WORK STUDY REPORT

ON

REVIEW OF STAFF

WORKING IN

SIGNAL WORKSHOP/GHAZIABAD

YEAR: 2019-20

WORK STUDY TEAM

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NO.16-CP/22/WS/2019-20

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EXECUTIVE SUMMARY

This study was allotted to Central Planning Cell, HQ Office to identify redundant/unproductive activities and to suggest improved methods of working due to closure of certain activities in the signal Workshop Ghaziabad.

STAFF POSITION

The total sanctioned and on roll strength of staff working in Signal Workshop, Ghaziabad is detailed below:-

S.N.	Category	S/S	O/R	Vacancy
1	SSE/JE	32	24	08
2	Clerical and allied staff	25	17	08
3	Sr. Technician	65	50	15
4	Technician-I	124	24	100
5	Technician-II	15	35	+20
6	Technician-III	27	27	-
7	Canteen staff	04	02	02
8	Helper-I & other Gr 'D' staff	76	47	29
	Total	368	226	142

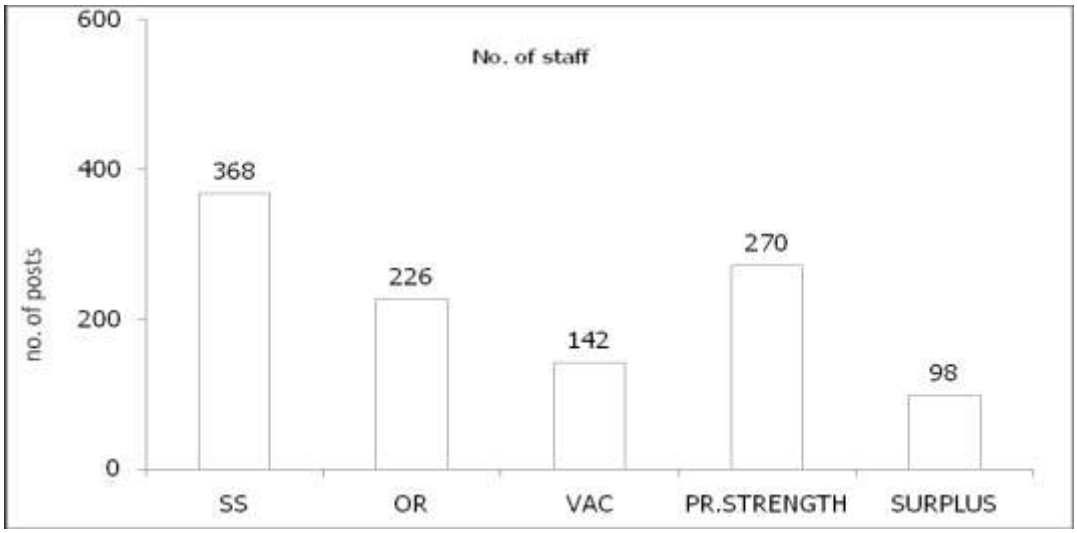
No. of posts identified surplus and recommended for surrender as below:

Group 'C' = 63 posts
Group 'D' = 35 posts
Total = 98 Posts

FINANCIAL IMPLICATIONS:

Anticipated recurring saving **=** Rs. 709.31 Lacs per annum
Capital Saving = Nil
Total recurring saving = Rs. 709.31 Lacs per annum.

Staff position as per work study report is shown in the form of bar chart:



INDEX

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SYNOPSIS

Signal and telecommunications needs over Indian Railways are growing rapidly due to its importance as basic need for railway operations. Presently, Indian Railways have adopted new technologies for manufacture of signaling gear after innovative efforts by RDSO/LKO. The introduction of Automatic Signaling and Route Relay Panel Interlocking System has contributed in the increased frequently and speed of trains. Signal workshops over railways are functioning to provide overhauling, repairs, replacements and maintenance of S&T equipments as per requirement of respective Zonal Railways.

About 10 signal workshops are functioning at different locations over IR. To meet the open line demands of Northern Railway, Signal Workshop Ghaziabad plays a role in overhauling/maintenance of signal gears and block instruments. The manufacturing cost of S&T workshop for certain items is higher as compared to their procurement cost through trade. Various S&T equipments/spares are already being procured at cheaper rates from trade and this has resulted off loaded of certain items from Signal Workshop, Ghaziabad.

The Signal workshop, GZB is also equipped with foundry shop for manufacturing of standard size brake blocks and items of lifting barrier etc. Presently the foundry shop is not working since 8th of August, 2019 and before this it was operated once in a week.

In view above, SDGM/NR directed Central Planning Cell HQ to conduct a review of staff working in Signal Workshop Ghaziabad with a view to optimize of manpower due to advancements/modernization. The work study team suggested certain improved methods in working to increase the productivity. The team also kept in view the local working conditions and held discussions at various levels before assessing the requirement of direct and indirect workers while making the recommendations.

Initially 112 post were identified in the Work Study Report, but after interaction with Signal Workshop administration 98 posts were identified surplus for surrender. If the recommendation made in the report are accepted and implemented in toto, a net recurring saving to the tune of Rs. 709.31 lacs per annum is likely to be achieved.

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ACKNOWLEDGEMENT

The work study team is highly grateful to Shri A.K.Sagar, CWM/Signal Workshop/GZB, Shri Vineet Sinha/WM, Sh. D.K.Sharma/ASTE & Shri Vijay Kumar Singh, APO and other functionaries for giving valuable guidance and extending their full co-operation for providing requisite data/information during the conduct of study.

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SUMMARY OF RECOMMENDATIONS

Rec. No.	Recommendations	Refer para no.	Accepting/ Implementing authority
1	It is proposed that total 98 posts identified as surplus instead of 112 posts after discussion with Signal Workshop GZB Administration in different categories from different shops of Signal Workshop, GZB are recommended for surrender. Sr. Tech. Grade 9300-34800-4200 =15 Tech.I Grade 5200-20200-2800 =45 Tech.III Grade 5200-20200-1900 =03 Helper-I Grade 5200-20200-1800 =35 Total =98	2.5.16 & 3.0.0	CWM/SW/GZB Dy. CPO/HQ
2	Three SSEs deployed in Foundry Shop may be utilized in other Shop/Sections as all Group C (artisan staff) & Group D staff has been recommended for surrender.	2.5.16	
3	After discussion with Signal Workshop administration, 8 staff of Erecting Shop and 14 staff from other shops i.e. 22 posts are identified as surplus but not recommended for surrender as the same may be utilized for the additional fabrication work of Emergency Sliding Boom.	2.5.2 & 3.0.0	

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1.0 INTRODUCTION

1.1 The entire movement of railway traffic is based upon signal and communication system to keep the wheels moving with great safety, punctuality and reliability. Signal and Telecommunication Department is responsible for installation and maintenance of Signaling system essential for the safe & speedy movement of trains and Telecommunication systems required for the effective utilization of the large fleet of locomotives and other rolling stock and track as well as for the administration of the vast Railway Network. As matter of fact, the communication system in the past was not so developed as now a days.

