

दक्षिण पूर्व मध्य रेलवे
SOUTH EAST CENTRAL RAILWAY

कार्यालय
वरिष्ठ उपमहाप्रबंधक, बिलासपुर



Office of the
Sr. Dy. General Manager, Bilaspur.
Tel.No. 64006(Rly), 07752-414229

पत्र सं. No. WS/MIBW/NGP/

दिनांक Dated: 23.06.2021

The CWM,
Motibagh Workshop,
S.E.C. Railway,
Nagpur.

Sub: Work study on "Review of existing cadre strength vis-a-vis workload of Motibagh Workshop of Mechanical Deptt. in Nagpur Division."

Ref.: (i) This office letter No. WS/ MIBW/NGP/1013, dated 18.12.2020.
(ii) CWM/MIBW/NGP' office letter No. MIBW/2021/19/1/WS 684 dated 27.02.2021/ 01.03.2021.

(iii) This office letter No. WS/ MIBW/NGP/248/1, dated 25.03.2021.

The work study of Motibagh Workshop of Mechanical Deptt. (excluding Ministerial staff) in Nagpur Division has been conducted to review the existing cadre strength vis-a-vis work load in view of Railway Board's instructions, Yardstick/Manhours for POH/ROH, outsourcing activities (existing & proposed), Multi-skilling, Need based requirement and optimum utilisation of manpower. Draft study report vide letter under reference was sent to CWM/MIBW/NGP to furnish the remarks. In response to this, remarks on the draft report from Dy. CME/MIB/WS has been received and counter reply has been sent to Dy. CME/MIB/WS vide letter under reference. Further, no reply pertaining to above Study report has been received so far. Hence, the draft study report is finalised.

The work study report contains recommendation for surrender of 20 surplus vacant posts of Technician in Phase-I and 28 posts of Technician after outsourcing of proposed activities in phase-II from Motibagh Workshop/NGP.

Therefore in view of above, it is requested that suitable instructions may be given to concerned officers for implementation of the work Study report and copy of surrender memorandum may be sent to this office so that progress of implementation of work study can be advised to Railway Board accordingly.

This has the approval of SDGM.


(S. N. Pattnaik) 23/6/2021

Asst. Work Study Officer
For Sr. Deputy General Manager

Encl: 1 work study report.

Copy along with one copy of work study report is forwarded to:-

- 1) The Executive Director, E&R (ME), Railway Board for kind information.
- 2) Secretary/SECR for kind information of GM.
- 3) PCME/SECR/BSP for kind information and necessary action please.



SOUTH EAST CENTRAL RAILWAY

WORK STUDY CELL

Work study report on

REVIEW OF EXISTING CADRE STRENGTH VIS-À-VIS WORK LOAD
OF

MOTIBAGH WORKSHOP of Mechanical Deptt.
in
NAGPUR DIVISION



OVER S.E.C. RAILWAY

WORK STUDY CELL
S. E C. RAILWAY
BILASPUR

STUDY NO.
SECR/01/2021-22

SOUTH EAST CENTRAL RAILWAY

WORK STUDY REPORT

ON

Review of Existing Cadre strength vis-à-vis Work Load of MOTIBAGH WORKSHOP of Mechanical Deptt. in Nagpur Division

OVER S.E.C. RAILWAY

GUIDED BY

**SRI AMIT KUMAR SINGH
SR. DY. GENERAL MANAGER**

LED BY

**SRI S. N. PATTNAIK
ASST. WORK STUDY OFFICER**

CONDUCTED BY

**SRI S. K. MISHRA
SRI A. HALDAR
WORK STUDY INSPECTOR**

**SRI V. K. SINHA
SRI A. C. BEHERA
CH. WORK STUDY INSPECTOR**

**WORK STUDY CELL
S. E. C. RAILWAY, BILASPUR**

**STUDY No.
SEC/01/2021-22**

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SUMMARY OF RECOMMENDATIONS & SUGGESTIONS

S#	Description	Para ref.
	<u>RECOMMENDATIONS:-</u>	
1.	Considering the existing workload and as per details given in Para 3.2 to 3.3, the total requirement of staff for Motibagh Workshop comes to 471 against a sanction of 491. Thus, 20 vacant posts of Technician are found surplus and should be surrendered in Phase-I from Motibagh Workshop/NGP of Mechanical Department in Nagpur Division.	3.7.1
2.	To bring savings in manpower costs and improving efficiency, it is recommended that some non-core activities of Motibagh Workshop like Carpentry, Trimming, and Painting & Welding activity should be outsourced. Therefore after outsourcing of Carpentry, Trimming, Painting & Welding activities of Trimming shop, Paint Shop & Welding shop, 28 posts of Technician deployed in these shops would be surplus and should be surrendered in Phase-II from Motibagh Workshop. The live men (staff) should be redeployed at other units as per requirement.	3.7.2
	<u>SUGGESTIONS:</u>	
1.	It is suggested that some Artisan staff of Millwright Shop may be imparted proper training to attend CNC (Computerized Numerical Control) machines and other machines properly for proper utilization of M&P.	3.7.3
2.	Artisan staff should follow safety rules during working and proper counseling should be provided to Artisan/Helper from time to time in this connection.	3.7.4

CHAPTER-I

INTRODUCTION

1.0 The study of Motibagh Workshop/Nagpur (Excluding Ministerial staff) of Mechanical Department in Nagpur Division has been undertaken to review the existing cadre strength vis-à-vis workload in view of Board's instructions, Yardstick/Manhours for POH/IOH, outsourcing activities, Multi-skilling concept and optimum utilization of manpower.

1.1 MOTIBAGH WORKSHOP (MECHANICAL DEPARTMENT)/NAGPUR :

The Motibagh Workshop is headed by Chief Workshop Manager assisted by one Asst. Works Manager, one Asstt. Personnel Officer and one AFA. This workshop performs mainly overhauling of BG Coach, BG Bogie, Wheel set, Tower Wagons, Corrosion repairs of BG Coaches, manufacturing of Bio Digester Tank and production & supply of Inoculums.

1.2 BRIEF HISTORY OF MIB WORKSHOP/NGP :

This workshop was originally set up by the Nagpur Chhattisgarh Railway in 1879 to service its metre gauge stock. It was later taken over by the Bengal Nagpur Railway in 1887. When conversion of the Nagpur - Rajnandgaon MG line to BG was completed in 1888, the workshop was altered to cater to BG stock requirements in the area. From 1887 to 1908, Motibagh Workshop was the prime workshop facility of the Bengal Nagpur Railway.

The Nagpur Chhattisgarh Railway company would get locomotive kits at Mumbai port and then ship them to Motibagh via the GIPR route from Bombay to Nagpur. These locomotives would then be assembled and commissioned at the Motibagh Workshop. BNR used a similar system in the initial years of its formation. After the Nagpur - Asansol BG line was completed, the locomotive kits would be brought in to the Damodar rail head by river. At a makeshift workshop there, the shell was assembled and wheeled so that it could be moved on its own wheels. This skeleton would then be moved to Motibagh via the BNR route for full assembly and commissioning. This practice continued till the extension of the Nagpur - Asansol line to Howrah and completion of facilities at Shalimar terminus for unloading ships. When the NG Satpura lines were built, Motibagh Workshop regauged two BG locomotives to NG for working on the Satpura lines.

The importance of Motibagh diminished soon after establishment of the Kharagpur Workshop in 1904 as BNR decided to shift all BG work to Kharagpur and Motibagh continued to handle only the NG locomotives and stock. However, Motibagh is known to have done some BG work intermittently since then. The workshop still has BG-NG dual gauge track leading inside.

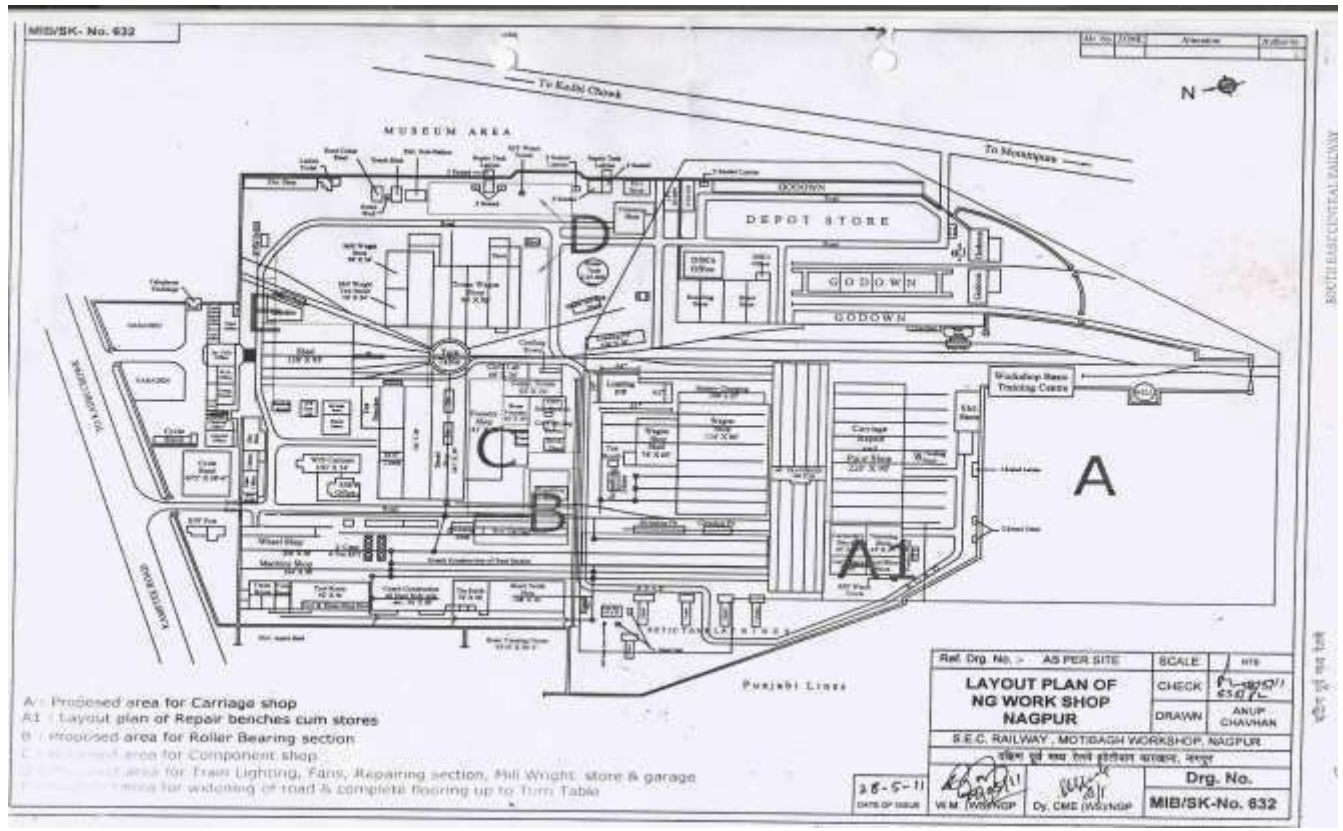
Narrow Gauge workshop, Nagpur is more than a century old workshop, established in the year 1879 to cater the maintenance needs to Rolling stock of the then Nagpur Chhattisgarh State Railway, being popularly known as BNR during the year 1887 and subsequently came to be known as South Eastern Railway since 1955. From April 2003, the Workshop has come under S.E.C. Railway after trifurcation of erstwhile S. E. Railway.

At present, Motibagh Workshop mainly overhauls BG Coach/Bogie, Tower wagon pertaining South East Central Railway and up to some extent of Central Railway. However, work load related to NG rolling stock has been ended up due to closure of NG Section and therefore MIB Workshop playing vital role in overhauling of BG coach and manufacturing of Bio-Digester Tank along with generation of Bacteria for Eco-Toilets in Coaches.

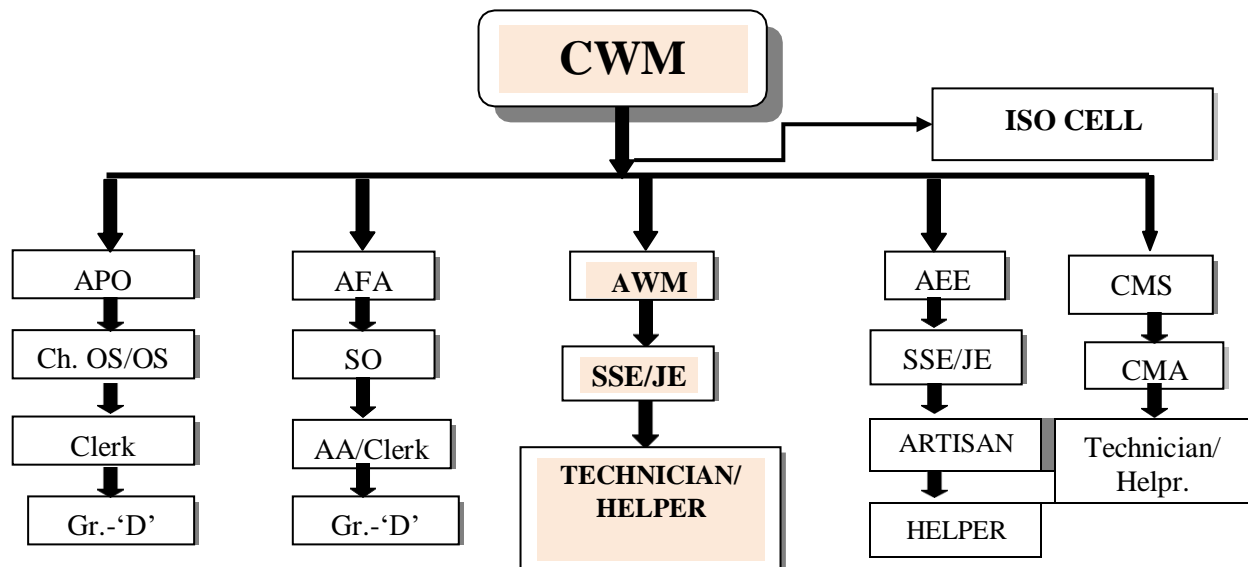
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1.3 Layout of MIB Work Shop:

Geographically Motibagh Workshop/Nagpur is situated on the South side of the National High Way No.7, Kamptee Road, nearly 2.5 KMs from Nagpur Railway station, extending over an area of 67580 Sq. Mtr. with an covered area of 15438 Sq. Mtr. and approachable by rail and road links. Motibagh Workshop comprises of various Shops/sections to compliance the required tasks. The complete Lay-out of Motibagh Workshop is as below:



1.4 ORGANIZATIONAL SET UP of MIB Workshop:



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1.5 List of Shops/Sections existing in Motibagh Workshop (MIBW)/NGP:

Motibagh workshop has the following shops/sections:

S#	Shop No.	Shop/Section Name	S#	Shop No.	Shop/Section Name
1.	01	Foundry Shop (Closed)	11.	31	Bogie Shop
2.	04	Smithy Shop	12.	32-N	Tower Wagon Shop
3.	06	Machine Shop	13.	33	Welding Shop
4.	08	Tool Room	14.	50	Bio Tank Shop
5.	10	Millwright Shop	15.	-	Bacteria Generation Plant
6.	18	Yard Shop & Material Movement	16.	-	PCO (Planning)
7.	19	Inspection section	17.	-	PCO (Progress)
8.	20	Wheel Shop & Roller Bearing	18.	-	Tender Section
9.	40	Coach Body Shop	19.	-	Technical & M&P Section
10.	-	Paint Shop	20.	-	Safety Section
11.	-	Trimming Shop	21.	-	CMT Lab

1.6 Activities of MIB Workshop:

The activities of MIB Workshop are as under:

- I. IOH of BG Bogie
- II. POH of BG Coach
- III. POH of Tower Wagon
- IV. Overhauling of LHB coach
- V. Manufacturing of Bio-digester Tank for Coach toilet
- VI. Formation & supply of Inoculums
- VII. Overhauling of wheel sets & Roller Bearing
- VIII. Placement & movement of coaches in yard
- IX. Welding work, smithy work, Paint work.
- X. Supply of materials from stores to shops
- XI. Maintenance of Machinery & Plants in shops.
- XII. Loading & Unloading of material.

