Skids
- f) Four tier and five tier arrangements for BRN Wagons.

The above works are outsourced.

1.4 **Flash Butt Welding Plant**

FBW was established in the year 1965 to meet the requirement of welded Rail panels. This plant is situated about 1.5 kms from AJJ Junction and is attached to the Engineering workshops. This is the only FBW Plant established in Southern Railway. This plant caters to the need of the Southern Railway as well as South Western Railway.

Initially the FBW plant started with one A.I. welding machine commissioned during the year 1965. After a record service of around 4 decades the A.I. Welding machine was released from production during July 2003. To meet the growing demand for welded rails ESAB (Sweden) Welding Machine was commissioned during the year 1986.

The production and quality activities are carried out as per the "Manual for Flash Butt Welding Rails" issued by RDSO Lucknow. The Flash Butt Welding Plant was awarded ISO – 9001: 2000 certification by M/S. RW – TUV, Germany during August 2003.

1.4.1 **Product Range**

The ESAB Welding machine is capable of welding 52 kg, 60 kg, and 90 UTS rail section. The following are the types of welded rail panels regularly produced.

3 Rail panels	-	52 kg
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3 Rail panels	-	60 kg
10 Rail panels	-	52 kg
10 Rail panels	-	60 kg

1.4.2 **Production Target**

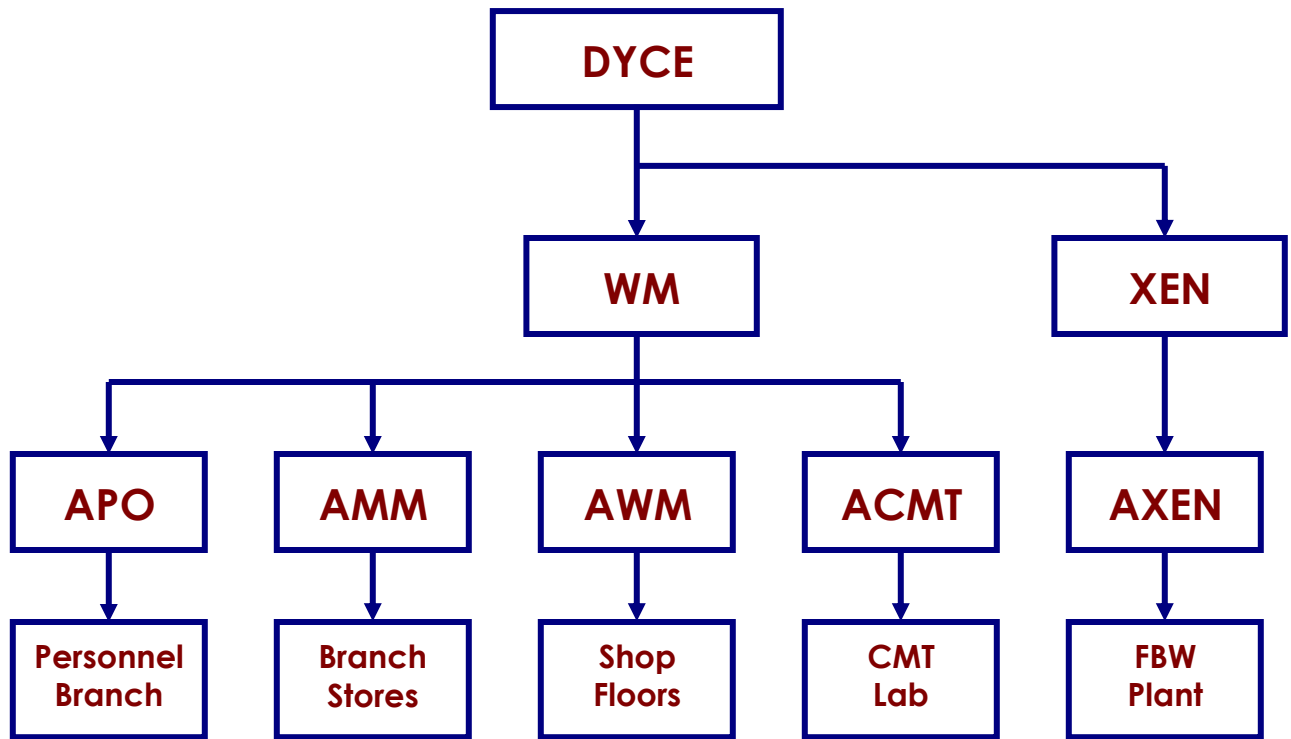
52 kg Rail section	-	80 joints per shift of 8.5 hrs
60 kg Rail section	-	72 joints per shift of 8.5 hrs
Annual Target set by Rly. Board	-	70,000 joints for 3 plants.

Two private mobile welding plants are working along with departmental welding plant.

1.4.3 The Flash Butt welding process comes under the category of "Resistance pressure welding". In this process, the fusion temperature of 800 to 900 C is generated due to the property of the material to resist the flow of electric current. Before welding, the rail ends to be welded are to be made perfectly clean from rust and dirt by means of grinding. Also, the electrode clamping area is cleaned to have better electrical conductivity and to ensure uniform heating. Then the two rail ends are held close together inside the welding machine and clamped in position by means of a set of copper blocks. The copper blocks itself act as the electrode to apply the welding current to the job. A very high welding current is passed through the electrodes from a special welding transformer. The power loss developed due to the resistance of the material results in generation of heat across the joint. The electronic control panel controls the welding current supplied to the electrodes in a pre-determined sequence.

1.4.4 The quality of the welded joints is ensured whether the joints are within the acceptable limits specified by the RDSO and tests are conducted such as Ultrasonic test, Hardness test, Transverse test, and destructive tests on test piece (Macro Examination)

At present FBW plant is under repair from April-2018 and production stopped.

CHAPTER-II**2.0 PRESENT SCENARIO****ORGANISATION SETUP**

Note: At present AWM post is vacant and WM & AXEN are looking after the shop floors.

2.1 The working hours of the workshop:

Monday to Friday -	07.00 to 11.30 hrs.	}	= 8 ½
	12.30 to 16.30 hrs.		
For 5 days (5 x 8 ½)			= 42.30 hrs
Saturday -	07.00 to 12.00 hrs.		= 5.00 hrs
			= 47.30 hrs

Total working hours per week = 47 hours and 30 minutes.

Totally there are 11 shops functioning as non-incentive scheme of works in which 7 shops (including Millwright line side) involved in manufacturing of various components required for Track items, bridge items, trolleys and other Mechanical Department items. The

other 4 shops (Machine, Welding, Millwright shop side, Electrical shops) are involved in carrying out render to servicing, maintenance and repairs of machineries of both Mechanical & Electrical to the production shops.

- 2.3 The actual staff strength of artisan and others of EWS/AJJ given by Dy.CE/O/EWS/AJJ is 382 as against the sanctioned strength of 747. **But the work study team has considered for Artisans, helpers, PCO staff (Progressman & Planner) and Technical Supervisors of EWS & FBW only. Hence, the study team has taken the actual staff strength of 332 (298+1+3+30) as against the sanctioned strength of 670 staff (612+3+5+50).** The 'SAVE' statement given by Dy.CE/O/EWS/AJJ is placed as **Annexure-I.**

2.4 The Shop-wise details:

2.4.1 MACHINE SHOP (M) Shop No. 600

Machine shop is the heart of any workshop as the raw materials are machined and converted into end product. The present staff strength at Machine shop is 34 in which 8 staff are deputed to other shops (P&C shop - 1, R.Shop – 1, GJ Section - 2, SD Shop – 1, Fitter Shop – 1 and Drawing Office – 2) The shop is headed by one SSE (incharge) and he is assisted by one SSE.

The three major sections of the Machine shop and the details of staff working in each section are

Lathe & Milling Sections	:	9
Drilling Section	:	2
Planning Section	:	14 + 4 (3 staff from SD, GJ & FBW shops and one Re-engagement staff)
Machine shop office	:	1
Staff deputed to other sections :		8
Total staff strength	:	34

2.4.2 **Lathe Section:** Machines details available at Lathe Section are furnished and tabulated as under:

Machines	Available Machines	Working	Not Working
Turret Lathe	3	1	2
Centre Lathe	11	7	4
Slotting	2	0	2
Milling	5	4	1
Shaping	1	0	1
Screwing	1	1	0
Grinding	3	3	0
Total	26	16	10

This section caters to the needs of the following shops Fitter, Signal Fitter, Blacksmithy, Millwright, Points & Crossings and Structural shop. Components used in Lifting Barrier gates, Motor Trolley, Push Trolley, dip Lorry, Points Screw clamp, etc are machined in this shop. Out of 26 machines 16 are in working condition. Presently staff working in the above table mentioned machineries is grouped as 9

2.4.3 **Drilling Section:** Machines details available in shop wise are as under:

Shop	Available Machines	Condition
Structural	5	Working
Crossings	6	Working
Fitter	3	Working
Signal Fitter	4	Working
Machine	3	Working
Millwright line side	3	Working
Black Smith	1	Working
Tinker	1	Working
Foundry	1	Working
Total	27	

This section caters to the needs of the above tabulated shops and presently staff working in Drilling section is 2 and deputed to

Crossing shop only. The shortage staff is managed for drilling works on the particular shop itself.

2.4.4 **Planning Section:** Machines available at Points & Crossing shop in Planning Section is tabulated as under:

Machines	Available Machines	Working	Not Working
Crossing Shop	7	6	1
Slotting	1	0	1
Shaping	1	1	0
Total	9	7	2

This section mostly machining of rails to the required specifications of Points & Crossing, SEJ, Modified SEJ etc. 18 staff is working in Planning Section in which 3 staff from other shops and one from Re-engagement.

2.4.5 **The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:**

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	24	23	1	0
Tech. I	46	10	36	0
Tech-II	6	1	5	0
Tech-III	2	0	2	0
Total	78	34	44	0

The actual staff available is 34 against the sanctioned strength of 78 and vacant posts are 44.

2.5 **BLACKSMITH SHOP (BS) Shop No. 602**

2.5.1 This shop is capable to manufacture the following items as under :

- Joggled fish plates. (Presently Manufactured)
- Buffer stop – Rail bending & Drilling (Presently Manufactured)
- “C” clamp (Presently Manufactured)
- Lug for stretcher bar 52 & 60 KG rail (Presently Manufactured)
- Bend fish plate for both 52 Kg/60 Kg (Presently Manufactured)

- Stretcher bar (Presently Manufactured)
 - Tie plates for 52 Kg/60 Kg C/S. (Presently Manufactured)
 - Components for New skid.
 - Fittings for curved switches.
 - Point clamps.
 - Combination fish plates.
 - Components for LB gates.
 - Gauge tie plate for points and crossings.
 - Bracket for SEJ.
 - Shoulder plate and Lug for slide chair.
 - Push trolley and Motor trolley wheels.
 - Components for open web girders.
- Mechanical items for C&W depots like door hook, door lock pin, door handle, hand brake wheel, APD knuckle pin, Foot step, Centre pivot retainer.
- Locking bolt with carter & chain
 - Solid joint
 - Rectification of CBC operating handle
 - Double end spanner for gang man
 - Solid joint
 - Combination fish plate
 - De-stressing roller
 - Components for open web girders

From the above list, most of the items were stopped and very few items only manufactured.

2.5.2 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	18	17	1	0
Tech. I	35	15	20	0
Tech-II	4	0	4	0

Tech-III	1	0	1	0
Total	58	32	26	0

The actual staff available is 32 against the sanctioned strength of 58 and vacant posts are 26.

2.6 POINTS AND CROSSING SHOP (E) Shop No. 603

The workload of Points and Crossings Shops is grouped as Section-I, Section-II and Section-III.

The Artizan staff strength of this Shop is 39 excluding Supervisors as on June 2019. In addition, some of the staff from other shops are deputed to work in this shop depends upon the work load. Presently this shop works in two shifts (7.00-16.30 & 16.45-02.30hrs)

2.6.1 The staff distribution section-wise is given as under:

Section-I

This section handles as Cutting, Bending, Drilling, Marker, E.O.T Cranes, Feeding and rail handling.

Section-II

SEJ assembly Batch-I, SEJ assembly Batch-II, Curved switch assembly Batch-I, Curved switch assembly Batch-II, Crossing assembly, Markers, Machine gang, Rail gang (to move the finished Goods), Night shift and EOT Cranes.

Section-III – Manufacture of fittings for assembly

This section involves as Riveting, Slide chair fabrication, Marker-cum-Fitter and Handling staff.

