दक्षिण मध्य रेलवे

SOUTH CENTRAL RAILWAY

लालागुड़ा इंजनीयरिंग वर्कशाप
कर्मचारियों की संख्या
की
समीक्षा पर कार्य अध्ययन रिपोर्ट

WORK STUDY REPORT
ON
REVIEW OF STAFF STRENGTH
OF
ENGINEERING WORKSHOP - LALLAGUDA

*** ***

मार्गदर्शक

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STUDY No: WSSCR-14/2020-21

November, 2020

केंद्रीय योजना संगठन, सिकंदराबाद

CENTRAL PLANNING ORGANISATION

SECUNDERABAD

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अनुक्रमणिका - I N D E X

** ** **

आभार

इस रिपोर्ट के संकलन में लालागुड़ा इंजनीयरिंग वर्कशाप के अधिकारियों एवं कर्मचारियों के मूल्यवान मार्गदर्शन तथा सहयोग के लिए केंद्रीय योजना संगठन हार्दिक धन्यवाद देता है.

A C K N O W L E D G E M E N T

The Central Planning organization takes this opportunity to express hearty thanks to the Officials and staff of Engineering Workshop, Lallaguda for their valuable guidance and co-operation in compilation of the report.

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विधि

कार्य अध्ययन विभाग ने इस कार्य अध्ययन को पूरा करने में निम्नलिखित तकनीकी अपनाया.

1. कार्यभार के विवरण का संग्रहण
2. लालागुड़ा इंजनीयरिंग वर्कशाप पर अध्किारियों और कर्मचारियों के साथ बातचीत करना
3. काय्र की पद्वति का प्रेक्षण
4. वर्तमान कार्य प्रणाली का आलोचनात्मक परीक्षण और
5. वर्तमान कार्यभार के लिए अपेक्षित श्रमशक्ति का मूल्यांकन.

METHODOLOGY

The Work Study department has applied the following techniques for completion of the Work Study.

1 Collection of the details of workload particulars.
2. Interaction with the Staff, Supervisors and Officers of Engineering workshop.
3. Observation of the pattern of working.
4. Critical examination of the existing system of working and
5. Assessment of manpower requirement for existing workload.

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Abbreviations used in the Report

B&S inspection: Bridges and Structures

DPT: Dye Penetration Test

EOT Crane: Electrical Over Head Traverse Crane

EQT: Equate Tonnes

EU: Equated Unit

EWS/LGD: Engineering Work Shop, Lallaguda

GRSP: Grooved Rubber Sole Plates

FBWP/MLY: Flash Butt Welding Plant, Moula-Ali

M&C inspection: Metallurgical and Chemical Inspection

MS Gates: Mild Steel Gates

MT: Metric Tonne

RDSO: Research Designs& Standards Organisation

SAIL: Steel Authority of India limited

SAW: Submerged Arc Welding

SBT machine: Static Bend Test machine

WO: Work Order

रूपरेखा S Y N O P S I S

- **फ्वषय**/SUBJECT: REVIEW OF STAFF STRENGTH OF ENGINEERING WORKSHOP AT LALLAGUDA
- **प्राधिकार**/AUTHORITY: Railway Board's Annual Programme of Work studies 2020-21
- **अध्ययन सं**/ STUDY No: WSSCR-14/2020-21
- **संदर्भ फाइल सं**/ REFERENCE File No: G.276/2/ WSSCR-14/2020-21
- **गतिविधि का क्षेत्र**/ AREA OF ACTIVITY: ENGINEERING WORKSHOP AT LALLAGUDA
- The brief details of the recommendations are as follows:

- **Summary of Production details of EWS/LGD for 5 years:**

Description (in MT)	2016-17		2017-18		2018-19		2019-20		2020-21	
	Trgt.	Done	Trgt.	Done	Trgt.	Done	Trgt.	Done	Trgt.	Done
Riveted girders	--	--	--	--	--	--	--	--	--	--
Welded girders	600	135	360	187	350	286	950	212.37	300	54.49
Glued joints	1470	1582.50	865	1012.25	820	1016.50	220	1001	165	134.75
Others	330	283.44	75	161.89	80	98.04	80	133.70	235	48
Total	2400	2000.94	1300	1361.14	1250	1400.54	1250	1347.07	700	237.24

- **Manpower position for five years:**

S.No.	Year	Sanction	Actual	Vacant
1	2016-17	200	174	26
2	2017-18	193	162	31
3	2018-19	188	148	40
4	2019-20	188	127	61
5	2020-21	187	114	73

- **Manpower requirement for five years:** As per Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17, existing production capacity of the work shop to be fixed on sanctioned staff strength considering productivity of **0.5 Equated Units (EU) per man per Month.**

1. **Manpower requirement for the year 2016-17:**

   Staff requirement for production of 0.5MT per month= 1

   Staff requirement for production of 0.5MT per year= 1/12

   Staff requirement for production of 1MT per year= (1/12)/0.5

   Target per the year 2016-17=2400 MT (**see 3.10**)

   Staff requirement for production of 2400 MT per year

   =2400X (1/12)/0.5=400

   Sanctioned staff =200(**see 3.11**)

   Short fall Staff=400-200=200

2. **Manpower requirement for the year 2017-18:**

S Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Actual done 1361.14 is taken into consideration since Actual done is more than the Target

Actual production done per year 2017-18=1361.14 MT= say1361MT Staff requirement for production of 1361MT per year

=1361X (1/12)/0.5=226.8=227

Sanctioned staff =193

Short fall Staff=227-193=34

3. **Manpower requirement for the year 2018-19:**

Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Actual done 1400.54 is taken into consideration since Actual done is more than the Target

Actual production done per year 2018-19=1400.54 MT= say1401MT

Staff requirement for production of 1401MT per year

=1401X (1/12)/0.5=233.5=234

Sanctioned staff =188

Short fall Staff=234-188=46

4. **Manpower requirement for the year 2019-20:**

Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Actual done 1347.07 is taken into consideration since Actual done is more than the Target

Actual production done per the year 2019-20=1347.07 MT= say1347MT

Staff requirement for production of 1347MT per year

=1347X (1/12)/0.5=224.5=225

Sanctioned staff =188

Short fall Staff=225-188=37

5. **Manpower requirement for the year 2020-21:**

Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Target production per the year 2020-21=700 MT

Staff requirement for production of 700MT per year

=700X (1/12)/0.5=116.67=117

Sanctioned staff =187

Excess Staff=187-117=70

- **Present Manpower Requirement of EWS/LGD:** The Work-study team considered the following factors for calculation of present manpower requirement of EWS/LGD:
  - Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17
  - Manpower position of EWS/LGD for five years
  - Production details of EWS/LGD for five years
  - On hand Work orders position of EWS/LGD

  Present manpower requirement of EWS/LGD: From the above observations, even though the production is in decreasing trend, the work study team considered the production capacity as 900MT (EU) per year, assuming that the future requirement may increase.
  - Staff requirement for production of 0.5MT per month= 1 (Rly. Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17)
  - Staff requirement for production of 0.5MT per month= 1
  - Staff requirement for production of 0.5MT per year= 1/12
  - Staff requirement for production of 1MT per year= (1/12)/0.5
  - Consideration of production per year =900 MT
  - Staff requirement for production of 900MT per year
  - =900X (1/12)/0.5=150
  - Sanctioned staff =187
  - Excess Staff=187-150=37

- **Percentage of indirect workers to Total Workers for 5 years:**

S.No.	Year	Indirect Workers	Total Workers	% of Direct Workers to Total Workers
1	2016-17	20	200	20/200X100=10
2	2017-18	21	193	21/193X100=10.88
3	2018-19	20	188	20/188X100=10.64
4	2019-20	20	188	20/188X100=10.64
5	2020-21	20	187	20/187X100=10.69

From the above table it is evident that the percentage of indirect workers to Total workers is increased for the last four years when compared to the previous years. As per Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17, the percentage of indirect workers to Total workers in the work shop to be reduced.