1.7 Schedule of POH/IOH of Coaching & Other Vehicle:

As per Maintenance Manual for BG Coaches of ICF Design, periodic overhauling of coaches (POH) should be done at specified periodical intervals as under:

S#	Type of Coaching & Other Vehicle	Periodicity of POH
1	BG Coach:	
	(i) Passenger coaching Vehicles on Mail and Express rakes	12 months
	(ii) Passenger coaching Vehicles on other than Mail and Express rakes	18 months
	(iii) Other Coaching vehicles	24 months
2	Tower Wagon	04 years

1.8 Methodology:

The following methodology has been adopted for conducting the study:

- I.** Collection of relevant data,
- II.** Examination of data & records
- III.** Interaction with Supervisors
- IV.** Critical Analysis of collected data and assessment of Need based requirement of man power.
- V.** Applying Yardstick/Man-hours for POH/IOH.
- VI.** Applying Outsourcing.
- VII.** Multi-skilling concept.

CHAPTER-II

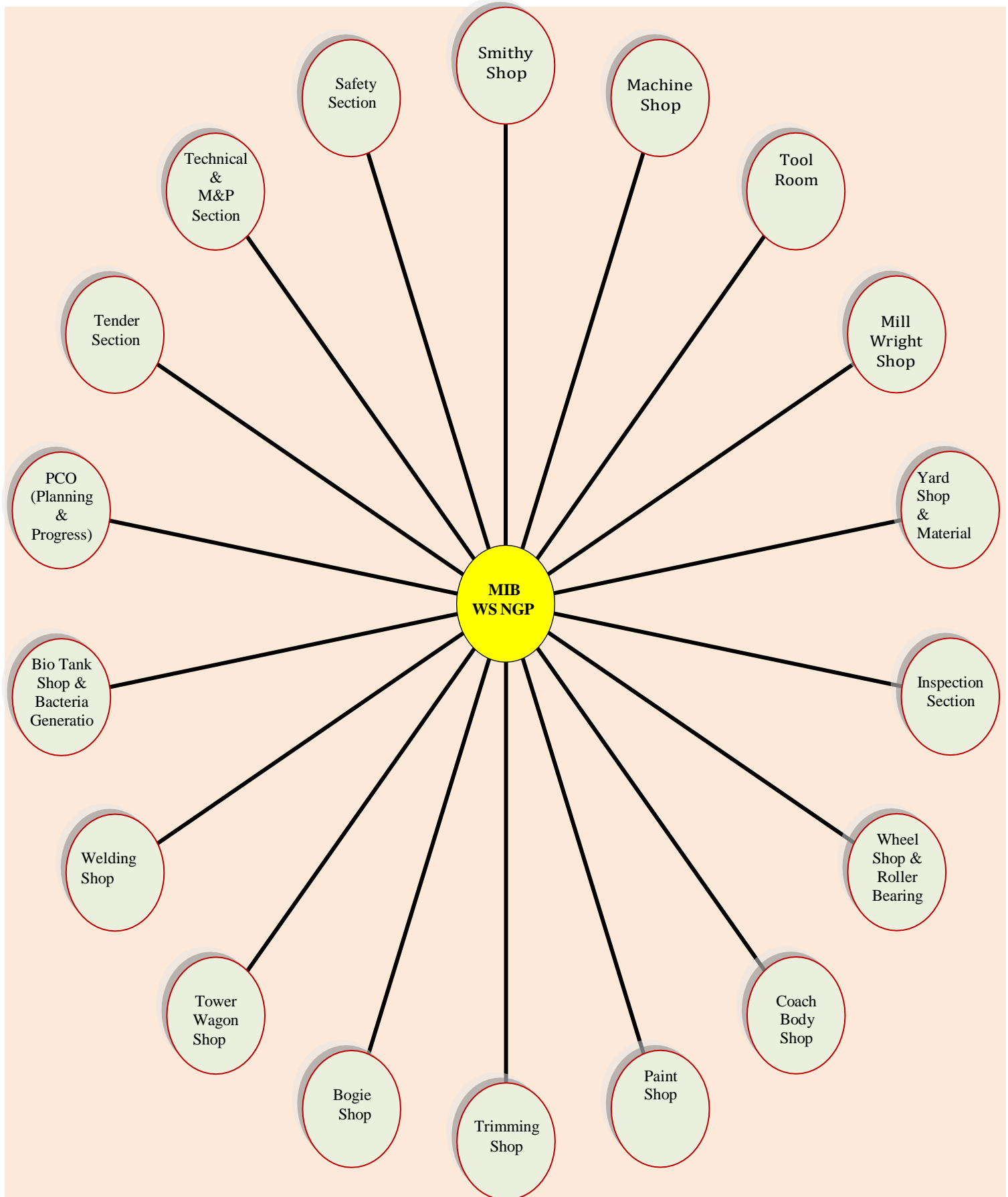
2.0 OBSERVATIONS :

2.1 Cadre Position: The cadre strength of Motibagh Workshop/NGP (Excluding Ministerial & Canteen staff) as per data collected (As on 01.11.2020) is as under:

S#	Designation	P. B.	G.P./Level	Sanc.	Actual	Vac
Supervisor:						
1.	SSE	9300-34800	4600/L-7	35	28	07
2.	JE	9300-34800	4200/L-6	13	16	-03
3.	SSE(Drg.)	9300-34800	4600/L-7	01	01	00
Sub-Total				49	45	04
Artisan:						
4.	Sr. Tech./MCM	9300-34800	4200/L-6	71	68	03
5.	Tech.-I	5200-20200	2800/L-5	209	185	24
6.	Tech.-II	5200-20200	2400/L-4	76	50	26
7.	Tech.-III	5200-20200	1900/L-2	58	49	09
8.	Helper	5200-20200	1800/L-1	24	31	-07
Sub-Total				438	383	55
CMT Lab:						
9.	C&M Supdt. Gr.I	9300-34800	4600/L-6	03	02	01
10.	CMA Lab	9300-34800	4200/L-2	01	01	00
Sub-Total				04	03	01
GRAND TOTAL				491	431	60

2.2 Working Hours of Motibagh Workshop: The Working Hours at MIB Workshop is as follows:-

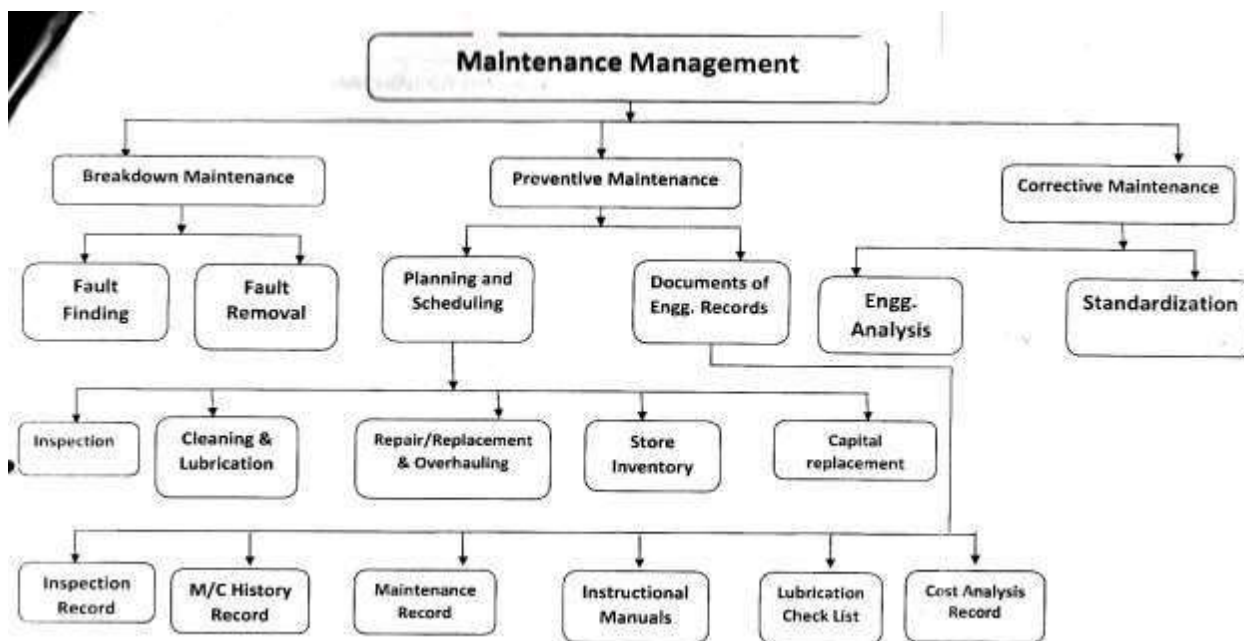
Shift	Timings	Frequency	Shop
General shift	7:00 to 11:30 Hrs. & 12:30 to 16:45 Hrs.	Mon-Friday	All Shops excluding BG Bogie IOH shop, Wheel shop.
	7:00 to 11:30 Hrs.	Saturday	
Three shifts	07.00- 15.30, 15.30-0.00, 07.00-16.45 Hrs.	6-days in a week	BG Bogie IOH shop, Wheel shop.
Workshop remains closed on every Sunday and National Holiday.			

Functional Chart of Motibagh Workshop :

2.4 Shop-Wise Activities/Flow Process Chart of MIB Workshop:

Each Shop has been assigned to perform a respective job to achieve overall efficiency of MIB Workshop and a brief description of the activities pertaining to related shop are as under:

Flow process chart of Maintenance Management for assigned jobs is as under:



2.4.1 SMITHY SHOP (SHOP No.-04):

Smithy Shop carries out the activities like Forging, Pressing, Straightening, pinning out, Hammering, bending, annealing, hardening etc. and operation of components (like Flap door handle, Clamp, Knee angle, Safety Strap, T-Hanger, CSK bolt, Hand Tool, Linear Axle Box, Brake Beam, Fulcrum etc.) of entire Workshop.

2.4.2 MACHINE SHOP (SHOP No.-06):

The general activities being performed by Machine Shop are Machining, Fabricating, Manufacturing, Drilling, Milling, Slotting, Shaping, Turning, Cottering etc. of various components like Axle box Spring, different types of Bushes, different types of Washer, Check Nut, Union/Nipple/Adopter, G.I. Pipes, Screw Buffer, Bolster Swing, Sleeve Nut etc.

2.4.3 TOOL ROOM (SHOP No.-08):

The main activities of Tool Room are Repairing, Drilling, Cutting, Grinding, Tapping of various parts, maintenance of Time Recorder, Cutting plates and manufacturing of special type of tools etc.

2.4.4 MILL WRIGHT (SHOP No.-10):

Basically, this Shop deals with miscellaneous type of job which includes cleaning of Administrative Building, cleaning of Turn Table, Machine & Equipments, Maintenance and repairing of Machine, EOT Cranes, Fork Lifts, Tools & Plants and Wheel Shifting along with Material movement work etc.

2.4.5 YARD SHOP & MATERIAL MOVEMENT SECTION (SHOP No.-18):

Activities of Yard section mainly consists of feeding & push out of Rolling Stock such as making arrangement for movement/placement/In-Out of BG Coach as per requirement,

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Loading/Unloading of BG Bogies on Trolleys & RS Coach and this Shop also carries out its activities in co-ordination of Yard Section for Supply of materials from stores to shops, inter shop movement of Work order items like Bearing Brass, Swing Link Bolt & Nut, Sleeve Nut, Screw Coupling. .

2.4.6 **INSPECTION SECTION:** This section deals with following activities:

I. At Bogie Shop :-

Average 100 to 110 Bogies are being dealt per month by the Inspection Cell at MIB/NGP and needs to carry out following activities.

- Thorough checking of Incoming Bogie
- Checking the components fitted in Bogie.
- Transforming of Bogie Frame
- Finally , all items are checked after completion of work.

II. At Wheel Shop :-

Average 200 to 230 Wheels are being dealt and following activities are performed.

- Incoming Wheels are checked thoroughly.
- Inspecting Bearings
- Checking of Dia./Wheel Flendge
- Final Checking before dispatch of Wheels.
- Axle Box checking: average 400 to 460 Axle Box are being checked per month and basically Components of Axle/Box , retaining Ring Collar & front Cover are examined for Safe operation this Device.

