WORK STUDY REPORT

ON

REVIEW OF STAFF WORKING IN

FLASH BUTT WELDING PLANT,

MEERUT CANTT

NORTHERN RAILWAY

2019-20

WORK STUDY TEAM

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DATE OF START : 13/01/2020
DATE OF COMPLETION : 24/01/2020

GUIDANCE BY
SH. ASHOK KUMAR AGARWAL
SWSO

NO.16-CP/35/WS/2019-20

CENTRAL PLANNING CELL
NORTHERN RAILWAY
BARODA HOUSE

EXECUTIVE SUMMARY

SDGM/NR has directed this work study to the Central Planning Cell, HQ Office, with a view to bring economy and to increase the productivity of the systems.

STAFF POSITION

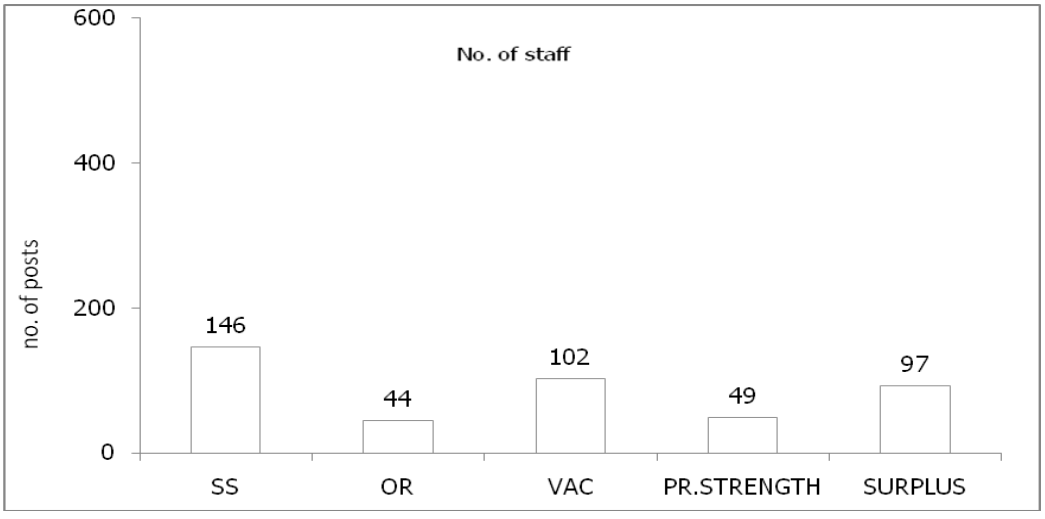
S.N.	Category	S/S	On roll Strength	Variation
1	SSE/JE	12	06	06
2	MCM	11	01	10
3	Technician	33	20	14
4	Ministerial staff	02	02	-
5	Helper/Peon/Chowkidar/ Safaiwala	88	16	72
	Total	146	44	102

STAFF IDENTIFIED FOR SURPLUS:-

Group 'C' = 27 Posts
Group 'D' = 70 posts
Total = 97 Posts

FINANCIAL IMPLICATIONS

Anticipated recurring saving **=** Rs. 626.05 Lacs per annum
Capital Saving = Nil
Total recurring saving = Rs. 626.05 Lacs per annum.



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SYNOPSIS

Indian Railways is the life-line of nation providing transportation facility over the length and breadth of country. It's vision is to provide efficient, affordable, customer-focused, environmentally sustainable integrated transportation solutions and to be the vehicle of inclusive growth, connecting regions, communities, ports and centers of industry, commerce, tourism and pilgrimage across the country.

Civil Engineering infrastructure is the largest static infrastructure of Indian Railways comprising of track, bridges, land, etc. Management of this huge infrastructure has to be done in accordance with the organization's vision. Civil engineering department of Indian Railways manages and maintains all these infrastructures. Further, it has key role in the area of infrastructure development, technological leap in various fields, high speed travel and development of world class stations.

Track fitness is the most important activity of any Railway. The maintenance of P.Way track over railways is a major term of expenditure. The increasing traffic density, increased axle load and sophisticated traveling deserves not only the high quality of C&W maintenance but also high quality fitness of track with a view to provide comfortable and speedy journey with safety.