1.2 Due to up-gradation and technological advancements in every sphere of Railways working, signal and telecommunication department has also adopted the new advanced systems to cope with the always-increasing voluminous traffic. Signaling department plays a vital role in increasing the line capacity and through put with great safety. In terms of the sophistication in Signaling and Telecommunication installations, Northern Railway occupies the pride of place among the various Indian Railway systems.

1.3 Signal workshop Ghaziabad is an established workshop with skilled and experienced work force to deal overhauling of equipments, manufacture of various items viz lifting barrier gates assembly, accessories, CL brake blocks, signal reverser and several types of stock and non stock items.

1.4 With the advancement in Signal & Telecommunication systems from Mechanical to Electro-mechanical and Electronics by adopting new state-of-art technologies to ensure safety of train movements at ever increasing speeds to optimize the use of Line Capacity and through put with greatest safety.

1.5 Keeping in view above, it is decided to conduct the "Review of staff working in Signal workshop GZB" to eliminate wasteful expenditure and to optimize utilization of assets and manpower. It was also emphasized that unproductive/obsolete activities be eliminated to increase productivity.

1.6 TERMS OF REFERENCE

The work study has been conducted under the following terms of reference: -

i) To review staff strength vis-à-vis workload.

ii) To suggest ways and means to identify redundant/unproductive activities to eliminate wasteful expenditure.

iii) To suggest ways and means to improve the system economically in view of modernization and systems development.

1.5 METHODOLOGY ADOPTED

The following method study and work measurement techniques were adopted to conduct the study: -

i) Data collection and its critical analysis.

ii) Work sampling, analytical estimation, spot observations, physical checks and yardstick in vogue, if any, to assess the performance of staff.

iii) Held discussions at various levels.

2.0.0 *BRIEF DESCRIPTION, STAFF POSITION, WORKLOAD, CRITICAL ANALYSIS, REQUIREMENT OF STAFF, RECOMMENDATIONS & OBSERVATIONS*

2.1.0 *BRIEF DESCRIPTION*

Northern Railway Signal Workshop Ghaziabad was established in 1958 with staff strength of 550 workers under the overall charge of an ASTE. The staff strength was further increased to meet with the enhanced demands of open line. During the year 1972, strength of 42 staff was added to signal workshop for undertaking manufacture of Electric Reverser 'B' type and mechanized signal machines.

2.2.0 At present the Signal workshop organization is headed by Chief Workshop Manager (SA Grade) with the assistance of one WM, one ASTE and one APO under whom the entire supervisory/Group 'C' and 'D' staff are working. The shop wise activities of signal workshop GZB is produced below:-

SN	Shop/ Section	Activity/manufacturing
1	Block shop	**Manufacturing:-** Colour light signal, Signal name and number plates, Marker/Light shunt signal(independent), CI Junction box 10-20 Line & 30-40 Line, locking arrangement. **Overhauling:-** Single line Block instrument(NTI), D/Line Block instrument SGE type, D.C. Neutral relay, electrical signal reverser, Route indicator, Air core inductor, track feed battery charger
2	Erecting Shop	**Manufacturing:-**Boom for lifting barrier gate, Boom pipe 2 meter & 4 meter long with flange, Winch gear for lifting barrier(out turn),Ground lever frame single lever, Lifting barrier without firing warning board, Wheel rope horizontal 1way & 2way, wheel rope vertical,Emergency sliding boom,ELB boom & cable trough, apparatus case RE type (signal/half/quarter) , warning board etc.
3	Foundry Shop	**Casting :-** Ferrous and non ferrous metals, foundation A & B type, roller bottom, roller top, roller stand, trestle, surface base for colour light signal, CI elbow, counter weight for RE and brake blocks for WAM-I/WAM-4/WAG-7 & WDP-1
4	Machine shop	**Manufacturing:-** Drum wheel pin IRS, Main axle, C.I. Drum for lifting barrier, Brass bush for L/Barrier, MS Pin over size, pin top roller, CI gear 26/28,teeth, drum for L/B, weight eye rod, flange, spindle with nut, link pin, skimming of fish plate, brass bushes etc.
5	Smithy shop	**Manufacturing:-** Adjusting screw 33 mm, fitting for Siemen type single slip SA-8800, Point fitting I.R.S. Type 3662, joint flush, lock bar 3 section, ladder for

		CLS(of sort) and switch clamp 60 kg,.
6	Proto and Reverser (P&R) section	**Manufacturing:-**Bracket for pole lock, electrical signal reversor, junction box track lead, PCP pole, pole lock, wheel rope horizontal etc.
7	Relay overhauling section	**Overhauling:-**Electrical relays as per IRS specifications.
8	Production and planning section(PCO)	Material management, rate fixing, arranging of workload for various shops inspection and dispatch of manufactured/overhauled materials etc.

2.3.0 *STAFF POSITION*

The team collected the staff position of Group 'C' and 'D; staff working in Signal Workshop Ghaziabad which is placed as Annexure I in the report and summarized position is tabulated as under:-

Table -I

S.N.	Category	S/S	O/R	Vacancy.
1	SSE/JE	32	24	08
2	Clerical and allied staff	25	17	08
3	Sr. Technician	65	50	15
4	Technician-I	124	24	100
5	Technician-II	15	35	+20
6	Technician-III	27	27	-
7	Canteen staff	04	02	02
8	Helper-I & other Gr 'D' staff	76	47	29
	Total	368	226	142

The above table reveals that the total sanctioned strength of Group 'C' & 'D' staff is 368 and on roll strength is 226 which shows that 142 posts of different categories are lying vacant.