- **Recommendation/ Suggestion:**
  1. It is recommended to surrender 37 vacant excess staff
  2. It is suggested to reduce the percentage of indirect workers to Total workers in the work shop

अध्याय- 1
CHAPTER - I

1.0 प्रसतावना / I N T R O D U C T I O N:

1.1 रेलों की भूमिका /RAILWAY'S ROLE:

Indian Railways is a premier transport service provider to the nation and is vested with the responsibility of carrying bulk of freight and passenger traffic across the country at economical rates. The Indian Railways operates through 17 Zones with 73 Divisions to serve the above objective.

1.2 रिपोर्ट की परिकल्पना / GENESIS OF THE REPORT:

The Operating/working expenses are increasing year after year. It is therefore imperative that to keep the working expenses within financially viable limits, the Railways have to reduce the expenses from all corners. The major portion of expenses being staff expenses, all out efforts have to be made to contain it.

1.3 Keeping the above said objectives in view, the Central Planning Organisation of South Central Railway conducted a review on the working of Staff in Engineering Workshop /LGD. The Workstudy team has visited the Workshop and assessed the manpower requirement of staff by practical observation and identified excess posts to the requirement for surrender which is projected in the report.

1.4 The present Engineering Workshop at Lallaguda was initially a small reclamation depot of the erstwhile Secunderabad Division of Central Railway wherein conversion of Class-III B.G. Steel sleepers into M.G and N.G. Sleepers were being done. In 1964 due to heavy work load in the Central Railway a part of the workload was diverted to this workshop. Consequently, it became a small scale feeding depot to the Engineering Workshop at Manmad to undertake light fabrication works such as Platform Shelters, Trusses, 26.8 Feet Girders, Glued joints, Cribs, etc.

1.5 After formation of South Central Railway in 1966, this workshop was transformed into Engineering Workshop, since the facilities available at Engineering Workshop, Manmad on Central Railway and Engineering Workshop, Arakkonam on Southern Railway would no longer be available to this Railway. Therefore, it was necessary to develop resources to meet the zonal railway requirements and demands. It was felt necessary to also repair and maintain the Railway assets like Lorries, Trucks, Compressors and Concrete mixers etc., for various departments in the Workshop. With this objective, facilities to carry out Mechanical repairs were added to this Workshop.

1.6 Engineering Workshop/LGD is mainly intended to cater to the needs of Civil Engineering Department of South Central Railway. The salient statistical data of EWS/LGD are furnished below:

- Total area: 7 acres (31309 Sq.mts.)
- Total number of machines available : 32
- Sanctioned strength of EWS/LGD : 187
- Actual Strength of EWS/LGD: 114

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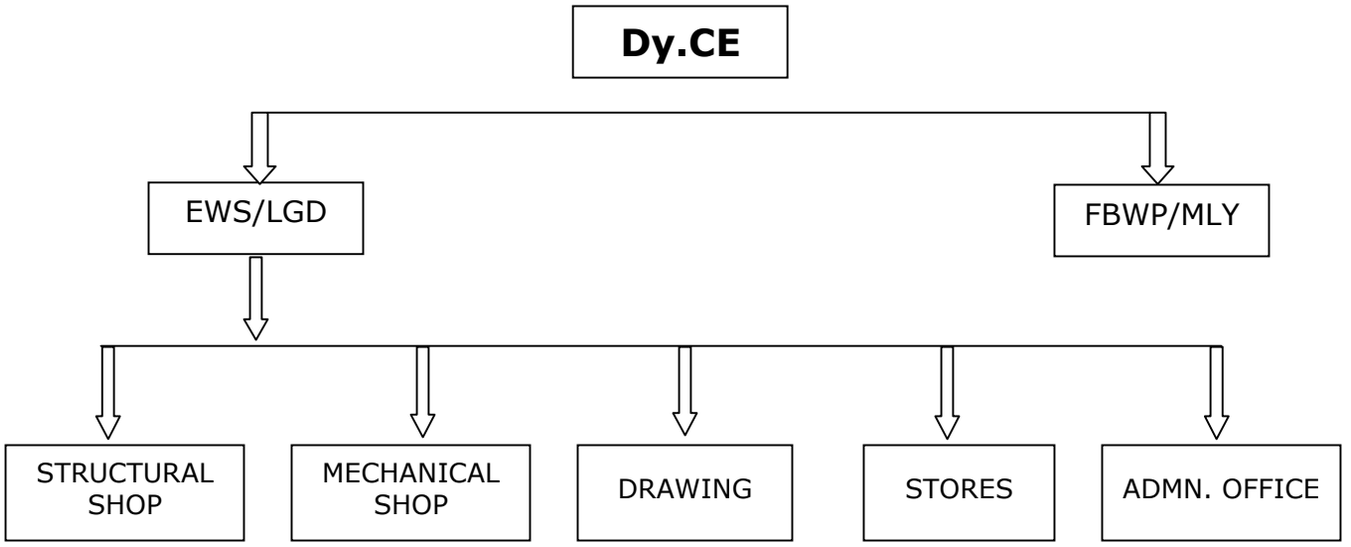
2.0 वर्तमान संगठनात्मक ढाँचा / EXISTING SCENARIO

2.1 संगठन/ORGANISATION: Executive Engineer working under the administrative control of Chief Bridge Engineer controls the Engineering Workshop and Flash Butt Welding Plant and the Organizational structure is furnished as below:



2.2 SCALE CHECK: The Scale check of Staff of Engineering Workshop /LGD is furnished below:

2.2.1 SAVE position of EWS/LGD:

Staff Position of EWS/LGD as on 01.09.2020					
S.No.	**Post**	**GP**	**Sanctions**	**Actual**	**Vacancy**
1	Sr.Tech.(Struc)	4200/L-6	20	17	3
2	Sr.Tech.(Mech.)	4200/L-6	18	16	2
3	St.Fitter .I	2800/L-5	18	3	15
4	St.Fitter .II	2400/L-4	1	0	1
5	St.Fitter .III	1900/L-2	6	12	-6
6	Welder-I	2800/L-5	9	2	7
7	Welder-II	2400/L-4	2	4	-2
8	Welder-III	1900/L-2	2	2	0
9	Riveter-I	2800/L-5	7	3	4
10	Riveter-II	2400/L-4	1	0	1
11	Riveter-III	1900/L-2	0	2	-2
12	Erector-I	2800/L-5	4	1	3
13	Erector-II	2400/L-4	1	1	0
14	Erector-III	1900/L-2	2	3	-1
15	A.C.Driver-I	2800/L-5	3	2	1
16	Crane Driver-I	2800/L-5	4	3	1
17	Crane Driver-II	2400/L-4	1	1	0
18	Crane Driver-III	1900/L-2	1	1	0

19	Machinist-I	2800/L-5	11	8	3
20	Machinist-II	2400/L-4	2	2	0
21	Fitter Mech-I	2800/L-5	9	6	3
22	Fitter Mech-II	2400/L-4	1	0	1
23	Fitter Mech-III	1900/L-2	2	4	-2
24	M.W.Fitter-I	2800/L-5	5	4	1
25	Blacksmith-I	2800/L-5	3	1	2
26	Blacksmith-II	2400/L-4	2	1	1
27	Blacksmith-III	1900/L-2	1	1	0
28	Helper	1800/L-1	23	3	20
29	Hd. Watchman	1800/L-1	1	0	1
30	Watchman	1800/L-1	7	0	7
TOTAL(ARTISANS and HELPERS)			**167**	103	**64**