Over Northern Railway Flash Butt Welding Plant, Meerut Cantt serves the purpose of track fitness by providing LWRs for high density of traffic and to meet with the increased axle load. Previously Flash Butt Welding Plant, Meerut Cantt was producing LWRs 260 meters (10 rail panel consisting of 9 joints having 26 meters each rail length or 20 rail panel of 19 joints having 13 meters of each rail length). But now a days, 26 meters rail length of 60 kg 90 UTS are being used for 260 meters LWR.

At present the work of production of LWRs of 260 meters panel of 60Kg/90UTS has been outsourced and 52 Kg/90UTS rail panels are not being produced due to negligible demand from the Divisions. So keeping in view of above, SDGM/NR directed Central Planning Cell HQ to conduct a review of Flash Butt Welding Plant, MUT with a view to optimize the manpower due to outsourcing of welding of 60 Kg UTS new/SH rails in 260 meter Rail panels. The team has considered local working conditions and held discussions at various levels before assessing the requirement of manpower.

Finally, the team is of the opinion that if the recommendations made in the report are accepted and implemented in toto, a net recurring saving to the tune of ₹ 626.05 lacs per annum is likely to be achieved after surrendering of 97 posts identified as surplus.

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SUMMARY OF RECOMMENDATIONS

<table>
<tr><th>Recom. No</th><th>Recommendations</th><th>Refer para no.</th><th>Accepting/ Implementing authority</th></tr>
<tr><td>1</td><td>It is proposed that 27 posts of Gr 'C' staff are identified as surplus and recommended for surrender from BWT/MUT.
<table>
<tr><td>Category</td><td>Pay scale</td><td>Surplus</td></tr>
<tr><td>SSE</td><td>9300-34800-4600</td><td>02</td></tr>
<tr><td>JE/ MCM</td><td>9300-34800-4200</td><td>10</td></tr>
<tr><td>Tech.-I</td><td>5200-20200-2800</td><td>15</td></tr>
<tr><td colspan="2">Total</td><td>27</td></tr>
</table></td><td>2.4.9</td><td>DY.CE/TP/NRHQ
Dy.CPO/HQ
XEN/BWP/MUT</td></tr>
<tr><td>2</td><td>It is proposed that 70 posts of Helper staff are identified as surplus and recommended for surrender from BWT/MUT.
Helper Gr. 5200-20200-1800 =70</td><td>2.4.9</td><td>--DO--</td></tr>
</table>

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ACKNOWLEDGEMENT

The team is thankful to Sh. Sunil Kumar Dy.CE/TP/HQ, Sh. Rakesh Sharma/AEN/BWP/MUT and other functionaries for giving their valuable guidance and cooperation in providing necessary data during the conduct of study.

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1.0 INTRODUCTION

Track fitness is a basic need of train operation. This can be achieved only by the intensive care of P.Way tracks. Engineering department plays a vital role for its exclusive maintenance for providing greater safety, punctuality and reliability of train operation. With the increase in volume of traffic and due to introduction of high speed trains, good and robust track has become a necessity. Track design plays an important role in high speed rail operation.

1.2 The modernization in the track technology gave us low maintenance and high speed ballast tracks. The use of the modernized tracks with optimum resiliency has reduced operational cost of the Railway system. With the introduction of modernization and technological up gradation, the Railways is running trains at the speed 160 kmph. It has become necessary to introduce the Pre stressed concrete sleeper track with LWR. To provide smooth, speedy, jerk free and journey to the rail users, the Railways developed LWR track on PSC sleepers by joining the rail of 13, 26, 65 in length to obtain a LWR of 260 meters. The LWR of 65 m length rail is being directly procured from SAIL/Bhilai, Durgapur, Rourkela etc. whereas the LWR 60Kg/90 UTS of 13 m and 26 m length is being produced in BWP/MUT through outsourcing.

1.3 In the past, to get the LWR 260 meter from 13 meter and 26 meters, the plant had to weld more joints in which more man power and time was consumed. But after the introduction of 26 meter and 65 meter rail panels, the Plant has saved manpower and time. The Flash Butt Welding Plant, MUT is not producing 52 LWRs of 52 Kg LWRs since June'2019 due to negligible demand from the divisions.

1.4 This work study has been conducted to review of Flash Butt Welding Plant Meerut with a view to effect improved and economical utilization of available resources to increase the manpower productivity and economy of the system due to modernization and system development.