:

2.6.2 The shop is capable to manufacture the following items as:

- ✓ Curved switches 1 in 16 60 Kg rail
- ✓ Curved switches 1 in 12 60 Kg rail
- ✓ Curved switches 1 in 12 52 Kg rail
- ✓ Curved switches 1 in 8.5 60 Kg rail

- ✓ Curved switches 1 in 8.5 52 Kg rail
- ✓ Derailing switches 1 in 8.5 60 Kg rail
- ✓ Derailing switches 1 in 8.5 52 Kg rail
- ✓ Switch Expansion Joint (SEJ) 52 kG
- ✓ Switch Expansion Joint (SEJ) 60 Kg
- ✓ Modified Switch Expansion Joint for both 52Kg/60Kg.
- ✓ Special crossings
 - 1) 1 in 8.5 Diamond crossings 52 Kg } Acute and
 - 2) 1 in 6 Diamond crossings 52 Kg } obtuse
 - 3) 1 in 4.25 Diamond crossings 52 Kg } angles

From the above list, most of the manufacturing items were stopped and few items only manufactured particularly Curved Switches.

2.6.3 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	20	16	4	0
Tech. I	40	21	19	0
Tech-II	5	1	4	0
Tech-III	8	1	7	0
Total	73	39	34	0

The actual staff available is 39 against the sanctioned strength of 73 and vacant posts are 34.

2.7 FITTER SHOP (D) Shop No. 604

2.7.1 This shop is capable to manufacture the following items as,

- Push trolleys.
- Modified Rail Dolleys.
- Point screw clamps.
- Steel sleepers for NM Railway.

- Tongue entry for N.M. Railway. (Rare item)
- Four tier and five tier arrangements for BRN Wagon.
- Bulk head for BRN wagon. (On demand basis)
- Special gauges for PWIs. (occasional)
- Spare for track machines (Wear plates, Bridges rail and Wear strip), Tie tamper machine and Ballast clearing Machines.
- Long cotter, short cotter for wagons.
- Hand carts. (occasional)
- Ladder trolley for OHE.
- Repairs to cash chest.

Presently this shop is manufacturing for Modified LB gate with all fittings, push trolley BG seat, brake, wheel & axle assembly and T.O works etc.

2.7.2 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	10	9	1	0
Tech. I	19	4	15	0
Tech-II	3	0	3	0
Tech-III	2	0	2	0
Total	34	13	21	0

The actual staff available is 13 against the sanctioned strength of 34 and vacant posts are 21.

2.8 SIGNAL FITTER SHOP (SD) Shop No. 605

This shop is capable to manufacture the following items as under:

- Components for LB gates.
- Bulk head door for BRN wagons. (On demand basis)

- Four tier and Five tier arrangements for BRN wagons.(only repair work)
- Modified LB gates with winch (Production started recently)

2.8.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	10	9	1	0
Tech. I	19	5	14	0
Tech-II	3	0	3	0
Tech-III	1	0	1	0
Total	33	14	19	0

The actual staff available is 14 against the sanctioned strength of 33 and vacant posts are 19.

2.9 STRUCTURAL SHOP (R) Shop No. 606

2.9.1 The main functioning of this shop is fabricated the bridge items, the some of the items produced in this shop are –

- Riveted type plate girders.
- Welded type plate girders.
- Shallow type girders.
- Semi through girders.
- Open web girders.(Presently out sourced)
- Passenger platform shelters. (stopped)
- Foot over bridge. (stopped)
- Steel cribs. (stopped)

Light structural works like platform shelters and foot over bridges are transferred to GOC unit. The monthly out turn is booked in to EWS account.

2.9.2 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	24	23	1	0
Tech. I	48	9	39	0
Tech-II	8	0	8	0
Tech-III	10	0	10	0
Total	90	32	58	0

The actual staff available is 32 against the sanctioned strength of 90 and vacant posts are 58.

2.10 WELDING SHOP (W) Shop No. 607

In Welding shop, to all welding and gas cutting works required by sister shops like Structural, Fitter, Signal Fitter, Black smithy, Points and Crossings, Millwright etc are carried out by Welding Shop.

2.10.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	19	17	2	0
Tech. I	37	9	28	0
Tech-II	5	1	4	0
Tech-III	4	0	4	0
Total	65	27	38	0

The actual staff available is 27 against the sanctioned strength of 65 and vacant posts are 38.

2.11 Glued Joint shop, Tinker shop, Painter shop and Loading shop are collectively called as Group-V shops.

2.11.1 **GLUDE JOINT SHOP (GJ) Shop No. 608:**

The Glued Joints are used in Track Circuit area for isolation of electrical continuity between rails. The finished product are tested for Insulation by Signal Inspectors and also subjected for pull out test once in every 150 joints. The seniority of this shop is maintained under two heads as GJ/C and GJ/WW.

Presently, the sand blasting works is outsourced.

2.11.2 **The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:**

Category	Sanction	Actual	Vacant	Excess
Staff strength at GJ/WW:				
Sr.Tech	4	4	0	0
Tech. I	8	6	2	0
Tech-II	1	0	1	0
Tech-III	1	1	0	0
Total-A	14	11	3	0
Staff strength at GJ/C:				
Sr.Tech	5	3	2	0
Tech. I	10	8	2	0
Tech-II	2	1	1	0
Tech-III	1	1	0	0
Total-B	18	13	5	0
Net A+B	32	24	8	0

The actual staff available is 24 against the sanctioned strength of 32 and vacant posts are 8.

2.12 **TINKER SHOP (T) Shop No. 609**

This shop is the capacity to manufacture the following items as under:

- Hand signal lamp.
- Gate lamp.
- Motor Trolley Cable work.

- AC Loco
- Cash boxes
- Tapal boxes.
- First Aid boxes,
- L.V. Board.
- Destination Board.
- Speed limit board and any other miscellaneous items made of GI Sheet

At present production work was completely stopped.

2.12.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	3	3	0	0
Tech. I	2	2	0	0
Total	5	5	0	0

From July – 2017 onwards, the functioning of Tinker shop has been discontinued and the available staff are being utilized to Glued Joint production.

2.13 PAINT SHOP (P) Shop No.610 :

This shop caters to the need of all Painting works pertaining to sister shops like painting of Girders, Points & Crossings, curved switches, Switch Extension Joints, tie plates, LB gates, Traveling cash chest, steel sleepers, push trolleys, motor trolleys, gate lamps, Hand Signal lamps etc.

2.13.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	5	4	1	0
Tech. I	10	3	7	0
Total-A	15	7	8	0

2.14 MILLWRIGHT SHOP (MW) Shop No.612

The activity of this shop is broadly divided into line side and shop side. The line side further subdivided into Production section and vehicle maintenance section. Presently 39 plus one re-engagement staff are working in MW shop at present 20 staff are working on line side and the rest of the staff are working on shop side.

2.14.1 Shop side

This shop is doing the maintenance and repairs of all the machines available at EWS/AJJ except for machineries at FBW. In addition to the above, this shop is also doing erection, installation, commissioning and maintenance of new machines. There are totally 216 machines available as on June 2019.

2.14.2 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	20	18	2	0
Tech. I	39	21	18	0
Tech-II	6	0	6	0
Tech-III	3	0	3	0
Total	68	39	29	0

2.15 LOADING SHOP (Y) Shop No. 615

This shop caters to other sister shops works, the following works are normally carried out.

- Collection of scrap from various shops, weighing, accounting and send them to scrap yard
- Unloading of rails from BFR Wagons
- Unloading of goods from lorry at sidings
- Loading of girders
- Unloading of MS plates and angles from Wagons
- Feeding work in sister shops

- g) Cleaning and bush cutting in workshop area.

2.15.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	1	1	0	0
Tech. I	2	0	2	0
Total	3	1	2	0

Presently this section is closed.

2.16 ELECTRICAL SHOP (ELE) Shop No. 617

This shop does the maintenance and repairs of electrical portion of all machineries. In addition to erection, installation and commissioning of new machines, generators, cable laying and power distributions are also done. Maintenance of electrical fittings like fan, lights in Dy.CE Office and EWS Workshops are also carried out by this shop.

2.16.1 The sanction, actual and vacancy position of artisans as on 01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Electrical (GS)				
Sr.Tech	5	2	3	0
Tech. I	9	1	8	0
Tech-II	1	1	0	0
Tech-III	3	3	0	0
Total- A	18	7	11	0
Electrical (EOT)				
Sr.Tech	3	2	1	0
Tech. I	6	2	4	0
Tech-II	1	1	0	0

Tech-III	2	3	0	1
Total- B	12	8	5	1
Helpers (Electrical)-C	3	0	3	0
Net A+B+C	33	15	19	1

2.17 FLASH BUTT WELDING (FBW) Shop No.616

Flash Butt Welding Plant was functioning with ESAB (Sweden) make stationary Rail Welding plant commissioned during 1986. The existing plant has served more than 32 years beyond its codal life of 15 years. The departmental ESAB welding machine has been suspended since April-2018 due to frequent failure of machine. Currently Flash butt welding is carried out using mobile flash butt welding plants by available two private agencies.

Other particulars:

Total area	:	24.78 Hectares
Covered area	:	0.8 hectares
Types of panels	:	60/52/Kg – 130m long
Man power	:	16 staff as on Jun-2019
Annual target	:	70000 joints for 3 machines
Achieved	:	18156 joints from Apr-2018 to Jan-2019

Out of 18156 joints, the departmental stationary plant (ESAB) has Produced 605 Joints only. Work could not be commenced by the second plant of the agency M/s Khem-chand as the approval to the QAP is awaited from RDSO.

This shop works as a separate entity and has XEN and AXEN exclusively to look after the production works. This shop is situated at about 1 km (Approx) away from EWS / AJJ workshop. The following types of welded rail panels are produced.

3 rail panel	-	52 kg
3 rail panel	-	60 kg
10 rail panel	-	52 kg
10 rail panel	-	60 kg

After the welded joints that should be made by trimming, top grinding and side grinding to remove the excess up set materials then the welded rails are straightened in post straightening machine. The welded joints are finally tested using ultrasonic flaw detector (USFD) for any internal crack, lack of fusion etc.

Hardness and transverse test carried out one in 1000 joints and macro examination one in 5000 joints. The defect free welded panels are transported to the loading platform for stacking.

The work of unloading and stacking of unfinished rail panels and stacking and loading of welded rails are outsourced.

2.17.1 **The following machines and equipments are available in FBW shop**

Post straightening machine	=	2
Drilling machine	=	2
Hoist	=	50 (approx)
Conveyor motors	=	50 (approx)
Hacksaw cutting	=	1
ESAB Machine	=	1
Top grinding machine	=	1
Side grinding machine	=	1
UFD equipment	=	1

2.17.2 **ZINC METALIZING OF RAILS :**

- ✓ Board has advised to give protective coating of new rails/welded panels Zinc metalizing followed by Acrylic Polyurethane painting for the use in corrosion prone area.
- ✓ A target of 100 track Kms has been fixed for Southern Railway for the year 2018-19.

- ✓ An agency for 9 TKM as trial measure has been finalized work is under progress. 1.50 Kms of Rails (0.75 track Kms) have been treated using the above contract.
- ✓ Tender for 150 TKM has been prepared and vetted by finance and tender is in uploading stage.

Metalizing Process sequence:

- Shifting of Finished 10 Rail panel to Metalizing area
- Cleaning of grease, paint of petroleum Hydrocarbon solvent
- Sand blasting by coarse sand of size 600-1700 microns
- Zinc spray by Electric Arc Method within 4 hrs of blasting
- Check for Average coating thickness by ELCO meter 140-150 microns (Minimum local thickness shall be 115 microns)
- Sealer coat with Aliphatic Acrylic Polyurethane paint with brush/spray for 50 microns

Check for average overall thickness 190-200 microns

2.17.3 The sanction, actual and vacancy position of artisans as on

01.06.2019 is detailed as under:

Category	Sanction	Actual	Vacant	Excess
Sr.Tech	9	7	2	0
Tech. I	17	8	9	0
Tech-II	2	1	1	0
Total	28	16	12	0

2.18 Functions of Production Control Organisation:

Production Control Organisation, shortly termed as PCO, regulates and stimulates production, control cost, eliminates wastages, simplifies planning and leads to higher productivity by aiming to produce the right product in the right quantity to the right quality at the right time and by the most economic methods.

The PCO comprises of four sections namely:

1. Planning.
2. Rate Fixing,

3. Progress and
4. Inspection.

2.18.1 **PLANNING**

The functions of the Planning Section are

- Annual Material Planning of Stocked items
- Process Planning.
- M&P planning.

2.18.2 **RATE FIXING**

The functions of the RF section are:

- ✓ Fixing the Allowed Times for the manufacturing of all the products of EWS/AJJ, duly conducting Time Studies and incorporating the same in the Process Sheets furnished by the Planning Section. These allowed times have to be approved by AWM/WM.
- ✓ Revision of Allowed Times when an improved process is adopted or when new machinery is commissioned which will result in less process time.
- ✓ Preparation of incentive coverage/utilization statements of all incentive shops every week and putting up to WM/AWM for scrutiny.
- ✓ Calculation of the Rate of each product as applicable to Home Railway, Foreign Railway and Private concerns (Home State & Other States).
- ✓ Preparation of Rate List Booklet annually. The rate list should have been vetted by FA&CAO/WST/PER.
- ✓ Preparation of PCDO statements to be sent to Headquarters during the 1st week of every month.
- ✓ Furnishing of Rates for the items shown in the Issue Notes received from Loading Section and then forwarding the issue notes to Sr.S.O./Accounts.