S.No.	**Post**	**GP**	**S**	A	**V**
1	SSE/WS	4600/L-7	6	3	3
2	Chief OS	4600/L-7	2	2	0
3	Office Supdt.	4200/L-6	4	3	1
4	Sr. Clerk	2800/L-5	0	1	-1
5	Steno Gr.-II	4200/L-6	1	0	1
6	S.S.E./Drg.	4600/L-7	2	1	1
7	J.E/Drg	4200/L-6	1	0	1
8	JE/WS	4200/L-6	3	0	3
9	JE/WS/Stores	4200/L-6	1	1	0
TOTAL (MINISTERIAL and SUPERVISORS)			**20**	**11**	**9**
GRAND TOTAL (ARTISANS, MINISTERIAL and SUPERVISORS)			**187**	**114**	**73**

2.2.2 Summary of SAVE position:

S.No.	Post	S	A	V
1	**Artisan staff**	**167**	**103**	**64**
2	**Supervisors/Ministerial staff**	**20**	**11**	**9**
	Total	**187**	**114**	**73**

2.3 Staff distribution in various shops:

1) Structural Shop:

S.No	Description of work	Number of staff
1	Marking	08
2	Grinding	05
3	Welding and Gas cutting	07
4	Drilling	02
5	Assembling	08
6	EOT staff	05
7	Helpers / LRs	02
Total Staff		**37**

2) Mechanical Shop:

S.No	Description of work	Number of staff
1	Machine operators	03
2	Fabrication	05
3	Mill-wright & maintenance	03
4	Crane staff	04
Total staff		**15**

3) Glued Joint Shop:

S.No	Description of work	Number of staff
1	Marking	02
2	Cutting	01
3	Drilling	02
4	Grinding	04
5	EOT staff	06
6	Glue	02
7	Assembly & Alignment	04
8	Tightening	04
9	Final Inspection & numbering / LR	01
10	Insulated Components fabrication	06
Total Staff		**32**

4) Stores & Watchmen:

S.No	Description of work	Number of staff
1	Stores	03
2	Watchmen & Head Watchman	08
Total Staff		**11**

5) Miscellaneous:

S.No	Description of work	Number of staff
1	Dy.CE Office	05
2	SSE Office	01
3	IOW	02
Total Staff		**08**

6) Summary of Staff distribution in various shops:

S.No	Work Shop	Number of staff
1	Structural Shop	37
2	Mechanical Shop	15
3	Glued Joint Shop	32
4	Stores & Watchmen	11
5	Miscellaneous	08
	Total Staff	**103**

2.4 Engineering Workshop is bifurcated into two main shops i.e., Structural Shop and Mechanical shop and the following are the main structures available.

a) Structural Shed: 1637 Sq. mtrs (2x12.2 mtrs; 67.1 mtr long)
b) Glued joint Shed: 520 sq,mtrs (12.2x 42.7 mtr)
c) Mechanical Shed: 1052 sq.mtrs (27.7x38 mtrs)
d) Reclamation Shed: 1206 sq.mtrs (33x36.5 mtrs)

2.5 Summary of Production details of EWS/LGD for 5 years:

Description in MTs	2016-17		2017-18		2018-19		2019-20		2020-21	
	Trgt	Done	Trgt	Done	Trgt	Done	Trgt	Done	Trgt	Done
Welded girders	600	135	360	187	350	286	950	212.37	300	54.49
Glued joints	1470	1582.50	865	1012.25	820	1016.50	220	1001	165	134.75
Others (P.Way items)	330	283.44	75	161.89	80	98.04	80	133.70	235	48
Total	2400	2000.94	1300	1361.14	1250	1400.54	1250	1347.07	700	237.24

2.6 Manpower position for five years:

S.No.	Year	Sanction	Actual	Vacant
1	2016-17	200	174	26
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3	2018-19	188	148	40
4	2019-20	188	127	61
5	2020-21	187	114	73

2.7 STRUCTURAL SHOP: Presently girder fabrication is being done in structural yard. One third of the area of this shed is allotted for stacking of structural steel material and preparatory works like gas cutting to required sizes and other ancillary works. One bay of structural shed is allotted for fabrication of welded girders. Fabrication of riveted girders has been stopped. Within the allotted area, one jig for making "I" section and submerged arc welding are provided. The remaining area is used for carrying out miscellaneous works like straightening of flanges, DPT Testing and flange finishing activities, etc. At a time the spacing is limited for fabrication of one welded girder only. The overall span of this girder is 26.8 mtrs with two splicing. Considering the length of the bay, at a time only two girders fabrication can be taken up.

The following activities are done here:

- Fabrication of welded plate Girders
- Foot over Bridges, Gantry Girders, Roller path Girders and various other misc. structural items required.
- Manufacturing of Steel Channel Sleepers.
- Fabrication of various Packing plates and miscellaneous items for Track Machines.

2.8 STAGES IN THE FABARICATION OF WELDED GIRDERS:

- Quality Assurance plan has to be submitted and get approval from RDSO for initiation of work.
- Templating – Web plate preparation- marking—gas cutting of Web plate
- Butt welding of web plate- Radiography test and inspection of web plate.
- Grinding of web plate marking of web plate to exact size and gas cutting.
- Flange plate preparation- Marking of flange plate and center line marking.
- I-section preparation- Web and flange plate kept in tack weld jig and track welding of I section.
- SAW of I section-Fillet SAW to I section- Flange straightening with hydraulic jack- cutting and grinding of ends- macro test- DPT testing of SAW weld.
- End stiffeners welding- end stiffeners CO_2 welding and bearing CO_2 welding
- Stiffeners riveting-Web track holes drilling–stiffeners opening, grinding, painting and riveting.
- RDSO M&C Inspection
- Finishing- Final end grinding and edge end grinding
- RDSO's B&S Inspection
- Dispatch of the girder.

2.9 MECHANICALSHOP:

The following activities are carried out in this shed:

- Fabrication of Rail wheel barrows
- Fabrication of Caution Boards
- Manufacturing of Rail Dollies, Dip Lorries, Engineering Indicator Boards, Racks, Rail Wheel Barrows, Sieves for Track Machines.
- Repairs to heavy vehicles.
- Fabrication of various unloading material equipment required for 10 Rail Panels unloading like U Clamps etc.,
- Fabrication of M.S gates and other misc. works as per the requirement of workshops.
- Manufacturing of Spring Setting Devices
- Mechanical shop also contains two lathe machines, drilling machines and shaping machines.

2.10 GLUED JOINT SHED:

The main activity of this shed is manufacturing of Glued Joints and other ancillary works connected to Glued joints such as –

- Cutting of Fiber Glass Cloth
- Preparation of end posts
- Preparation of Insulated channels
- Preparation of Insulated bolts and nuts
- Preparation of Glue
- And other misc. works connected to manufacturing of Insulated Glued joints.

2.11 STORES: The basic functions of Stores Section and the actual utilization of them are as follows:

- Indenting for materials through COS/SC
- Receipt of material, accounting and testing
- Issue of material and maintenance of track
- Procurement of manufacturing products.
- Dispatch of finished products.