1.5 TERMS OF REFERENCE:

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

i) Review of staff vis-à-vis existing workload.

ii) Suggest ways and means to improve the manpower productivity and economy of the system.

iii) To suggest ways and means to eliminate unproductive activities and unwanted expenditure.

1.6 METHODOLOGY ADOPTED

The following work study techniques were adopted to conduct the study.

i) Data collection and critical analysis to assess the actual trend of working/workload.

ii) Work measurement technique applied to compare the actual working of certain activities.

iii) Work sampling technique applied to assess peak and average workload of BWP/MUT per day.

iv) Held discussions at various levels.

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2.0.1 BRIEF DESCRIPTION, STAFF POSITION, WORKLOAD CRITICAL ANALYSIS, REQUIREMENT OF STAFF & RECOMMENDATIONS & GENERAL OBSERVATION.

2.1.0 Flash Butt Welding Plant at Meerut Cantt is the production unit of Northern Railway for producing 260 Meter Rail welded panels. This plant was commissioned in June, 1970 to provide necessary welded rail panes for track renewals. Scotland made APHF 30R Flash Butt Welding Machine was commissioned in June, 1970 and more than 10 lacs joints have been made by this machine. This was being used for welding of 52 kg serviceable Rails in BWP/MUT. At present BWP/MUT is not producing 52 KG rail panels due to less demand from the open line and execution of 60 kg rail panels has outsourced. Loose rails are being procured from SAIL/Bhilai in rail length of 10 meters, 11 meters, 12 meters 13 meters and 26 meters.

2.2.0 The system of working of renewal of track etc. is carried out by Engg. Deptt./P.Way wing which is entirely responsible for upkeep and fitness of tracks. The rail of different lengths are received from SAIL/Bhilai and panels are manufactured in BWP/MUT as per requirement over Northern Railway. Besides the welded rail panels, the loose rails of different lengths are also dispatched to the firms as per railway contracts for various purposes i.e. Special Expansion Joints(SEJ), scissor crossing, diamond crossing, glues joints etc.

The rails are being welded by the sophisticated welding machine which takes hardly 5 minutes to each joint. But pre and post activities of welded rail joint are the major factor involving excessive manpower mainly for placing of rail, their checking and cutting, metal cleaning, aligning, chipping, grinding, post straightening and final cleaning etc.

2.3.0 STAFF POSITION

During the conduct of study, the team collected the staff position from XEN Office, BWP/MUT which is depicted in annexure No. II in the work study report and the summarized position is tabulated as under:-

SN	Category	S/S	O/R	Vac.
1	SSE(P.Way)	06	04	02
2	SSE(Mech.)	01	01	-
3	SSE(Elect.)	01	-	01
4	JE(P.Way)	03	-	03
5	JE(Elect.)	01	01	-
6	COS	01	01	-
7	OS	01	01	-
8	MCM	11	01	10
9	Tech.-I	25	11	14
10	Tech.-II	04	08	-04
11	Tech.-III	04	-	04
12	Helper	85	13	72
13	Peon	01	01	-
14	Chowkidar	01	01	-
15	Safaiwala	01	01	-
Total		146	44	102

The above table reveals that the on roll position is 44 against the sanctioned strength of 146 and 102 posts are lying vacant.

2.4.0 WORKLOAD

The work study team collected the workload from SSE/Incharges from the section with is tabulated as under:-

S.No.	F.Y.	Annual Target of Joint (in no.)		Production of joints	
		52 Kg	60 Kg	52 Kg	60 Kg
1	2017-18	6000	15000	2741 (23 TKM)	13814 (94 TKM)
2	2018-19	6000	15000	661 (4.5 TKM)	16566 (170 TKM)
3	2019-20(up to Dec'19)	6000	15000	61 (0.5 TKM)	8746 (124 TKM)

2.4.1 **RAIL HANDLING**:-

The team collected the following details from the XEN Office, BWP/MUT for the last year F.Y. 2017-18,2018-19 & 2019-20 (upto Dec' 2019)

S.N.	Rail received			Rail dispatched loose		Rail dispatch welded panel	
	F.Y.	52 KG	60 KG	52 KG	60 KG	52 KG	60 KG
1	2017-18	174 TKM	207 TKM	133 TKM	166 TKM	21 TKM	108 TKM
2	2018-19	77 TKM	255 TKM	83 TKM	134 TKM	9 TKM	175 TKM
3	2019-20(up to Dec'19)	76.5 TKM	340 TKM	107 TKM	155 TKM	Nil	117 TKM

The above tables reveals as under:-

i) The 52 Kg rail lengths received are in decreased trend as compared to 2017-18 due to reduction in the production of 52Kg panels.

ii) The dispatch of 52 Kg loose rails is also in decreasing trend as compared to 2017-18.

iii) The dispatch of 52 Kg welded rail panels has decreased drastically.