III. Carriage related work :-

Average 5 to 6 coaches of ICF+LHB Coaches are being dealt for checking & inspecting the POH activities of incoming Coaches.

IV. Draw Gears :-

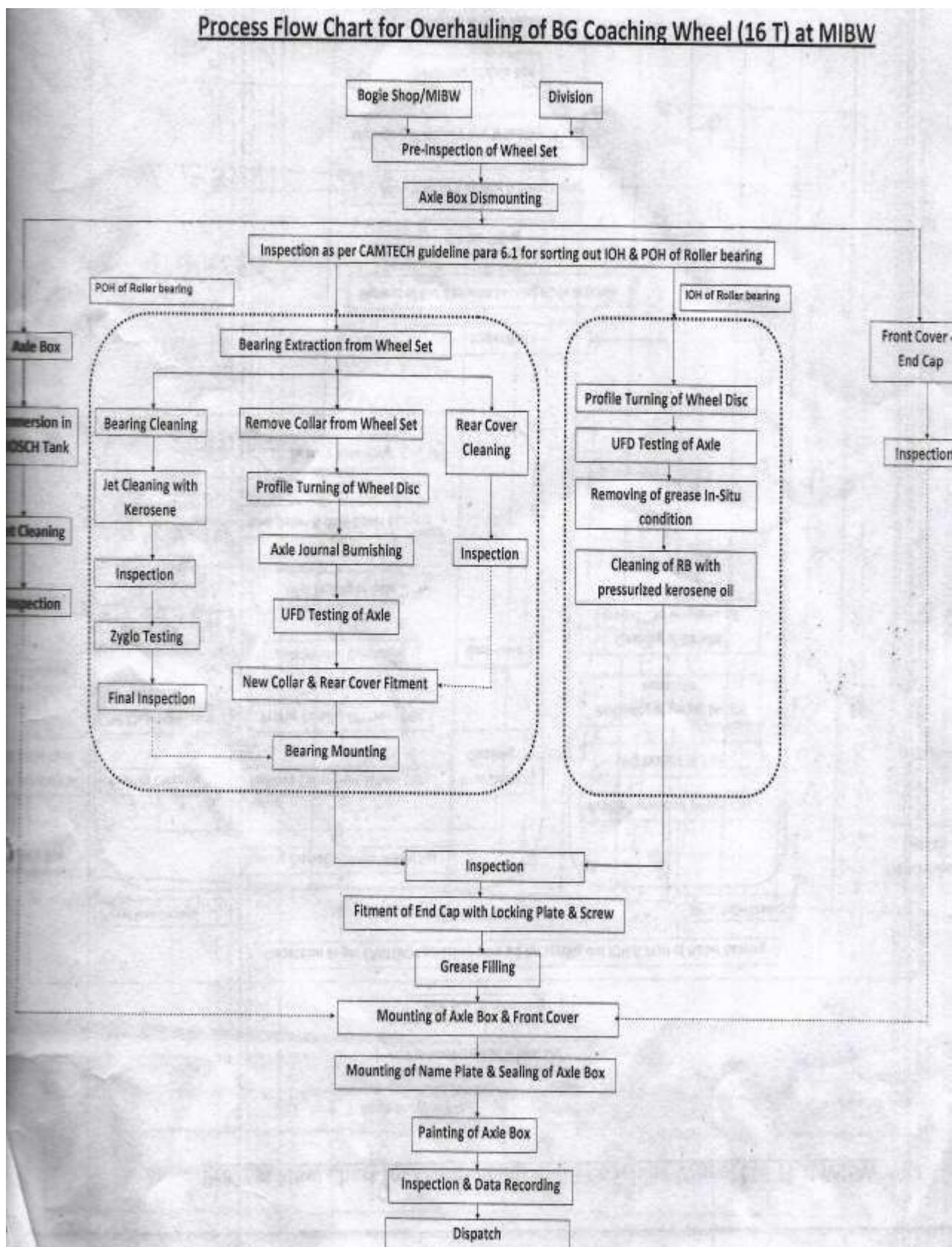
Average 30-32 Draw Gears Box/Fittings are being dealt per month and basically Load Testing activities are carried out.

Document maintenance, Record Maintenance and correspondence work regarding above activities are also carried out by the Inspection Cell.

2.4.7 **WHEEL SHOP & ROLLER BEARING (SHOP No.-20):**

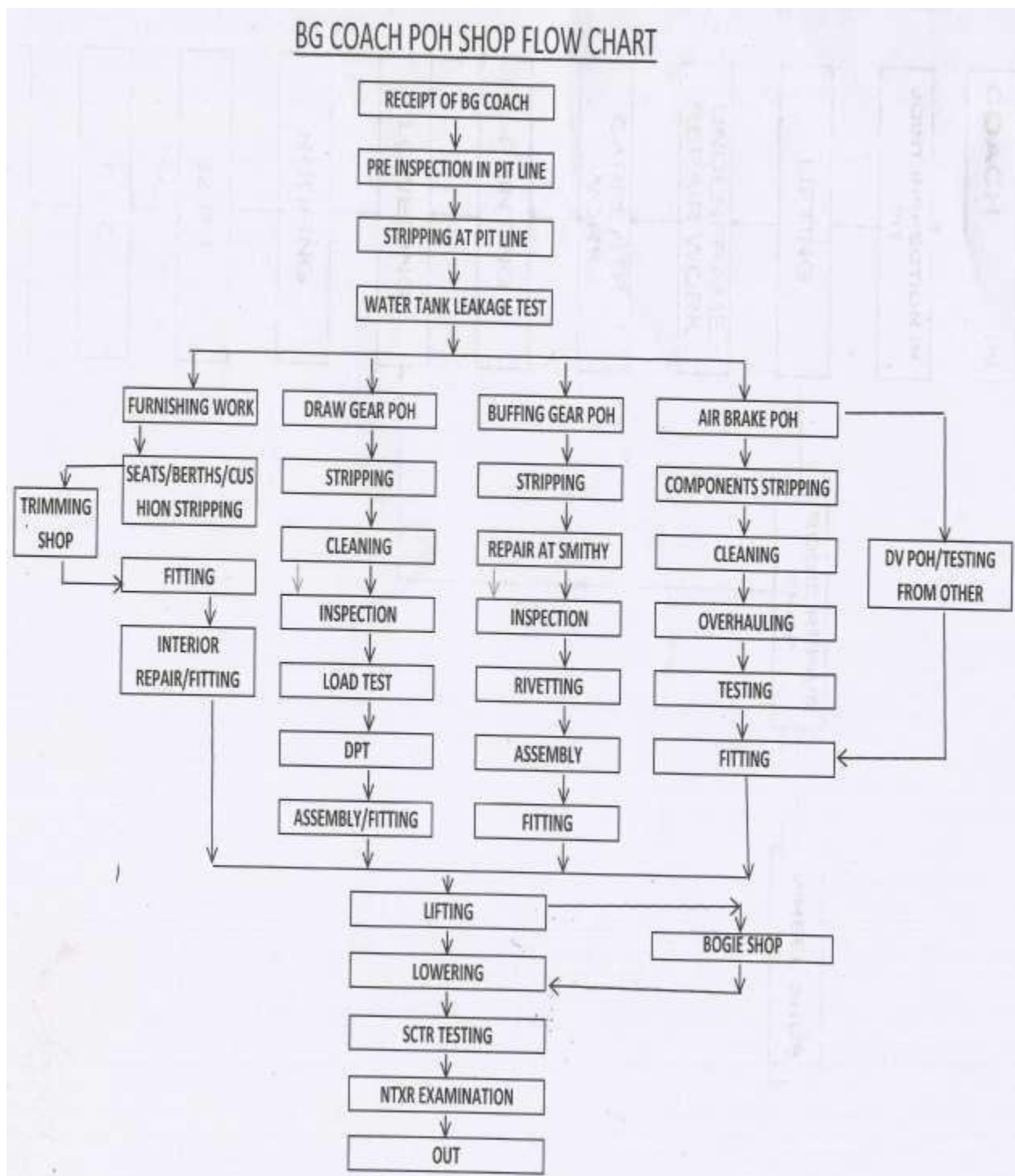
This Shop deals with repair and periodic overhauling of BG-ICF/LHB wheel & Roller bearings per month, Tyre turning of BG Coach , Bearing cleaning of BG bogie and coupled etc.

This Shop deals with repair and periodic overhauling of BG-ICF Roller bearings per month, Tyre turning of BG Coach, Loco, Wagon etc, Bearing cleaning of BG bogie wheel press out and coupled etc.



This Shop deals with the activities related to POH/Repair of Coaches under frame including sole bar, Head stock, Longitudinal bar repair Buffer and coupling repair POH of vacuum brake system Water tank repair etc.

Practically, this Shop is existing under organizational set up of Carriage Body Section and deals with activities such as Under gear(including Side Buffer & Draw gear) work, A. B. (Air Brake) system Overhauling, furnishing work, Lifting lowering & Buffer height of the Coaches and water Tank testing & rectifying.



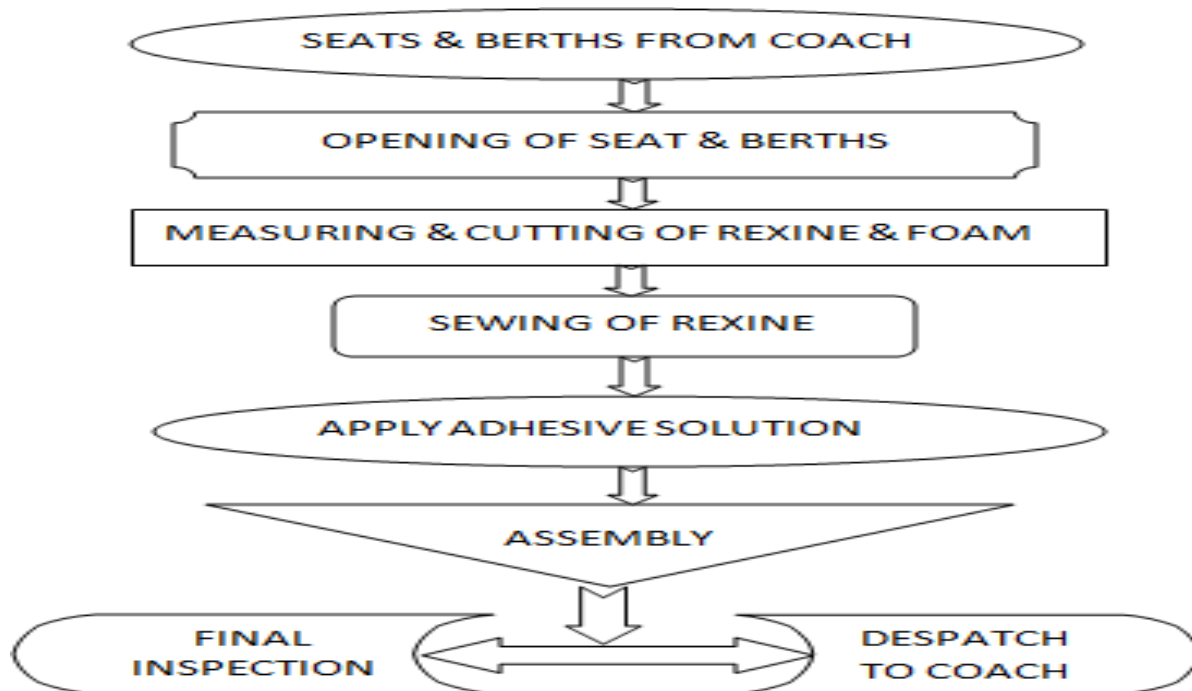
PAINT Shop:

This Shop mainly deals with activities of exterior painting & Stenciling of BG Coach & T/Wagon.

CARRIAGE SECTION PAINT SHOP 47	
SCHEDULE "A" EXTERIOR	
1st Day	Washing Down to Bare Metal
2nd Day	Red Oxide Zinc Chromate Primer Applied
3rd Day	One Coat of Filler Applied
4th Day	First Coat of Knifing Stopper Applied
5th Day	Second Coat of Knifing Stopper Applied
6th Day	Wet Rub Down and Under Coat Applied
7th Day	Finishing Enamel Applied (First Coat)
8th Day	Wet flattening and Second Coat of Enamel Applied
9th Day	Glaze Coat (50% Finishing Enamel + 50% SYN Varnish Clear) is Applied in the Morning Lettering & Cleaning in the after Noon.
SCHEDULE "C" EXTERIOR	
1st Day	Cleaning with soap solution or any other Cleaning solution and wash thoroughly with water touch up damaged portion with Recommended
2nd Day	Spot putty if necessary and one coat of under coat
3rd Day	Flat with silicon carbide water paper and Apply one coat of finishing Enamel
4th Day	Flat with silicon Carbide water paper Apply 'A' second coat of synthetic Enamel finishing
5th Day	Lettering and Miscellaneous work,

TRIMMING Shop:

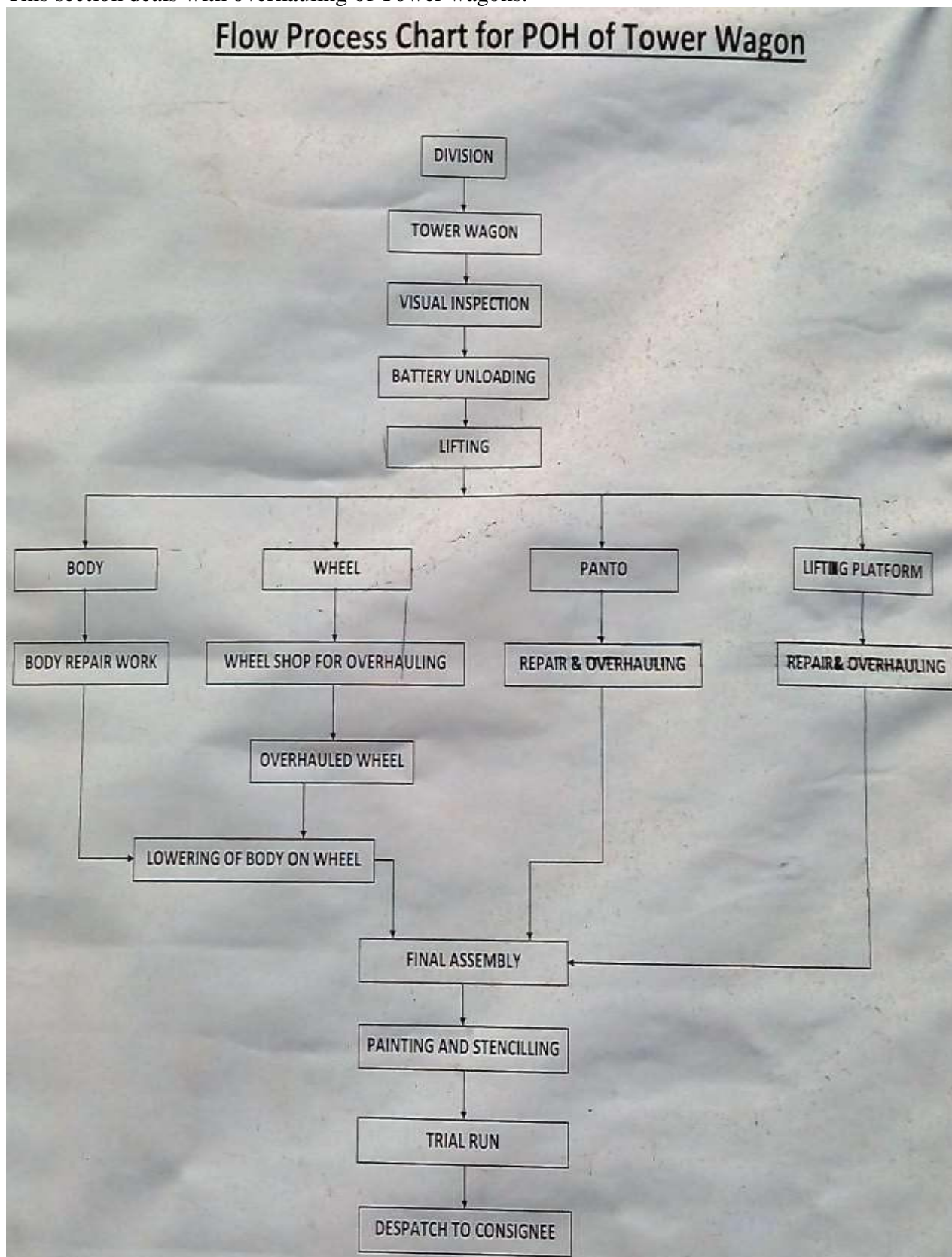
Activities of this shop are related with PVC & Cushion work of BG Coach (Patch Work) making Seats & Berths of incoming Coaches.

Process Flow Chart Seat & Berths:

2.4.12

TOWER WAGON SHOP (SHOP No.-32-N):

This section deals with overhauling of Tower wagons.

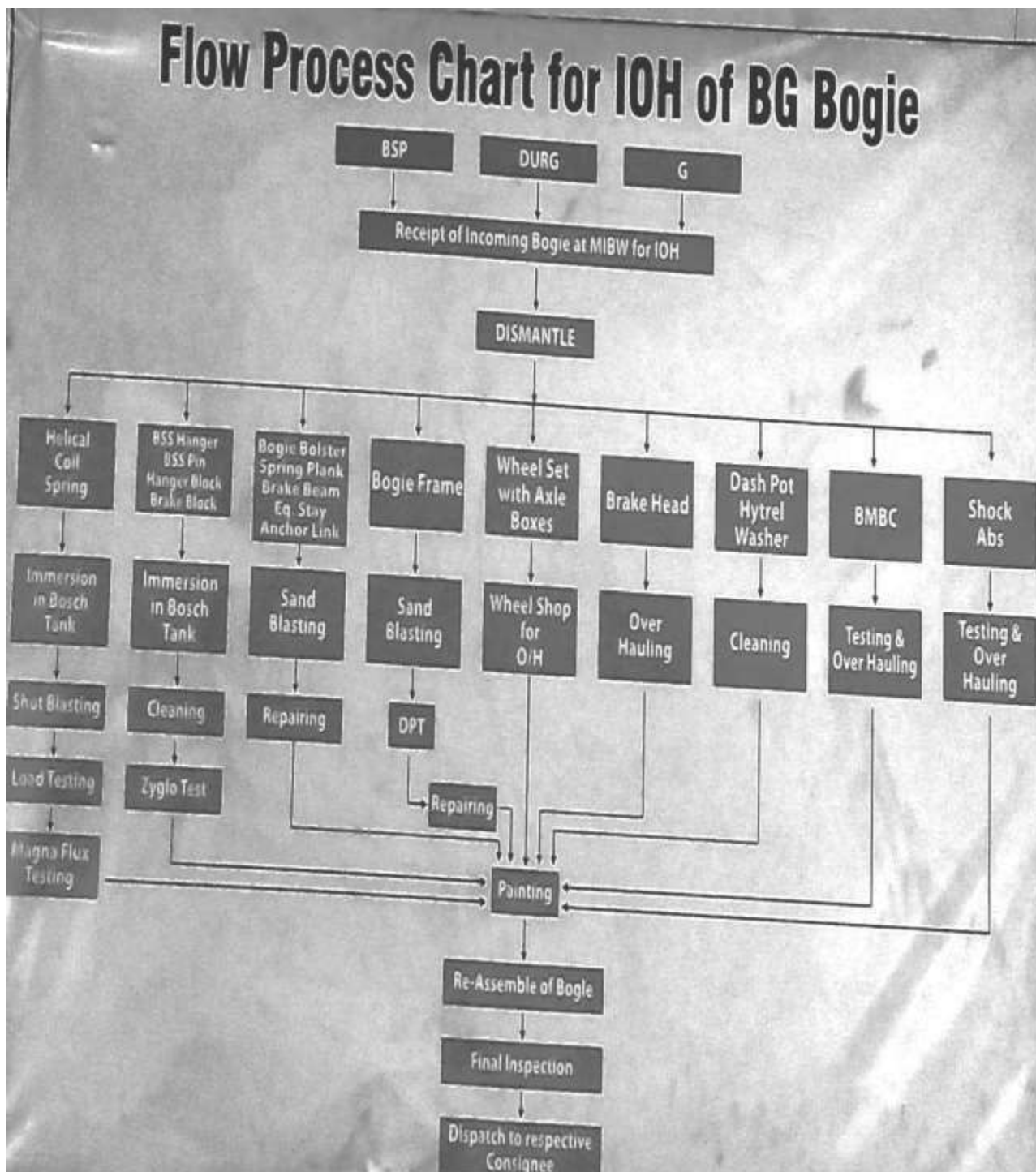


2.4.13 WELDING SHOP (SHOP No.-33):

This Shop deals with Welding work in various Shop such as Wheel, Machine, Smithy, and Tools Room etc.

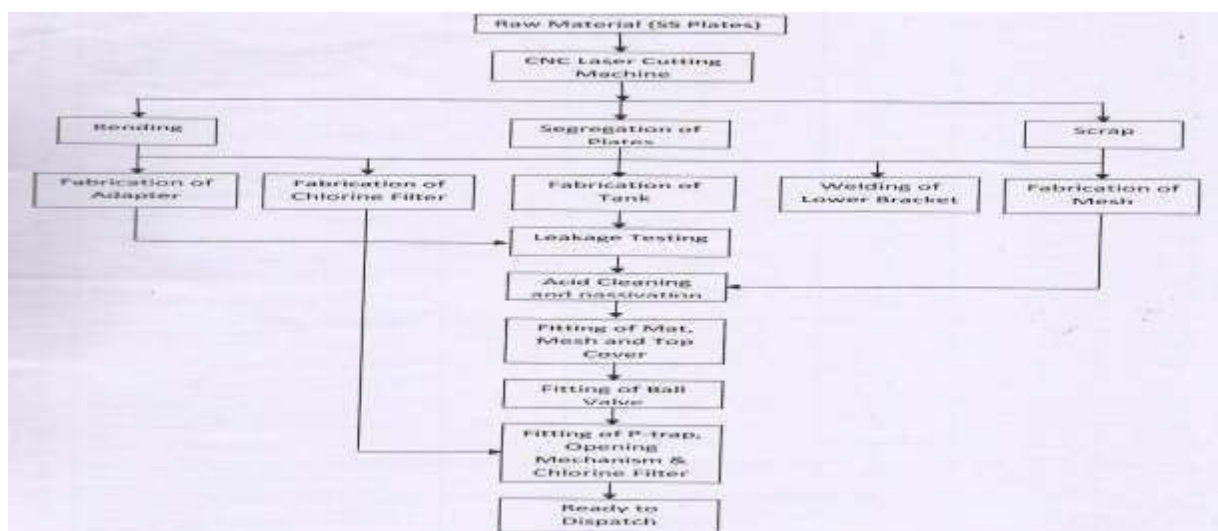
2.4.14 BG BOGIE IOH SECTION:

The general activities of this Shop are Overhauling (IOH/POH) of BG Bogie which comprises of Dismantling, Assembling, Spring, Serviceable Items, Heavy repair, Store, Dash pot, BMBC Overhauling, Stock absorber Overhauling & Brake Head Overhauling and Buffer height maintenance of POH Coach.



MANUFACTURING OF BIO TANK (EFT) SECTION:

Toilets currently used on Passenger Coaches of Indian Railway are of flush-Type, in which human waste is discharged directly on the Tracks. This makes the Ecosystem unhygienic, besides resulting in corrosion of Track fittings. To overcome this problem, IR is carrying out field trials with various types of Environment Friendly Toilets (EFT)*. By the use of such Toilets, there will have no humane waste on Railway Tracks and therefore, cleaner and greener Station premises and tracks.

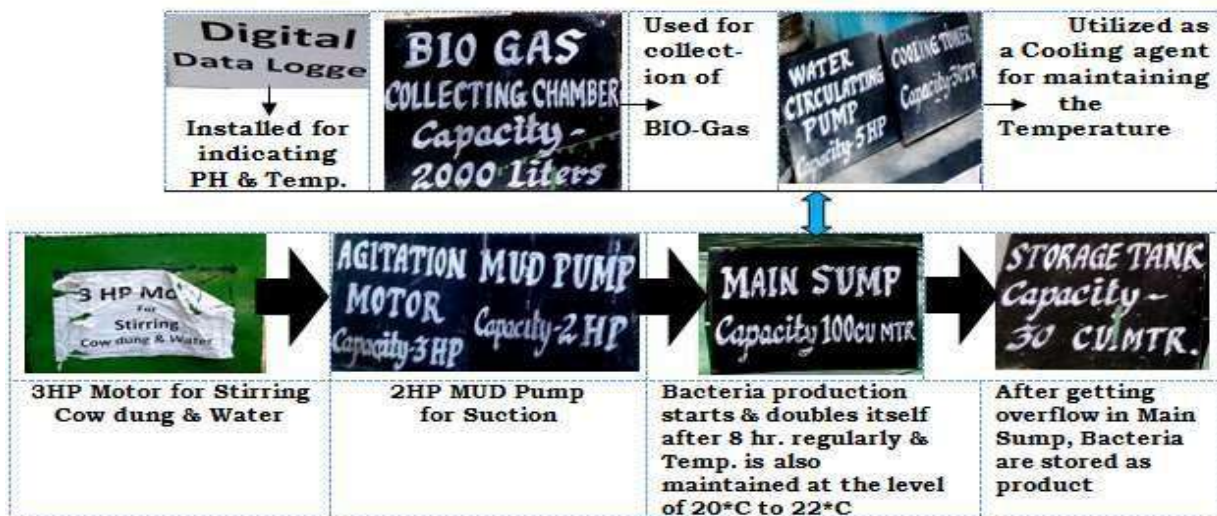
Flow Process Chart for making BIO-Tank (EFT)

(Environment Friendly Toilets (EFT))*- The eco-friendly toilet does not allow the refuse to fall on the tracks. Instead, it is collected in a tank fixed below the coach floor. The tank capacity is 900 litres, twice the capacity of the overhead water tank. The prototype of this toilet was developed in 2000. In appearance it is similar to the current train toilets). The fitting of Bio-Tank is shown below:



2.4.16 **BACTERIA GENERATION PLANT:**

The main component of the Eco-Friendly Toilets for its desired operation is Bacteria specially generated in a separate Plant of MIB Workshop. This Plant is used for generation and preservation of Bacteria and Block diagram of Bacteria generation System may be represent as under:

2.4.17 **PCO (Planning & Progress):**

Mainly, Administrative and Establishment works are being dealt by this Section. Some of the important activities of this Shop are as follows:

Progress (Planing):- Material arrangement both stock and non stock by chasing stores, proposal for opening of new cards, placement of non stock requisition on stores, day to day shifting of material from one shop to another according to various operations in shops, scrap disposals, making out of challan, gate pass, loan gate pass, adjustment memo, DS-8 for disposal of materials to stores, preparation of window. Processing of job cards, issue of job cards against Request Notes both for shops and out stations and work order items, rate fixing section, disposal of job Cards to accounts after completion of jobs. Advanced planning for inclusion of works in PWP, LAW BOOK, MWP& RSP for infrastructural development and to keep rolling stocks in good fettle. Preparation of abstract, detailed and revised estimates for above works, proposal for out sourcing non Inspection Cell- Stage inspection of all jobs carried.

2.4.18 **Tender Section:**

This Section plays an important role to carry out the activities related to preparing Estimate, making proposal and correspondence about Tender related work.

Tender:- Processing proposal for approval and sanction, preparing and processing detail estimate for sanction, preparing tender document, obtaining approval and uploading, NIT, preparing CSBN after opening tender, TCM drafting issuing LOA and preparing and processing Contract Agreement, bill passing and booking of expenditure and entire correspondence of tender case.

2.4.19 **Technical & M & P Section:**

This Section plays an important role to carry out the activities related to preparing Estimate, making proposal and correspondence about T&P/M&P items. In addition Tender related work are also being dealt by this Section.