2.4.0 ***CRITICAL ANALYSIS***

2.4.1 *(A) Foundry shop*

i) The work study is confined to review the economical and effective utilization of manpower deployed in signal workshop GZB. The team collected the data/information required from the planning/production sections. The team collected the out turn of Foundry shop in terms of tonnage, consumption of Cast Iron (CI) & Pig Iron (PI) and coal for the last three years.

ii) It was apprised that the furnace (cupola) works for once in a week and rest of the days the most of the staff remains idle. During the course of the review it was observed that furnace is not working since 8th of August, 2019 till now.

iii) The cost of the items which are being manufactured in Foundry Shop is very higher in comparison to the same items being procured by the Dy. CSTE/Const./TKJ contract no. 287-SIG/C/TKJ/TENDER/03/15 dt. 16/05/16, Dy. CSTE/Const./LKO contract no. 287-SIG/C/LKO/TENDER/08/17 dt. 13.6.17 and Dy. CSTE/CN./TBM contract no. TBM-SG-CN-19-20-09-OT-02 from the trade.
The detailed comparison in rates is shown in the table below.

Table -II

S.N.	Name of the item	In house cost per unit (in Rs.)	Cost through the vender (in Rs.) per unit.	Difference in cost (increase) (in Rs)	Increased in house cost in %
1	Foundation A type	9034.00	2101.00	6933.00	76.44
2	Guide Roller Bottom roller	91.00	51.92	39.08	42.94
3	Roller top	25.00	13.76	11.24	44.96
4	Surface base for colour light signal 5.5" dia.	9135.00	4118.00	5017.00	54.92
5	Wheel horizontal 2-way	2740.00	1061.03	1678.97	61.27
6	Wheel vertical	1232.00	503.62	728.38	59.12
7	Brake block	4610.00	1021.00	3589.00	77.85

The rates of the items provided by signal workshop, GZB are as on May 2013 and which are not revised till now. If the rates are revised as on date then rates of the items will be on higher side and difference will increase quietly.

The comparison of rates between the same items being manufactured in Foundry shop and procured from vendors shows the in house cost is very higher. In this way the running of foundry shop is uneconomical and unproductive .

iv) The out turn (in tones) of the Foundry shop has been reduced to 37.40% in FY 2018-19 in comparison to FY 2016-17. The same has been shown in the table-III.

v) The consumption of C.I./P.I. in the Foundry shop has been reduced to 49.42 % in FY 2018-19 in comparison to the FY 2016-17. The same has been shown in the table-IV.

vi) The consumption of coal in the Foundry shop has reduced to 41% in FY 2018-19 in comparison to the FY 2016-17. The same has been shown in the table-V.

vii) An expenditure of Rs. 5.99 crore per annum is being incurred on manpower against the 80 sanctioned posts of foundry shop.

2.4.2 The items being produced in Foundry shop on very high rates where as these items are readily available in open markets at cheaper rates.

2.4.3 It is observed that the review of staff is required to assess the actual requirement as per existing workload.

2.4.4 (B) Other shops/sections of Signal Workshop Ghaziabad**.**

The other shops like Block shop, Machine shop, Erecting shop, Smithy shop and Proto Reverser shop, the requirement of man power have been assessed on the basis of allowed man hours and considering the incentive scheme in production/repair shops per direct worker 267 man hours per month. So the requirement of man power has been calculated on the basis of 267 man hours per Direct worker. EIWS and other allied staff have been calculated on proportionate basis of direct workers.

2.5.0 *EXISTING AND PROPOSED STAFF (SHOP WISE).*

The team visited each shop and interacted with shop incharge to know the actual status of each shop/section. The shops like Block shop,

Erecting shop, Machine shop, Smithy shop and Proto & Reverser shop are incentive shops. The staff of these shops works on the basis of incentive scheme in production units i.e. 267 allowed time man hours per month. The requirement of Direct workers for the shops i.e. Block shop, Foundry shop, Erecting shop, Machine shop, Smithy shop and Proto & Reverser shop has been calculated shop wise as below.

2.5.*1* ***BLOCK SHOP***

The main activities of this shop are overhauling of block instruments, manufacturing of electrical signal reverser, colour light signal, signal number plates, 'P', 'C', 'G' Marker/Light shunt signal(independent), CI Junction box 10-20 Line & 30-40 Line, route indicator, U lock with key, Air core inductor, O/H of D.C. Neutral relay, O/H of D/Line Block instrument SGE type, O/H of single line Block instrument(NTI),track feed battery charger and its over hauling etc.

2.5.1.(i) *REQUIREMENT OF DIRECT WORKERS*

Name of the shop	Allowed man hours avg. per month	Yard stick	DW	LR @ 12.5%	Total req.	S/S	Identified surplus
Block Shop	8917	267 man hrs per direct worker	33.39	4.17	37.56 or say 38	43	05
				Total	38	43	05

The above table reveals that the sanctioned strength of direct workers in Block shop is 43 whereas 38 comes the actual requirement. So the team identified 05 direct workers as surplus from this shop.

2.5.1. (ii) In addition to the direct workers, there are some indirect workers who are deployed in the shop and whose sanctioned strength is given in the following table. The requirement of indirect workers has been calculated in the proportionate basis of direct workers.

S.No.	Sanctioned strength			Total	Proposed strength			Total
1	JE	Tech.	Helper		JE	Tech.	Helper	
	02	07	12	21	02	05	08	15

The above table reveals that the sanctioned strength of EIW staff in Block shop is 21 whereas the actual requirement comes to 15 staff. So the team identified 06 EIW as surplus from this shop.

2.5.2 **ERECTING SHOP**

This shop fabricates the sliding boom barrier for inter locked level crossing gates, Boom pipe 2 meter & 4 meter long with flange, Winch gear for Lifting Barrier (out turn),Ground lever frame single lever,

Lifting barrier without fringe, warning board, Wheel rope horizontal 1way & 2way, wheel rope vertical ,Emergency sliding boom, ELB boom & cable trough, apparatus case RE type (signal/half/quarter),warning board etc.

2.5.2.(i) *REQUIREMENT OF DIRECT WORKERS*

Name of the shop	Allowed man hours avg. per month	Yard stick	DW	LR @ 12.5%	Total req.	S/S	Identified surplus
Erecting Shop	6575	267 man hrs per direct worker	24.62	3.07	27.69 or say 28	32	4
				Total	28	32	4*

The Erecting shop has additional fabrication work of emergency sliding booms. So it is proposed that the same 32 sanctioned strength against the bare requirement of 28 posts due to additional workload of emergency sliding boom fabrication.