2.5.0 **CRITICAL ANALYSIS**

2.5.1 Since manpower is the biggest component of the expenditure of Indian Railways, rightsizing of manpower to reduce unit costs is an effective way to increase efficiency of Indian Railway.

2.5.2 Vide contract agreement no. S-2/FBWP/TP/MUT/2019/1 dt. 20.08.2019, issued by Dy. CE/TP/NR/BH/NDLS the execution of welding of 60Kg/90 UTS new/SH rails in LWR of 260 meter panel has been outsourced at the cost of Rs. 7,46,83,620.00

2.5.3 The one of biggest advantage of outsourcing is cost savings. The lower cost of labour provided by outsourcing is very economical to the system.

2.5.4 It is clear that the execution activities for welding of 60Kg/90 UTS new/SH rails in 260 panels(LWR) has been outsourced by the administration and the departmental staff is engaged in supervision, mechanical maintenance, electrical maintenance, testing, loading/unloading of DMT and other activities.

2.5.5 The departmental machine APHF 30R which was commissioned in June'1970 for welding of 52 Kg rail panels is not functioning since June'2019. This machine was capable to make 100 joints per day of 13 meter rails. The work of joints of 52 Kg rail panel is not being carried out in the BWP/MUT due to less demand from the open line.

2.5.7 EXISTING DEPLOYMENT OF STAFF:

S.No.	Category	Staff deployed
1	SSE(P.Way)=04	Over all incharge & P-Way store=01
		USFD Testing =01
		Supervision on Joint machine=01
		Production=01
2	SSE/Mechanical=01	To supervise the mechanical maintenance
3	JE/Electrical=01	To supervise the electrical maintenance
4	COS/OS=02	For office work.
5	MCM/Tech.-I/ Tech.-II/ Tech.-III	Mechanical/Electrical Maintenance/Loading/unloading of DMT/Store/Gate security=20
6	Helper/Peon/Chowkidar/Safaiwala	Loading/unloading of DMT/Gate security/Office/Housekeeping=16

2.5.8 REQUIREMENT OF STAFF:

Vide contract agreement no. S-2/FBWP/TP/MUT/2019/1 dt. 20.08.2019, the execution of welding of 60Kg/90 UTS new/SH rails in LWR of 260 meter panel has been outsourced in the Flash Butt Welding Plant, MUT. The departmental staff is required for supervision of various activities, testing, Mechanical and Electrical maintenance, loading/unloading of DMT. The team observed these activities and provided the staff as below.

S.No.	Description of activities	Staff required
Supervisory staff		
1	Over all supervision and P-Way store	SSE=01
2	For USFD Testing	SSE=01
3	To supervise the work of Ms Khemchand's 60 Kg joint machine.	SSE=01
4	Production	SSE=01
5	Mechanical Maintenance	SSE=01
6	Electrical Maintenance	SSE=01
Total		06

Ministerial staff		
7	Overall Incharge and other correspondence work	COS=01
8	For ACME, Bills, promotions, passes/PTOs, tender and other miscellaneous work.	OS=01
Total		02
Technician & Helper staff for Mechanical maintenance		
9	For repair & maintenance work of 02T 46 hoists, 15T & 7.5T Goliath Crane, 04 DMT rakes, 320KV DG set, other fabrication work and Mechanical store	06
Technician & Helper staff for Electrical maintenance		
10	To manned hoist cabin, 02 cranes and other Electrical maintenance of plant	07
Technician & Helper staff of P-Way and other Gr. 'D' staff		
11	For gate security i.e (Morning=01, Evening=01, Night=02)	04
12	For escorting of 02 DMTs i.e. 2x3=06	06
13	Store(P-Way)	01
14	AEN/SSE Office	01
15	For house keeping	01
16	For loading/Unloading of BRN rake	10
	Sub total	36
	LR@12.5% on 33	4.50
	Total(Technician, helper& other Gr 'D' staff	*40.50 or say 41*

