NORTHEAST FRONTIER RAILWAY

WORK STUDY REPORT

ON

REVIEW OF STAFF STRENGTH OF CARRIAGE & WAGON PAINTING SHOP

UNDER CHIEF WORKSHOP MANAGER OF NEW BONGAIGAON WORKSHOP N.F.RAILWAY

GUIDED BY:

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CO-ORDINATING OFFICERS & PERSONNEL

BRANCH OFFICER : SHRI D.S.KUNWAR CWM/NBQ'S .

ASSOCIATED OFFICER: SHRI R.P.SINGH. W.M./DEMU/NBQ

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STUDY NO. WSNF/ 57/2018 -19

CASE NO. Z/375/10/57/2018 -19

CENTRAL PLANNING ORGANISATION

N. F. RAILWAY/MALIGAON

GUWAHATI - 781011.

EXECUTIVE SUMMARY

SUBJECT : Review of Staff Strength of C & W Painting Shop under CWM/NBQ's of N.F. Railway

STUDY NO	**:**	**WSNF/57/2018-19**
CASE NO	**:**	**Z/375/10/57/2018-19**
AUTHORITY	**:**	**SDGM/N.F.R.**
CONCERN DIV.	**:**	**CWE/MLG**
DEPARTMENT	**:**	**MECHANICAL.**

DATE OF COMMENCEMENT : **12/09/2018**

DATE OF COMPLETION : **05/11/2018**

DATE OF SUBMISSION : **06/11/2018**

TERMS OF REFERENCE:

Approved annual Programme of Work Study.

NOS. OF RECOMMENDATION: 1(One)

In this work study 36 nos. of vacant posts of different categories (Tech I(Painter) - 26 , Tech III (Painter) - 6 & Helper-4) has identified as surplus and proposed for surrender.

PROJECTED MAN POWER: **36 Posts.**

PROJECTED FINANCIAL SAVING: **Rs 169.31 Lakhs per annum**.

MONTH AND YEAR OF CIRCULATION: **NOV/2018**

I N D E X

CHAPTER - I

1.0 INTRODUCTION:

This is the second Railway Workshop established at New Bongaigaon in Bongaigaon district in 1965 covering an area of about 80 hectares . This project at New Bongaigaon consist of 3 amalgamated factories and was completed at a cost of about Rs. 10.52 crores. It has a periodical overhauling capacity of 1,500 units of passengers coaches and 3,000 units of goods wagons per annum. It also undertakes manufacturing work for various Divisions of North-East Frontier Railways.

VITAL STATISTICS

1. Sanctioned Strength 3133
2. On Roll Strength 2717
3. No. of Officers 15
4. No. of Supervisors 282
5. Total Area 846700 sq.m.
6. Covered Area 45858 sq.m.
7. Township Area 16 sq.m.
8. Power Consumption 569504 KWH
9. Water Consumption 13680 KL/month
47880 KL/month (raw water
10. Annual Budget Rs.85 Cr.

MAIN ACTIVITIES

S/N. Activities Outturn 09-10 & Target 10-11
1. BG AC Coach POH 85 & 84
2. BG NAC Coach POH 482 & 432
3. BG Wagon POH 1217 & 1200
4. MG Coach POH – 60

BRIEF HISTORY OF NEW BONGAIGAON WORKSHOP

The Carriage and Wagon Repair Workshop, New Bongaigaon was conceived in the year 1965, soon after the formation of Northeast Frontier Railway. It is situated in an eco-friendly environment at about 2 km. to the west of New Bongaigaon Railway station. The main civil township of Bongaigaon is about 4 km to the East of Workshop.

The project work for undertaking repairs to carriage & wagon stock of this workshop was sanctioned in 1961-62, at an estimated cost of Rs.6.85 Crores. The work was completed and commissioned in April 1965.

The initial capacity of the workshop was for POH of 10 four wheeler unit (FWU) of MG coaches & 50 FWU of MG wagons per month, with a staff strength of about 600. The capacity was subsequently augmented in phases. The workshop was remodeled during 1983-84 for undertaking POH and corrosion repair of BG coaches. Further, “Modernisation of workshop” was sanctioned by Railway Board in 2004-05 at a cost of Rs.17.87 crores, towards augmentation of capacity and upgradation of facility. This augmented the capacity for POH of non-AC and AC BG coaches from 31 to 54 VUs and that for BG wagons from nil to 20 VUs per month.