**Identified surplus 4 DW staff not recommended for surrender at this stage, which can be utilized for Emergency Sliding Boom fabrication.*

2.5.2(ii) ESSENTIALLY INDIRECT WORKERS (EIW).

In addition to the direct workers, there are some indirect workers who are deployed in the shop and whose sanctioned strength is given in the following table. The requirement of indirect workers has been calculated in the proportionate basis of direct workers.

S.N.	Sanctioned strength			Total	Proposed strength			Total	Identified surplus
1	JE	Tech.	Helper		JE	Tech.	Helper		
	01	06	08	15	01	04	06	11	4*

The above table reveals that the sanctioned strength of EIW staff in Erecting shop is 15 and the actual requirement comes to 11 staff. So it is proposed that the same 15 sanctioned strength against the bare requirement of 11 posts due to additional workload of emergency sliding boom fabrication.

**Identified surplus 4 EIW staff not recommended for surrender at this stage, which can be utilized for Emergency Sliding Boom fabrication.*

2.5.3 MACHINE SHOP

This shop manufactures Drum wheel pin, IRS main axle, C.I. Drum for Lifting barrier, Brass bush for lifting barrier, MS Pin oversize, pin top roller, C.I. gear 26/88 teeth, drum for lifting barrier, weight eye rod, flange, spindle with nut, link pin, skimming of fish plate, brass bushes etc.

2.5.3.(i) REQUIREMENT OF DIRECT WORKERS

Name of the shop	Allowed man hours avg. per month	Yard stick	DW	LR @ 12.5%	Total req.	S/S	Identified surplus
Machine Shop	3968	267 man hrs per direct worker	14.86	1.85	16.71 or say 17	23	06
				Total	17	23	06

The above table reveals that the sanctioned strength of DW staff in Machine shop is 23 whereas the actual requirement comes to 17 staff. Thus 6 DW staff are identified as surplus.

2.5.3.(ii) ESSENTIALLY INDIRECT WORKERS(EIW)

In addition to the Direct Workers, there are some Indirect Workers who are deployed in the shop with the sanctioned strength as given in the following table. The requirement of indirect workers has been calculated in the proportionate basis of direct workers.

S.N.	Sanctioned strength			Total	Proposed strength			Total	Identified surplus
1	JE	Tech.	Helper		JE	Tech.	Helper		
	01	06	09	16	01	04	07	12	4

The above table reveals that the sanctioned strength of EIW staff in Machine shop is 16 whereas the actual requirement comes to 12 staff. Thus 04 EIW staff are identified as surplus from this shop.

Total DW & EIW Staff identified as surplus - 10

2.5.4 SMITHY SHOP

This shop manufacture Adjusting screw 33 mm, fitting for Siemens type single slip SA-8800, Point fitting IRS Type 3662, joint flush, lock bar 3 section, ladder for CLS(off sort), switch clamp 60 kg. etc.

2.5.4.(i) REQUIREMENT OF DIRECT WORKERS

Name of the shop	Allowed man hours avg. per month	Yard stick	DW	LR @ 12.5 %	Total req.	S/S	Identified surplus
Smithy Shop	5424	267 man hrs per direct worker	20.31	2.53	22.84 or say 23	27	04
				Total	23	27	04

The above table reveals that the sanctioned strength of DW staff in Machine shop is 27 whereas the actual requirement comes to 23 staff. Thus 4 DW staff are identified as surplus.

2.5.4.(ii) ESSENTIALLY INDIRECT WORKERS(EIW)

In addition to the direct workers, there are some indirect workers who are deployed in the shop and whose sanctioned strength is given in the following table. The requirement of indirect workers has been calculated in the proportionate basis of direct workers.

S.N.	Sanctioned strength			Total	Proposed strength			Total	Identified surplus
1	JE	Tech.	Helper		JE	Tech.	Helper		
	01	02	05	08	01	01	04	6	2

The above table reveals that the sanctioned strength of EIW staff in Smithy shop is 08 whereas the actual requirement comes to 06 staff. Thus 02 EIW staff are identified as surplus from this shop.

Total DW & EIW Staff identified as surplus - 06

2.5.5 **PROTO REVERSOR SHOP**

Manufacturing:

Bracket for pole lock, electrical signal reversor, junction box track lead, PCP pole, pole lock, wheel rope horizontal etc.

Overhauling:

Electrical relays as per IRS specifications.

2.5.5.(i) DIRECT WORKERS

Name of the shop	Allowed man hours avg. per month	Yard stick	DW	LR @ 12.5%	Total req.	S/S	Identified surplus
Proto Reverser Shop	3664	267 man hrs per direct worker	13.72	1.71	15.43 or say 15	21	06
				Total	15	21	06

The above table reveals that the sanctioned strength of DW staff in Proto Reversor shop is 21 whereas the actual requirement comes to 15 staff. Thus 6 DW staff are identified as surplus.

2.5.5(ii) ESSENTIALLY INDIRECT WORKERS (EIW).

In addition to the direct workers, there are some indirect workers who are deployed in the shop and whose sanctioned strength is given in the following table. The requirement of indirect workers has been calculated in the proportionate basis of direct workers.

S.N.	Sanctioned strength			Total	Proposed strength			Total	Identified surplus
1	JE	Tech.	Helper		JE	Tech.	Helper		
	01	02	03	06	01	01	02	04	02

The above table reveals that the sanctioned strength of EIW staff in Proto Reversor shop is 06 whereas the actual requirement comes to 04 staff. Thus 02 EIW staff are identified as surplus from this shop.

Total DW & EIW Staff identified as surplus – 08

2.5.6 Production & Planning section(PCO).

This section deals with material management, rate fixing, arranging of workload for various shops, inspections, dispatch of manufactured/overhauled materials etc.