2.12 Position of Work Orders at EWS/LGD for 5 years:

- **Structural section:**

Description	Span in Meters	Weight in MTs	WO received on date.	Production					
				2016-17	2017-18	2018-19	2019-20	2020 -21	Balance
Girders WO no. 15011813	1x14.4 + 1x26.8	63	05.04.2013	57	6	-	-	-	0
Girders 15012113	1x26.8	47	01.05.2013	43	4	-	-	-	0
CC Cribs	-	80	30.05.2013	56.98	0	-	-	-	23.02
Girders 15014614	1x26.8	47	22.04.2014	47	-	-	-	-	0
Girders 15014714	3x20.4	90	01.05.2014	55	21	14	-	-	0
Girders 15017215	10x18.3	274.8	21.07.2015	90	158	26.8	-	-	0
Jigs & Fixtures 25018516	-	02	12.02.2016	02	-	-	-	-	0
Platform shelters	-	221.7	17.05.2016	207	-	-	14.7	-	0

CC Cribs 25021316	-	35.316	28.12.2016	-	6.18	-	-	-	29.136
Girders 15018115	1x14.4 + 1x26.8	67	14.12.2015	-	-	66.75	0.25	-	0
Girders 15018215	1x14.4 + 1.26.8	67	09.01.2016	-	-	66.75	0.25	-	0
Girders 15018716	1x14.4 + 1x20.4	46	22.04.2016	-	-	46	-	-	0
Girders 15021817	2x20.4	80	08.05.2017	-	-	23.63	49.73	-	-
Girders 15024918	8x12.2	120.75	01.09.2018	-	-	12.75	108	-	0
Girders 15025718	2x20.4	80	26.10.2018	-	-	0	27.15	45.5	7.35
Girders 15025818	2x20.4	80	26.10.2018	-	-	0	6.25	5	68.75
SBT machine Frame 15028019	-	19	16.12.2019	-	-	-	18.55	-	0.45
	Total	**1420.57**	**-**	557.98	195.18	256.68	224.88	50.5	135.35

- **Mechanical Section:**

S no	Description	Qty	WO received on date.	Production					Balance
				2016-17	2017-18	2018-19	2019-20	2020-21	
1	Indicator Boards WO no. 25011813	225 nos	18.05.2016	225	-	-	-	-	0
2	Indicator Boards WO no. 25019116	145 nos	21.06.2016	145	-	-	-	-	0
3	Indicator Boards WO no. 25019216	446 nos	20.06.2016	446	-	-	-	-	0
4	Reconditioning of anchoring device WO no. 25019416	40 nos	23.06.2016	40	-	-	-	-	0
5	Repairs to lever arms WO no. 25019516	25 nos	11.07.2016	25	-	-	-	-	0
6	Reconditioning of anchoring device WO no. 25019616	43 nos	12.07.2016	43	-	-	-	-	0
7	Rail Dollies WO no. 25019716	5 nos	18.07.2016	5	-	-	-	-	0
8	Reconditioning of anchoring device WO no. 25020016	42 nos	9.9.2016	42	-	-	-	-	0
9	Rail Dollies WO no. 25020116	16 nos	10.09.2016	16	-	-	-	-	0
10	Rail Dollies WO no. 25020216	100 nos	22.09.2016	-	50	50	-	-	0
11	Rail Dollies WO no. 25020316	36 nos	22.09.2016	-	36	-	-	-	0
12	Rail Dollies WO no. 25020416	20 nos	22.09.2016	-	-	-	-	-	20

13	Indicator/warning boards WO NO:25020816	100 Nos	22.11.2016	44	56	-	-	-	0
14	Indicator boards/WO no:25020916	100 nos	22.11.2016	44	56	-	-	-	0
15	Rail Dollies wo No:25021717	22nos	27.04.2017	08	-	-	-	-	14
16	Rail Dollies WO no:25022517	10	19.06.2017	-	04	06	-	-	0
17	Indicator Boards WO no:25022417	175	19.06.2017	-	-	175	-	-	0
18	Indicator Boards WO no:25022617	75	15.07.2017	-	-	-	-	-	0
19	Rail Dollies WO no:25022717	15	15.07.2017	-	-	-	-	-	15
20	Indicator Boards WO no:25022317	281	19.06.2017	-	-	281	-	-	0
21	Rail Dollis WO no:25022817	40	01.08.2017	-	-	-	-	-	40
22	B G Dip Lorries WO NO:25023017	04	06.09.2017	-	04	-	-	-	0
23	Rail Dollies WO no:25023117	40	08.09.2017	-	-	-	21	-	19
24	Rail Dollies WO no:25023217	06	15.12.2017	-	-	02	-	-	04
25	Rail Dollies WO no:25023317	10	28.12.2017	-	-	06	-	-	04
26	Rail Dollies WO no. 25023417	10	28.12.2017	-	-	04	-	-	06
27	Rail Dollies WO no. 25023517	10	28.12.2017	-	-	-	04	-	06
28	Rail Dollies WO no. 25021917	20	29.05.2017	-	06	-	-	-	14
29	Rail Dollies WO no. 25023918	06	14.05.2018	-	-	06	-	-	0
30	Rail Dollies WO no. 25024118	05	14.05.2018	-	-	05	-	-	0
31	Rail Dollies WO no. 25024718	12	27.07.2017	-	-	12	-	-	0
32	Rail Dollies WO no. 25025018	04		-	-	04	-	-	0
33	Rail Dollies WO no. 25025918	04	26.11.2018	-	-	-	04	-	0
34	Rail Dollies WO no. 25026119	06	11.03.2019	-	-	-	06	-	0
35	Rail Dollies WO no. 25026219	20	11.03.2019	-	-	-	-	-	20
36	Rail Dollies WO no. 25026319	20	20.03.2019	-	-	-	04	-	16

37	Rail Dollies WO no. 25026319/1	22	03.04.2019	-	-	-	06	-	16
38	Rail Dollies WO no. 25026419	20	04.05.2019	-	-	-	-	-	20
39	Rail Dollies WO no. 25026719	20	18.07.2019	-	-	-	-	-	20
40	Rail Dollies WO no. 25027019	21	01.08.2019	-	-	-	11	-	10
41	Rail Dollies WO no. 25027119	6	19.08.2019	-	-	-	6	-	0
42	Rail Dollies WO no. 25026819	10	31.08.2019	-	-	-	10	-	0
43	Rail Dollies WO no. 25026919	06	23.07.2017	-	-	-	06	-	0
44	Rail Dollies WO no. 25027019	21	01.08.2019	-	-	-	-	11	10
45	Rail Dollies WO no. 25027219	16	25.10.2019	-	-	-	-	05	11
46	Rail Dollies WO no. 25027419	28	05.11.2019	-	-	-	-	-	28
47	Rail Dollies WO no. 25027519	06	13.11.2019	-	-	-	-	-	06
48	Rail Dollies WO no. 25027619	06	21.11.2019	-	-	-	-	-	06
49	Rail Dollies WO no. 25027719	28	27.11.2019	-	-	-	-	-	28
50	Rail Dollies WO no. 25028119	12	26.12.2019	-	-	-	-	02	10
51	Rail Dollies WO no. 25028220	16	04.01.2020	-	-	-	-	-	16
52	Rail Dollies WO no. 25028320	16	04.01.2020	-	-	-	-	10	06
53	Rail Dollies WO no. 25028520	10	17.03.2020	-	-	-	-	10	0
54	Rail Dollies WO no. 25028720	16	02.03.2020	-	-	-	-	14	0
55	Rail Dollies WO no. 25028920	08	02.03.2020	-	-	-	-	08	0
56	Dip lorries WO no. 25028820	02	07.08.2020	-	-	-	-	-	-
57	Trusses WO no. 15029020	18	01.09.2020	-	-	-	-	-	-
58	Plates welded to Trusses WO no. 15029120	18	01.09.2020	-	-	-	-	-	-
59	Plates WO no. 15029220	18	01.09.2020	-	-	-	-	-	-

3.0 Critical Analysis

3.1 General: Engineering workshop/LGD caters to the needs of Civil Engineering Department with the available Technical and other staff viz. Stores staff, Laboratory staff, Office Staff, Drawing staff and Ministerial staff.

As there is no specific benchmark or relevant yardstick for Engineering Work shop to evaluate the requirement of staff, assessment has been done based on the production done yearly.