2.18.3 **PROGRESS SECTION**

The functions of the Progress Section are:

- Opening of work orders for the indents received.
- Preparation of Route Card and incentive job cards and issuing to the shops.
- Preparation of monthly production programmes for all shops based on the availability of raw materials and DW staff strength.
- Regularly monitoring the progress of manufacture of the programmed works.
- Entering of issue details and fresh indent details in the load file and preparation of updated load statement and put up to DY.CE every week.
- Preparation of ground stock statement of produced items and put up to Dy.CE, WM and AWM every week.
- Advise the consignees to arrange for lifting of manufactured items.
- Issuing of produced items to various consignees duly obtaining the issue orders from AWM/WM.
- Preparation of outturn statement for the monthly Production Review Meeting.
- Preparation of PCDO statements and submitting to HQ.

2.18.4 **INSPECTION SECTION**

- ✓ Quality control of all manufacturing items of EWS/AJJ by inspection at various stages and final inspection of products.
- ✓ Co-ordinating with Template section while preparing various Templates, Jigs & Fixtures for Girder fabrication and getting approval from RDSO/HQ.
- ✓ Co-ordinating with ACMT Lab for Qualification of Welders both Railway and Contract.

- ✓ Co-ordinating with RDSO/HQ inspectors during Girder inspection.

CHAPTER – III**3.0 CRITICAL ANALYSIS**

3.1 The manpower requirement of EWS/AJJ is calculated under two different heads viz., Production Shops and Servicing & Maintenance shops/sections.

3.2 Production Shops.

Blacksmith Shop	:	Shop No.602
Points & Crossings	:	Shop No.603
Fitter Shop	:	Shop No.604
Signal Fitter Shop	:	Shop No.605
Structural Shop	:	Shop No.606
Glued Joint Shop	:	Shop No.608
Tinker shop	:	Shop No.609*
Millwright Shop (line side)	:	Shop No.612
Flash Butt Welding	:	shop No.616

*Production is completely stopped.

3.3 Servicing & Maintenance shops/sections:

Machine Shop	:	Shop No.600
Welding Shop	:	Shop No.607
Paint Shop	:	Shop No.610
Millwright Shop side	:	Shop No.612
Loading Shop	:	Shop No.615*
Electrical shop	:	shop No.617

*This shop is closed.

3.4 Previously, this workshop functioning as Incentive and Non-incentive scheme. At present the whole Engineering Workshop is working as Non-Incentive scheme only. The manpower requirement in respect of Production Shops is calculated based on the Allowed Time. Normally the average Allowed time will be taken for the last financial year and the man power requirement would be decided

accordingly. In this study the average allowed time for the year 2018-2019 is taken. The Allowed Time (AT) details were collected month wise for all Production Shops for the last year from April - 2018 to Jun – 2019.

Generally, the average monthly Allowed Time is divided by the average monthly man hours of 267 for incentive scheme as prescribed in the Mechanical Code for Workshops to arrive at the requirement of Direct Workers. The Leave Reserve for the Direct workers is worked out at the rate of 12.5%. Essentially indirect workers and indirect workers are worked out at the rate of 15% of Direct Workers including Leave Reserve.

- 3.5 ***But in this case, the average monthly Allowed Time is divided by the average monthly man hours of 200 for non incentive to arrive at the requirement of Direct Workers and leave reserve is worked out at the rate of 12.5%. The allied activities as material handling, office, store etc are considered by work study team to calculate the manpower requirement as need base.***

In addition to work study team has also considered to enhance the manpower requirement in some shops to the importance of the manufacturing especially for track and bridge items.

The requirement of manpower is assessed shop-wise, based on allowed time and apply need base where ever required as below.

3.6 **MACHINE SHOP (M – Shop No.600)**

The workload at Machine shop is broadly classified into three sections viz., (i) Drilling (ii) Lathe & Milling, (iii) Planning. Though this shop is covered under services cater to other sister shops, based on the nature of work, certain activities are classified as.

- a) Drilling Section : Drill holes for Track and bridge items.
- b) Lathe Section : Surface grinding.
- c) Planning Section : Planning the rails as per drawing.
- d) Tool Room : Planning & maintaining of Machine tools.
- e) Other activities : Milling, Slotting, Pressing, shearing, screwing etc.

The allowed time of planning, drilling, and slotting for machine shop production is allotted in the Points & Crossing Shop and other sister shop. Hence, the study team has taken the Allowed Time from the monthly programme of the above shops.

3.6.1 The Allowed Time in MHrs.for Monthly Programme for the year April-2018 to June-2019:

Mon&Year	Planning	Drilling	Slotting	Total
Apr-18	1906	457	207	2570
May-18	1515	303	103	1921
Jun-18	2060	308	181	2549
July-18	2813	340	258	3411
Aug-18	2800	275	258	3333
Sep-18	2799	273	258	3330
Oct-18	2657	273	258	3188
Nov-18	2644	286	261	3191
Dec-18	2283	482	185	2950
Jan-19	2067	394	158	2619
Feb-19	2162	410	158	2730
Mar-19	2449	359	213	3021
Apr-19	2279	340	213	2832
May-19	1780	250	160	2190
Jun-19	2116	282	187	2585
Total	34330	5032	3058	42420
Avg/Month(15)	2288.67	335.47	203.87	2828

The required man power for Machine shop is calculated as below.

Average Allowed Time per month (X) : 2828
 No of direct Workers required (Y=2828/200) : 14.14
 Say as : 14

Staff for Allied activities as need base:

Lathe operators : 3

Drillers for all production shops	:	10
Milling operators	:	4
Screwing operator	:	1
Material Handling & Scrap removal at M.Shop	:	2
Material handling & Scrap removal at E-Shop	:	2
Tool Room & Office	:	2
Sub total	:	38
LR at 12.5% (4.75 say as 5)	:	5
Total	:	43

Apart from the above, in addition to enhance the staff strength at 50% of calculated man power requirement of the planning section of Points and Crossing shop as $14 \times 50/100 = 7$, and making a total of $43 + 7 = 50$.

Hence, the study team has allowed 50 staff for future requirements in view of expected increase in the work load at Points & Crossing shop and Structural shop etc.

3.6.2 Sanction Vs Requirement:

Sanction	Actual	Requirement	Surplus
78	34	50	28

Recommendation No.1

One post of Sr.Tech in GP Rs. 4200/-, 25 posts of Tech-I in GP Rs. 2800 and 2 posts of Tech-II in GP Rs. 2400/- are found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank

(Total-28 posts)

3.7 **BLACKSMITHY SHOP (No.602)**

The workload at Black Smithy Shop is broadly dealt with items of manufacturing as below.

Joggled fish plate (52 & 60 kg) with C-clamps, Buffer Stop, New Skid, Fittings for curved switches (gauge tie plates, stretcher bar with bracket), Locking bolt with chain link, bend fish plates for 52 & 60 Kg, Tool shank etc.

Lifting barrier components, gauge tie plate, stretcher bar with bracket for Points & Crossings shop, Shoulder plate and lug for slide chair, push trolley and motor trolley components and components for open web girders.

3.7.1 **Machines and equipments available at Blacksmithy Shop**

Power Hammer	:	3 (20 CWT-1, 15 CWT-1, 10 CWT-1).
Power Press	:	500 Ton capacity – 1
Pillar Drilling machine	:	1
Band Saw cutting machine	:	1
Pedestal girding machine	:	1
Air blower	:	2
Oil fire Furnace	:	2
Coal Furnace	:	2

As on June-2019, 32 staff is working against the sanctioned staff strength of 58. Out of 32 staff, 5 staff is working in Points & Crossing shop and one staff is in FBW. The remaining 26 and Re-engagement staff of 5, making total of 31 staff.

3.7.2 Staff distribution for the year April-2018 to June-2019:

Mon & Year	BS Shop	RE	Total at BS shop	Depute to other shops	Available staff of BS	LR at 12.5%	Staff for Allied works	Staff for Prog.
	A	b	c=(a+b)	D	e=(c-d)	F	g	h=(e-f-g)
Apr-18	36	0	36	9	27	3	11	13
May-18	35	0	35	9	26	3	11	12
Jun-18	35	0	35	9	26	3	11	12
July-18	34	1	35	9	26	3	11	12
Aug-18	34	2	36	8	28	4	11	13
Sep-18	34	3	37	8	29	4	11	14
Oct-18	34	3	37	8	29	4	11	14
Nov-18	33	3	36	8	28	3	11	14
Dec-18	33	3	36	8	28	3	11	14
Jan-19	33	3	36	8	28	3	11	14
Feb-19	33	3	36	17	19	3	8	8
Mar-19	33	2	35	9	26	3	9	14
Apr-19	33	3	36	8	28	4	11	13
May-19	33	3	36	6	30	4	12	14
Jun-19	32	5	37	6	31	4	12	15
Total			539	130		51	162	196
AVG/Month			35.93	8.66		3.4	10.8	13.07

Note:

- ✓ RE – Re-engagement staff.
- ✓ Staff deputed to other shops such as FBW, Structural shop, Points & Crossing shop etc.
- ✓ Staff for allied works like Material handling, Die section, marking, office, Machining & welding operations etc.

3.7.3 Month wise Programmed AT & Production details of Black Smithy Shop from April - 2018 upto June – 2019:

Sl.No	Month & Year	Allowed Time in Man hours	Production details	
			Prog	Achieved
For the Year April-2018 to March-2019				
1	April – 2018	2627	11.094	11.15
2	May – 2018	1814	7.784	7.769
3	June -2018	2340	9.744	9.830
4	July – 2018	2487	11.194	11.224
5	Aug – 2018	2650	11.209	11.220
6	Sep - 2018	2776	11.694	11.893

7	Oct – 2018	2676	15.844	13.894
8	Nov – 2018	2729	14.684	14.664
9	Dec – 2018	2776	14.554	14.555
10	Jan – 2019	2532	11.364	13.584
11	Feb – 2019	1579	10.650	10.910
12	Mar – 2019	2625	15.700	15.710
	Total	29611	145.515	146.403
			Achieved in %	100.82%
For the Year April-2019 to June-2019				
1	April – 2019	2467	14.594	14.956
2	May – 2019	2065	12.102	12.154
3	Jun – 2019	2987	21.962	21.922
	Total	7519	48.658	49.032
			Achieved in %	100.77

The required man power for BS shop is calculated as below.

AT for Apr-2018 to Mar-2019	:	29611
AT for Apr-2019 to Jun -2019	:	7519
Total Allowed Time	:	37130
Average AT/Month (for 15 months)	:	2475
No of direct Workers required (2475/200)	:	12.38
Say as	:	13
Staff for Allied activities as need base	:	11
Sub total	:	24
LR at 12.5%	:	3
Total	:	27

From the above table it is observed that, the out turn achieved is more than 100 % against the programmed out turn. Further the work study team has considered, to enhance the staff strength at 25 % of the calculated man power requirement as $27 \times 25/100 = 6.75$, rounded at 7 for future and making a total of $27 + 7 = 34$.

Hence, the study team has allowed 34 staff for future requirements in view of expected increase in the work load of Points & Crossing shop, Structural shop and LB gate production.

Further the available 5 staff in excess may be deputed to needy shops especially FBW, Structural etc, till the future requirement arises.

3.7.4 Sanction Vs Requirement:

Sanction	Actual	Requirement	Surplus
58	32	34	24

Recommendation No.2

One post of Sr.Tech in grade pay Rs. 4200, 20 posts of Tech-I in GP Rs. 2800/- and 3 posts of Tech-II in GP Rs. 2400/- are found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank

(Total-24 posts)

3.8 POINTS AND CROSSINGS SHOP (No.603)

This shop caters to the need of items like various types of switches, Turn outs, Switch Expansion Joints (SEJ), Modified SEJ, special crossings, etc., to the open line and construction unit of Civil Engineering Depot.

3.8.1 The following are the items manufactured in Points & Crossings Shop.

- Curved switches for fan shaped layout 60 kg(1 in 16, 1 in 12, & 1 in 8 ½).
- Derailing switch.
- SEJ for PSC lay out and improved SEJs.
- Standard crossings, 52 Kg (1 in 8 1/2, 1 in 12, 1 in 16) and 60 Kg (1 in 8 1/2 , 1 in 12).
- Special crossings 1 in 6.
- Diamond Crossings 1 in 4 ¼, 1 in 10, 1 in 2 ½ and 1 in 8 ½.