SN	Category	Description	No. of staff proposed.
1	SSE/PCO	Over all in charge of PCO & Planning section.;	01
2	SSE/Production	Deals all the work orders received from different divisions, coordinates in all types of construction work of workshop.	01
3	SSE/Plg.	Deal the requisition of non-stock items of SMM & CMM/HQ. Also deals the work of non-stock to stock conversion of the items.	02
		Deal in issuing job cards against the work orders received the PCO office to all sections, time study and rate fixations for new items & inspection of the non-stock items purchased from the open market.	02
		Deals in the final inspection of the items manufactured by Block shop & Erecting shop.	01
		Deals in PCDO, RDSO dryings, preparation of Production schedule & AAC of the stock items of the workshop.	02
5	SSE/IT	Computer maintenance & other IT related work.	01
4	JE/Plg.	Deals in final inspection of the items manufactured by Smithy, Machine, Foundry, Block & Proto-Reverser.	04
5	JE/D&D	For design and drawing.	01
6	Clerk	Receive all the work orders and prepare the case for the approval, after approval send the case to concerned SSE, arrange the necessary documents for the dispatch of the prepared material.	02
7	Technician	Punching of job cards & GA cards.	01
8	Vehicle Driver	To operate lifter and fork lifter.	01
9	Peon(workshop)	For office.	01
10	Helper	Loading/unloading of material & transporting the material within the workshop.	13
		Total	25

2.5.7 FOUNDRY SHOP

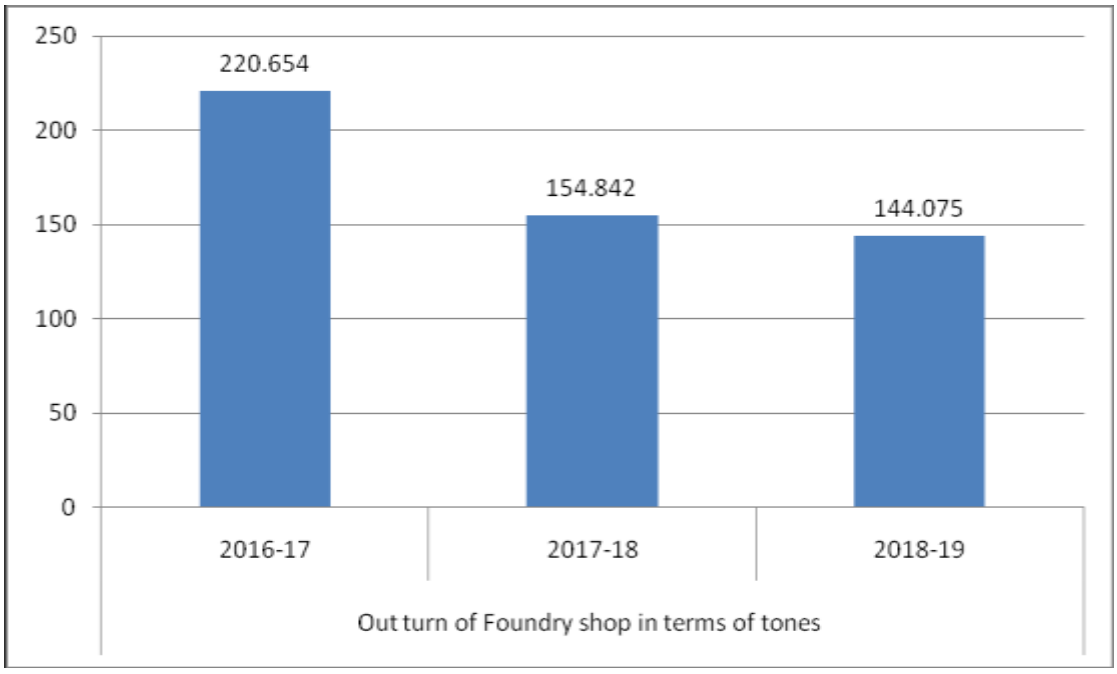
Foundry shop had been the important and integral part of this workshop. Initially the Foundry was preparing a lot of items which were used in the Mechanical Signaling system including mechanically operated lifting barriers. Previously it was preparing brake blocks for wagons/coaches & Diesel Engines WAM-1,/WAM-4/WAG-7 and WDP-1. But now a days mechanical interlocking has been replaced by Panel interlocking and mechanically operated lifting barriers have been replaced by motor operated light weight lifting barriers. The introduction of Disc brakes in new series of Engines and LHB coaches and composite brakes in the other stocks has reduced the requirement of standard cast iron brake blocks resulting into a drastic reduction in the workload of Foundry shop.

This work study is specially confined to review the economical and effective utilization of manpower deployed in Foundry shop of signal workshop GZB. The cupola runs once in week and rest of the days most of the staff remains idle. The comparison of rates between the same items being manufactured in Foundry shop and procured from vendors shows the in house cost is very higher. In this way the running of foundry shop is uneconomical and unproductive .The team collected the data/information required from the Planning/Production sections. The team collected the out turn of Foundry shop in terms of tonnage, consumption of Cast Iron (CI) & Pig Iron (PI) and hard coke consumption of the last three years and same has been shown in Table III, IV & V respectively with graphical presentation.

2.5.8 **Out turn of Foundry shop in terms of tones (Table III)**

Month	2016-17	2017-18	2018-19
April	13.507	20.572	12.698
May	10.676	15.290	Nil
June	5.40	19.459	Nil
July	2.296	11.568	Nil
August	29.733	6.528	Nil
September	28.233	3.495	Nil
October	28.677	7.045	5.28
November	22.015	7.81	15.515
December	13.09	12.626	24.71
January	23.815	14.825	23.738
February	26.200	18.971	31.915
March	16.921	16.563	30.219
Total	220.654	154.842	144.075
	*100%	29.82 % reduction	34.70% reduction