The Work-study Team observed the work force actually being utilised in both Structural and Mechanical shops, duly interacting with the supervisory staff and made an analysis with regard to the production details for the last five years factual requirement of the staff.

3.2.1 SAVE position of EWS/LGD:

Staff Position of EWS/LGD as on 01.09.2020					
S.No.	**Post**	**GP**	**Sanctions**	**Actual**	**Vacancy**
1	Sr.Tech.(Struc)	4200/L-6	20	17	3
2	Sr.Tech.(Mech.)	4200/L-6	18	16	2
3	St.Fitter .I	2800/L-5	18	3	15
4	St.Fitter .II	2400/L-4	1	0	1
5	St.Fitter .III	1900/L-2	6	12	-6
6	Welder-I	2800/L-5	9	2	7
7	Welder-II	2400/L-4	2	4	-2
8	Welder-III	1900/L-2	2	2	0
9	Riveter-I	2800/L-5	7	3	4
10	Riveter-II	2400/L-4	1	0	1
11	Riveter-III	1900/L-2	0	2	-2
12	Erector-I	2800/L-5	4	1	3
13	Erector-II	2400/L-4	1	1	0
14	Erector-III	1900/L-2	2	3	-1
15	A.C.Driver-I	2800/L-5	3	2	1
16	Crane Driver-I	2800/L-5	4	3	1
17	Crane Driver-II	2400/L-4	1	1	0
18	Crane Driver-III	1900/L-2	1	1	0
19	Machinist-I	2800/L-5	11	8	3
20	Machinist-II	2400/L-4	2	2	0
21	Fitter Mech-I	2800/L-5	9	6	3
22	Fitter Mech-II	2400/L-4	1	0	1
23	Fitter Mech-III	1900/L-2	2	4	-2
24	M.W.Fitter-I	2800/L-5	5	4	1
25	Blacksmith-I	2800/L-5	3	1	2
26	Blacksmith-II	2400/L-4	2	1	1
27	Blacksmith-III	1900/L-2	1	1	0
28	Helper	1800/L-1	23	3	20
29	Hd. Watchman	1800/L-1	1	0	1
30	Watchman	1800/L-1	7	0	7
TOTAL(ARTISANS and HELPERS)			**167**	103	**64**

S.No.	Post	GP	S	A	V
1	SSE/WS	4600/L-7	6	3	3
2	Chief OS	4600/L-7	2	2	0
3	Office Supdt.	4200/L-6	4	3	1
4	Sr. Clerk	2800/L-5	0	1	-1
5	Steno Gr.-II	4200/L-6	1	0	1
6	S.S.E./Drg.	4600/L-7	2	1	1
7	J.E/Drg	4200/L-6	1	0	1
8	JE/WS	4200/L-6	3	0	3
9	JE/WS/Stores	4200/L-6	1	1	0
TOTAL (MINISTERIAL and SUPERVISORS)			**20**	**11**	**9**
GRAND TOTAL (ARTISANS, MINISTERIAL and SUPERVISORS)			**187**	**114**	**73**

3.2.2 Summary of SAVE position:

S.No.	Post	S	A	V
1	Artisan staff	167	103	64
2	Supervisors/Ministerial staff	20	11	9
	Total	187	114	73

3.3 Activities in Structural Shop:

A) I-Section: Fabrication of welded girder of span 26.8m long:

- **Template:** Template on ground, Jigs preparation
- **I-section preparation:**
- Web plate preparation- Web plate kept in marking position, Marking of web plate, Gas cutting of web plate, Grinding of web plate to size & square ends
- Flange plate preparation- Flange plates kept in marking position, marking of
- flange plates, Gas cutting of flange plates, Flange plates grinding to exact sizes,
- Flange plates positioning and tack welding without air gaps, Flange plates SAW, Blow holes repairs
- Flange straightening with hydraulic jack, *DPT testing of SAW weld*, Testing and rectification of defects if any, Ends cutting, grinding, macro test
- End stiffeners CO2 welding, Bearing CO2 welding Intermediate Stiffeners CO2 welding, Stiffeners assembling & Tack welding,CO2 welding
- **Splice preparation for joint:** I-sections preparation for assembling & finishing, Marking of I-Sections, I-sections end grinding to square and matching, Assembling of splice plate to I-sections, Drilling of splice holes on I-sections on flange & Web, Dismantling of splice plate, grinding
- **Common works for girder**
    b. Marking of splice joint plates
    c. Marking of gusset plates
    d. Marking of stiffeners
    e. Marking of bed plates & location strips
    f. Marking of I-section connecting channels
    g. Flange bracing hole marking
    h. Gas cutting of above plates a, b, c, d, e & f
    i. Grinding & welding of a, b, c, d, e & f
    j. Shaping of location strips & bearing plates

- End diaphragm: Marking, cutting & welding
- Drilling: End diaphragm I-section, end stiffener, X- Int. Stiffeners, bed plate & gusset plates
- Assembling: Splice joints assembling, I-sec. X-frame assembling, Bracing assembling
- Final assembly, End grinding & inspection, RDSO B&S inspection, Painting of shipping list, Dismantling & stacking, Indirect Man Hours EOT, cranes, Elecl., MW, compressor drivers, etc

B) Preparation of Steel Cribs:

- Marking
- Cutting
- Drilling
- Welding
- Grinding
- Assembling
- Inspection/rectifications
- Loading/handling/EOT
- Elec/Mech Maintenance & Misc

3.4 MACHINE SHOP:

- Rails Handling:-

  a) Removal of Glued joints from fixtures

  b) Placing free rails in the glued joint shed.
- Checking of free rails for end bends.
- Marking for cutting of Rails to size of 3.25 M length.
- Cutting of rails to 3.25 M length (30 cuts)
- Marking of rails for drilling of holes & centre punching of holes (20X6=120 holes).
- Drilling of holes (120 nos)
- Grinding of rails at drilled ends.
- Chamfering of holes
- Grinding of Fish plates.
- Cleaning of Jigs and fixtures to remove the existing glue
- Placing of Rails on fixtures and checking alignment
- Assembly -

i) Cleaning of rails & fish plates with acetone

ii) End post placing and PVC sheet placing in position.

iii) Placing of glass cloth carrier.

iv) Placing Liner ('U' channel)

v) Application of Glue.

vi) Placing of glass cloth carrier.

vii) Fixing the assembly in position fixing bolts.

- Mixing & Application of glue

i)Application of glue on rails,

ii) Application of glue fish plate

iii) Application of glue on glass cloth

iv)Application of glue over the assembly.

- Tightening

i) Initial tightening of the bolts with impact wrench.

ii) Tightening of the bolts to a torque of 35 kgf-m with torque wrench as per Specified sequence.

iii) Second torquing the bolts to 75 Kgf –m torque.

iv) Final torquing of the HT bolts to 105 Kgf-m torque.

- Checking of joint alignment & numbering the joint.
- EOT Crane staff

3.5 GLUED JOINTS COMPONENT SECTION:

- Glass cloth carrier cutting to sizes required for end-post, channels and assembly cloth and bolt insulator.
- Plate preparation for end post.
- Cleaning of the rails by removing the existing glue
- Preparation of Channels.
- Dressing of channels& punching holes in glass cloth & in channels.
- Cutting of end post.
- Grinding of end post to exact shape
- Cleaning & insulating the bolts

3.6 Mechanical, Millwright and Misc. works:

- Millwright shop including Mill-Wright & mechanical maintenance
- Compressor operators (two compressors in two shifts (2X2
- Vehicle drivers (Pick-up van & Jeep)
- Crane drivers (two rail cranes & road crane)
- Erector & helpers (Unloading of rails, steel sections & stack in them. Shifting of the stacked rails/ steel sections to the work spot. Shifting of finished girders for metalizing works and stacking the same in dispatch section. Arranging the glued joints duly spreading & grinding for testing and assisting S&T supervisor while testing.)
- Mechanical & glued joint shed cleaning & assisting in office for maintenance of tool room, and glued joint components stock
- Machinists (two lathe machines, one shaping machine & one Hacksaw cutting machine.) required for various machining works like bearing plate SSD components and ancillary required for pipe line & MW maintenance works like nipples, pipe threading, nozzles, etc.
- Staff utilized for fabrication of spring setting device, rail dollies, dip lorries, jurisdiction boards and other works like MS gates, sheds, U-clamps, marking for cutting of micro rail test pieces, fencings, tie bar punching, black smithy works etc.