In view of traffic requirement on NF Railway, POH of MG wagon was gradually phased out and the released capacity was diverted to POH of BG wagon.
Likewise, POH of MG coach was also phased out and released capacity was
20
diverted to POH of BG coaches. This rationalization has improved the working and productivity of the workshop.
The workshop has been delivering an output/outturn of about 50 BG coaches and 100 BG wagons per month. In addition to that, 33 BG coaches have been taken for IOH per month.
This workshop has the distinction of being one of the Indian Railway workshopswhich supplies BG, MG and NG wheels of all stock to divisions.

1.1 RATIONALE FOR CONDUCTING THIS STUDY:

- Man power is the most costly and precious resource over Indian Railway and right sizing is the need of the hour.
- Focusing attention on core activities by reducing/elimination of non- core activities.
- Improving the efficiency (output/input) either by improving the output (numerator) or by decreasing the input (denominator).
- Up-gradation/introduction of automation/innovations
- Outsourcing of noncore activity.
- Availability of better process/technology.
- Reducing/removing redundancy in work.

1.2 **AUTHORITY:**

SDGM of N.F.Railway.

1.3 **TERMS OF REFERENCE:**

Approved Annual Work Study Programme

1.4 **METHODOLOGY:**

a) Collection of data relating to workload.
b) Discussion with WM/NBQ's & Subordinates and obtaining their views.
c) Assess the workload for Workshop /field activity.
d) Assess the workload for CPS units.
e) Assess the staff requirements for the above workload.

1.5 **ACKNOWLEDGEMENT:**

Work study team is grateful to Sri D.S.Kunwar, CWM/NBQ's, Sri R.P.Singh WM/DEMU/NBQ for their kind guidance and co-operation for conducting this study. The work study team is thankful to Sri U.Biswas SSE/RS/NBQ's for his assistance rendered to the work study team for conducting the subject study.

1.6. CWM/NBQ's has nominated Sri R.P.Singh WM/DEMU/NBQ as associated officer and Sri U. Biswas SSE/RS/NBQ's as associated supervisor for the said study (placed as Annex-I)

CHAPTER-II

1.0 GENERAL

After the coach body is fully repaired and the flooring work completed, it should be swept and cleaned of all dust, shavings, etc., before the coach is placed in the Paint shop for painting and polishing. The condition of the paint on the inside and outside surfaces should be examined to decide whether the old paint should be removed to the bare metal. Usually, extensive corrosion repair work necessitates removal of old paint to bare metal and complete repainting of the coach. If the condition of the paint so warrants or at every 5th POH of a coach, the paint should be completely removed to the bare metal and the coach repainted as per paint schedule `A'. If the general condition of the paint is good, follow paint schedule `C'. These paint schedules cover the exterior painting of coaches with synthetic enamel paint system. RDSO Sketch No :CSC - 1723 gives the exterior colour scheme of the coaches.

2.0 Object of Painting in Coaches:

1. To prevent the surface from atmosphere i.e. Corrosion.

2. To prevent the surface from Wear-Tear.

3. To prevent surface from Harmful Insects

4. To reflect Heat & Light.

5. To produce Aesthetics look (formal nice to look at) of surface.

6. To produce New Life.

3.0 Composition of paint:

There are following ingredients of Paint

- Pigment
- Binder
- Solvent
- Additive

Pigment:

Pigments contribute colour in the paint.

Pigments give the paint special properties.

Pigments can be classified as natural and synthetic types.

Pigment effect cost of the paint.

Binder:

The binder, or resin, is the actual film forming component of paint.

Binders can be categorized according to drying or curing mechanism

Solvent:

The main purpose of the Solvent is to adjust the viscosity (control flow) & affect the stability of the paint.

It is volatile and does not become part of the paint film.

The carrier for the non volatile components.

MTO or Xylene is the main solvent for Industrial paints.

Water is the main solvent for water-based paints.

Additives:

Additives are usually added in small amounts to Provide a significant effect on the product. Example: To modify surface tension, improve flow properties, improve the finished appearance, improve pigment stability, control foaming, etc

4.0 Type of Paints on the basis of application

• Automotive

• Decorative

• Industrial

There are following two type of schedules are followed in Indian Railway for Painting in Coaches during POH

1. 'A' Schedule

2. 'C' Schedule

A SCHEDULE (NINE DAYS)

1 st Day : Remove old paint

2 nd Day : One coat of Red Oxide Zinc chromate primer.