* Year 2016-17 has been taken as base year i.e., 100%

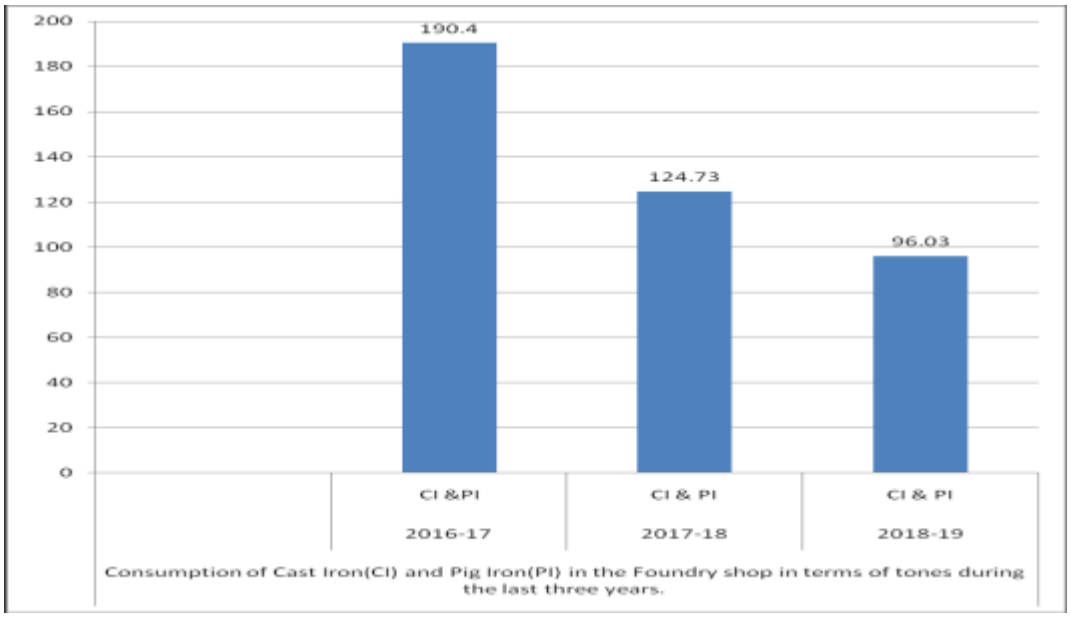


The above table reveals that the total out turn in terms of Tones in FY 2017-18 has decreased by 29.82 % and in 2018-19 the reduction is 34.70 % as compared to FY 2016-17. This shows the reduction trend of out turn of Foundry shop, GZB.

2.5.9 **Consumption of Cast Iron(CI) and Pig Iron(PI) in the Foundry shop in terms of tones during the last three years.(Table –IV)**

Month	2016-17		2017-18		2018-19	
	CI	PI	CI	PI	CI	PI
April	4	0	6	4	4	4
May	14.2	0	6	6	-	-
June	7.30	2	10	30	-	-
July	18.90	12	4	4	-	-
August	4	-	6	-	-	-
September	10	10	2	-	-	-
October	10	10	2	-	2	2
November	6	6	6.73	-	22.8	12
December	10	10	4	-	-	-
January	10	-	10	-	14	7
February	14	14	6	8	16.23	12
March	10	8	10	-	-	-
Total	118.4	72	72.735	52	59.03	37
G. Total	190.40		124.73		96.03	
	*100%		34.49% reduction		49.42% reduction	

* Year 2016-17 has been taken as base year i.e., 100%

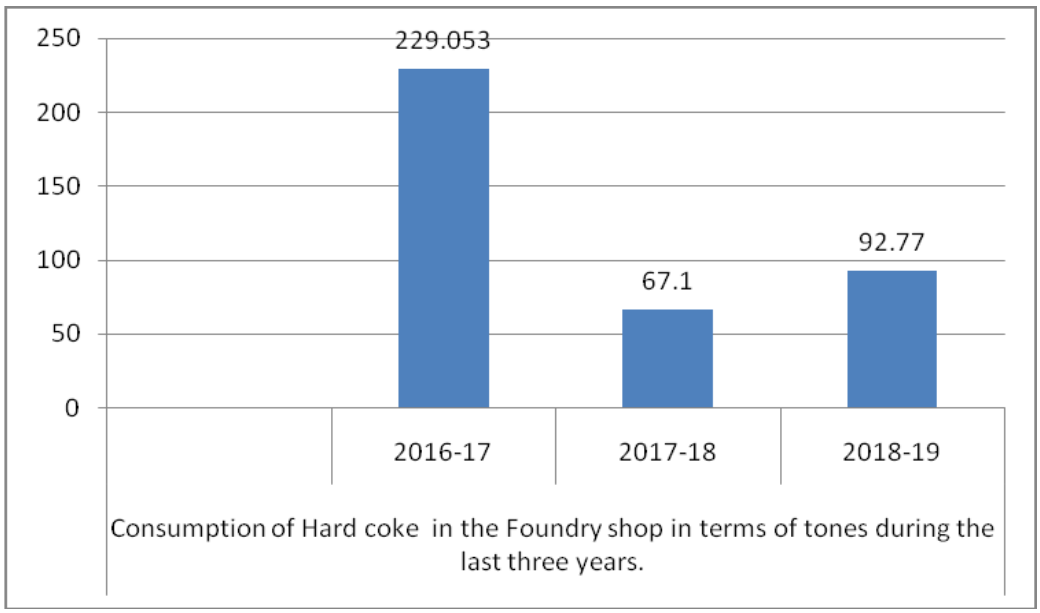


The above table reveals that the total consumption of CI&PI in terms of Tones in FY 2017-18 has decreased by 34.49 % and in 2018-19 the reduction is 49.42 % as compared to FY 2016-17. This shows the consumption of CI & PI is decreasing in Foundry shop, GZB.

2.5.10 **Consumption of Hard coke in the Foundry shop in terms of tones during the last three years. (Table –V)**

S.N.	2016-17	2017-18	2018-19
1.	229.053	67.10	92.77
	*100%	70.70 % reduction	59.52 % reduction

* Year 2016-17 has been taken as base year i.e., 100%



The above table reveals that the total consumption of hard coke in terms of Tones in FY 2017-18 has decreased by 70.70 % and in 2018-19 the reduction is 59.52 % as compared to FY 2016-17. This shows the consumption of coal is decreasing in Foundry shop, GZB.

2.5.11 *Establishment charges of 80 sanctioned of the Foundry shop.*

Table –VI

S.N.	Category	No. of sanctioned posts	Grade Rs.	Monthly expenditure (in Rs.)	Annual expenditure (in Rs.)
1	SSE	02	9300-34800-4600	209776.00	2517312.00
2	Sr. Tech. Foundry	17	9300-34800-4200	1407056.00	16884672.00
3	Tech. Foundry	31	5200-20200-2800	2109240.00	25310880.00
6	Clerk/Tech. III	02	5200-20200-1900	93072.00	1116864.00
7	Khallasi	28	5200-20200-1800	1174432.00	14093184.00
Total		80		4993626.00	59923512.00

The Table VI reveals that an expenditure of Rs. 5.99 crore per annum is being incurred on manpower against the 80 sanctioned posts of foundry shop (excluding the incentive bonus). If incentive bonus is added than this recurring expenditure will also increase.

Keeping in view of the above facts there is a major difference in the rates of the items being manufactured in Foundry shop as compared to the items procured from the trade as shown in the table-II of this Report. Also the out turn of the Foundry shop in 2018-19 has been decreased significantly by 34.70% as compared to 2016-17 due to uneconomical and unproductive activities are being carried out in foundry shop. Thus the total strength i.e. 77 posts of artisan and other staff are identified as surplus and recommended for surrender. SSE/JE can be utilized in other shops which are not being proposed for surrender at this stage.