3.7 Staff distribution in various shops:

1) Structural Shop:

S.No	Description of work	Number of staff
1	Marking	08
2	Grinding	05
3	Welding and Gas cutting	07
4	Drilling	02
5	Assembling	08
6	EOT staff	05
7	Helpers / LRs	02
Total Staff		**37**

2) Mechanical Shop:

S.No	Description of work	Number of staff
1	Machine operators	03
2	Fabrication	05
3	Mill-wright & maintenance	03
4	Crane staff	04
Total staff		**15**

3) Glued Joint Shop:

S.No	Description of work	Number of staff
1	Marking	02
2	Cutting	01
3	Drilling	02
4	Grinding	04
5	EOT staff	06
6	Glue	02
7	Assembly & Alignment	04
8	Tightening	04
9	Final Inspection & numbering / LR	01
10	Insulated Components fabrication	06
Total Staff		**32**

4) Stores & Watchmen:

S.No	Description of work	Number of staff
1	Stores	03
2	Watchmen & Head Watchman	08
Total Staff		**11**

5) Miscellaneous:

S.No	Description of work	Number of staff
1	Dy.CE Office	05
2	SSE Office	01
3	IOW	02
Total Staff		**08**

6) Summary of Staff distribution in various shops:

S.No	Work Shop	Number of staff
1	Structural Shop	37
2	Mechanical Shop	15
3	Glued Joint Shop	32
4	Stores & Watchmen	11
5	Miscellaneous	08
	Total Staff	**103**

3.8 Ministerial and Supervisor Staff distribution:

1. Chief Office Superintendent(General) :
    a) Over all supervision of office and General correspondence of the office of DY.CE/EWS/O/LGD
    b) Complete correspondence relating to Cash Awards
    c) Forwarding of CCS applications of staff of EWS/LGD & FBWP/MLY
    d) Correspondence regarding telephone bills
    e) Correspondence regarding Audit & Accounts Paras
    f) Initiation/maintenance of ACRs of 26 supervisors/ministerial staff and 150 Artisan staff
    g) Maintenance of confidential files of Dy.CE/EWS and dealing of confidential matters
    h) Dealing of DAR cases
    i) Correspondence related to CL cards.
    j) Correspondence related to Honorarium.

k) Maintenance of Imprest Cash
l) Initiation for drawal of stationery items from DY.CMM/G&S/MFT and AMM/S&F/SC
m) Issue & maintenance of Money Value Books and stationery items

2. Chief Office Superintendent (Works & Stores):
   a) Complete correspondence regarding works and stores matters.
   b) Processing of Tenders
   c) Dealing with stores matters like COS indents (mainly steel items & corresponding with M/s.SAIL/HYB) Local Purchase orders etc., of EWS/LGD & FBWP/MLY and works matters.
   d) Indenting of glued joints materials & processing with Hqrs office.
   e) Complete correspondence related to court (arbitration) cases.
   f) Dealing with stock sheets of EWS/LGD & FBWP/MLY
   g) Dealing with release orders pertaining to glued joints
   h) Calculation of Unit Cost of all products of EWS & FBWP
   i) Preparation of stores summaries & rising of AMs of EWS/LGD & FBWP/MLY
3. Ch. S& WI:
   a) Correspondence on Cadre, issuing of promotion orders, taking initiation in conducting of selection, Trade Tests
   b) Preparation and submission of periodical returns/statements to HQRs
   c) Updating of Book of Sanctions
   d) Maintenance of Rosters
   e) Processing for drawl of family planning increments
   f) Fixation of pay of the employees
   g) Correspondence in connection with new appointments including compassionate Appointments
   h) All returns – payment of wages act, WCA
   i) Correspondence with Factories department
   j) Compassionate appointments.
   k) Assisting to the administration in conducting PNM meetings with the recognized labour Organizations at Branch level
4. Office Superintendent(Budget, SRs & Passes/PTOs) :
   a) Complete Budget correspondence of EWS/LGD & FBWP/MLY.
   b) Processing of Stores, Local purchase bills & repairs bills
   c) Maintenance of Service Registers
   d) Issue of Passes/PTOs and its related correspondence
5. Office Superintendent(Salary bills):
   a) Preparation of Pay sheets pertaining to artisan and Group-D staff
   b) Correspondence related to court attachments
   c) Checking and preparation of OTA, T.A, Conveyance, NDA statements of the staff statements
   d) Maintenance of leave accounts of Ministerial & Supervisory staff of EWS/LGD &FBWP/MLY
   e) General correspondence relating to pay sheets
   f) Processing of all bills of arrears, encashment of leave, PL Bonus etc.,
   g) Correspondence relating to Scooter/Motor Cycle Advance, HBA, Personal Computer Advance, Moped Advance, Festival Advance, and maintenance of all advance registers

h) General correspondencerelating to pay sheets

6. OS/Sr. Clerk(Settlement & Quarters etc.): vacant at present
   a) Complete correspondence related to staff quarters.
   b) Processing of settlement cases on account of Superannuation, Voluntary Retirement etc., and its related correspondence.

DRAWING STAFF:

1. Sr.Section Engineer (Drawing):
   a) Issue of work orders to shops (structural & mechanical)
   b) Monthly PCDO to HQ.
   c) Monthly PCDO booklet (complete progress of EWS & FBWP/MLY) to CE/WS&F &PCE.
   d) Weekly progress for Glued joints to XEN/TP & DY.CE/TP.
   e) Monthly material statement (Glued Joint) to XEN/TP & DY.CE/TP
   f) Quarterly progress report to Dy. CVO
   g) Monthly production details of EWS to Rly . Board through HQ
   h) GM's narrative report (in a year)
   i) Reply to audit parlous (HQ Audit& Rly Bds)
   j) Dealing with Quality Audit reports of Hqrs. &Rly.Boards Audit reports.
   k) Compilation to CE/PCE's inspection notes
   l) Tech & general letters correspondence
   m) Preparation of Drawings
   n) Preparation of daily progress reports
   o) Maintenance of general/Technical records of drawing section

2. Junior Engineer_(Drawing):
   a) Preparation of estimates
   b) Preparation of tender schedules
   c) Checking of contractual bills
   d) Attending accounts & HQ for clarifications reg proposals
   e) Issue of work orders to shops (structural & mechanical)
   f) Monthly PCDO to HQ
   g) Monthly PCDO booklet (complete progress of EWS & FBWP/MLY) to CE/WS&F &PCE.
   h) Weekly progress for Glued joints to XEN/TP & DY.CE/TP.
   i) Monthly material statement (Glued Joint) to XEN/TP & DY.CE/TP
   j) Quarterly progress report to Dy. CVO
   k) Monthly production details of EWS to Rly. Board through HQ
   l) GM's narrative report (in a year)
   m) Reply to audit parlous (HQ Audit& Rly Bds)
   n) Dealing with Quality Audit reports of Hqrs. & Rly.Board's Audit reports.
   o) Compilation to CE/PCE's inspection notes
   p) Tech & general letters correspondence
   q) Preparation of Drawings
   r) Preparation of daily progress reports
   s) Maintenance of general/Technical records of drawing section