Main activities of this Section may be stated as under:

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(1) **M&P:-** Processing proposal under PH-41 (Railway Board Power & GM's power), preparing and processing detail estimate for sanction item, preparing and processing Indent/NSR (SECROADS) for M&P items, all correspondence from initial stage to warranty period, processing for repairs of machine through OEM/Authorized dealers, processing for condemnation and disposal of condemned M&P and T&P items, maintaining asset register etc.

(2) **RSP (PH-21):-** Similar work like item No. (2).

(3) **Workshop Budgeting (Revenue, Capital, PH-41 & PH-21) :-** Processing budget in stage of ARE, RE & BE, FME & Appropriation Account and entire Correspondence of budget matter, expenditure booking and certification of fund etc., (4)

2.4.20 **Safety Cell:**

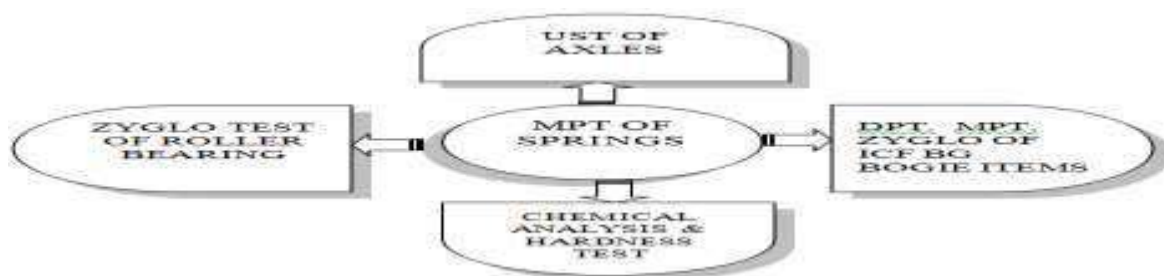
Safety Cell deals with activities mainly related with provision of safe environment for smooth working in workshop premises. Some of the important activities of Safety Cell are as under:

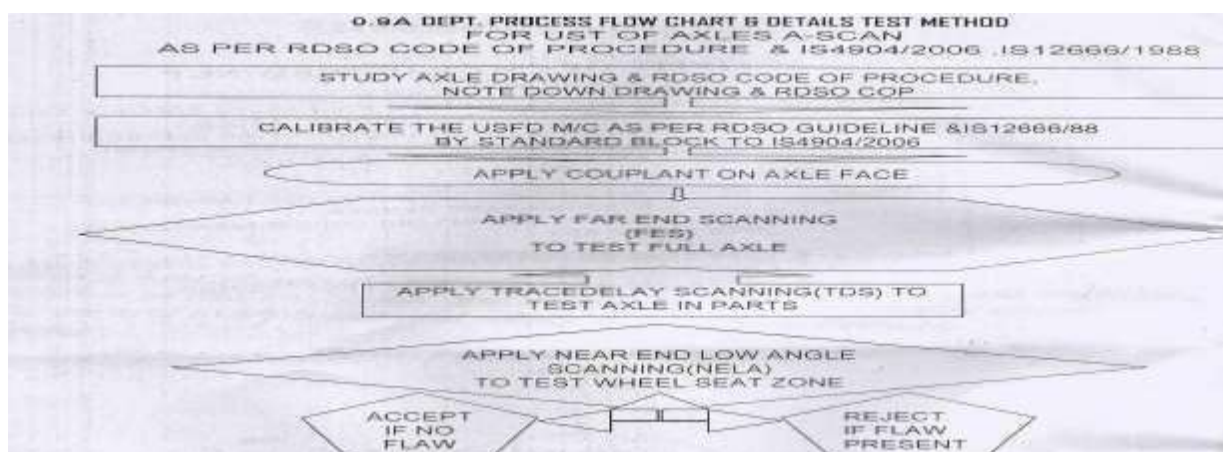
- Ensuring safety parameters regarding use of Safety Equipments being provided by Millwright Section to various Shops.
- Monitoring of Safety matters related to unwanted movement of Cattle/Animals, drainage problem, pest controls and unexpected incidents in MIB Workshop premise and then coordinating to concerned departments accordingly.
- Checking of Major cranes, Compressor, Reservoirs, sling Chain etc. for schedule of testing.
- To organize Safety seminars in MIB Workshop as per the order of CWM/MIB.
- Dealing the matter of Solar Plant panel's proposal regarding its installation.
- Collecting and feeding the month wise data of consumption of Electricity, Diesel Oil & Water for evaluation of performance on Environment management.
- Monitoring of scrap (Ferrous & Non-Ferrous) disposal work for DS-8.
- Assisting in compiling of MCDO.

2.4.21 **CHEMICAL & METALLURGICAL LAB (CMT):**

Chemical & Metallurgical Organization are engaged in Testing and Certification of raw materials and vital safety items, thereby ensuring quality control of Material and safety of travelling Railway passenger.

Activities of CMT LAB/MIBW/NGP:



Process Flow Chart & Details Method :**2.5 Annual Target of Motibagh Workshop for the year 2020-21:**

The target of Motibagh Workshop for the year 2020-21 as per Railway Board's letter No. 2020/M(W)/814/1/Pt., dated 14.09.2020 and data collected is as under:-

S#	Activity	Target
1	POH of BG Coach	36 (Annual)
2	POH of Tower Wagon	04 (Annual)
3	IOH of BG Coach Bogie (ICF & LHB)	110 (98 ICF+12 LHB) per month
4	Overhauling of Wheel set	250 per month

2.6 Outturn Position of Motibagh Workshop in the last 02 years:

The Comparative Outturn position of Motibagh Workshop in the last 02 years (2019-20, 2020-21 (upto October)) as per data provided by SSE /Plg./MIB is as under:-

Months	POH of BG Coach		POH of NG Coach		POH of Tower Wagon		Overhauling of Wheel set		IOH of ICF BG Bogie		Mfg. of Bio Tank	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
April	04	00	02	00	0.50	00	229	20	118	18	560	00
May	03	03	00	00	0.50	0.50	226	40	116	16	452	00
June	03	04	00	00	0.25	0.50	211	174	108	74	573	00
July	04	03	00	00	0.50	0.50	243	240	113	99	317	30
August	04	04	00	00	0.50	00	196	159	101	89	175	00
September	04	06	01	00	0.75	0.50	187	189	83	94	298	00
October	04	07	01	00	0.50	0.50	174	245	79	104	200	00
November	04	-	00	00	0.75		202	-	84	-	192	-
December	04	-	00	00	0.75		146	-	88	-	188	-
January	05	-	00	00	0.75		194	-	95	-	200	-
February	05	-	00	00	0.25		203	-	98	-	112	-
March	04	-	00	00	0.50		151	-	70	-	81	-
Total	48	27	04	00	6.50	2.5	2362	1067	1153	494	3348	30
Avg. per month	04	04	0.33	00	0.50	0.35	197	152	96	71	279	04

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2.7 Shop wise List of Equipments/Machinery at MIB Workshop:

Each Shop requires necessary Equipments/Machinery to carry out the routine jobs. The list of available machineries/equipments in various shops of MIB Workshop is as under:

S#	Name of Shop	In-charge	Description of Machine	Capacity
1	Wheel Shop	SSE/WH	CENTRE LATHE	
2	Carriage Shop	SSE/C	WASTE SOAKING PLANT	
3	Wagon Shop	SSE-W	Tool Grinding M/C.	
4	Foundry shop	SSE-FDY	D/E FLOOR GRINDING M/C	24``Dia
5	M/C Shop	SSE/DEV	SS & SC LATHE	
6	Carriage Shop	SSE/C	OTHER WOOD WORKING M/C	
7	Wheel Shop	SSE/WH	EOT CRANE	6t
8	Tool Room	SSE/DEV	UNIVERSAL TOOL GRINDING M/C	
9	Foundry shop	SSE/FDY	SAND SCREENING MACHINE	
10	Tool Room	SSE/DEV	T.C.TIPPED TOOL GRINDING M/C	
11	M/W Shop	SSE/MW	AIR COMPRESSOR	120 CFM
12	M/W Shop	SSE/MW	AIR COMPRESSOR	200 CFM
13	M/C Shop	SSE/DEV	HORIZONTAL BORING M/C	
14	Wheel Shop	SSE/WH	CENTRE LATHE	C/Height-325mm
15	Wagon shop	SSE/W	COMBINED SHEARING,PUNCHING, CROPPING& KNOTCHING	
16	M/C Shop	SSE/DEV	RADIAL DRILLING M/C 50 MM	50 mm
17	M/C Shop	SSE/DEV	CENTRE LATHE	C/Height-275 mm
18	M/C Shop	SSE/DEV	SLOTING MACHINE	Motor Driven
19	M/C Shop	SSE/DEV	CENTRE LATHE	C/Height-325 mm
20	Fitting shop	SSE/DEV	HYDRAULIC PRESS 'C' FRAME (OTHERS)	50 T
21	Fdy shop	SSE/C	WOOD WORKING SAW	
22	Tower Wagon	SSE-TW	WHITING JACK 25 T	
23	Tower Wagon	SSE-TW	WHITING JACK 25 T	
24	Yard	SSE/YD	PIT TRAVERSER (100 TONNES)	
25	Carriage Shop	SSE/C	WOOD WORKING SAW	36 ``
26	Carriage Shop	SSE/C	OTHER WOOD WORKING M/C	75 mm
27	Carriage Shop	SSE/C	OTHER WOOD WORKING M/C	75 mm
28	Tool room	SSE/DEV	D/E TOOL GRINDING M/C.	
29	Black smith shop	SSE/DEV	HAMMER 500 KG	500 Kg
30	Welding shop	SSE/WH	ELECTRIC ARC WELDING TRANSFORMER	400 Amp
31	Welding shop	SSE/WH	ELECTRIC ARC WELDING TRANSFORMER	400 Amp
32	Welding shop	SSE/WH	ELECTRIC ARC WELDING TRANSFORMER	400 Amp
35	Welding shop	SSE/WH	RECTIFIER WELDING SET	300 Amp.
36	M/C Shop	SSE/DEV	CENTRE LATHE	C/Height-275 mm
37	M/C Shop	SSE/DEV	UNIVERSAL MILLING MACHINE (1600 X 350 MM)	
38	M/C Shop	SSE/W_NG P	SAW SHARPENING MACHINE	
39	Foundry shop	SSE/FDT	MOTORISED BLOWER	
40	Tower Wagon shop	SSE/TW	WHITING JACK 25 T	
41	Tower Wagon	SSE/TW	WHITING JACK 25 T	

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42	T/Wagon	SSE/TW	CRANE 1.5 T	
43	Welding shop	SSE/WH	RECTIFIER WELDING SET	
44	Welding shop	SSE/WH	RECTIFIER WELDING SET	
45	M/W Shop	SSE/MW	ELECTRIC DRIVEN ROTARY SCREW AIR COMPRESSOR	
46	Welding shop	SSE/Weld_NGP	PROFILE GAS CUTTING M/C	
47	Tower wagon shop	SSE/MW	WHITING JACK 25 T	25 T
48	Tower wagon shop	SSE/MW	WHITING JACK 15 T	15 T
49	Tower wagon shop	SSE/MW	WHITING JACK 15 T	15 T
50	Tower wagon shop	SSE/MW	WHITING JACK 15 T	15 T
51	Tower wagon shop	SSE/MW	WHITING JACK 15 T	15 T
52	Tower wagon shop	SSE/MW	WHITING JACK 15 T	15 T
53	Laboratory	SSE/CMS	ULTRASONIC Flaw Detector	
54	Wheel Shop	SSE/WH	Axle Roller Bearing Puller Cum Installer	100 T
55		SSE/C	Hyd. Pipe Bending Machine	10 mm
56		SSE/WH	Precision Induction Heating Equipment	
57	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
58	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
59	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
60	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
61	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
62	Welding shop	SSE/WL	DC ARC WELDING PLANT	600 Amp.
63	M/C Shop	SSE/DEV	Vertical Drilling Machine	50mm
64	Welding shop	SSE/WL	SEMI-AUTO CO2 WELDING PLANT	600 Amp.
65	Welding shop	SSE/WL	SEMI-AUTO CO2 WELDING PLANT	600 Amp.
67	M/W Shop	SSE/MW	ROAD MOBILE CRANE	3 T
68	Laboratory	SSE/CMS	ULTRASONIC Flaw Detector (Digital)	
69	Welding shop	SSE/WL	WELDING RECTIFIER (D/O)	400 Amp.
70	Welding shop	SSE/WL	WELDING RECTIFIER (D/O)	400 Amp.
71	Welding shop	SSE/WL	WELDING RECTIFIER (D/O)	400 Amp.
72	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
73	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
74	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
75	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
76	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
77	Welding shop	SSE/WL	WELDING RECTIFIER (S/O)	400 Amp.
78	Wheel shop	SSE/WH	CNC SURFACE WHEEL LATHE (BG & NG)	
79	M/C Shop	SSE/DEV	Drilling Machine (Bench type), Cap-20 mm	20mm
80	M/C Shop	SSE/DEV	Drilling Machine (Pillar type), Cap-40 mm	40mm
81	Laboratory	SSE/CMS	MAGNETIC CRACK DETECTOR	
82	Millwright shop	SSE/MW	DG Set 250 KVA	250 KVA
83	Wheel shop	SSE/MW	Vertical Turret Lathe	
84	M/C Shop	SSE/DEV	Radial Drilling Machine Capacity-50MM	50mm
85	Bogie shop	SSE/W	CRANE 1 T	1 T
86	Bogie shop	SSE/W	CRANE 1 T	1 T
87	M/W Shop	SSE/MW	FORK LIFT TRUCK	3 T