3 rd Day : One coat of brush filler followed by spot putty to fill up holes/dents where required.

4 th Day : Filler second coat (including spot putty where necessary)

5 th Day : Rub down with silicon carbide water proof paper Gr. 120 & 220

6 thDay : One coat of under coat

7 th Day : Flat with silicon Carbide water proof Paper Gr. 320. One coat of enamel finishing.

8 th Day : Flat with silicon Carbide water proof Paper Gr. 400 and apply a second coat of synthetic enamel finishing.

9 th Day : Lettering with Golden yellow and miscellaneous work (cleaning window glasses etc.)

FIVE DAY SCHEDULE

1 st Day : Cleaning with soap solution or any other cleaning solution and wash thoroughly with water touch up damaged portion with primer recommended under A schedule.

2 nd Day : Spot putty if necessary and one coat of under coat.

3 rd Day : Flat with silicon carbide water proof paper Gr. 120 & 220, and apply one coat of finishing enamel.

4 th Day : Flat with silicon carbide water proof Gr. 400 and apply a second coat of synthetic enamel finishing.

5 th Day : Lettering with golden yellow and miscellaneous work.

SCHEDULE-"A"

1. The entire surface should be applied with a suitable paint remover and the old paint scraped off. Thereafter, the coach surface shall be swabbed with petroleum hydrocarbon solvent to IS:1745 to remove all traces of paint remover.

2. After the surface dries up completely, it should be sand papered to make it slightly rough and a coat of red oxide zinc chromate primer to IS 2074-92 to a DFT of 25 microns minimum should be applied by spray/brush immediately. Where facilities exist, the entire coach body should be sand blasted and the primer coat of red oxide zinc chromate should be applied by spray/brush immediately thereafter.

3. After allowing adequate drying time for primer, the entire coach should be applied with the first coat of brushing filler to IS 110-83 by spray/brush to a DFT of 30 micron minimum.

4. After hard drying of filler, apply the first coat of knifing stopper putty to IS:5083-88 followed by spot putty application and wet rubbing.

5. After ensuring drying of water, apply necessary putty to get a uniform surface followed by wet rubbing.

6. After drying of water, apply second coat of filler to IS:110-83 to a DFT of 30 microns minimum.

7. The dry surface should be wet rubbed down with bone cuttle and silicon carbide water proof paper grade 120 and 220. It should then be allowed to dry.

8. After ensuring that there is no trace of water on the surface, a coat of under-coating to IS 8662-93 should be sprayed or applied by brush to a DFT of 25 microns minimum.

9. The entire surface should again be rubbed down smooth with silicon carbide water proof paper grade 320 and after drying, a coat of enamel finishing to IS 8662-93 should be applied to a DFT of 20 microns minimum.

10. After the first coat of finish enamel has dried completely, it should again be flattened with silicon carbide water proof paper grade 400 and apply a second coat of synthetic finish enamel to IS 8662-93 to a DFT of 20 microns minimum.

11. The door handles, if not chrome plated, should be painted with golden yellow to IS 8662-93. The foot steps, roof, etc., should be painted as per prescribed colour scheme.

12. Standard lettering, as specified, should be done with golden yellow to IS 8662-93. Similarly, all standard schedule charts, signs, etc., should be stenciled/painted as prescribed

13. Finally, the window glasses, etc., should be cleaned well and all paint marks removed. Any damage to the paint should be touched up before the coach is turned out after POH.

PAINT SCHEDULE `B'

1. The portions where paint has flaked or is damaged, should be scraped off of all the loose and damaged paint. The coach should then be washed thoroughly with soap and water and allowed to dry. Then a coat of red oxide zinc chromate primer to IS 2074-92 should be applied by brush at the places where metal surface is visible.
2. After the primer dries up completely, it should be puttied and a coat of under-coating to IS 8662-93 should be applied at these portions.
3. The complete coach shall thereafter be painted in the manner described in paragraphs 1202g to 1202k above.