3.9 Position of Work Orders at EWS/LGD for 5 years:

- **Structural section:**

Description	Span in Meters	Weight in MTs	WO received on date.	Production					
				2016-17	2017-18	2018-19	2019-20	2020 -21	Balance
Girders WO no. 15011813	1x14.4 + 1x26.8	63	05.04.2013	57	6	-	-	-	0
Girders 15012113	1x26.8	47	01.05.2013	43	4	-	-	-	0
CC Cribs	-	80	30.05.2013	56.98	0	-	-	-	23.02
Girders 15014614	1x26.8	47	22.04.2014	47	-	-	-	-	0
Girders 15014714	3x20.4	90	01.05.2014	55	21	14	-	-	0
Girders 15017215	10x18. 3	274.8	21.07.2015	90	158	26.8	-	-	0
Jigs & Fixtures 25018516	-	02	12.02.2016	02	-	-	-	-	0
Platform shelters	-	221.7	17.05.2016	207	-	-	14.7	-	0
CC Cribs 25021316	-	35.316	28.12.2016	-	6.18	-	-	-	29.136
Girders 15018115	1x14.4 + 1x26.8	67	14.12.2015	-	-	66.75	0.25	-	0
Girders 15018215	1x14.4 + 1.26.8	67	09.01.2016	-	-	66.75	0.25	-	0
Girders 15018716	1x14.4 + 1x20.4	46	22.04.2016	-	-	46	-	-	0
Girders 15021817	2x20.4	80	08.05.2017	-	-	23.63	49.73	-	-
Girders 15024918	8x12.2	120.75	01.09.2018	-	-	12.75	108	-	0
Girders 15025718	2x20.4	80	26.10.2018	-	-	0	27.15	45.5	7.35

Girders 15025818	2x20.4	80	26.10.2018	-	-	0	6.25	5	68.75
SBT machine Frame 15028019	-	19	16.12.2019	-	-	-	18.55	-	0.45
	Total	**1420.57**	**-**	557.98	195.18	256.68	224.88	50.5	135.35

- **Mechanical Section:**

S no	Description	Qty	WO received on date.	Production					
				2016-17	2017-18	2018-19	2019-20	2020-21	Balance
1	Indicator Boards WO no. 25011813	225 nos	18.05.2016	225	-	-	-	-	0
2	Indicator Boards WO no. 25019116	145 nos	21.06.2016	145	-	-	-	-	0
3	Indicator Boards WO no. 25019216	446 nos	20.06.2016	446	-	-	-	-	0
4	Reconditioning of anchoring device WO no. 25019416	40 nos	23.06.2016	40	-	-	-	-	0
5	Repairs to lever arms WO no. 25019516	25 nos	11.07.2016	25	-	-	-	-	0
6	Reconditioning of anchoring device WO no. 25019616	43 nos	12.07.2016	43	-	-	-	-	0
7	Rail Dollies WO no. 25019716	5 nos	18.07.2016	5	-	-	-	-	0
8	Reconditioning of anchoring device WO no. 25020016	42 nos	9.9.2016	42	-	-	-	-	0
9	Rail Dollies WO no. 25020116	16 nos	10.09.2016	16	-	-	-	-	0
10	Rail Dollies WO no. 25020216	100 nos	22.09.2016	-	50	50	-	-	0
11	Rail Dollies WO no. 25020316	36 nos	22.09.2016	-	36	-	-	-	0
12	Rail Dollies WO no. 25020416	20 nos	22.09.2016	-	-	-	-	-	20

13	Indicator/warning boards WO NO:25020816	100 Nos	22.11.2016	44	56	-	-	-	0
14	Indicator boards/WO no:25020916	100 nos	22.11.2016	44	56	-	-	-	0
15	Rail Dollies wo No:25021717	22nos	27.04.2017	08	-	-	-	-	14
16	Rail Dollies WO no:25022517	10	19.06.2017	-	04	06	-	-	0
17	Indicator Boards WO no:25022417	175	19.06.2017	-	-	175	-	-	0
18	Indicator Boards WO no:25022617	75	15.07.2017	-	-	-	-	-	0
19	Rail Dollies WO no:25022717	15	15.07.2017	-	-	-	-	-	15
20	Indicator Boards WO no:25022317	281	19.06.2017	-	-	281	-	-	0
21	Rail Dollis WO no:25022817	40	01.08.2017	-	-	-	-	-	40
22	B G Dip Lorries WO NO:25023017	04	06.09.2017	-	04	-	-	-	0
23	Rail Dollies WO no:25023117	40	08.09.2017	-	-	-	21	-	19
24	Rail Dollies WO no:25023217	06	15.12.2017	-	-	02	-	-	04
25	Rail Dollies WO no:25023317	10	28.12.2017	-	-	06	-	-	04
26	Rail Dollies WO no. 25023417	10	28.12.2017	-	-	04	-	-	06
27	Rail Dollies WO no. 25023517	10	28.12.2017	-	-	-	04	-	06
28	Rail Dollies WO no. 25021917	20	29.05.2017	-	06	-	-	-	14
29	Rail Dollies WO no. 25023918	06	14.05.2018	-	-	06	-	-	0
30	Rail Dollies WO no. 25024118	05	14.05.2018	-	-	05	-	-	0
31	Rail Dollies WO no. 25024718	12	27.07.2017	-	-	12	-	-	0

32	Rail Dollies WO no. 25025018	04		-	-	04	-	-	0
33	Rail Dollies WO no. 25025918	04	26.11.2018	-	-	-	04	-	0
34	Rail Dollies WO no. 25026119	06	11.03.2019	-	-	-	06	-	0
35	Rail Dollies WO no. 25026219	20	11.03.2019	-	-	-	-	-	20
36	Rail Dollies WO no. 25026319	20	20.03.2019	-	-	-	04	-	16
37	Rail Dollies WO no. 25026319/1	22	03.04.2019	-	-	-	06	-	16
38	Rail Dollies WO no. 25026419	20	04.05.2019	-	-	-	-	-	20
39	Rail Dollies WO no. 25026719	20	18.07.2019	-	-	-	-	-	20
40	Rail Dollies WO no. 25027019	21	01.08.2019	-	-	-	11	-	10
41	Rail Dollies WO no. 25027119	6	19.08.2019	-	-	-	6	-	0
42	Rail Dollies WO no. 25026819	10	31.08.2019	-	-	-	10	-	0
43	Rail Dollies WO no. 25026919	06	23.07.2017	-	-	-	06	-	0
44	Rail Dollies WO no. 25027019	21	01.08.2019	-	-	-	-	11	10
45	Rail Dollies WO no. 25027219	16	25.10.2019	-	-	-	-	05	11
46	Rail Dollies WO no. 25027419	28	05.11.2019	-	-	-	-	-	28
47	Rail Dollies WO no. 25027519	06	13.11.2019	-	-	-	-	-	06
48	Rail Dollies WO no. 25027619	06	21.11.2019	-	-	-	-	-	06
49	Rail Dollies WO no. 25027719	28	27.11.2019	-	-	-	-	-	28
50	Rail Dollies WO no. 25028119	12	26.12.2019	-	-	-	-	02	10
51	Rail Dollies WO no. 25028220	16	04.01.2020	-	-	-	-	-	16