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88	M/W Shop	SSE/MW	FORK LIFT TRUCK	3 T
89	Wheel Shop	SSE/WH	Universal Axle Journal Turning and Burnishing Lathe (BG/NG)	
90		SSE/DSL	Pressure Pump (Oil Injection Kit)	
91		SSE/DSL	Pressure Pump (Oil Injection Kit)	
92	Welding shop	SSE/WL	Welding Machine Thyoistried type 600 amp	600 Amp.
93	B.G.Bogie shop	SSE-BOGIE	Servo Hydraulic Shock Absorber Testing Machine	
94	B.G.Bogie shop	SSE-BOGIE	Computer Controlled Precison Universal Testing Machine	
95	Wagon shop	SSE/W	Double Column Guillotine Shearing Machine 16x3100 mm capacity	16x3100mm
96	Welding shop	SSE/WL	TIG Welding Plant, 250 AMPs	300 AC/DC
97	M/W Shop	SSE/MW	Diesel Fork Lift Truck	3000 kgs
98	Diesel POH shop	SSE/DSL	Hot Water Steam Jet Cleaning Machine	
99	Wheel Shop	SSE/WH	Induction Heater,12/16 KVA	12/16 KVA
100	Laboratory	SSE/CMT-1	Fluorescent Inspection test bench(Zyglow testing machine)	
101	B.G Bogie shop	SSE-BOGIE	EOT CRANE-10T	10 T
102	Wheel Shop	SSE/WH	Automatic Hydraulic Bearing Extractor With power pack	130 mm
103	Welding shop	SSE/WL	Welding Rectifier (D/O),400 Amp	400 Amp
104	Welding shop	SSE/WL	Welding Rectifier (D/O),400 Amp	
105	Welding shop	SSE/WL	Welding Rectifier (D/O),400 Amp	
106	B.G. Bogie	SSE-BOGIE	1200mm die rotary table shot blasting machine	
107	Black smith shop	SSE/DEV	Heat treatment furnace	
108	Welding shop	SSE/WL	AIR PLASMA CUTTING MACHINE	
109	Welding shop	SSE/WL	AIR PLASMA CUTTING MACHINE	
110	Wheel Shop	SSE/WH	EOT Crane-10T	
111	B.G.Bogie shop	SSE-BOGIE	COIL SPRING SCRAGGING & LOAD TESTING M/C	20T
112	Labortary	SSE/CMS	MAGNETIC CRACK DETECTOR SPRIGMAG-506	
113	Black smith	SSE/DEV	BLOW ENERGY SINGLE FRAME OPEN DIE FORGING HAMMER	
114	B.G.Bogie shop	SSE-BOGIE	EOT CRANE-25 T	
115	EFT Shop	SSE/WL	CNC LESSER CUTTING MACHINE	
116	EFT Shop	SSE/WL	PRESS BRAKE HUDRAULIC CNC	CAP-200T
117	EFT Shop	SSE/WL	HYDRAULIC HORIZONTL TENSILE TESTING M/C.	
118	EFT Shop	SSE/WL	POWERED PLATFORM TRUCK-BATTERY OPERETED,	CAP-3000KG.
119	EFT Shop	SSE/WL	FORKLIFT TRUCK	3000 kgs
120	EFT Shop	SSE/WL	ELECTRIC STACKER LOAD .	1600 kg
121	EFT Shop	SSE/WL	PORTABLE DRILLING,TAPPING,GRINDERS,	
122	EFT Shop	SSE/WL	PULSE MIG WELDING M/C	1600AMP
123	EFT Shop	SSE/WL	PULSE MIG WELDING M/C	1600AMP
124	EFT Shop	SSE/WL	TIG WELDING M/C,	250 Amp
125	EFT Shop	SSE/WL	TIG WELDING M/C,	250 Amp

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126	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
127	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
128	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
129	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
130	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
131	EFT Shop	SSE/WL	PILLER MOUNTED JIB CRANE	3 T
132	EFT Shop	SSE/WL	PLOTTER	-
133	EFT Shop	SSE/WL	PLOTTER	-
134	EFT Shop	SSE/WL	PLOTTER CUM SCANNER COPIER KIP-7700	-
135	Wheel Shop	SSE/WH	Induction Heater,12/16 KVA	
136	Wheel Shop	SSE/WH	Induction Heater,12/16 KVA	
137	Black smith shop	SSE/Dev	Oil fired Furnace-	700 kgs.
138	Wheel Shop	SSE/WH	Automatic Hydraulic Bearing Extractor With power pack	
139	Wheel Shop	SSE/WH	Automatic Hydraulic Bearing Extractor With power pack	
140	Electric shop	SSE/EL	Constant voltage Battery Charger	
141	B.G.Bogie shop	SSE/Bogie	Electric wire rope Hoist-	2T
142	Wheel Shop	SSE/WH	High pressure Hot water/Steam Jet Cleaning machine	20Ltr
143	EFT Shop	SSE/WL	TIG Welding machine	250 Amps
144	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
145	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
146	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
147	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
148	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
	EFT Shop	SSE/WL	TIG Welding machine	315 Amps
150	Wheel Shop	SSE/WL	EOT Crane	10T
151	M/W Shop	SSE/MW	Air compressor Rottery screw, Electric driven	300CFM
152	Wheel Shop	SSE/Wheel	EOT crane	2 T
153	M/W Shop	SSE/MW	Electronic Road Weigh Bridge ,Make Digital	30T
154	Laboratory	CMS/Lab	Ultrasonic Flaw Detector machine	
155	Laboratory	CMS/Lab	Ultrasonic Flaw Detector machine	
156	Laboratory	CMS/Lab	Magnetic Particle testing Bench	

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2.8 Existing Deployment of Staff at MIB Workshop / NGP :-

As per available data, the present deployment of staff shop/section-wise in Motibagh Workshop/NGP is given below:

S #	Name of Section/shop	Actual Strength		
		Supervisor (SSE/JE/CMS)	Tech./Helper	Total
1.	Smithy Shop	00	04	04
2.	Machine shop	01	05	06
3.	Tool Room		04	04
4.	Mill Wright shop	03	32	35
5.	Yard & Material Movement shop	02	13	15
6.	Inspection Shop	02	11	13
7.	Wheel shop& Roller Bearing section	05	60	65
8.	Coach Body Shop (BG Coach POH shop)	05	79	84
9.	Paint Shop	01	12	13
10.	Trimming Shop		12	12
11.	BG Bogie IOH & LHB SS Shop	07	103	110
12.	Tower Wagon Shop	01	10	11
13.	Welding Shop	01	04	05
14.	Bio Tank Shop	01	06	07
15.	Bacteria Generation plant	01	00	01
16.	PCO (Planning)	02	01	03
17.	PCO (Progress)	02	01	03
18.	Tender section	03	00	03
19.	Technical & M&P Section	01	00	01
20.	Safety section	01	00	01
21.	CMT Lab	03	11	14
Total		42 + 06 Trainee JE=48	368+15 of Bio Tank in different shops=383	410+2 1=431

2.9 Position of Outsourced Activities carried out at MIB Workshop:

The position of existing & proposed outsourced activities carried out at Motibagh Workshop as per data provided SSE/Plg./MIB is as under:-

S#	Name of Outsourcing Activity
	Existing:
(i)	AMC of maintenance and operation Inoculums Generation Plant Capacity 100 Cu.M/100000 Litres.
(ii)	Road Transport of Inoculums from MIB Workshop Nagpur to other Coaching Depots/Workshops in Indian Railway.
(iii)	Road Transport contracts for BG coach Bogie for overhauling from Ex-Coaching depots/BSP,DUG & G to MIB Workshop and back.
(iv)	Hiring of Truck/Trailer for Road Transport contracts for LHB coach Bogie for overhauling from Ex-Coaching depots/BSP, DUG & G to MIB Workshop and back.
(v)	Cleaning and Upkeeping of administrative building & road in MIB WS.
(vi)	All Canteen activities.
(vii)	Hiring of one AC road vehicle for official use.
(viii)	Dismantling, cleaning, repairing and re-fitment of Bio-Digester tanks during POH of BG coach .
(ix)	Hiring of Ambulance at MIB Workshop Nagpur.
(x)	One time repair of two EOT cranes of capacity 102 T.

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Upcomming proposals:

- (i) Hiring of trailers for Road Transportation of Bogie from Motibagh Workshop, NGP to Depot/Division/Workshop and back.
- (ii) Stripping, cleaning and painting of LGB Bogies during SS-I & SS-II.
- (iii) PU painting of LHB coaches during SS-II.
- (iv) Stripping, Recushoning and fitment of seats and berths in LHB coaches.
- (v) Furnishing work of Non AC LHB coaches
- (vi) One time repair of two EOT cranes.
- (vii) Conversion and modification work of 1 No. Motor coach of existing conventional MEMU rake as SPIC at MIBW.

CHAPTER-III

3.0 CRITICAL ANALYSIS & RECOMMENDATIONS:

- 3.1 The actual staff strength of Motibagh Workshop/NGP is 431 against the sanctioned strength of 491 as on 01.11.2020. After going through data collected and as per discussions held with Supervisors, it is found that NG activities like POH of NG Coach/Loco has been ended up on account of closure of NG section due to gauge conversion and BG activities like POH of BG Coach, IOH of BG (ICF) Bogie, Shop schedule maintenance of LHB Boggies & manufacturing of Bio Digester Tank have been increased. The requirement of Mechanical staff (excluding Ministerial staff) has been assessed based on the present workload, yardstick/Manhours for POH/IOH, outsourcing activities, Multi-skilling concept and effective utilization of manpower.

It is evident that Capital & labour are the basic factor of an organization and thereof human resource is one of the most indispensable assets of the organization. Continuous updating & designing of job descriptions, reduction of number of Categories for job enrichment through Multi-skilling, training and responsibilities are need of the time. Therefore, rightsizing of Manpower substantially optimizes a system to work with high economy and with more productivity.

3.2 Shop/Section-wise Assessment of Requirement of staff at Motibagh Workshop/NGP:-

3.2.1 SMITHY SHOP:

At present 04 staff (Technician) are working in Smithy Shop. Staff of this section deals with heating of buffer plunger, pins, guide rings, flap door handle, hanger of wheel set, billet steel, hammering, bending, plate cutting, annealing etc. Presently, In-charge of Tower Wagon Shop is also In-charge of Smithy Shop. The requirement of staff for smithy shop as per existing workload is assessed as under:

Average Allowed Time per month as per data collected = 1123.15 Manhours.

Requirement of staff (Direct Worker) = $1123/267 = 04$

Requirement of EIW @ 10% of 04 = 01

LR @ 12.5% of Direct worker + EIW i.e. 05 = 01

Total Artisan Staff (Tech.+Helper) required for Smithy Shop
= 04+01+01 = 06

Requirement of Supervisor (18:1) = 01 for overall supervision (In-charge).

Thus, the requirement of staff for Smithy Shop comes to 07 [Supervisor-01, Technician/Helper-06] against present deployment of 04.

3.2.2 MACHINE SHOP:

At present 06 staff (01 SSE, 02 MCM, 03 Tech.-I) are working in Machine Shop. Staff of this section deals with manufacturing/repairing of various items like pins, nuts, bolts, drilling, machining, milling, boring etc. as demanded by different shops.

The requirement of staff for smithy shop as per existing workload is assessed as under:

Average Allowed Time per month as per data collected = 1608 Manhours.

Requirement of staff (Direct Worker) = $1608/267 = 06$

Requirement of EIW @ 10% of 06 = 01

LR @ 12.5% of Direct worker + EIW i.e. 07 = 01

Total Artisan Staff (Tech.+Helper) required for Machine Shop
= 06+01+01 = 08

Requirement of Supervisor (18:1) = 01 for overall supervision (In-charge).

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Thus, the requirement of staff for Machine Shop (Shop No.-06) comes to 09 [Supervisor-01, Technician/Helper-08]. Hence, for smooth operation of Machine Shop, 03 more Technician/Helper are required.

3.2.3 **TOOL ROOM :**

At present 04 staff (01 MCM & 03 Tech.-I) are working in Tool Room and in-charge of Machine Shop is looking after this Section. Staff of this section deals with repairing of tools, EEFT strip drilling, cutting of plates, tapping of various parts, maintenance of Time Recorder, issuing of Tools etc.

The requirement of staff for Tool Room as per existing workload is assessed as under:

Average Allowed Time per month as per data collected = 1080 Manhours.

Requirement of staff (Direct Worker) = $1080/267 = 04$

Requirement of EIW @ 10% of 04 = 01

LR @ 12.5% of Direct worker + EIW i.e. $05 = 01$

Total Artisan Staff(Tech.+Helper) required for Tool Room= $04+01+01=06$

Requirement of Supervisor (18:1) = 01 for overall supervision (In-charge).

Thus, the requirement of staff for Tool Room comes to 07 [Supervisor-01, Tech.-06] . Hence, 01 SSE/JE as In-charge and 02 Tech./Helper are required for this section.

3.2.4 **MILL WRIGHT SHOP:**

At present 35 staff (02 SSE, 01 JE, 04 MCM, 15 Tech.-I, 06 Tech.-II, 03 Tech.-III & 04 Helper) are working in Mill Wright shop. Staff of this section deals with repairing & maintenance of Machine & Plant/ EOT cranes/Road crane/Truck/Traverser, wheel shifting, material movement, cleaning of administrative building, road cleaning in workshop etc. Out of 35 staff, 04 staff are deployed as EOT crane Driver, 02 staff as Truck Driver, 03 staff as Fort lifter Driver, 02 staff as Road Crane Driver, 02 staff as store keeper, 02 staff as Compressor Operator, 02 staff for coach movement, 07 staff utilised for repairing of machines of wheel shop, Machine shop, Tool Room, Smithy shop & Bogie shop, 07 staff utilised for repairing & maintenance of crane/Fork lifter/compressor and cleaning of administrative building/Road, 01 staff is utilised at store and office works.

Thus, considering existing workload the present deployment of 35 staff [Supervisor-03, Technician/Helper-35] for Mill Wright shop is found justified.

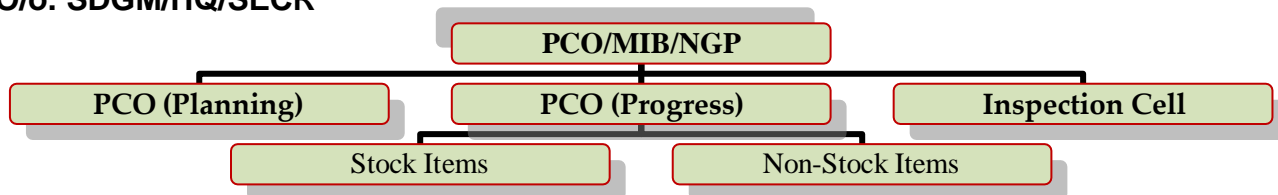
3.2.5 **YARD SHOP AND MATERIAL MOVEMENT :**

At present 15 staff (02 SSE, Tech-13) are working in Yard shop. Staff of this section deals with placement/movement of BG Coach & Tower Wagon and material movement from GSD/MIB to different shops as per requirement. Out of 13 staff, 08 staff are deployed for placement/movement of BG Coach & Tower Wagon and 04 staff deployed for material movement from GSD to different shops and 01 ladies staff is utilized at Office works.