2.5.12 Requirement of ministerial & other allied staff.

(A) For Office use:-

SN	Category	Description	Proposed staff
1	COS	Incharge & Settlement	01
2	COS	ACME/Bill	01
3	OS	Test, promotion, selection, training& recruitment	03
4	OS	PF, all advances, PMC & union matters.	02
5	OS	Budget	02
6	Sr. Clerk	All types of passes/medical cards	02
7	Clerk	Dak & dispatch	01
Sub total			12
Add LR @ 12.5% on 12			1.50
Total			12.50 or say 13
8	Hindi Translator	For translation work	01
9	Steno	For CWM Office	01
10	DMS-III	Stores	01
11	Office Peon	For CWM office	01
12	Bunglow Peon	For CWM	01
G. Total			18

(B) Ministerial staff for different Shops.

S.N.	Name of shop	Proposed strength		Total
		Shop(Booth)	Store	
1	Block shop, Proto Reverser, & Production	01	02	03
2	Machine & Smithy	01	01	02
3	Erecting	01	02	03
			Sub total	08
			Add LR @ 12.5% on 08	01
			Total	09

2.5.13 Proposed requirement of Supervisor staff (Shop wise)

S.N.	Shop/section	Supervisor staff	
		SSE	JE
1	Production & Planning	10	5
2	Block	4	2
3	Erecting	2	1
4	Machine	2	1
5	Smithy shop	1	1
6	Proto & Reverser	2	1
Total		21	11

One post of SSE/Signal is Hq controlled who examines the overhauled Block instruments and other signal equipments before delivery from the Block shop.

One post of SSE/Tele is Hq controlled who examines the over hauled track feed battery charger and other tele equipments before delivery from the block shop.

2.5.14 *Requirement of canteen staff:-*

The sanctioned strength of canteen staff in Signal Workshop, GZB is 04 where as 02 canteen assistant are on roll. As observed the sale in the canteen is very low and only 30 to 40 tea are prepared on the basis of requirement. No snacks are prepared in the canteen as assistant cook is not available. The work study team opines that the Administration should fill up vacant posts of Asstt. Cook & canteen manager to improve the canteen facility in Signal Workshop, GZB.

2.5.15 *CATEGORIES WISE SUMMARY OF EXISTING AND PROPOSED STAFF*

S.N.	Category	S/S	O/R	Proposed strength	Identified surplus
1	SSE	21	18	21	-
2	JE	11	06	11	-
3	Ministerial & allied staff	25	17	25	-
4	Sr.Tech.	65	50	44	21
4	Tech.-I	124	24	74	50
5	Tech.-II	15	35	15	-
6	Tech.-III	27	27	24	03
7	Canteen staff	04	02	04	-
8	Helper-I/Office peon/shop messenger/ Bunglow Peon	76	47	38	38
Total		368	226	256	112

2.5.16 SHOP/SECTION WISE SUMMARY OF EXISTING AND PROPOSED STAFF

S.N.	Shop/section	S/S	Proposed strength	Identified surplus
1	Block	64	53	11
2	Erecting	47	47	-
3	Foundry	77	-	77
4	Machine	39	29	10
5	Smithy shop	35	29	06
6	Proto & Reverser	27	19	08
7	Production & Planning	16	16	-
8	Clerical staff	22	22	-
9	Other allied staff	05	05	-
10	Canteen staff	04	04	-
11	SSE/JE	32	32	
	Total	368	256	112

RECOMMENDATION NO.1:

It is proposed that total 98 posts identified as surplus instead of 112 posts after discussion with Signal Workshop GZB administration in different categories from different shops of Signal Workshop, GZB and recommended for surrender

S.N.	Category	Grade Rs.	No. of posts
1	Sr. Tech. Foundry/Pattern maker/mason/ welder/Turner Machinist/molder	9300-34800-4200	15
2	Tech. Foundry/Pattern maker/Fitter Block/Fitter interlocking/ Black smith/ Turner Machinist	5200-20200-2800	45
3	Tech. Foundry/Pattern maker / Fitter interlocking/Turner Machinist	5200-20200-1900	03
4	Helper-I	5200-20200-1800	35
Total			**98**

RECOMMENDATION NO. 2:

Three SSEs deployed in Foundry Shop may be utilized in other Shop/Sections as all Group C (artisan staff) & Group D staff has been recommended for surrender.

RECOMMENDATION NO. 3:

After discussion with Signal Workshop administration, 8 staff of Erecting Shop and 14 staff from other shops identified as surplus but not recommended for surrender as the same may be utilized for the additional fabrication work of Emergency sliding boom.

2.5.17 GENERAL OBSERVATIONS

(i) During the course of work study the team observed that these days Signal workshop, GZB is manufacturing sliding boom barriers which are to be provided at all interlocked level crossing gates of northern Railway in the current financial year. As per the Chief Signal Engineer's letter no. 342-Sig/AP/GM/19-20 dated 10.06.2019, Signal work shop has to provide 1008 sliding boom barriers to the Northern Railway. The in house cost of the one pair of sliding boom barrier is Rs. 181932.00. Signal work shop, GZB is procuring raw material i.e. GI pipe, iron sheet, roller, locking arrangement for manufacturing of sliding boom barriers. The approx. weight of one pair of sliding boom is about 650kg. As there is no technical complexity in the manufacturing of sliding boom barriers, so it can be easily procured from the open market which will be cheaper and economical being the higher cost of manpower of Railways

(ii) It is also observed that the workload of emergency sliding boom is one time workload for which the existing manpower and sanctioned strength of Erecting shop has been proposed in the work study report as it is sufficient to cope up with the additional workload.

(iii) The most of the work orders of foundry shop are for standard size cast iron brake blocks. It is clear that these cast iron brake blocks cost much higher than the cost of brake blocks being procured from the vender by ELS/GZB as compared in the table-II.