52	Rail Dollies WO no. 25028320	16	04.01.2020	-	-	-	-	10	06
53	Rail Dollies WO no. 25028520	10	17.03.2020	-	-	-	-	10	0
54	Rail Dollies WO no. 25028720	16	02.03.2020	-	-	-	-	14	0
55	Rail Dollies WO no. 25028920	08	02.03.2020	-	-	-	-	08	0
56	Dip lorries WO no. 25028820	02	07.08.2020	-	-	-	-	-	-
57	Trusses WO no. 15029020	18	01.09.2020	-	-	-	-	-	-
58	Plates welded to Trusses WO no. 15029120	18	01.09.2020	-	-	-	-	-	-
59	Plates WO no. 15029220	18	01.09.2020	-	-	-	-	-	-

3.10 Summary of Production details of EWS/LGD for 5 years:

Description in MTs	2016-17		2017-18		2018-19		2019-20		2020-21	
	Trgt	Done	Trgt	Done	Trgt	Done	Trgt	Done	Trgt	Done
Riveted girders (in MT)	--	--	--	--	--	--	--	--	--	--
Welded girders (in MT)	600	135	360	187	350	286	950	212.37	300	54.49
Glued joints (in EQT)	1470	1582.50	865	1012.25	820	1016.50	220	1001	165	134.75
Others (P.Way items) in EQT	330	283.44	75	161.89	80	98.04	80	133.70	235	48
Total	2400	2000.94	1300	1361.14	1250	1400.54	1250	1347.07	700	237.24

3.11 Manpower position of five years:

S.No.	Year	Sanction	Actual	Vacant
1	2016-17	200	174	26
2	2017-18	193	162	31
3	2018-19	188	148	40
4	2019-20	188	127	61
5	2020-21	187	114	73

3.12 Manpower requirement: As per Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17, existing production capacity of the work shop to be fixed on sanctioned staff strength considering productivity of **0.5 Equated Units (EU) per man per Month.**

1. **Manpower requirement for the year 2016-17:**

   Staff requirement for production of 0.5MT per month= 1

   Staff requirement for production of 0.5MT per year= 1/12

   Staff requirement for production of 1MT per year= (1/12)/0.5

   Target per the year 2016-17=2400 MT (**see 3.10**)

   Staff requirement for production of 2400 MT per year

   =2400X (1/12)/0.5=400

   Sanctioned staff =200(**see 3.11**)

   Short fall Staff=400-200=200

2. **Manpower requirement for the year 2017-18:**

   S Staff requirement for production of 0.5MT per month= 1

   Staff requirement for production of 0.5MT per year= 1/12

   Staff requirement for production of 1MT per year= (1/12)/0.5

   Actual done 1361.14 is taken into consideration since Actual done is more than the Target

   Actual production done per year 2017-18=1361.14 MT= say1361MT Staff requirement for production of 1361MT per year

   =1361X (1/12)/0.5=226.8=227

   Sanctioned staff =193

   Short fall Staff=227-193=34

3. **Manpower requirement for the year 2018-19:**

   Staff requirement for production of 0.5MT per month= 1

   Staff requirement for production of 0.5MT per year= 1/12

   Staff requirement for production of 1MT per year= (1/12)/0.5

   Actual done 1400.54 is taken into consideration since Actual done is more than the Target

   Actual production done per year 2018-19=1400.54 MT= say1401MT

   Staff requirement for production of 1401MT per year

   =1401X (1/12)/0.5=233.5=234

   Sanctioned staff =188

   Short fall Staff=234-188=46

4. **Manpower requirement for the year 2019-20:**

Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Actual done 1347.07 is taken into consideration since Actual done is more than the Target

Actual production done per the year 2019-20=1347.07 MT= say1347MT

Staff requirement for production of 1347MT per year

=1347X (1/12)/0.5=224.5=225

Sanctioned staff =188

Short fall Staff=225-188=37

5. **Manpower requirement for the year 2020-21:**

Staff requirement for production of 0.5MT per month= 1

Staff requirement for production of 0.5MT per year= 1/12

Staff requirement for production of 1MT per year= (1/12)/0.5

Target production per the year 2020-21=700 MT

Staff requirement for production of 700MT per year

=700X (1/12)/0.5=116.67=117

Sanctioned staff =187

Excess Staff=187-117=70

3.13 Present Manpower Requirement of EWS/LGD:

3.13.1 The Work-study team considered the following factors for calculation of present manpower requirement of EWS/LGD:

- Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17
- Manpower position of EWS/LGD for five years
- Production details of EWS/LGD for five years
- On hand Work orders position of EWS/LGD

3.13.2 Present manpower requirement of EWS/LGD: From the above observations, even though the production is in decreasing trend, the work study team considered the production capacity as 900MT (EU) per year, assuming that the future requirement may increase.

- Staff requirement for production of 0.5MT per month= 1 (Rly. Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17)
- Staff requirement for production of 0.5MT per month= 1
- Staff requirement for production of 0.5MT per year= 1/12
- Staff requirement for production of 1MT per year= (1/12)/0.5
- Consideration of production per year =900 MT
- Staff requirement for production of 900MT per year =900X (1/12)/0.5=150
- Sanctioned staff =187
- Excess Staff=187-150=**37**

3.14 Comparative table of Manpower and workload for 5 years:

S.No.	Year	Manpower (San staff)	Work load (MT/year)	Manpower requirement (0.5MT per month per man)	Excess/ Short fall of staff
1	2016-17	200	2001	2001X(1/12)/0.5=333.5=334	334-200 =134 shortfall
2	2017-18	193	1361	1361X(1/12)/0.5=226.8=227	227-193 =34 shortfall
3	2018-19	188	1401	1401X(1/12)/0.5=233.5=234	234-188 =48 shortfall
4	2019-20	188	1347	1347X(1/12)/0.5=224.5=225	225-188 =37 shortfall
5	2020-21	187	700	700X(1/12)/0.5=150	187-117 =70 excess

3.15 Percentage of indirect workers to Total Workers for 5 years:

S.No.	Year	Indirect Workers	Total Workers	% of Direct Workers to Total Workers
1	2016-17	20	200	20/200X100=10
2	2017-18	21	193	21/193X100=10.88
3	2018-19	20	188	20/188X100=10.64
4	2019-20	20	188	20/188X100=10.64
5	2020-21	20	187	20/187X100=10.69

From the above table it is evident that the percentage of indirect workers to Total workers is constant/ increased for the last four years when compared to the previous years. As per Rly.Board order No.2015/CE-III/BR/Work shop review committee report dt: 23.03.17, the percentage of indirect workers to Total workers in the work shop to be reduced.

3.16 Recommendation/ Suggestion:

- It is recommended to surrender 37 excess staff
- It is suggested to reduce the percentage of indirect workers to Total workers in the work shop

4.0 वित्तीय परिणाम FINANCIAL IMPLICATIONS:

4.1 If the recommendations are accepted, the recurring savings on surrender of the following posts in Engineering Work shop /LGD would be as follows:

Sl. No	Category	Scale		No. of posts	** Mean Pay	* Grade Pay	DA @ 17%	Emoluments P.M (in Rs.)	Total Emoluments P.A (in Rs.)
		From	To						
1	Artisan/Helpers/others	5200	20200	**37**	20750	1800	3527.5	898267.5	10779210
TOTAL				**37**	**Rs. 10779210**				

* For calculation purpose only initial grades are taken into account
** For Mean Pay calculation, 1st and 10th cells of Pay Matrix are taken into account

On implementation of the recommendations brought out in the Work study report, an annual savings of **Rs.1.08 crore** can be achieved.

** ** **

अध्याय - 5
CHAPTER – 5

संस्तुती / सुझाव
R E C O M M E N D A T I O NS / S U G G E S T I O NS

Sl. No. क्रम सं.	Description	Para No.
01	**सिफारिश Recommendation** It is recommended to surrender 37 vacant staff which is excess to the requirement.	3.16
02	**सुझाव SUGGESTION** It is suggested to reduce the percentage of indirect workers to Total workers in the work shop	3.15

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