Considering the existing workload, more 03 Tech./Helper is required for smooth operation of Yard Shop. **Thus, the requirement of staff for Yard Shop comes to 18 [Supervisor-02, Technician/Helper-16] against existing deployment of 15.**

3.2.6 **INSPECTION SECTION:**

PCO (Production Control Office) of MIB Workshop/NGP comprises of three wings viz PCO (Planning), PCO (progress) and Inspection Cell/Section. It may be represented as under :



At present, total 13 Staff (01 SSE +01 JEs + 11 Technicians) are working for managing the Workload of Inspection Cell. The main activities of this Cell may be described as under :

V. At Bogie Shop :-

Average 100 to 110 Bogies are being dealt per month by the Inspection Cell at MIB/NGP and needs to carry out following activities.

- Thorough checking of Incoming Bogie
- Checking the components fitted in Bogie.
- Transforming of Bogie Frame
- Finally , all items are checked after completion of work.

VI. At Wheel Shop :-

Average 200 to 230 Wheels are being dealt and following activities are performed.

- Incoming Wheels are checked thoroughly.
- Inspecting Bearings
- Checking of Dia./Wheel Flendge
- Final Checking before dispatch of Wheels.
- Axle Box checking: average 400 to 460 Axle Box are being checked per month and basically Components of Axle/Box , retaining Ring Collar & front Cover are examined for Safe operation this Device.

VII. Carriage related work :-

Average 5 to 6 coaches of ICF+LHB Coaches are being dealt for checking & inspecting the POH activities of incoming Coaches.

VIII. Draw Gears :-

Average 30-32 Draw Gears Box/Fittings are being dealt per month and basically Load Testing activities are carried out.

Document maintenance, Record Maintenance and correspondence work regarding above activities are also carried out by the Inspection Cell.

Based on critical observations and taking above work load in consideration, it is observed that the present deployment of 13 staff in this section is sufficient to meet the need base requirement for cope the workload.

Thus, the existing deployment of 13 Staff (01 SSE +01 JEs + 11 Technicians) is justified.

WHEEL SHOP & ROLLER BEARING SECTION:

At present 65 staff (SSE/JE-05, Technician/Helper-60) are working in Wheel Shop. Staff of this section deals with overhauling of wheel sets of BG coach & Tower wagon. As per discussion held with SSE, the annual target (2020-21) of overhauling of wheel set is 3000. It is found that staff are deployed in two shifts.

The requirement of staff for Wheel shop as per existing workload is assessed as under:

Avg. Monthly Target of overhauling of wheel set = 250 BG Bogie wheel

Time required for overhauling of wheel set per Bogie = 42.37 Manhours

(Based on the Allowed Time of Workshop)

Time required for overhauling of wheel set of 250 Bogie per Month = $250 \times 42.37 = 10592$ M/Hrs.

Requirement of staff (Direct Worker) = $10592/200 = 53$

EIW @ 10% of 53 = 05

LR @ 12.5% of Direct worker + EIW i.e. 58 = 07

Total Artisan Staff (Tech.+ Helper) required for overhauling of BG wheel sets = $53+05+07 = 65$

Requirement of Supervisor (18:1) = 04 [01 for overall supervision(In-charge), 01 for Gen. shift, 01 for shift-I and 01 for shift-II]

Thus, the requirement of staff for Wheel Shop & Roller Bearing Section comes to 69 [Supervisor-04, Artisan/Helper-65] against present deployment of 65 staff. Hence, 04 more staff may be provided for smooth working in this Shop.

3.2.8

COACH Body Shop (BG Coach POH Shop):

At present 79 staff (05 SSE/JE, Tech/Helper-74) are working in BG Coach POH shop. Staff of this section deals with overhauling of BG Coach like undergear parts including side Buffer, Drawgear, Air Brake, furnishing work, lifting lowering & Buffer height of the coaches, water tank testing & rectifying. As per POH Programme of Rolling Stock for the year 2020-21 issued by Railway Board, Annual target of POH of BG coach is 36.

The requirement of staff for POH of BG Coach is assessed as under:

Avg. Annual Target of POH of BG Coach (Based on last 02 years outturn) = 42

Avg. Monthly Target of POH of BG Coach = 04

Time required for POH of one BG Coach = 2431 Manhours

(Based on the Allowed Time of Workshop)

Time required for POH of 03 BG Coach per Month = $2431 \times 4 = 9724$ M/Hrs.

Requirement of staff (Direct Worker) = $9724/200 = 49$

Requirement of EIW @ 10% of 49 = 05

LR @ 12.5% of Direct worker + EIW i.e. 54 = 07

Total requirement of Artisan Staff (Tech.+Helper) for POH of 04 BG Coach = $49+05+07 = 61$

Requirement of Supervisor (18:1) = 05 [01 for overall supervision (In-charge) and 01 for supervision of Air Brake work, 01 for Furnishing work, 01 for water tank testing & rectifying work & 01 for Draw gear work]

Thus, need based requirement of staff for Coach Body Shop (BG Coach POH) comes to 66 [Supervisor-05, Artisan/Helper-61] against present deployment of 79. Thus, 13 staff are found surplus.

PAINT SHOP:

At present 13 staff (01 SSE, 05 MCM, 06 Tech-I & 01 Tech-II) are working in Paint shop and deployed in two shift (Shift A:08.00-12.00 and Shift B: 13.00-17.00). Staff of this section deals with exterior and interior painting & stenciling of BG Coach. The workload of this shop is as per target of POH/IOH of BG Coaches. The target of POH and IOH of BG Coach/Bogie is 04 and 100 per month respectively. Considering the existing workload, it is assessed that existing 13 staff for painting of BG Coach are sufficient to carry out the work of Paint Shop. ***However considering outsourcing of non-core activity, it is proposed to outsource painting & stenciling activity of coach.***

3.2.10

TRIMMING SHOP:

At present 12 staff (03 MCM, 07 Tech-I & 02 Helper) are working in Trimming shop and deployed in two shift (Shift A:08.00-12.00 and Shift B: 13.00-17.00). SSE/Paint Shop is looking after the Trimming Shop. Staff of this section deals with PVC & cushion work of BG Coach & T/Wagon. The workload of this shop is as per target of POH/IOH of BG Coaches/bogies. The target of POH and IOH of BG Coach is 04 and 100 per month respectively.

Considering the existing workload, the Work Study team proposed to deploy 01 SSE/JE to supervise the activities of Trimming Shop.

However considering outsourcing of non-core activity, it is proposed to outsource carpentry/trimming activity of coach.

3.2.11

BG BOGIE SHOP:

At present 110 staff (SSE/JE-07, Technician/Helper-103) are working in BG Bogie shop. Staff of this section deals with Intermediate overhauling of ICF Coach Bogies & shop schedule maintenance of LHB Bogies. Overhauled Bogies are supplied to BSP, Durg, Gondia and NGP/CR Coaching Depot. It is found that earlier Bogies cleaning activity by sand blasting were outsourced but presently this activity has been stopped as per the statutory requirement of State Pollution Control Board. The IOH target in the year 2020-21 is 1200 ICF BG Bogie and Shop schedule of 140 LHB. The avg. monthly target of ICF BG Bogie IOH is 100 and SS maintenance of 12 LHB coach. The requirement of staff for IOH of ICF BG Bogie as per existing workload is assessed as under:

Annual Target of IOH of BG Bogie = 1200

Avg. Monthly Target of IOH of BG Bogie = 100

Time required for IOH of one BG Bogie = 119 Manhours

(Based on the Allowed Time of Workshop)

Time required for IOH of 100 BG Bogie per Month = $100 \times 119 = 11900$ M/Hrs.

Requirement of staff (Direct Worker) = $11900/200 = 60$

Requirement of EIW @ 10% of 60 = 06

LR @ 12.5% of Direct worker + EIW i.e. 66 = 08

Total Artisan Staff(Tech.+Helper) required for IOH of BG Bogie = $60+06+08 = 74$

Requirement of Supervisor (18:1) = 05 [01 for overall supervision(In-charge), 01 for Gen. shift, 01 for shift-I, 01 for shift-II and 01 for shift-III]

However, 10 more staff is required for shop schedule maintenance of LHB Bogies in addition to IOH of ICF Bogies as there is no manhours available for SS of LHB coach.

Thus, the requirement of staff for BG Bogie Shop comes to 89 [Supervisor-05, Artisan/Helper-84] against present deployment of 110. Thus, 21 staff are found surplus.

3.2.12 **TOWER WAGON SHOP:**

At present 11 staff (SSE-01, MCM-04, Tech-I-04, Tech-II-01, Helper-01) are working in Tower Wagon shop. Staff of this section deals with Periodical Overhauling of Tower Wagon of Mark-II, III & IV of SECR, CR and ECoR in General shift (08-17). As per POH Programme of Rolling Stock for the year 2020-21 issued by Railway Board, Annual target of POH of Tower Wagon at MIB Workshop is 04. Actual workload of this shop depends on arising of Tower Wagons.

The requirement of staff for POH of Tower wagon is assessed as under:

Avg. Annual Target of POH of Tower Wagon (Based on last 02 years outturn) = 06

Avg. Monthly Target of POH of Tower Wagon = 0.5

Time required for POH of 1 T/Wagon = 5261 Manhours

(Based on the Allowed Time of MIB Workshop)

Time required for POH of 0.5 T/W per Month = $5261/0.5 = 2630$ M/Hrs.

Available Man-Hour for a worker in a month = 200

Requirement of Staff (Direct Worker) = $2630/200 = 13$

Requirement of EIW @ 10% of 13 = 02

LR @ 12.5% of Direct worker + EIW i.e. 15 = 02

Total Staff (Tech.+Helper) required for POH work of Tower Wagon = $13+2+2=17$

Requirement of Supervisor (18:1) = 01 for overall supervision(In-charge) of work.

Thus, the requirement of staff for Tower Wagon Shop comes to 18 [Supervisor-01, Technician/Helper-17] against present deployment of 11. Hence, 07 more staff may be provided for smooth working in this Shop.

3.2.13 **WELDING SHOP (SHOP NO. 33):**

At present 05 staff (01 SSE, 01 MCM, 01 Tech.-I and 02-Tech.-II) are working in Welding shop. Staff of this section deals with maintenance of welding plants, Gas cutting, fabrication of Mesh for Bio tank, fabrication of flap door for Box'N' wagon, reclamation of flange of BG wheel and as per R-note work. Considering existing workload of Welding shop, the Work Study team proposed to deploy 02 Tech./Helper in Welding Shop. ***Thus, the requirement of staff for Welding Shop comes to 07 [Supervisor-01, Technician/Helper-06].***

However considering outsourcing of non-core activity, it is proposed to outsource welding activity.

3.2.14 **BIO- DIGESTER TANK MANUFACTURING PLANT (EFT SHOP):**

At present 07 staff (SSE-01, Tech-05, Helper-01) are working in Bio Digester Tank Manufacturing shop. Staff of this section deals with manufacturing of Bio Tank for lavatories in coaches. Out of 06 staff, 02 are deputed for store related work, 02 for establishment and correspondence work and 02 for maintenance of machines. The manufacturing of Bio Tanks was started by this workshop in Nov'2015. At present, Bio-tank is not manufacturing in this shop since machine is out of order. The target of mfg. of Bio tank has not been given by Railway Board since last 02 years. However based on outturn of last 02 years, it is observed that 3348 Bio Tank were manufactured in the year 2019-20 and 30 Bio Tank have been manufactured in the year 2020-21 (upto Nov'2020). Before April'2020, total 67 staff were deployed in Bio Tank shop but presently 60 staff are shifted in other shops as there is no manufacturing work ongoing in this shop due to not functioning of machine. Presently, there is an order of 128 Bio Tank pending at this shop. Actual workload of this shop depends on order of manufacturing of Bio Tank. An average of 04-05 Bio Tank are manufactured per day.

However considering the workload based on outturn of last 02 years, it is assessed that previous deployment of 67 (04 Supervisor +63 Tech./Helper) staff

are sufficient for Bio Tank shop and these staff can be arranged from other shops as per workload.

3.2.15 **Bacteria Generation Plant:**

At present 01 SSE and 04 Contractual staff are working in Bacteria Generation Plant. No departmental staff is deployed in this plant. Staff of this section deals with production & supply of Inoculums. This Plant was started in Feb'2014. The Inoculums produced in this plant is supplied to Zonal Railways. Out of 04 staff, 01 staff in 1st Shift, 02 staff in 2nd shift & 01 staff in 3rd shift are deployed. Considering the existing workload, it is assessed that existing operation & maintenance of Bacteria Generation plant by contractual staff should be continued since it is more economical and beneficial.

Thus, the requirement of departmental staff (excluding 01 SSE for supervision) for Bacteria Generation Plant is nil.

3.2.16 **PCO PLANNING SECTION:**

At present 03 staff (02 SSE & 01 Helper) are working in PCO Planning Section wherein 01 Helper is utilized in PCO Progress section also for Group D activities. Major activities of this are as under :

- Preparation of works programme.
- preparation of abstract estimate.
- Preparation of MCDO.
- Preparation of daily progress report.
- Maintaining Ledger/DMTR.
- Correspondence work with Division and HQ/Rly. Board.

Considering the existing workload, i.e. increasing workload of BG Coach POH/IOH, the Work Study team proposed to deploy 01 more SSE/JE and 05 Technician/Helper in PCO (Planning) Section. These 05 additionally proposed staff can be utilised as MTS for various works as per need.

Thus, the requirement of staff for PCO Planning section comes to 09 [Supervisor-03, Tech./ Helper-06].