- Rack bars for N.M. Railways.(Rare item)

3.8.2 Staff distribution for the year April-2018 to June-2019:

Mon & Year	E Shop	RE	Total at E-shop	Staff from other shops	Available staff of E-Shop	LR at 12.5%	Staff for Allied works	Staff for Prog.
	a	b	c=(a+b)	d	e=(c+d)	F	g	h=(e-f-g)
Apr-18	49	0	49	17	66	8	26	32
May-18	47	0	47	17	64	8	26	30
Jun-18	46	8	54	17	71	9	30	32
July-18	42	10	52	15	67	8	30	37**
Aug-18	41	12	53	11	64	8	26	38
Sep-18	49	12	61	14	75	9	37	38
Oct-18	49	12	61	14	75	9	37	38
Nov-18	49	12	61	14	75	9	37	38
Dec-18	48	12	60	14	74	9	36	38
Jan-19	48	12	60	14	74	9	36	38
Feb-19	48	12	60	14	74	9	37	37
Mar-19	48	12	60	14	74	9	36	38
Apr-19	45	12	57	14	71	9	36	35
May-19	44	12	56	14	70	9	36	34
Jun-19	39	12	51	14	65	8	34	31
Total			842	217		130	500	534
AVG/Month			56.13	14.47		8.67	33.33	35.60

**** From the month of July-2018 onwards LR is included in the monthly programme.**

From the above table, the staff of allied works is almost equal to the staff of programmed works. Normally, the EIW and IW staff requirement is 10 to 15% of the direct workers in incentive scheme. Hence the study team has allowed 50% for allied works duly considering the nature of works. So, the staff requirement is 17 for allied works.

Note:

- ✓ RE – Re-engagement staff.
- ✓ Staff from other shops such as D, SD, BS, M and Electrical staff for EOT crane operations etc.

- ✓ Staff for allied works like office, store, Marking, EOT crane, feeding & handling, shearing, staging for pug gas cutting etc. Moreover, some of the staff is deputed to other shops also.

3.8.3 Month wise Programmed AT & Production details of Points and Crossing shop from April - 2018 upto June – 2019:

Sl.No	Month & Year	Allowed Time in Man hours	Production details	
			Prog	Achieved
For the Year April-2018 to March-2019				
1	April – 2018	6286	68.191	68.617
2	May – 2018	4322	52.951	53.371
3	June -2018	5445	66.011	74.608
4	July – 2018	7758	89.668	90.391
5	Aug – 2018	7379	88.082	88.485
6	Sep - 2018	7606	86.609	86.745
7	Oct – 2018	7422	85.126	85.861
8	Nov – 2018	7452	84.464	80.228
9	Dec – 2018	7545	82.340	89.745
10	Jan – 2019	6701	75.475	83.840
11	Feb – 2019	6972	78.638	93.755
12	Mar – 2019	7174	81.087	76.820
	Total	82062	938.642	972.466
			Achieved in %	103.60%
For the Year April-2019 to June-2019				
1	April – 2019	6759	77.496	78.076
2	May – 2019	4929	58.399	60.531
3	Jun – 2019	5813	68.885	72.539
	Total	17501	204.78	211.146
			Achieved in %	103.11%

The required man power for Points & Crossing shop is calculated as below.

AT for Apr-2018 to Mar-2019	:	82062
AT for Apr-2019 to Jun-2019	:	17501
Total Allowed Time	:	99563

Average AT/Month (for 15 months)	:	6638
No of direct Workers required (6638/200)	:	33.19
Say as	:	33
Staff for Allied activities as need base	:	17
Sub total	:	50
LR at 12.5%	:	6
Total	:	56

From the above table it is observed that, the out turn achieved is more than 100 % against the programmed out turn. Moreover, it is most vital shop for manufacturing of track items like various types of Points & Crossing, SEJs, Modified SEJs etc. Even though, some of the items stopped to manufacture temporarily, it is likely to initiate manufacture in near future.

Hence, the study team allows the sanctioned strength of 73 staff as it is, for future requirements in view of expected increase in the work load of Points & Crossing shop.

3.9 **FITTER SHOP (D) (No.604)**

Fitter Shop manufactures items like, Push Trolleys, modified rail dollies, point screw clamps, steel sleepers for N.M. Rlys. Manufacture & repairs of four tier and five tier arrangements for BRN wagons, special gauges for Permanent Way Inspectors, spares for Track machines, Tie tampers, Ballast cleaning machines, wagon door long cotters, short cotters, steel channel sleepers for bridges, ladder trolley for OHE, spring setting device, Hand cart for IOW & Health Unit, etc.

3.9.1 **The machines and equipments available**

Drilling machine (Pillar)	:	1
Drilling Machine Radial	:	2
Power Band Saw	:	1

Pedestal grinding machine : 1
 Electrical hand grinding : 2 (common to both D&SD shop)

Total Artizan staff available as on June 2019 is 13 excluding supervisors against the sanctioned strength of 34.

3.10 SIGNAL FITTER SHOP(SD) (No.605)

This shop is covered under incentive scheme and the items manufactured in this Shop are as under:

- Lifting Barrier Gate
- Winches for L.B. gates.
- Four tier & five tier arrangements for BRN wagon.
- Bulk head doors.
- Girder components for open web girder (Presently stopped).

3.10.1 Details of Machines and equipments available:

Band Saw Machines : 1
 Radial drilling machines : 1
 Pillar Drilling machines : 2
 Double end grinding machine : 1

Presently 14 staff are working against the sanctioned strength of 33.

The staff and Allowed Time of Fitter & Signal Fitter Shops are combined and detailed as under.

3.10.2 Staff distribution for the year April-2018 to June-2019:

Mon & Year	D&SD Shop	RE	Total	Depute to other shops	Available staff of D&SD	LR at 12.5%	Staff for Allied works	Staff for Prog.
	a	B	c=(a+b)	D	e=(c-d)	F	g	h=(e-f-g)
Apr-18	37	0	37	21	16	2	4	10
May-18	36	0	36	20	16	2	4	10
Jun-18	33	4	37	20	17	2	4	11
July-18	30	5	35	14	21	2	5	14
Aug-18	29	4	33	15	18	2	5	11
Sep-18	28	3	31	14	17	2	2	13

Oct-18	28	4	32	13	19	2	3	14
Nov-18	28	4	32	13	19	2	3	14
Dec-18	28	4	32	13	19	2	3	14
Jan-19	27	0	27	15	12	1	2	9
Feb-19	27	0	27	15	12	1	2	9
Mar-19	0	0	0	0	0	0	0	0
Apr-19	27	0	27	11	16	2	2	12
May-19	27	0	27	13	14	2	2	10
Jun-19	27	2	29	15	14	2	2	10
Total			442	212		26	43	161
AVG/Month(14)			31.57	15.14		1.85	3.07	11.5

Note:

- ✓ RE – Re-engagement staff.
- ✓ Staff deputed to other shops such as Gr.V, E.Shop, FBW, Structural shop, Points & Crossing shop etc.
- ✓ Staff for allied works like Material handling, office, Gas cutting & welding operations etc.

3.10.3 Month wise Programmed AT & Production details of D & SD Shops from April - 2018 upto June – 2019:

Sl.No	Month & Year	Allowed Time in Man hours	Production details	
			Prog	Achieved
For the Year April-2018 to March-2019				
1	April – 2018	2048	8.800	20.750
2	May – 2018	1510	6.850	8.150
3	June -2018	2145	9.300	17.700
4	July – 2018	3312	12.050	13.500
5	Aug – 2018	2442	9.900	13.050
6	Sep - 2018	2582	9.700	9.150
7	Oct – 2018	2632	9.950	9.660
8	Nov – 2018	2738	10.050	10.250
9	Dec – 2018	2788	10.300	10.250
10	Jan – 2019	1722	6.650	5.200
11	Feb – 2019	1032	0	0
12	Mar – 2019	0	0	0
	Total	24951	93.55	117.66
			Achieved in %	
For the Year April-2019 to June-2019				
1	April – 2019	2314	7.750	7.450

2	May – 2019	1478	5.350	5.950
3	Jun – 2019	1964	6.780	6.650
	Total	5756	19.88	20.05
			Achieved in %	100.86%

The required man power for D & SD shops is calculated as below.

AT for Apr-2018 to Mar-2018	:	24951
AT for Apr-2018 to Mar-2018	:	5756
Total Allowed Time	:	30707
Average AT/Month (for 14 months)	:	2194
No of direct Workers required (2194/200)	:	10.97
Say as	:	11
Staff for Allied activities as need base	:	5
Sub total	:	16
LR at 12.5%	:	2
Total	:	18

From the above table it is observed that, the out turn achieved is more than 100 % against the programmed out turn. Further the work study team has considered, to enhance the staff strength at 50 % of the calculated man power requirement as $18 \times 50/100 = 9$ for future and making a total of $18 + 9 = 27$.

Hence, the study team has allowed 27 staff for future requirements in view of expected increase in the work load at D&SD shops.

Further the available 9 staff in excess may be deputed to needy shops especially FBW, Structural etc, till the future requirement arises.

3.10.4 Sanction Vs Requirement:

Shop	Sanction	Actual	Requirement	Surplus
Fitter	34	13	27	40
Signal Fitter	33	14		

Total	67	27		
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Recommendation No.3

C) One post of Sr.Tech in GP Rs. 4200/-, 15 Posts of Tech.Gr.I in GP Rs. 2800/-, 3 posts of Tech-II and 2 posts of Tech – III are found excess to the requirement in Fitter Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total – 21 posts)

D) One post of Sr.Tech in GP Rs. 4200/-, 14 Posts of Tech.Gr.I in GP Rs. 2800/-, 3 posts of Tech-II and 1 posts of Tech – III are found excess to the requirement in Signal Fitter Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total -19 posts)

Net Total-40 posts)

3.11 STRUCTURAL SHOP (No.606)

This Shop manufactures various types of Girders like Riveted open Web Girder, Riveted Shallow type girders, welded girders, temporary girders platform shelters and Foot over Bridges and caters to the need of the entire Railways. **At present, the 16 spans of 18.3m span welded type plate girders are manufactured through outsourced.** Consequent to the contract works involved the workload in structural shop would be reduced. Light structural works like platform shelter and foot over bridges are already transferred to GOC unit.

3.11.1 Details of Machines and equipments available :

Template Shed	:	1 size : 45m x 13m
Drilling Machine	:	7
Electrical Grinding Machine	:	1
Electrical Hoist Machine	:	1
E.O.T	:	4

Plate straightening Machine	:	1
Section straightening machine	:	1
End Milling Machine	:	1
Warp removal Machine	:	1
Welding Plant	:	8
Compressor	:	2
Generator	:	1 (250 KVA)

3.11.2 Staff distribution for the year April-2018 to June-2019:

Mon & Year	R. Shop	RE	Total	Staff from other shops	Available staff of R	LR at 12.5%	Staff for Allied works	Staff for Prog.
	a	b	c=(a+b)	d	e=(c+d)	F	G	h=(e-f-g)
Apr-18	42	0	42	9	51	3	25	23
May-18	41	0	41	8	49	3	23	23
Jun-18	40	12	52	8	60	4	18	32
July-18	35	11	46	8	54	4	13	37
Aug-18	35	10	45	12	57	6	13	38
Sep-18	35	10	45	12	57	6	13	38
Oct-18	35	14	49	12	61	6	13	42
Nov-18	35	14	49	12	61	6	13	42
Dec-18	35	14	49	12	61	6	13	42
Jan-19	35	14	49	12	61	6	13	42
Feb-19	35	21	56	29	85	9	13	63
Mar-19	35	22	57	24	81	9	15	57
Apr-19	35	12	47	9	56	5	19	32
May-19	34	15	49	7	56	5	18	33
Jun-19	32	8	40	7	47	4	16	27
Total			716	181		82	238	571
AVG/Month			47.73	12.07		5.47	15.87	38.07

Note:

- ✓ RE – Re-engagement staff.
- ✓ Staff from other shops such as GJ, E.Shop, FBW, MW shops etc.
- ✓ Staff for allied works like Template shed, Material handling, lab, office, store, long absent, sick etc.

3.11.3 Month wise Programmed AT & Production details of Structural shop from April - 2018 upto June – 2019:

Sl.No	Month & Year	Allowed Time in Man hours	Production details	
			Prog	Achieved
For the Year April-2018 to March-2019				
1	April – 2018	5832	25.500	55.500
2	May – 2018	4320	16.800	42.065
3	June -2018	6912	24.000	33.817
4	July – 2018	7200	25.000	41.436
5	Aug – 2018	7733	26.850	47.489
6	Sep - 2018	7546	26.200	47.204
7	Oct – 2018	7978	27.700	47.942
8	Nov – 2018	8179	28.400	48.885
9	Dec – 2018	8352	29.000	50.662
10	Jan – 2019	7632	26.500	52.486
11	Feb – 2019	12499	43.400	67.861
12	Mar – 2019	10800	37.500	55.260
	Total	94983	336.85	590.607
			Achieved in %	175.33%
For the Year April-2019 to June-2019				
1	April – 2019	6210	42.500	94.610
2	May – 2019	4950	40.000	46.410
3	Jun – 2019	5400	45.000	43.750
	Total	16560	127.5	184.77
			Achieved in %	169.44

The required man power for Points & Crossing shop is calculated as below.