3.0.0 INTERACTION

The recommendation made in Work study report was discussed in detail with Work Study team and between Shri Vineet Sinha/WM, Shri D.K.Sharma/ASTE, Shri Vijay Kumar Singh/APO & Shri Makhan Lal SSE/PCO on 04.10.2019 at Signal Workshop GZB. After discussion the Workshop administration was agreed to surrender 98 posts instead 112 post identified as surplus by the Work Study Team. The details of 98 surplus posts as agreed upon are tabulated as under:

S.N.	Shop/section	Sanctioned Strength	Proposed strength		Identified surplus		Staff provided for Emergency sliding boom
			In Work Study Report	After discussion	In Work Study Report	After discussion	
1	Block	64	53	56	11	8	3
2	Erecting	47	47	47	-	-	-
3	Foundry	77	-	-	77	77	-
4	Machine	39	29	33	10	6	4
5	Smithy shop	35	29	32	06	3	3
6	Proto & Reverser	27	19	23	08	4	4
7	Production & Planning	16	16	16	-	-	-
8	Clerical staff	22	22	22	-	-	-
9	Other allied staff	05	05	05	-	-	-
10	Canteen staff	04	04	04	-	-	-
11	SSE/JE	32	32	32		-	-
Total		368	256	270	112	98	14

Initially as per the Work Study Report 112 posts were identified as surplus but after the interaction 14 posts have been provided from the above Shops, now 98 posts have been identified as surplus for surrender as shown in the above table.

These 14 posts above and 8 posts from Erecting Shop (Para 2.5.2) total 22 posts may be utilized for additional workload for fabrication of Emergency Sliding Boom.

4.0.0 FINANCIAL IMPLICATIONS

4.1.0 The annual expenditure as per 7th CPC on staff working in Signal Workshop, GZB is as under:-

S.N.	Category	Grade Rs.	S/S	Monthly value per post	Monthly expenditure (in Rs.)	Annual expenditure (in Rs.)
1	SSE/COS	9300-34800-4600	25	104888.00	2622200.00	31466400.00
2	JE/OS/Hindi translator/DMS/Sr. Tech.	9300-34800-4200	89	82768.00	7366352.00	88396224.00
3	Sr.Clerk/Technician-I	5200-20200-2800	127	68040.00	8709120.00	103692960.00
4	Steno/Technician-II/Canteen manager	5200-20200-2400	17	59696.00	1014832	12177984.00
5	Clerk/Technician-III/Asstt. Cook	5200-20200-1900	32	46536.00	1489152.00	17869824.00
6	Helper-I/Office peon/shop messenger/B. Peon/Canteen 'D'	5200-20200+1800	78	41944.00	3271632.00	39259584.00
		Total	368			292862976.00

The above table reveals that the annual expenditure being incurred on 368 sanctioned posts of staff working in Signal Workshop, GZB is Rs. 292862976.00

4.2.0 The annual expenditure as per 7th CPC on the proposed strength of staff for Signal Workshop, GZB is as under:-

S.N	Category	Grade Rs.	Monthly value Per post	Prop. Strgth	Monthly Expndtr. (in Rs.)	Annual Expndtr (in Rs.)
1	SSE/COS	9300-34800-4600	104888	25	2622200	31466400
2	JE/OS/DMS/ Hindi translator/Sr. Tech.	9300-34800-4200	82768	74	6124832	73497984
3	Sr.Clerk/ Technician-I	5200-20200-2800	68040	82	5579280	66951360
4	Steno/ Technician-II	5200-20200-2400	59696	17	1014832	12177984
5	Technician-III/Asstt. Cook	5200-20200-1900	46536	29	1349544	16194528
6	Helper-I/Office peon /B.Peon / Canteen 'D'	5200-20200-1800	41944	43	1803592	21643104
		Total		270		221931360

The above table reveals that the annual expenditure on the proposed 270 posts for Signal Workshop, GZB will be reduced to Rs. 221931360.00 instead of Rs. 292862976.00 and the net recurring saving will be Rs. 70931616.00

4.3.0 ANTICIPATED RECURRING SAVING

SN	Category	Grade Rs.	Refer Recom. No.	No. of posts identified as surplus	Monthly value per post	Annual expenditure (in Rs.)
1	Sr.Tech. Foundry/ Pattern maker/ mason/Welder/ Turner Machinist	9300-34800 - 4200	2.5.16.	15	82768	14898240.00
2	Tech. Foundry/ Pattern maker/ Fitter Block/ Fitter interlocking /Black smith/Turner Machinist	5200-20200 - 2800		45	68040	36741600.00
3	Tech. Foundry /Pattern maker/ Fitter interlocking/ Turner Machinist	5200-20200 - 1900		03	46536	1675296.00
4	Helper-I	5200-20200 - 1800		35	41944	17616480.00
Total				98		70931616.00

No. of posts identified as surplus: -

Group 'C' = 63 posts

Group 'D' = 35 posts

Total = 98 posts

Anticipated recurring saving = Rs 709.31 lacs per annum

Capital saving=Nil

Total saving = Rs 709.31 lacs per annum

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WORK STUDY REPORT DETAILED CHART

Department: -Signal & Telecommunication

Name of study: - Review of staff working in Signal Workshop Ghaziabad.

Activity Centre: - Signal Workshop, Ghaziabad

SN	Sub activity	Brief description of workload	Actual staff deployed	Work Study recommendation	Representative workload
1	Signal workshop Ghaziabad of Northern Railway is functioning for production and repairing/overhauling of old equipments over N.Rly.	The lay out of signal workshop GZB is divided into different shops/ sections viz.block shop, foundry shop, erecting shop, machine ship, smithy shop, reverser shop, production section, Planning & Genl. /Admin. The workload for direct workers is assigned as 267 man hours per worker.	The entire strength of Gr.'C' and Gr.'D' staff working in Signal workshop GZB is as under SS=368 OR=226	The work study team recommended that 98 posts instead of 112 posts identified as surplus in different categories and grades have been proposed for surrender after discussion.	Overhauling/ manufacturing items of signal Deptt i.e. Bracket for pole lock, electrical signal reversor, junction box track lead, PCP pole, pole lock, wheel rope horizontal etc.

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LIST OF ANNEXURES

S.N.	Description	Annex. No.
1	Statement showing staff position of signal workshop GZB.	I
2	Letter of C.P.Cell to initiate the work study No. 16-CP/22/Ws/19-20 dt.08/08/19	II

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Annexure-I

The position of staff category wise working in Signal Workshop Ghaziabad.

S.N.	Category	S/S	O/R	Vacancy
1	SSE/JE	32	24	08
2	Clerical and allied staff	25	17	08
3	Sr. Technician	65	50	15
4	Technician-I	124	24	100
5	Technician-II	15	35	+20
6	Technician-III	27	27	-
7	Canteen staff	04	02	02
8	Helper-I & other Gr 'D' staff	76	47	29
	Total	368	226	142