2.5.9 SUMMARY OF EXISTING, PROPOSED AND SURPLUS STAFF.

The summarized position of existing sanctioned strength, proposed staff and surplus staff is depicted as under:-

S.No.	Category	Sanctioned strength	Proposed staff	Surplus posts	Remarks
1	SSE	08	06	02	
2	JE	04	-	04	
3	COS/OS	02	02	-	
4	MCM	11	05	06	
5	Tech.-I	25	10	15	
6	Tech.-II	04	04	-	
7	Tech.-III	04	04	-	
8	Helper	85	15	70	
9	Peon	01	01	-	
10	Chowkidar	01	01	-	
11	Safaiwala	01	01	-	
	Total	146	49	97	

Recommendation No.1

It is proposed that 27 posts of Gr 'C' staff are identified as surplus and recommended for surrender from Flash Butt Welding Plant, MUT.

S.No.	Category	Grade Rs.	No. of post identified surplus
1	SSE	9300-34800-4600	02
2	JE	9300-34800-4200	04
3	MCM	9300-34800-4200	06
4	Tech.-I.	5200-20200-2800	15
Total			27

Recommendation No.2

It is proposed that 25 posts of Gr 'D' staff are identified as surplus and recommended for surrender from Concrete Sleeper Plant, Khalispur

S.No.	Category	Grade Rs.	No. of post identified surplus
1	Helper	5200-20200-1800	70
Total			70

2.6.1 GENERAL OBSERVATIONS

During the course of study, it was found that SAIL/BSP is manufacturing 65 meters rail length, which is being received by Railways in piece length of 13 m and 26m. The 26 meter rail length is further welded with 9 joints on 10 rails panels to produce 260 m length panel called LWR.

In view of the above, the team feels that if the number of joints will be minimized, the strength and stability of LWR will certainly improve and will be technically sound. This LWR is supplied by DMT to the Northern Railway Divisions. It would be better if the rails of standard length of 65 meters be procured from SAIL/BSP to minimize the joints and reduce cost of production.

3.0.0 FINANCIAL IMPLICATIONS

3.1.0 The annual expenditure as per 7th CPC on staff working in Flash Butt Welding Plant, MUT is as under:-

S.No.	Category	Grade Rs.	Monthly value per post	S/S	Monthly expenditure (In Rs.)	Annual expenditure (In Rs.)
1	SSE/COS	9300-34800-4600	109571	09	986139	11833668.00
2	JE/OS/ MCM	9300-34800-4200	86463	16	1383408	16600896.00
3	Tech.-I	5200-20200-2800	71078	25	1776950	21323400.00
4	Tech.-II	5200-20200-2400	62361	04	249444	2993328.00
5	Tech.-III	5200-20200-1900	48614	04	194456	2333472.00
6	Helper/Peon/ Chowkidar/ Safaiwala	5200-20200-1800	43817	88	3855896	46270752.00
Total				146		101355516.00

The above table reveals that the annual expenditure being incurred on 146 sanctioned posts of staff working in Flash Butt Welding Plant, MUT is Rs. 101355516.00

3.2.0 Proposed strength: The annual expenditure on the proposed strength of staff working in Flash Butt Welding Plant, MUT is as under:-

S.No.	Category	Grade Rs.	Monthly value per post	P/S	Monthly expenditure (In Rs.)	Annual expenditure (In Rs.)
1	SSE/COS	9300-34800-4600	109571	07	766997	9203964.00
2	OS/ MCM	9300-34800-4200	86463	06	518778	6225336.00
3	Tech.-I	5200-20200-2800	71078	10	710780	8529360.00
4	Tech.-II	5200-20200-2400	62361	04	249444	2993328.00
5	Tech.-III	5200-20200-1900	48614	04	194456	2333472.00
6	Helper/Peon/ Chowkidar/ Safaiwala	5200-20200-1800	43817	18	788706	9464472.00
Total				49	-	38749932.00

The above table reveals that total annual expenditure on the proposed 49 staff for Flash Butt Welding Plant, MUT will be reduced to ₹ 38749932.00 instead of ₹ 101355516.00 and net annual recurring saving will be ₹ 62605584.00