AT for Apr-2018 to Mar-2018	:	94983
AT for Apr-2018 to Mar-2018	:	16560
Total Allowed Time	:	111543
Average AT/Month (for 15 months)	:	7436

No of direct Workers required (7436/200)	:	37.18
Say as	:	37

Staff for Allied activities as need base	:	16
Sub total	:	53
LR at 12.5% (6.63 say as 7)	:	7
Total	:	60

From the above table it is observed that, the out turn achieved is more than 100 % against the programmed out turn. Moreover, it is most vital shop for manufacturing of bridge items like various types of riveted and welded types of girders. Even though, some of the items stopped to manufacture temporarily, it is likely to initiate manufacture in near future.

Hence, the study team allows the sanctioned strength of 90 staff as it is, for future requirements in view of expected increase in the work load at Structural shop.

Further the extension work of two bays of size 146.6m x 36.6m is under progress by construction unit and it should be completed shortly.

3.12 WELDING SHOP (No.607)

This Shop caters to the need of all Welding works in other Shops. The staff distribution to sister shops are based on the programme issued by them every month.

3.12.1 Staff distribution and Month wise Programmed details for the year April-2018 to June-2019:

Mon & Year	Shop	Staff details				Man Hour details		
		Pug	Gas cut	Welder	Total	Pug	Gas cut	Welder
Apr-18	BS	0	2	1	3	0	205	117.5
	E	0	2	5	7	0	285.23	576.36
	D & SD	0	2	4	6	0	257.4	508
	R	4	2	10	16	0	140	501
May-18	BS	0	2	1	3	0	304	127

	E	0	2	5	7	0	205.43	330.9
	D & SD	0	2	4	6	0	193.05	381
	R	4	2	10	16	0	99	353
Jun-18	BS	0	2	1	3	0	304	127
	E	0	2	3	5	0	224.91	392.2
	D & SD	0	2	4	6	0	257.4	508
	R	4	2	10	16	0	151	540
July-18	BS	0	2	1	3	0	304	127
	E	0	2	3	5	0	324.9	666.48
	D & SD	0	2	4	6	0	257.4	508
	R	4	2	10	16	0	158	563
Aug-18	BS	0	2	1	3	0	332	127
	E	0	2	3	5	0	276.02	550.36
	D & SD	0	2	4	6	0	257.4	508
	R	2	2	12	16	0	169	605
Sep-18	BS	0	2	1	3	0	244	102
	E	0	2	3	5	0	264.45	813.10
	D & SD	0	2	4	6	0	257.4	508
	R	2	2	12	16	0	165	590
Oct-18	BS	0	2	1	3	0	165	206
	E	0	2	3	5	0	267.7	813.1
	D & SD	0	2	4	6	0	257.4	508
	R	2	2	12	16	0	175	624
Nov-18	BS	0	2	1	3	0	168	206
	E	0	2	3	5	0	277.56	815.7
	D & SD	0	2	4	6	0	257.4	508
	R	2	2	12	16	0	179	639
Dec-18	BS	0	2	1	3	0	174.5	102
	E	0	2	3	5	0	429.3	1331.5
	D & SD	0	2	4	6	0	257.4	508
	R	2	2	12	16	0	183	653
Jan-19	BS	0	2	1	3	0	212.5	102
	E	0	2	3	5	0	348.07	1048.1
	D & SD	0	2	4	6	0	193.05	381
	R	2	2	12	16	0	167	597
Feb-19	BS	0	2	1	3	0	212.5	102
	E	0	2	3	5	0	367.96	1104.5
	D & SD	0	2	4	6	0	0	0
	R	2	2	12	16	0	274	977
Mar-19	BS	0	2	1	3	0	254.5	102
	E	0	2	3	5	0	323.68	1022.4
	D & SD	0	0	0	0	0	0	0
	R	2	2	12	16	0	236	844
Apr-19	BS	0	2	0	2	0	263.5	18
	E	0	2	3	5	0	309.04	1030.5
	D & SD	0	2	4	6	0	193.05	381
	R	2	2	12	16	0	206	736

May-19	BS	0	2	1	3	0	233.5	93
	E	0	2	3	5	0	255.88	768.75
	D & SD	0	2	4	6	0	128.7	254
	R	2	2	8	12	0	153	546
Jun-19	BS	0	2	0	2	0	205.5	93
	E	0	2	3	5	0	304.76	845.25
	D & SD	0	2	4	6	0	69.32	254
	R	2	2	8	12	0	155	554
Total		38	118	282	438	0	13493.76	28897.7
AVG/Month(14)		2.53	8.43	20.14	31.29	0	963.84	2064.12

From the above table, the required man power calculation is based on Man Hours programmed for Welding Shop as below.

Average Allowed Time per month,

For Gas cutting activities	:	963.84
For Welding activities	:	2064.12
Total average allowed time per month(X)	:	3027.96
No of direct Workers required (Y=3028/200)	:	15.14
Say as	:	15
Staff assisting to gas cutter/welder as need base	:	9
Gas cutter/Welder for BFR, MW shop, FBW, etc	:	5

Collection of gas cylinders/repair works to	}	
Welding Equipments/Store/Office		
	:	4
Sub total	:	33
LR at 12.5%	:	4
Total	:	37

Apart from the above, welding shop is also important to cater sister shops like Points and Crossing shop and Structural shop etc. for manufacturing of track and bridge items respectively. Even though, some of the items are out of manufacture temporarily, it is likely to initiate manufacture in near future, the study team allows the 30% of the calculated man power as $37 \times 30/100$ is 11.1 say 11 staff.

Hence, the study team has allowed 48 staff (37+11) for future requirements in view of expected increase in the work load at Points & Crossing, Structural, D&SD shops etc.

3.12.2 Sanction Vs Requirement

Sanction	Actual	Requirement	Surplus
65	27	48	17

Recommendation No.4

17 posts of Tech.Gr.I in GP Rs. 2800/-are found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank

(Total-17)

3.13 GLUED JOINT SHOP (GJ No. 608)

At present 4 Glued Joints are produced an average per day for single batch consists of 24 staff for arranging feeding of rails, insulation sleeves, liners, fish plates, end post, mixing of glues etc. But in two batches consist of 31 staff to be produced 8 glued joints per day.

Currently, the sand blasting works is outsourced.

3.13.1 The details of machinery and equipments available are

Shearing machine	-	1
Electrical hoist	-	1
Air compressor 300 CFM	-	1
Circular Saw Cutting Machine	-	1
FRET SAW grinding machine	-	1
Bench grinding machine	-	1
Sand blast equipment	-	1

3.13.2 Distribution of Staff

Sl.No	Works description	Single batch	For two batches
1	Feeding of rails, checking of holes for	6	7

	correctness, letter grinding and hoist operation		
2	Assembly of glued joints	5	10
3	End post moulding	1	1
4	End post cutting	1	1
5	Bolt moulding	1	1
6	Liner moulding, cutting & punching	2	3
7	Holes chamfering	2	2
8	Cloth cutting, S.I test, Pull out test, joint loading and other jig works.	3	3
9	Office and store	2	2
10	Shop floor cleaning	1	1
	Total	24	31

3.13.3 Staff strength Vs Out turn details:

Mon & Year	Staff strength	RE	Total	Staff distribution			Out turn details	
				GJ Production	Office /Store	LR	Prog	Achieved
For the year Apr-2018 to Mar-2018								
Apr-18	39	0	39	32	2	5	61.542	58.370
May-18	39	0	39	32	2	5	43.508	44.570
Jun-18	39	4	43	36	2	5	56.940	57.310
July-18	37	5	42	35	2	5	63.668	61.370
Aug-18	37	5	42	35	2	5	59.276	59.276
Sep-18	33	5	38	31	2	5	61.168	57.230
Oct-18	33	5	38	31	2	5	62.604	54.610
Nov-18	33	5	38	31	2	5	62.393	63.010
Dec-18	33	5	38	31	2	5	62.726	61.300
Jan-19	33	5	38	31	2	5	58.054	56.580
Feb-19	33	0	33	26	2	5	29.344	16.880
Mar-19	33	0	33	26	2	5	58.996	46.530
Total	422		461	377	24	60		
					Total		680.219	637.036
					Achieved in %			93.65%
For the year Apr-2019 to Jun-2019								
Apr-19	33	0	33	26	2	5	58.020	60.230
May-19	33	5	38	31	2	5	46.410	43.380

Jun-19	33	0	33	26	2	5	43.750	46.140
					Total		148.18	149.75
					Achieved in %			101.06%
Total	521		565	460	30	75		
Avg/ Mon	34.73		37.66	30.66	2	5		

From the above table it is observed that, the out turn achieved is almost the same against the programmed out turn. Further the sanctioned strength of GJ section is 32 (both GJ/WW & GJ/C) but in actual is 24. The additional staff is met out from Re-engagement/sister shops or the provision of Over time work.

Hence the study team has allowed the present system of deployment of staff for the above work and the same can be continued on need base as 32 staff for two batches is found satisfactory to produce at the rate of 8 Glued joints per day.

3.14 TINKER SHOP (No.609)

This shop is manufacturing of Hand Signal lamps, gate lamps, Motor Trolley Cable Work, Mud Guards, Cash boxes, Tapal boxes, first aid boxes, LV Boards, Destination Boards, Speed Limit Board and all other items made of G.I. Sheets etc.

3.14.1 The following machines and equipments available at this Shop:

Spot Welding Machine	:	1
Bench Grinder	:	1
Pillar Drilling Machine	:	1
Zion Crew Machine	:	1
Guillotine Shearing Machine	:	1
Blower	:	1

Since the manufacturing works are stopped from July-2017, the above machineries are to be used in needy places.

Presently 5 Artizan staff is available against the sanctioned strength of 5. It is to be recommended for surrender.

Recommendation No.5

3 posts of Sr.Tech. in GP Rs. 4200/ and 2 posts of Tech.Gr.I in GP Rs. 2800/- are found excess and the same may be surrendered and credited to the Vacancy Bank

(Total-5 posts)

3.15 PAINT SHOP (P – No.610)

Presently 7 staff is working against the sanctioned strength of 15. This shop is performing the painting work of steel works, end loading wagons, signal lamps, lifting barrier gates, push trolleys, motor trolleys, dip lorry, rack bars, steel Girders, points and crossing works.

In EWS/AJJ, most of the works are out of manufacture and the available 7 staff of deployment is found satisfactory and the same is allowed to continue on need base. Moreover, the painting works are to be outsourced in future.

Sanction Vs Requirement

Sanction	Actual	Requirement	Surplus
15	7	7	8

Recommendation No.6

One post of Sr.Tech. in GP Rs. 4200/ and 7 posts of Tech.Gr.I in GP Rs. 2800/- are found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank **(Total-8 posts)**

3.16 LOADING SHOP (Y – No.615)

At present, 1 staff is working on account of FBW works against the sanctioned strength of 3. The following works are carried out by Loading Shop.

- Rails received from FBW Shop are unloaded for Points and Crossings Shop.
- Placement and movement of wagons by issue of gate memos in co-ordination with Yard Master.
- Material Collection from Stations and Parcel Depots.
- Scrap collection from all shops Segregation and forming of lots carried out in coordination with other shop workers

Nowadays, the above works are doing individually by the sister shops itself. Moreover this shop is also closed. Hence, the work study team recommends two vacant posts for surrender. The available one Sr.Tech post is allowed to continue in the FBW shop.

Sanction Vs Requirement

Sanction	Actual	Requirement	Surplus
3	1	1	2

Recommendation No.7

Two posts of Tech.Gr.I in GP Rs. 2800/- is found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank

(Total-2 posts)

3.17 MILLWRIGHT SHOP (No.612)

In Millwright shop (both Line side and Shop side) 39 staff are working against the sanctioned strength of 68. Millwright Shop consists of line side and Shop side. Out of the 39 staff, 20 are working in Line side and the remaining 19 plus one Re-engagement staff are working in Shop side. In Millwright, Shop side mainly caters for the maintenance and repairs of machines of all Shops.

3.17.1 Line side :

Line side are manufacturing of Motor Trolley, Dip Lorry, Jacks etc.

The service and maintenance works of Line side comprises of vehicle maintenance and repairs. The available vehicles are Jeep – 1, Lorry –2 , Mobile Cranes -1, DG-sets -3 , Fork lifts -1 tractors-2 etc.

Out of 20 Artizan staff working in Line side, 4 staff is covered under Push trolley and Motor trolley manufacturing/repair works. Presently push trolley only are manufactured, and one staff is deputed to FBW shop, the other staff are working in Vehicle Maintenance and repair section.

3.17.2 Requirement of Manpower in Line side:

Sl.No	Work description	Present deployment	Requirement assessed by Work study
1	Push trolley/Motor manufacturing	4	4
Vehicle Maintenance/Service			
2	TATA lorry	1	4
3	Dipper lorry	2	
4	Tractors – 2 Nos	2	3
5	Fork lift	1	1
6	Mobile crane	1	3
7	Jeep	1	1
8	Vehicle Maintenance	3	4
Misc. Works			
9	Water pump operator	1	1
10	Gen-Sets, 3 Nos	3	4
	Sub Total	20	25
11	LR at 12.5%		3
	Net Requirement		28

From the above table it is shown that the study team has allowed the manpower requirement of Line Side as 28 instead of 20 staff. Hence 28 staff is sufficient to manage the present work load.