STAFF POSITION AT CARRIAGE & WAGON PAINTING SHOP UNDER CWM/NBQ'S

SN	**Category**	**Pay Band**	**G/Pay**	**Sanc**	**On Roll**	**Vac**	**Remarks**
1	SSE/CPS	9300-34800/-	4600/-	9	7	2	
2	JE	9300-34800/-	4200/-	1	0	1	
3	Sr Tech (Painter)	9300-34800/-	4200/-	45	44	1	
4	Tech I(Painter)	5200-20200/-	2800/-	89	53	36	
5	Tech II(Painter)	5200-20200/-	2400/-	14	24	-10	
6	Tech III(Painter)	5200-20200/-	1900/-	27	20	7	
7	Helper	5200-20200/-	1900/-	9	1	8	
				194	149	45	

CHAPTER-III

3.0 CRITICAL ANALYSIS OF EXISTING WORKLOAD AND STAFF REQUIREMENTS:

The activities of the Staff under C &W Painting Shop /NBQ already discussed in CH-II. In reference of above, the requirement/ non-requirement of following category of staff is justified as below-

The present sanctioned strength of staff was calculated on the basis of cleaning & painting works **manually** , but now-a-days all such work is conducted by Modern machinery- such as **spray Painting Machine and High Pressure Jet Machine.** Thus, **W**ork load of painter of all categories are reduced due to up-gradation of machinery and as well as utilisation of Modern machinery.

However, the study team has identified the following vacant posts as surplus , considering provision of promotional avenue of Painter Gr-II (sanctioned-14 + excess10 =Total 24 Posts) to Painter Gr-I

(Total on Roll -53 Posts + 10 vacant posts = Total 63 posts) and proportionate reduction of Helper as tabulated below-

STAFF POSITION AT CARRIAGE PAINTING SHOP UNDER CWM/NBQ'S

SN	**Category**	**Pay Band**	**G/Pay**	**Sanc. Stregth**	**On Roll**	**Vac**	**Surplus**
1	SSE/CPS	9300-34800/-	4600/-	9	7	2	
2	JE	9300-34800/-	4200/-	1	0	1	
3	Sr Tech (Painter)	9300-34800/-	4200/-	45	44	1	
4	Tech I(Painter)	5200-20200/-	2800/-	89	53	36	26
5	Tech II(Painter)	5200-20200/-	2400/-	14	24	-10	
6	Tech III(Painter)	5200-20200/-	1900/-	27	20	7	6 (initial Grade)
7	Helper	5200-20200/-	1900/-	9	1	8	4
		TOTAL-		**194**	**149**	**45**	**36**

2. K/Helper

The above trade is identified as surplus on the basis of redundancy of workload due to up-gradation of Technology and requirement and on the ratio of no. of Gr.C category identified as surplus.

CHAPTER-IV

RECOMMENDATION

In this work study 36 nos. of vacant posts of different categories [Tech- I(Painter) - 26 , Tech- III (Painter) -6 & Helper-4) has identified as surplus and proposed for surrender, which may be deleted from the working BOS.

CHAPTER- V
FINANCIAL IMPLICATION

SN	Category	Pay Band	G/Pay	Basic Pay in Rs	Revised Pay as per 7th CPC	Salary per annum in INR	Nos. of posts proposed for surrender	Total amount in Rs
1	Tech- I(Painter)	5200-20200/-	2800/-	15,500	39,835	4,78,020	26	1,24,28,520
2	Tech -III(Painter)	5200-20200/-	1900/-	14,600	37,522	4,50,264	6	27,01,584
3	Helper	5200-20200/-	1900/-	14,600	37,522	4,50,264	4	18,01,056
						TOTAL	**36**	**1,69,31,160**

5.1. PROJECTED FINANCIAL SAVINGS PER ANNUM

Rs.169.31 Lakhs (say) per annum

CHAPTER - VI

6.0. READY RECKONER

Pay Band	GP	Mean pay	Basic Pay in Rs	M.F. of 7th CPC(2.57) & revised Pay	Salary per annum in INR
9300-34800	4600	22050	26,650	68,490.5	8,21,886
9300-34800	4200	22050	26,250	67,462.5	8,09,550
5200-20200	2800	12700	15,500	39,835	4,78,020
5200-20200	2400	12700	15,100	38,807	4,65,684
5200-20200	2000	12700	14,700	37,779	4,53,348
5200-20200	1900	12700	14,600	37,522	4,50,264
5200-20200	1800	12700	14,500	37,265	4,47,180