4.0.0 ANTICIPATED RECURRING SAVING

S N	Category	Grade ₹	Refer Recom. No.	No. of surplus posts	Monthly value Per post Rs.	Anticipated annual recurring saving ₹
1	SSE	9300-34800-4600	2.4.9	02	109571	2629704.00
2	JE/MCM.	9300-34800-4200	2.4.9	10	86463	10375560.00
3	Tech.-I	5200-20200-2800	2.4.9	15	71078	12794040.00
4	Helper	5200-20200-1800	2.2.4	70	43817	36806280.00
		Total		97		62605584.00

No. of posts identified as surplus: -

Group 'C' = 27 posts

Group 'D' = 70 posts

Total = 97 posts

Anticipated recurring saving = ₹ 626.05 lacs per annum

Capital saving=Nil

Total saving = ₹ 626.05 lacs per annum

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WORK STUDY REPORT DETAILED CHART

Department : - Engineering

Name of study : - Review of Flash Butt Welding Plant, Meerut Cantt.

Activity Centre : - Flash Butt Welding Plant, Meerut Cantt.

S N	Sub activity	Brief Description of workload	Actual staff deployed	Work Study recommendation	Representative workload
1	Flash Butt Welding Plant, MUT of Northern Railway is functioning for production of 260 meter Rail panels from 13m and 26 meter Rails received from SAIL/BSP.	At present BWP/MUT is producing 260 meter rail panels of 60kg through outsourcing. Rail panels of 52 kg are not being produced due to negligible demand from the Divisions. Besides this, plant is also supplying the rails of different measurement to the firms for preparation of SEJ, Diamond crossing, scissor crossing etc.	S/S= 146 O/R=44 Vac. =102	The work study has identified 97 posts in different categories and grades as surplus and recommended for surrender.	The execution work for manufacturing of LWR panels of 260 meter 60Kg/90 UTS is outsourced 52 Kg panels are not being produced by the departmental machine. The on roll staff is engaged in Supervision/Testing /mechanical maintenance/ Electrical Maintenance/ loading/unloading of DMT etc.

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LIST OF ANNEXURES

S.N.	Description	Annex. No.
1	Statement showing staff position of Flash Butt Welding Plant, MUT.	I
3	Letter of C.P.Cell to initiate the work study No. 16-CP/35/WS/19-20 dt.06/01/2020	II

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Annexure-I

Summarized position of staff working in the Flash Butt Welding Plant, MUT.

SN	Category	S/S	O/R	Vac.
1	SSE(P.Way)	06	04	02
2	SSE(Mech.)	01	01	-
3	SSE(Elect.)	01	-	01
4	JE(P.Way)	03	-	03
5	JE(Elect.)	01	01	-
6	COS	01	01	-
7	OS	01	01	-
8	MCM	11	01	10
9	Tech.-I	25	11	14
10	Tech.-II	04	08	-04
11	Tech.-III	04	-	04
12	Helper	85	13	72
13	Peon	01	01	-
14	Chowkidar	01	01	-
15	Safaiwala	01	01	-
Total		146	44	102

Salient features of the work study

Name of the Work study: Review of staff working in Flash Butt Welding Plant, Meerut Cantt**.**
No. 16-CP/35/WS/19-20

(A) The study was conducted to provide the actual requirement of staff in view of the existing workload in Flash Butt Welding Plant, Meerut Cantt. The execution work for production of 260 meters LWRs of 60 Kg/90 UTS is out sourced with cost of Rs 7,46,83,620 for 30000 joints for 22 years as facilities for production of 260 meter LWRs of 60 Kg/90 UTS is not available in the Plant. The production of 260 meters LWRs of 52 Kg/90 UTS is not being carried out departmentally since June'2019 due to negligible demand from the open line. The on roll staff is engaged in supervision, safety inspection, mechanical, electrical maintenance and loading/unloading of DMT in the plant.

(B)Staff proposed and identified surplus:-

sanctioned strength	146
On roll strength	44
Vacancy	102
Proposed strength	49
Identified surplus	97

(C) Net recurring saving.

If the recommendations made in the report are accepted and implemented in toto, a net recurring saving to the tune of ₹ 626.05 lacs per annum will be achieved after surrendering of 97 posts identified as surplus and will also economize the system.