3.17.3 Shop Side :

This shop carries out the maintenance and repairs works of all the 216 machines available at EWS workshop. Out of 216 machines,

some machines are treated as critical machines such as Planning Machines, EOT cranes, Air compressors, Drilling Machines, PSM, Warp removal Machine, CNC-End milling Machine etc. These are required regular monitoring/maintenance. In addition to the above this shop does the erection, installation, commissioning of new machines and extends technical expertise for the maintenance of Pamban Bridge in co-ordination with structural shop.

The work study team has considered the above, and arrived the manpower requirement for Millwright Shop side including new machines in M&P Programme.

3.17.4 Manpower requirement of Millwright Shop side:

Sl.No	Work description	Present deployment	Requirement assessed by Work study
1	Water Pump operator	1	1
2	Air Compressors operator-3 Nos	3	3
3	Office/Store	1	1
4	Planning Machines	15	3
5	Air compressors		3
6	EOT – Cranes		4
7	PSM, CNC-End Milling, Warp Removal M/c, Pressing M/Cs, Hoists, Grinding M/Cs, Bandsaw, Oil fired furnaces, Pneumatic hammers & Misc. Machineries.		6
8	Drilling machines		2
9	Lathe machines		2
10	Hydraulics/Pneumatics items		2
	Sub Total	20*	27
11	LR at 12.5%		3
	Net Requirement		30

*One staff is in Re-engagement account.

From the above table it is shown that the study team has allowed the manpower requirement of Millwright Shop Side as 30 instead of

20 staff. Hence 29 staff is sufficient to manage the present work load.

Therefore, the Total requirement of manpower for the entire Millwright shop is 58. (28 for Line side and 30 for Shop side)

3.17.5 Sanction Vs Requirement

Sanction	Actual	Requirement	Surplus
68	39	58	10

Recommendation No.8

10 posts of Tech.Gr.I in GP Rs. 2800/- is found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank

(Total-10 posts)

3.18 ELECTRICAL SHOP (ELE – No.617)

This shop is responsible for power distribution and maintenance of all electrical gears in Workshop as well as Dy.CE's Office premises. There are 3 substation having capacity 500 KVA, 750 KVA and 1000 KVA. Substation I covers Points and crossing shop, Millwright shop, AWM office, AMM office and Dy.CE office.

Substation II covers BS shop, Machine shop, Tool room, Fitter shop, Signal Fitter shop, Glued joint shop and Paint shop, Substation III cover structural shop, ACMT lab, Foundry shop, Welding plants and drilling machines. In addition to maintaining the power distribution, erection, installation and commissioning of new machines, cable laying work also carried out.

At present 7 Artizan staff is working against the sanctioned strength of 21 including helpers. Staff distribution is done based on the day-to-day work requirement. The present staff strength of 7 is found to be insufficient for the workload that exists and most of the works could not be attended in time which has a direct bearing on the

production and hence the study team suggests to maintain the sanctioned staff strength of 18 which is bare minimum for efficient maintenance of electrical gears.

3.18.1 Electrical shop is generally responsible for:

- Ensuring power supply to various shops, administrative office, canteen etc.
- Periodical maintenance of transformers.
- Manning of 500 KVA, 750 KVA & 1000 KVA Sub stations.
- Maintenance of ACBs, OCBs, LT boards in Sub station.
- Maintenance of HT & LT Earths.
- Electrical failure attention of 216 machines.
- Preventive maintenance of all machines inside workshop.
- Break down attention of Air compressors, and portable equipment like grinding machines, drilling machines etc.
- Day to day maintenance of lights, fans street lights etc, inside workshop, administration offices and canteen.
- To ensure electrical safety drives.
- Carrying out annual maintenance works of M & P inside workshop every year during summer holidays.
- Installation of new machines

In EWS/AJJ, the Electrical shop is broadly divided in two groups. First one is Electrical (GS) for maintaining power house, sub stations and machineries & plants maintenance etc. Second one is EOT crane operations and the details of works in each section are briefly discussed one by one as below.

3.18.2 **Electrical (GS):**

The Electrical (GS) shop is a maintenance & service shop. It is functioning in two ways, first one is operating and maintaining the power station such as Sub stations and accessories with DG-set and another is periodical/preventive and break down maintenance of machines and plants in EWS and FBW/AJJ

respectively. The study team has arrived the man power requirement separately such as Power side based on energy consumption per month and Machinery & plants based on the number of available machineries in need base.

3.18.3 Annual Energy Consumption:

The monthly energy consumption details are tabulated for EWS & FBW/AJJ from Jan-2018 to May-2019.

Month & Year	EWS - Units	FBW - Units	Total (Units)
Jan 18	31503	3900	35403
Feb 18	37123	4300	41423
Mar 18	35903	4500	40403
April 18	37269	6600	43869
May 18	30216	3850	34066
June 18	37962	4700	42662
July 18	27554	4900	32454
Aug 18	41934	1800	43734
Sept. 18	42423	2500	44923
Oct 18	31472	2200	33672
Nov 18	39500	2350	41850
Dec 18	22500	2210	24710
Jan 19	43570	4200	47770
Feb-19	47230	3210	50440
Mar-19	46110	3100	49210
Apr-19	44100	2650	46750
May-19	42850	2250	45100
Total	639219	59220	698439
Average/month	42614	3948	46562

From the above table, the energy consumption is taken on the monthly average of 42614 units for EWS/AJJ and 3948 units for FBW/AJJ and making a total of 46562 units. This amount of electrical energy consumption is utilised for inside EWS, FBW, administrative

buildings, accounts, store section etc. The manpower requirement is arrived by using the current IR average.

3.18.4 **Man Power Ratio (Bench marking) of Electrical power:**

Man power ratio of electrical power has been classified as two Groups viz. divisions having energy consumption of more than 23,00,000 units per month and divisions having less than 23,00,000 units per month.

The manpower required for power side maintenance is arrived based on the MPR (benchmark) provided by the Efficiency Research Directorate of Railway Board vides Benchmarking Report – May - 2019.

3.18.5 As per the report, MAS division is consuming more than 23 lakh units/month and man power ratio is 0.18 men per 000 units in Southern Railway. The bench marking of electrical power for the month of May – 2019 is described below.

Current IR average	- 0.20 Men / 000 units
Current bench marking	- 0.06 Men in KUR div. in ECoR

Efficiency of an organisation is assessed based on the Bench marking concept so as to adopt the same in other similar units to improve the same in future.

3.18.6 **In order to achieve the Targeted Operating Ratio, it is very essential to keep the staff cost to the minimum. This can be done only by adopting the bench marking i.e Man Power Ratio methodology.**

In the power maintenance, there are lot of areas such as Sub stations, transformers & switch gears, UPS, Pumps, solar heaters if available, Street/road lights, meter readings, water coolers, operation of DG-sets etc.

Even though the operation and maintenance of motor pumps for water, UPS connection, operation of DG sets can be outsourced for maintenance and repair to minimize the staff strength.

3.18.7 The work study team proposes to adopt the bench marking as the methodology to arrive the man power requirement. According to the bench marking of May-2019, current IR average is 0.20 men/000 units. Hence, the total requirement based on this methodology is as follows.

Average energy consumption/month	=	46562 units
Bench marking (0.20 staff per 000 units based on current IR average.)	=	$46562/1000 \times 0.20$
Requirement of man power is	=	9.31 say 9 staff .
This includes LR/RG and one supervisor JE/SSE.		

These 9 staff are exclusively used for power side of EWS & FBW/AJJ such as Sub stations, transformers, switch gears, HT & LT connections, DG – set etc., for periodical and break down maintenance.

3.18.8 **Machinery & Plants Maintenance/Repair works:**

At present 216 machines/plants are available in EWS and ESAB plant, Post straightening machine, drilling machines, 40 no of hoists, 40 no of conveyers (approximately) etc in FBW shop of which these machines require electrical maintenance from Electrical shop along with MW staff. The sanctioned strength of 18 plus 3 helpers is being utilized for electrical maintenance of machines & plants but in actual is 7 plus 3 helpers and total is 10. Out of sanctioned strength 21 staff, 9 staff is deputed for Sub stations for both EWS & FBW/AJJ. One staff is used for office/Store and the remaining 11 staff is utilizing for machine maintenance and other related accessories.

After deducting power side staff, 12 staff only available for machines maintenance. These 12 staff is not sufficient to manage the 216 machineries and plants in various shops & administrative office, FBW machineries etc.

Moreover, there is no standard allowed time for their working in any machine or any activity, the requirement can be worked out only by physical observation of the engagement of the activities of staff. From the observation at different times in various shops, it is found that Electrical staff is engaged in sustained attention only for about 60 to 70 % of their duty hours, but it is more sensitive nature, and also the use of OT is due to proper planning of works and less idling during regular hours. No data was given from the various shops regarding machine failure hours.

However, the work study team has considered and enhanced the staff strength of 12 to 15 for effective and uninterrupted machine maintenance only and this lead to maintain targeted production of EWS & FBW/AJJ. So the urgent need is to create the 3 posts to Electrical shop. Therefore, 9 staff has to be deputed for power side. 15 staff has to be deputed for machineries and plants maintenance and making a total of 24 staff excluding 2 supervisors for EWS & FBW respectively in Electrical shop.

3.18.9 The SSE/Electrical incharge may distribute electrical staff to EWS & FBW respectively as per the requirement.

Therefore, the study team has considered 24 staff excluding 2 Supervisor against the existing sanctioned strength of 21.

3.18.10 Sanction Vs Requirement:

Shop	Sanction	Actual	Required	Shortage
Electrical(GS)	21	7	24	3

Hence, the Administration may create 3 posts of Technicians/Helpers in Electrical department.

3.18.11 **Electrical (EOT):**

This section staff is mainly catered to operate EOT cranes of various shops in EWS/AJJ. At present, the need for EOT crane works is stopped in various shops like Foundry, MW line side and BS shop.

The EOT crane operators are working mostly in E-Shop and Structural Shop. According to the present work load the sanctioned strength of 12 staff is allowed to continue as such.

3.19 **FLASH WELDING SHOP (FBW No.616)**

The types of welded rail panels regularly produced in this Shop are:

- | | | | |
|------|-------------------|---|--------|
| i) | Three Rail Panels | : | 52 kg. |
| ii) | Three Rail Panels | : | 60 kg. |
| iii) | Ten Rail Panels | : | 52 kg. |
| iv) | Ten Rail Panels | : | 60 kg. |

The production target per shift is 80 Joints of 52 kg / 72 joints of 60 kg. The annual target set by Railway Board is 20,000 joints. The following are the various stages of work involved in producing the end product.

- Burn off.
- Pre-heating.
- Flashing.
- Upsetting (butting)
- Trimming & top grinding.
- Post straightening
- Ultrasonic testing.
- Transverse testing & Hardness testing.

Unloading & stacking of rails received from steel plants and stacking of welded rail panels and loading work are outsourced. 16 Artizan staff are working at present against the sanctioned strength of 28.

Staff Distribution for various Work

Matching, Hoisting, clamping : 10

End Grinding & Machine Cleaning	:	6
Welder & Machine Operator	:	6
Side & Top Grinding	:	7
Straightening Machine, USFD & Conveyor switch	:	6
Number Painting Work	:	1
ESAB & other Machineries Maintenance	:	8
Rail Receipt & Despatch	:	6
Office work	:	1
Stores Maintenance & Issue of materials	:	2
Total	:	53

Requirement of Staff for contract works at Flash Butt Welding Plant:

The requirement of departmental staff is working along with Contractor's Works. Presently, two mobile welding plants and one Zinc metalizing unit are working in FBW. The man power demand as required by XEN/FBW is furnished below.

General:

- Witnessing of Rail unloading received from BSPC - 2
- Witnessing of rail loading to division/EWS, welding and other Railways/Fabricators and lashing works - 2
- Co-ordinating with YM/SMR/TXR for loco power and wagon movement and shunting work inside FBW and AJJ yard - 2
- Total - 6 staff

For Plant – 1:

- ✓ Dimensional check 100% of welded joints done by contractor - 2
- ✓ Dept. test check of welded joints by USFD on daily basis – 2

- ✓ Witnessing of loading of welded panels, preparation of paring list, preparation of issue notes, RMC, credit note etc. – 1

For plant-1 - 5 staff

For plant-2 - 5 staff

The work study team has allowed as per XEN/FBW demand of 16 artisans staff for General, plant-1 & 2.

Zinc Metalizing Unit:

1. Zinc metalizing work on rails- to check coating thickness of zinc and polyurathone paint and recording of measurements – 2 staff
2. Attending minor repairs to 4-tier/5tier wagons for loading of 10 rail panels – 3 staff
3. Maintenance of hoist conveyers and other assets – 5 staff
4. Electrical staff – 3 staff
5. Maintenance of stores, indenting of stock & NS items scrap disposal – 2 staff

From the above views of XEN/FBW demand for manpower requirement, the work study team has allowed 6 staff for Sl.No. 2 & 3 and is sufficient to manage these activities. So the study team has allowed 13 staff for Sl.No. 1 to 5.