3.2.17 **PCO (PROGRESS) :**

At present 03 [02 SSE + 01 Tech.] are working to deal the activities related to procurement Stock & Non-Stock Items and disposal of Scrap Items. Major activities of this are as under :

- Chasing of Stock Items (Aprox. 490 items)/Non- stock Items
- Preparation of Forecast Demand (AAC)
- Preparation of stocking proposals
- Preparation of PAC certificates
- Preparation of warranty claim report monthly
- Preparation and submission of critical item list for Head Quarter Store Meeting
- disposal of surplus items
- General correspondence with Head Quarter and store department.

During the course of Study, it is revealed that the presently posted 01 Technician in this Section is being utilized in both the PCO (Planning) & PCO (Progress) Section which resulting lack of manpower as a specific point of time. Therefore, keeping smooth functioning of PCO (Progress) Section, it is proposed that 01 additional Technician should be deployed to meet the requirement.

Thus, the proposed deployment of Staff for PCO (Progress) is 04 [02 SSE+ + 02 Tech].

3.2.18 TENDER SECTION:

At present, 03 Staff (Mechanical) (02 SSE + 01 JE) are working to deal with activities related to Tender works. Main activities of this Section are to prepare Estimate, Tender document preparation, publication of Tender, Tender Opening & Briefing , assisting Tender Committee, Issuing of LOA, returning of EMD (Earnest Money Deposit), finalization of Contract Agreement, Billing of Tender as per norms and documentation and correspondence work.

Based on critical observations of the work load being dealt in present scenario under this Section, it is assessed that the present deployment of 03 Mechanical Staff are sufficient to cope up the existing work load.

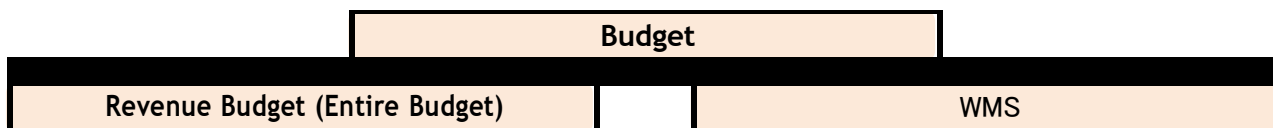
Thus, the present deployment of 03 Staff (02 SSE + 01 JE) is justified.

3.2.19 TECHNICAL & M&P SECTION:

At present, 01 staff (01 SSE) is working in Technical & M&P section.

The main activities of this Section is to prepare Budget, deals with WMS and carries out the activities related M & P items.

The work flow chart comprises of the activities pertaining to this Section may be described as under :



While dealing the work related to Revenue Budget, many of the activities like dealing of Funds & Expenditure in proportionate manner, preparation of funds Proposals for non-Stock Items, dealing the activities related to August Review, FME, preparation of Statement/Assessment have to be dealt. Whereas, under WMS (Workshop Manufacture Suspense) all the activities mentioned in Capital Budget Plan Head-16 & Plan Head-72 are being dealt.

In addition to above, matters related to M&P items like assessment of M&P Items, proposal preparation for requirement, taking approval from CWM/GM/Rly. Board as the case may be, vetting work , checking Technical suitability along with dealing of paper work regarding installation & maintenance of M&P items and dealing of all kind of Observations pertaining to this matter. Simultaneously, the activities pertaining to condemnation of M&P items are being also dealt under this Section.

Based on critical observations & need based requirement of Manpower for this section, it is observed that the present deployment of 01 Supervisor (SSE) is insufficient and one more Supervisor (SSE/JE) should be deployed for smooth working.

Thus, keeping the above facts in view, the Work Study Team propose that 01 more supervisor should be deployed and thereby total requirement of Staff for this Section comes to 02 (01 SSE + 01 SSE/JE).

3.2.20 SAFETY:

At present, 01 Staff (SSE) is deployed in Safety Section and he mainly needs to carry out the following activities :

- Looking after the Safety aspects of Motibagh Workshop including Testing of EOT Cranes, Electrical Hoists, Sling Chains Chain Pulley Blocks, Jamalpur Jacks, and Pressure Vessels on regular prescribed intervals.
- Looking after the Environmental issued related to MIB Workshop

- Making co-ordination in taking consent from Maharashtra Pollution Control Board for operation of MIB Workshop.
- Dealing with disposal of Oil contaminated Hazardous wastes and Waste Oil generated in the Workshop as per procedure of Maharashtra Pollution Control Board.
- Looking after the safety features of Inoculums generation Plant.

Based on critical observations of the present workload and keeping the need base requirement in view, it is observed that the present deployment of 01 SSE is sufficient to manage the work load of this Section.

Thus, the existing deployment of 01 Staff (SSE) in Safety Section is justified.

3.2.21 CMT LAB (CHEMICAL & METALLURGICAL LABORATORY):

At present 14 staff (02 CMS, 01 CMA, 11 Tech./Helper) are working in CMT Lab. Staff of this section deals with Ultrasonic testing of Axles, Magnetic particle testing of Spring, Zygo testing of Roller Bearing, Non Destructive testing of BSS Hanger, Screw coupling, D/Hook pin, Dye-penetrant testing of BG Bogie welded joints, BG Bogie Axle Box, chemical analysis and hardness testing. Technician staff assist to CMS/CMA in testing process. It is observed that 11 Technician/Helpers from various Shops are booked per day at CMT Lab. 02 staff are deployed in testing of Roller Bearing, 03 staff for testing of Spring, 02 staff for Ultrasonic testing of Axles, 04 staff for testing of Axle Box, 03 staff for testing of BG Bogie items.

Considering the existing workload and discussion, existing deployment of 14 CMS/Technician/Helper are not sufficient. Hence, 01 more CMA is required for smooth operation of CMT Lab.

3.3 Summary of Existing & Proposed Deployment of staff shop/section-wise based on existing workload at Motibagh Workshop/NGP:

S#	Name of Shop/Section	Present deployment of Staff		Proposed deployment of staff	
		Supervisor	Artisan/Helper	Supervisor	Artisan/Helper
1	Smithy Shop	00	04	01	06
2	Machine shop	01	05	01	08
3	Tool Room shop		04	01	06
4	Mill Wright shop	03	32	03	32
5	Yard & Material Movement shop	02	13	02	16
6	Inspection Shop	02	11	02	11
7	Wheel shop & Roller Bearing section	05	60	04	65
8	Coach Body Shop (BG Coach POH shop)	05	79	05	61
9	Paint Shop	01	12	01	12
10	Trimming Shop		12	01	12
11	BG Bogie Shop	07	103	05	84
12	Tower Wagon Shop	01	10	01	17
13	Welding Shop	01	04	01	06
14	Bio Tank Shop	01	06	04	63
15	Bacteria Generation plant	01	00	01	00
16	PCO (Planning)	02	01	03	06
17	PCO (Progress)	02	01	02	02
18	Tender section	03	00	03	00
19	Technical & M&P Section	01	00	02	00
20	Safety section	01	00	01	00
Total		39 (SSE/JE) +06Trainee JE =45	357+ 15 of Bio Tank in different shops	44 (SSE/JE)	407
21	CMT Lab	03 (CMS/CMA)	11	04 (CMS/CMA)	11
Total		48	383	48+05=53	418
GRAND TOTAL		431		471	

3.4 Justification for proposed surrender of 20 surplus vacant posts of Technician:

However, a positive attitude has been applied in evolving the requirement of staff vis-à-vis quantum of work of individual employee by taking their work in total and followed a feasible solution to the administration as well as to the employees.

Supervisor (SSE/JE):- After assessing the requirement of Supervisors (SSE/JE) based on existing workload at different shops/sections and discussions with Supervisors, it is concluded that out of total sanctioned of 49 Supervisors, 44 Supervisors are justified and thus 05 SSE are found surplus. But keeping the promotional avenues in view, the post of SSE is not proposed for surrender and 05 SSE may be utilised for miscellaneous work or as per requirement.

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Artisan(Technician/Helper):- After assessing the requirement of Artisans (Technicians/Helper) based on existing workload at different shops/sections and discussions with Supervisors, it is concluded that out of total sanctioned of 438 Technicians/Helper, 418 Artisan staff are justified which is 35 more proposed than present 383 staff and thus 20 vacant posts of Technician are found surplus. Keeping the promotional avenues in view, the post of MCM/Sr. Technician is not proposed for surrender. Hence, work study team recommends for surrender of 20 vacant post of Technician.

3.5 Analysis of Expenditure in Existing Carpentry/Trimming, Painting & Welding Activities and proposed outsourcing of Trimming, Painting & Welding Activities & Financial Savings:

(A) **Expenditure in Existing system of working (Departmental staff cost):**

(i) **Expenses on Departmental staff for Trimming, Painting & Welding Activities:**

Total On Roll staff of Trimming, Painting & Welding Shops	Average Cost per month	Total Yearly expenses (approx.)
Trimming Shop =12	583200	6998400/-
Paint Shop = 12	583200	6998400/-
Welding Shop = 04	194400	2332800/-
Total cost per year		1,63,29,600/-

Total Expenses Per Year (approx.): = 1,63,29,600/-

(B) **Expenditure in Proposed Outsourcing of Trimming, Painting & Welding Activities of Motibagh Workshop:**

(i) **Approximate Expenditure on Outsourcing/Contractual staff:**

At present total 28 Artisan staff are being utilized under Trimming, Painting & Welding Shops. Hence, it is assumed that bare requirement of Contract's worker will be same as no. of manpower utilised in departmental work.

S#	Category	Total No.	Per day Rate of Labour as per Minimum wages	Total Cost per year (Approx)
1.	Skilled Labour (as Artisan)	28	500/-	28x500x365= 5110000/-
Total cost of contractor's staff		-	-	5110000/-
2.	Add Contractors remuneration @ 10%	-	-	511000/-
3.	Add GST @ 12% on above			674520/-
Per Year Cost				6295520/-

(ii) Expenses on Materials used in maintenance/repair work will remain same i.e. in departmental or outsourcing.

(C) **NET SAVINGS Per year (Approx):**

$$\begin{aligned}
 \text{Net Savings} &= (A) - (B) \\
 &= 1,63,29,600 - 6295520 \\
 &= 1,00,34,080/-
 \end{aligned}$$

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Thus, Annual Recurring Savings of Rs. 1,00,34,080/- per annum can be achieved after implementation of Outsourcing of Trimming, Painting & Welding Activities of Motibagh Workshop and surrender of 28 posts of Technician. The live men should be redeployed at other units as per requirement.

3.6 Summary of Sanction, Present & Proposed staff strength at Motibagh Workshop/NGP:

S#	Designation	Sanction	Actual	Proposed	No. of identified Surplus post to be surrendered
Supervisor:					
1.	SSE	35	28	35	00
2.	JE	13	16	13	00
3.	SSE(Drg.)	01	01	01	00
Sub-Total		49	45	49	00
Artisan:					
4.	Sr. Tech./MCM	71	68	71	00
5.	Tech.-I	209	185	196	13
6.	Tech.-II	76	50	50	26
7.	Tech.-III	58	49	49	09
8.	Helper	24	31	24	00
Sub-Total		438	383	390	48
CMT:					
9.	C&M Supdt. Gr.I	03	02	03	00
10.	CMA	01	01	01	00
Sub-Total		04	03	04	00
GRAND TOTAL		491	431	443	48

3.7 RECOMMENDATIONS & SUGGESTIONS:

On the basis of above observations and critical analysis, following recommendations and suggestions are made:

3.7.1 Considering the existing work load and as per details given in Para 3.2 to 3.3, total requirement of staff for Motibagh Workshop comes to 471 against sanction of 491. Thus, 20 vacant posts of Technician are found surplus and should be surrendered in Phase-I from Motibagh Workshop/NGP of Mechanical Department in Nagpur Division.

3.7.2 To bring savings in manpower costs and improving efficiency, it is recommended that some non-core activities of Motibagh Workshop like Carpentry, Trimming, and Painting & Welding activity should be outsourced. Therefore after outsourcing of Carpentry, Trimming, Painting & Welding activities of Trimming shop, Paint Shop & Welding shop, 28 posts of Technician deployed in these shops would be surplus and should be surrendered in Phase-II from Motibagh Workshop. The live men (staff) should be redeployed at other units as per requirement.

Suggestions:

3.7.3 It is suggested that some Artisan staff of Millwright Shop can be imparted proper training to attend CNC (Computerized Numerical Control) machines properly for proper utilization of M&P.

3.7.4 Artisan staff should follow safety rules during working and proper counseling should be provided to Artisan/Helper from time to time in this connection

CHAPTER-IV**4.0 FINANCIAL EVALUATION & RESULTS:-****Phase-I: Savings due to surrender of 20 identified surplus vacant posts (Based on Existing Workload):-**

Design.	Level (7 th CPC)	G.P. (6 th CPC)	Pay Structure (7 th CPC)	No. of Post to be surrendered	Mean pay of the level	Approx. Cost per Month per staff (Mean Basic pay+ D.A. @ 17%)	Total cost per month (in Rs.)	Total cost per year (in Rs.)
Technician-II	Level-4	2400	25500-81100	11	53300	62350	685850	8230200
Technician-III	Level-2	1900	19900-63200	09	41550	48600	437400	5248800
TOTAL				20				13479000

Thus, recurring savings to the tune of Rs. 1,34,79,000 say Rs. 135 lakh Per annum can be achieved due to surrender of 20 surplus vacant posts of Technician from Motibagh Workshop of Nagpur Div. and surrender memorandum to be issued by APO/MIB WS/SECR.

Phase-II: Savings due to surrender of 28 surplus posts after outsourcing-

Design.	Level (7 th CPC)	G.P. (6 th CPC)	Pay Structure (7 th CPC)	No. of Post to be surrendered	Mean pay of the level	Approx. Cost per Month per staff (Mean Basic pay+ D.A. @ 17%)	Total cost per month (in Rs.)	Total cost per year (in Rs.)
Technician-I	Level-5	2800	29200-92300	13	60750	71080	924040	11088480
Technician-II	Level-4	2400	25500-81100	15	53300	62350	935250	11223000
TOTAL				28				22311480

Thus, Recurring Savings of Rs. 2,23,11,480/- per annum can be achieved due to surrender of 28 surplus posts of Technician after implementation of outsourcing of trimming, painting & welding activities of Motibagh Workshop/NGP and surrender memorandum to be issued by APO/MIB WS/SECR.