Hence, the work study team has allowed **29 staff for FBW/AJJ without departmental welding work.** Therefore, the total requirement of man power is **82 staff** (53+29) for both departmental and contract works.

Sanction Vs Requirement

Sanction	Actual	Requirement	Shortage
28	16	82	54

From the above table it is shown that 54 staff seems to be in shortage. But the ESAB plant production work was completely stopped till April-2018. Therefore, the work study has allowed to continue as per the present sanctioned strength of 28 staff.

In addition to, staff deputed to utilize FBW from other shops in EWS and Re-engagement staff. Further, staff may be redeployed as per requirement of manpower in the future. (when the new ESAB machine will be commissioned).

3.20 Requirement of Supervisors:

The Work shop is functioning under Non-Incentive Scheme. The Supervisor's works involves various areas like supervising the artisans staff, store activities, dealing of contract works, maintenance of employees safety etc. Even though the work study team has considered the above and calculated the requirement of Supervisors on need base.

3.20.1 Position of Supervisors as on Jun-2019 Vs Requirement:

Shop	Artisan staff		Present Deployment		Allowed by Work Study	
	Sanc	Actual	SSE	JE	SSE	JE
Shop Supervisors						
Machine	78	34	2	-	2	-
Blacksmithy	58	32	1	-	2	-
Crossing	73	39	3	-	4	1
Fitter	34	13	2	-	2	-
Signal Fitter	33	14		-		-
Structural	90	32	5	-	4	1
Welding	65	27	1	-	2	-
GJ(WW)	14	11+1*	2	-	2	1
GJ(C)	18	13				
Tinker	5	5				
Painter	15	7				
Loading	3	1				
Millwright	68	39	4	-	4	1
FBW	28	16	4	-	3	1
Electrical & FBW(GS)	18+3*	7	At present 2 Supervisors are working in division control			

Electrical (EOT)	12	8				
Total-A	615	299	24		25	5
PCO & Other Supervisors:						
Planning			2	-	2	-
Rate Fixing			1	-	2	-
Progress			1	-	2	-
Inspection			1	-	4	2
Computer centre			1	-	1	-
Work Study cell (Ex-Cadre)			2	-	2**	-
Deputation to PCE's office			3	-	-	-
Total-B			11	-	13	2
Net (A+B)			35	-	38	7

* Helpers.

** Two supervisors are always deputed in Work study cell for the past 20 years. Hence, the study team has allowed two supervisors in work study account.

From the above table, it is shown that the some of the shop/section has only one supervisory staff. The work study team has considered the minimum requirement with LR of 2 or 3 Supervisory staff.

The works involving regular manufacturing along with Out sourcing activities in major production shops like Structural, Points & Crossing, Millwright for service and maintenance, Glued Joint section, FBW and PCO/Inspection etc. These Shops/Sections are required more supervision of contract works, store activities and Re-engagement staff. So the requirement of supervisory staff is to be increased naturally. Hence, the work study team has considered the above and enhances the supervisory staff strength suitably including LR and trainee reserve on need base.

3.20.2 Sanction Vs Requirement

Supervisory staff	Sanction	Actual	Requirement	Surplus
SSE	43	30	38	5
JE	7	0	7	0
Total	50	30	45	5

Recommendation No.9

5 posts of SSE in GP Rs. 4600/- is found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank.

(Total-5 posts)

3.21 PCO staff (Progressman & Planner):

There are 2 Sr.Tech posts available against the sanctioned strength of 2. One post of Tech-Gr.I is available against the sanctioned strength of 3. The workshop is functioning non incentive scheme, the work load is drastically reduced instead of incentive scheme and the work study team has recommended surrendering of two vacant posts.

3.21.2 Sanction Vs Requirement

PCO – staff (Progressman & Planner)	Sanction	Actual	Requirement	Surplus
Sr.Tech	2	2	2	0
Tech. Gr-I	3	1	1	2
Total	5	3	3	2

Recommendation No.10

2 posts of Tech. Gr-I in GP Rs. 2800/- is found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank.

(Total-2 posts)

3.22 Contract works Details:

The following works are carried out through out sourcing as tabulated below.

Shop	Name of Contractor	Name of Work	Amount in Rs.	period
MW	M/s OM Sai CNC Solutions, Pune	Complete servicing and reconditioning of Heavy duty double column planning machine	14,07,862	3 months
R.Shop	M/s Seema Enterprises Bhopal	Fabrication of 18.3m span welded type girders 16 spans (436 MTs)	85,89,758	180 days
	M/s Narayani Constructions Bangalore	Fabrication of 30.5m span welded type girders 4 spans (304 MTs)	76,00,000	
	M/s Sivashakthe builder Salem	Trial assembly of 30.5m span open web girder of 25T loading	9,31,631	30 days
	M/s Keerthi industries, Pudukottai	Fabrication of 12.2m welded type girder (150 MTs)	39,31,350	90 days
	M/s Sakthi Nanotech Engineers Chennai	Machining of 30.5m span open web girder bearing components	5,84,000	90 days
FBW	M/s Prowess delve projects PVT Ltd Hyderabad	Cleaning, Blasting, Zinc metalizing and application of sealer coat (7000 Sq.m)	47,25,000	180 days
		Lifting of 52Kg/60Kg 10 rail panel from platform (140 panels)	1,26,000	
		Lifting of 52Kg/60Kg 10 rail panel from roller conveyer (140 panels)	31,920	
Fitter	M/s Teja Construction Kadapa	Conversion of BRN wagons to 5 tier and end unloading rake (37560 Kg) etc. Schedule-A & B	1,19,84,297	180 days
		Total	3,99,11,818	

From the above table, it is shown that the huge amount of Rs. 3,99,11,818/- incurred for various outsourcing activities in EWS &

FBW/AJJ for the past two years. The work study team has not recommended for any surrender on account of contract works.

At present, the running of canteen is closed and the tinker shop works is also closed due to the administration problems.

3.23 Summary of staff requirement in Shop/Section wise:

Shop	Sanction	Actual	Requirement	Surplus
Machine	78	34	50	28
Blacksmithy	58	32	34	24
Crossing	73	39	73	0
Fitter	34	13	27	21
Signal Fitter	33	14		19
Structural	90	32	90	0
Welding	65	27	48	17
GJ(WW)	14	11	32	0
GJ(C)	18	13		
Tinker	5	5	0	5
Painter	15	7	7	8
Loading	3	1	1	2
Millwright	68	39	58	10
FBW	28	16	28	0
Electrical(GS)	18	7	18+3*	3*
Electrical(EOT)	12	8	12	0
Total-A	612	298	478	134
Helpers-B	3	1	3	0
PCO – staff (Progressman & Planner)	5	3	3	2
Total-C	5	3	3	2
Technical Supervisors				
SSE	43	30	38	5
JE	7	0	7	0

Total-D	50	30	45	5
Net (A + B + C + D)	670	332	529	141

Note: * 3 posts is shortage to the requirement and the same to be created by administration in Electrical (GS) shop.

CHAPTER – IV**4.0 PLANNING BRANCH REMARKS ON CO-ORDINATING OFFICER'S VIEWS**

The Co-ordinating officer views/remarks are received on 13.08.2019 vide letter No.EWS/AJJ/Work study/2019 dated on 10.08.2019. The planning branch remarks are given against the Co-ordinating officer's views in para wise as below.

4.1 Co-ordinating Officer's Views:

Recommendation No.1 : 28 posts at Machine shop is not agreed to. As it is pointed out in the draft report that there are around 50 working machines (16 lathes, 27 Drilling machines & 7 Planing machines (2 operators per machine and 2 machines working in double shifts) and to operate all these machines, at least 61 Machinists plus LR @ 12.5% = 8 plus Handling and other indirect staff @ 15% = $(61 + 8) \times 15\% = 10$ staff totaling $61+8+10 = 79$ staff are required to keep running all the machines without any idling. Since machining of components is very important and they are being used for assembling of track items like curved switches, push trolleys, modified L.B. Gates, etc. All these track items falls under safety category.

4.2 Planning branch remarks:

Not agreed to. Two lathe are only having required load and remaining are kept idling for want of load for which three operators were permitted stands good. At present 3 staff are there for operating milling & screwing and 2 staff for drilling to other shops respectively. However, the study team has allowed 4 staff for milling and one staff for screwing machines and 10 staff for drilling works. Further, 14 staff are allowed for planning section based on allowed time, two staff for office/tool room and 4 staff for material handling & scrap removal at E & M shops. And also 7 staff allowed for future requirement.

The present technological changes in Permanent Way/Bridges envisage for unified gauge in Indian Railways which drastically reduced the requirement of various sizes of spares in P.way/bridges which reflected the work order to Engineering workshop in decreasing trend. As per the Railway board's present instructions, all the possible non core activities to be outsourced which will reduce the considerable amount of staff cost. This policy is being

adopted in EWS/AJJ also to various items like holding down bolts, track machine spare items, girder bearing items, push trolley items, LB gate items etc. Also on the economical side, manufacturing by outsourcing is cheaper than departmental staff. In this juncture accepting additional work load to this workshop is not justifiable. Hence, the present work load and 50% over the current work load is permitted for Planning section.

Work study team has already considered the future requirement of points & crossing shop, Structural shop etc., and increased the staff strength to 50, instead of actual strength of 34.

Co-ordinating officer mentioned that 50 machines are in good working condition and allowed the 2 staff for each machine in two shifts. Allotment of staff is proportional to the present work load and anticipated requirement also with due consideration for enhancing productivity of the work shop.

4.3 **Co-ordinating Officer's Views:**

Recommendation No.2 : 24 posts at Black smithy shop is not agreed to. The Black smithy shop is caters to the needs of all the other manufacturing shops like Crossing, Structural, Fitter and Signal Fitter, Millwright, etc.,. Apart from the sister shop items, it has its own manufacturing items like Buffer stop, Joggled Fish Plates 52 kg / 60 kg, Bend Fish Plates 52 kg / 60 kg, Iron skids, etc. The listed items are very vast as furnished in the draft report. Due to shortage of staff, its production capacity is very much hampered and various divisions requirements could not fulfilled. To tide over the crisis, reengaged (retired) staff are being utilised to achieve the production to possible extent.

4.4 **Planning branch remarks:**

Not agreed to. The list of manufacturing items are furnished in the draft report, but now this shop is manufacturing only few items, due to sea changes in the permanent way after the introduction of gauge conversion, Unified gauge policy, LWR track, outsourcing etc., in Indian Railways which drastically reduced the requirement of various spares in P. way, which reflected and got reduced work order to Engineering workshop.

However, the work study team has already considered the future requirement of BS shop on account of points & crossing shop, Structural shop etc. It is also pointed out that, curved switches only presently manufacturing in points & crossing shop.

4.5 **Co-ordinating Officer's Views:**

Recommendation No.3: 40 posts at Fitter and Signal Fitter shops is not agreed to. As it is pointed out in the draft report, there are huge vacancies in these shops due to superannuation and these shops are compelled to work together to distribute the available staff for various works which are very important and urgent in nature (e.g) attending repairs to 4 Tier / 5 Tier arrangements for BRN wagons, Modified L.B. Gates, Push Trolleys, Rail Dollies, etc. Due to shortage of staff, the production has gone down drastically and reengaged (retired) staff are being utilised to make up the production levels.

4.6 **Planning Branch remarks:**

Not agreed to. The average total staff of D&SD plus re-engagement is 32 per month, out of 32 staff 50% of the staff are deputed to other shops, it is evident that the work load got reduced. The work study team has allowed 18 staff based on allowed time, further the study team has allowed by increasing 50% of the staff strength for future demand.

Hence, the required staff strength is arriving 27 stands good.

4.7 **Co-ordinating Officer's Views:**

Recommendation No.4: 17 posts at Welding shop is not agreed to. In the draft report, the requirement of Welders / Gas cutters is arrived based on Man hours programmed for the present monthly programmes of production shops. Due to shortage of welders / gas cutters, some of the production shop staff who knows welding / gas cutting works are being utilised for welding / gas cutting works and also considering the modernisation/ augmentation of structural shop to increase the fabrication of girders from 50 T per month to 100 T per month, the existing sanction of 65 is definitely not sufficient. Indent has been placed for 33 welder vacancy posts and at present some of the re-engaged staff are being utilised for welding / gas cutting works.

4.8 Planning Branch remarks:

Requirement of 15 staff has been arrived for welder and gas cutter is based on allowed time of Black Smith, points & crossing, structural, fitter and signal fitter shops. Also the study team has already considered separately 18 staff for assisting to welders/gas cutters, collection of gas cylinders/repair works to welding equipments/store/office and gas cutters/welders for BFR, MW shop, FBW etc.

Moreover, the conversion of BRN wagons to 5 tier end unloading rake(EUR) works are outsourced for which the welding, gas cutting, fitter shop attention, machining of spares works are also drastically reduced. Further, the expected workload increase from 50 T to 100 T, the work study team has already increased 30% of the total staff i.e., $37 \times 30\% = 11$ staff allowed.

Therefore, the work study team has considered the anticipated workload and allowed the staff strength proportionately. The average monthly staff used for welding and gas cutting is 16 staff for 50 T at structural staff and further increase of workload for another 50 T, 16 staff are required for welding and gas cutting works. But, work study team has already allowed 11 staff for future requirement and **now allowed remaining 5 more staff for the above activities.**

4.8.1 Sanction Vs Revised Requirement:

Sanction	Actual	Requirement	Surplus
65	27	53	12

4.8.2 Revised Recommendation No.4:

12 posts of Tech.Gr.I in GP Rs. 2800/-are found excess to the requirement of Welding Shop and the same may be surrendered and credited to the Vacancy Bank.

(Total-12 posts)

4.9 Co-ordinating Officer's Views:

Recommendation No.5 : 5 posts at Tinker shop is agreed since activities at Tinker shop like production of Hand signal lamps, Gate lamps, etc. is discontinued presently due to decreased demand and also superannuation of experienced staff. However, 5 Tinker shop staff are presently working at Glued Joint shop. Hence on

filling up of vacant posts at Glued Joint shop through the indent already submitted these 5 posts will be surrendered.

4.10 Planning branch remarks:

Noted. These 5 posts may be surrendered in Tinker shop account and the present incumbents may be redeployed in Glued Joint section.

4.11 Co-ordinating Officer's Views:

Recommendation No.6: 8 posts at Paint shop is not agreed to. The existing available 7 paint shop staff are not sufficient to cover the painting activities of all production shops. Due to shortage of staff, some of the less skilled painting works like primer painting and stenciling etc. are forced to carry out by production shop fitters.

4.12 Planning branch remarks:

Not agreed to. As per instructions from Railway Board, huge number of items are not manufacturing in EWS/AJJ for the past five years approximately. Therefore the on date manufacturing items are very limited for which the painting works are also got reduced drastically. Further, some items which are outsourced, it is suggested to include the painting work also on that. Therefore, 7 staff were allowed for painting work is stands good.

4.13 Co-ordinating Officer's Views:

Recommendation No. 7 : 2 posts at Loading shop is not agreed to. The existing 1 staff is working at FBW and attending the duties there. At EWS the loading related works are carried out by production shops as mentioned in the draft report. Definitely, it is an added burden on production shops and can be avoided duly filling the vacant posts at Loading shop.

4.14 Planning branch remarks:

Not agreed to, hence the shop is already closed and not functioning, the work being done in the said shop is now taken care by the respective shops. Since, the loading related works is not a regular activity the staff presently deployed from the shops may continue as such.

4.15 Co-ordinating Officer's Views:

Recommendation No.8: 10 posts at Millwright shop is not agreed to. The man power requirement is arrived based on the present

available vehicles at Line side and Machineries maintained by shop side. However, due to modernisation / augmentation of Structural shop, the following new machines are expected shortly and procurement action is under way at COFMOW / NDLS.

1. CNC plasma profile cutting machine – 1 No.
2. CNC plate drilling machine – 1 No.
3. EOT cranes – 4 Nos. for new shed
4. Radial drilling machines – 6 Nos for new shed
5. Band saw cutting machine – 1 No. for new shed
6. 20 T Road mobile crane – 1 No.
7. 3T Fork Lift Trucks – 2 Nos.
8. 1000 cfm Rotary Air compressor – 1 No.
9. 200 T HHydraulic press – 1 No. for new shed.

In addition to these machines, the Holistic Review Committee has recommended 1 No. of Gantry automatic drilling and milling machine and 1 No. of CNC Beam welding line for automated production of welded girders.

Considering all these additional machines, there is no scope for surrender of Millwright shop.

4.16 Planning branch remarks:

Agreed to.

4.17 Co-ordinating Officer's Views:

Recommendation No.9 : 5 posts of SSEs is not agreed to. The filling up of vacant posts of 121 Technicians and 309 Helpers through the indents already submitted will definitely increase the requirement of Supervisors to cope up the increased work load set by the Railway Board.

4.18 Planning branch remarks:

Not agreed to. The above requirement is only increasing the staff strength and work load in future. The Supervisory post will be increased, as and when the work load increases. Further, it is stated that, the annual target is reduced gradually for the past five years in EWS/AJJ and the staff strength of Technicians at EWS/AJJ is also declining due to retirements and no recruitments of manpower for the past 25 to 30 years except special drive/CG for filling up of short fall vacancies.

Hence, the study team calculated the manpower of Supervisory staff in draft report stands good. It is also suggested that to create new posts if any increase of workload in future.

4.19 **Co-ordinating Officer's Views:**

Recommendation No.10 : 2 posts of PCO staff is not agreed to. Even though the shops are working in non –incentive scheme, the other regular activities like receipt indents from divisions and BIS from HQ, preparation of monthly production programmes, monitoring the progress of various items at various shops, issuing / despatching of finished items, out turn of production shops, preparation of PCDO, weekly ground stock, production and despatch statements to be furnished to officers, making computer entries are not reduced and the meager staff strength available at PCO is struggling to complete all these works in time.

4.20 **Planning branch remarks:**

Not Agreed to. Work study team has allowed 3 staff for the above work. The workshop is functioning under non-incentive scheme and accordingly PCO section activities are also got reduced. Hence, these 3 staff is sufficient to manage the above activities.

4.21 **Co-ordinating Officer's Views:**

Apart from the above remarks, it is pertinent to mention the following points for your consideration.

1. As per the Committee Report on Holistic Review of Civil Engineering Workshops, the annual production will be increased to 5000 MT (with two shift working) by infrastructural improvement to stream line flow process (Report copy enclosed – 5 pages).
2. Modernisation / Augmentation work is going on at a cost of 17.5 crores and is expected to complete all the works shortly by CN / S.Rly.
3. In SR 2019-20 pink book, Modernisation of civil engineering work shops (umbrella work 2019-20) – Item No. 1028 is sanctioned for 175 crores for which proposals are being prepared for EWS/AJJ (copy of pink book page enclosed) 1 page.

As there are nearly 461 vacancies (including anticated vacancies upto March 2021). The Railway Administration decided to RRB through On line indenting and Recruitment Management System (ORIMS) as directed by PCPO / HQrs/MAS vide their letter No. P(RT)563/RRb/01mas/2018 DATED 06.02.2019. (Copy enclosed – 13 pages.

4.22 **Planning branch remarks:**

Not agreed to. The Co-ordinating officer mentioned the above points are in future requirement. The work study team has already increased the staff strength to the extent possible for future requirement in draft report. Further, Board target is also reduced gradually for the past five years as given below.

Year	Target		
	Girders	Other items	Total
2014-15	500	3000	3500
2015-16	1400	1400	2800
2016-17	1500	1500	3000
2017-18	1500	1000	2500
2018-19	1000	1400	2400

As per the Committee Report on Holistic Review of Civil Engineering Workshops 23.03.2017, the annual production will be increased to 5000 MT (with two shift working). But, the infrastructure and improvement works are in initial stage.

Modernization /Augmentation work is going to complete shortly. Therefore, study team has already allowed the staff strength against the future increase in workload, in the draft work study report. The amount sanctioned for Rs.175 crores is under the umbrella work 2019-20, but the Co-ordinating officer is not mentioned the exact share amount of EWS/AJJ from Umbrella work sanction.

Also the Co-ordinating officer mentioned that for 461 vacancies indents have been placed to RRB through online for fill up the vacancies for increasing work load in future. However, the work study team has already allowed the manpower to the extent possible against the future requirement. Further, the work study team suggested for implementation of activities/work in EWS/AJJ duly following the methodology.

The sanction strength of EWS/AJJ (Technicians, supervisors and PCO staff)	-	670
Annual target for the year 2018-19	-	2400 MT
Actual staff strength	-	332
Achieved annual target by actual staff	-	2464 MT
Staff strength right sized by work study duly considering CO's views	-	544
Difference between right sized and actual staff	-	212
% of increase in staff strength from actual staff	-	63.86
Increase in out turn/work load for 212 staff	-	1569 MT
Total out turn after filling up of 212 vacancies	-	4033 MT

In Indian Railways there is a provision of incentive scheme in workshops. If, EWS/AJJ may implement the incentive scheme of working is lead to 33.33% of increase in out turn i.e., 1343 MT of out turn will be increased on account of incentive scheme.

Therefore, the 5000 T target set by Railway Board in future will be easily achieved through the above sources that is,

Target achieved by actual staff strength	-	2464 MT
Staff increased by work study (212 staff)	-	1569 MT
Implementing of Incentive scheme	-	1343 MT
Total work load	-	5376 MT

The above projected total work load is arrived for departmental manufacturing only, but the various contract works, Re-engagement staff and Over time work are to be in force which will again give the way to enhance the total work load of 5233 T. However, the study team not considers the contractual and Re-engagement portions in the total output.

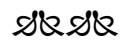
The actual staff strength is 332 and the work study revised the manpower of 544 duly considering of Co-ordinating officer's views which is capable of manufacturing 5376 T, as explained above. Hence, the extra division may arrange to compile the recommended 126 surplus posts in various categories in EWS/AJJ and credit in to the vacancy bank.

4.23 **Revised Summary of staff requirement in Shop/Section wise:**

Shop	Sanction	Actual	Requirement	Surplus
Machine	78	34	50	28
Blacksmithy	58	32	34	24
Crossing	73	39	73	0
Fitter	34	13	13+14	21
Signal Fitter	33	14		19
Structural	90	32	90	0
Welding	65	27	53	12
GJ(WW)	14	11	32	0
GJ(C)	18	13		
Tinker	5	5	0	5
Painter	15	7	7	8
Loading	3	1	1	2
Millwright	68	39	68	0
FBW	28	16	28	0
Electrical(GS)	18	7	18+3*	3*
Electrical(EOT)	12	8	12	0
Total-A	612	298	493	119
Helpers-B	3	1	3	0
PCO – staff (Progressman & Planner)	5	3	3	2
Total-C	5	3	3	2
Technical Supervisors				
SSE	43	30	38	5
JE	7	0	7	0
Total-D	50	30	45	5
Net (A + B + C + D)	670	332	544	126

Note: * 3 posts is shortage to the requirement and the same to be created by administration in Electrical (GS) shop.

Therefore, the recommended surrender for 126 posts may be surrendered at the earliest.



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	Grade Pay (Rs)	No.of post	Mean pay (Rs.)	Annual Savings (Rs.)
POSTS RECOMMENDED FOR SURRENDER					
1	Sr.Section Engineer	4600	5	104888	6293280
2.	Sr.Technician	4200	8	82768	7945728
3.	Technician Gr.I	2800	99	68040	80831520
4.	Technician Gr.II	2400	11	59696	7879872
5.	Technician Gr.III	1900	3	46536	1675296
TOTAL			126		10,46,25,696

Rough work

Mon & Year	Staff strength	RE	Total	Staff distribution			No of Joints
				GJ Production	Office/ Store	LR	
Apr-18	39	0	39	32	2	5	197
May-18	39	0	39	32	2	5	149
Jun-18	39	4	43	36	2	5	195
July-18	37	5	42	35	2	5	204
Aug-18	37	5	42	35	2	5	204
Sep-18	33	5	38	31	2	5	196
Oct-18	33	5	38	31	2	5	188
Nov-18	33	5	38	31	2	5	195
Dec-18	33	5	38	31	2	5	196
Jan-19	33	5	38	31	2	5	180
Feb-19	33	0	33	26	2	5	96
Mar-19	33	0	33	26	2	5	96
Apr-19	33	0	33	26	2	5	189
May-19	33	5	38	31	2	5	148
Jun-19	33	0	33	26	2	5	140
Total	521		565	460	30	75	2573
Avg/ Mon	34.73		37.66	30.66	2	5	171.53

From the above table shown, 171 joints are produced against two batches of staff strength of 30.66 say as 31. But in actual production is to be made 200 glued joints for two batches at the rate of 8 glued joints per day (average 25 days per month). The reduced out turn per month is due to various reasons like power failures, machine failures, shortage of raw material, heavy rain etc.

In E- shop

During day duty - 3

During Night duty	-	1
In Structural shop		
During day duty	-	3
During Night duty	-	1
Sub total	-	8
LR at 12.5%	-	1
Total	-	9

The EOT cranes are available in other shop and it is operated by existing staff in case of emergency. Hence, the study team has allowed 9 EOT crane operators for the EWS/AJJ and the remaining 3 posts are to be recommended for surrender.

Sanction Vs Requirement:

Shop	Sanction	Actual	Required	Surplus
Electrical(EOT)	12	8	9	3

Recommendation No.10

One post of Sr.Tech. in GP Rs. 4200/- and 2 posts of Tech. Gr.I in GP Rs. 2800/- are found excess to the requirement and the same may be surrendered and credited to the Vacancy Bank. **(Total-3)**

1.8.1 FLOW PROCESS DIAGRAM

The sequence of activities carried out at the FBW plant for the production of welded rail panels is detailed in the flow process Diagram Shown below.

