

ACKNOWLEDGEMENT

The Central Planning Organization takes this opportunity to express hearty thanks to the Sr.DME/BZA, officials and Inspectors of Mechanical Department and Sr.DPO/BZA, officials and Staff of Personnel department of BZA Division for their valuable guidance and co-operation in extending their support.

METHODOLOGY

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

1. Collection of the details of workload.
2. Interaction with the Officers and Staff.
3. Observation of the pattern of working.
4. Critical examination of the existing system of working and
5. Assessment of manpower requirement for the existing workload basing on yard stick and practical observation

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- **SUBJECT:** REVIEW OF STAFF STRENGTH OF C&W WING OF MECHANICAL DEPARTMENT OVER BZA DIVISION.
- **AUTHORITY:** Annual Programme of Work studies for the year 2018-19.
- **STUDY No:** WSSCR-46/2018-19.
- **REFERENCE FILE NO:** G.276/02/WSSCR-46/2018-19.
- **AREA OF ACTIVITY:** MECHANICAL DEPARTMENT OF BZA DIVISION
- As per the programme of work studies 2018-19, the Central Planning cell of South Central Railway has taken up Work-study on the "Review of Staff Strength of C&W Wing of Mechanical Department over BZA Division".
- Primary maintenance of coaches is being carried out at BZA, NS, COA and MTM depots & turn round/Terminal examination of coaches is being carried out at the BZA, NS, COA and MTM stations.

ROH (Regular Over Hauling) maintenance for Goods (air brake) wagons is Being carried out at ROH depot/BZA and BPC is being issued for CC/premium/End to End Rakes at BZA, COA, KI station Goods yards.

Regular maintenance for ART & MRV is being carried out by Mechanical (C&W) department at BZA, RJY and BTTR stations.
- Major changes have taken in the working system of Mechanical (C&W) department, as some works are being done on contract/outourcing. Recently the Mechanical department has out sourced number of activities in a big way like House Keeping Services, Linen management, mechanized cleaning of coaches including depot cleaning, garbage collection and disposal etc.,
- SAVE statement of C&W staff of over Vijayawada Division:

S No	Designation	Sanction	Actual	Vacancy
1.	SSE/JE/Drafts man/Instructor	142	133	9
2.	Technician fitter	764	659	105
3.	Technician Black smith	7	8	-1
4.	Technician Carpenter	14	12	2
5.	Technician Painter	6	5	1
6.	Revitter	8	6	2
7.	Welder	35	33	2
8.	Machinist	3	3	0
9.	Khalasi Multipurpose	359	378	-19
10.	Safaiwala	10	8	2
11.	CC Maistry/ Office Boy	10	9	1
12.	Office staff	54	59	-5
	Grand Total	1412	1313	99

- In order to have first hand information the Work-study team visited all the units, depots, sections, yards and offices of the Mechanical department of BZA division and observed the working pattern, various processes involved in maintenance of activities.
- The Work-study team made an analysis on the requirement of staff based on the following parameters.
 - a) No. of activities under out sourcing/contract in Mechanical department
 - b) Requirement of staff on for Mechanical department (C&W) basing on Yard stick and practical observation.

➤ **Summary of requirement of staff for C&W department:**

S.No.	Activity	Requirement of staff
1	Requirement of staff for coaching depots	800
2	staff for way side stations for coaching trains	88
3	requirement of staff for Goods ROH & Way side	297
4	Sub Total	1185
5	LR @ 12.5%	149
6	Sub Total	1334
7	Ministerial staff	54
8	Staff for Statistical work	10
9	Control office	10
	Total	1408

➤ Comparative statement of requirement of staff against sanctioned strength of Mechanical department (C&W)/BZA:

Department	Sanction	Actual	Vacancy	Requirement	Excess on requirement
Mechanical (C&W)	1412	1313	99	1408	4

The sanctioned strength of mechanical department (C&W) is 1412, actual staff is 1313 and the requirement is worked out to 1408 and found 4 staff is excess on requirement.

Hence, recommended as follows.

➤ **Recommendation:**

It is recommended to surrender 4 posts from sanctions, which are excess to the requirement at Mechanical department (C&W) over BZA division.

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1.0 INTORDUCTION

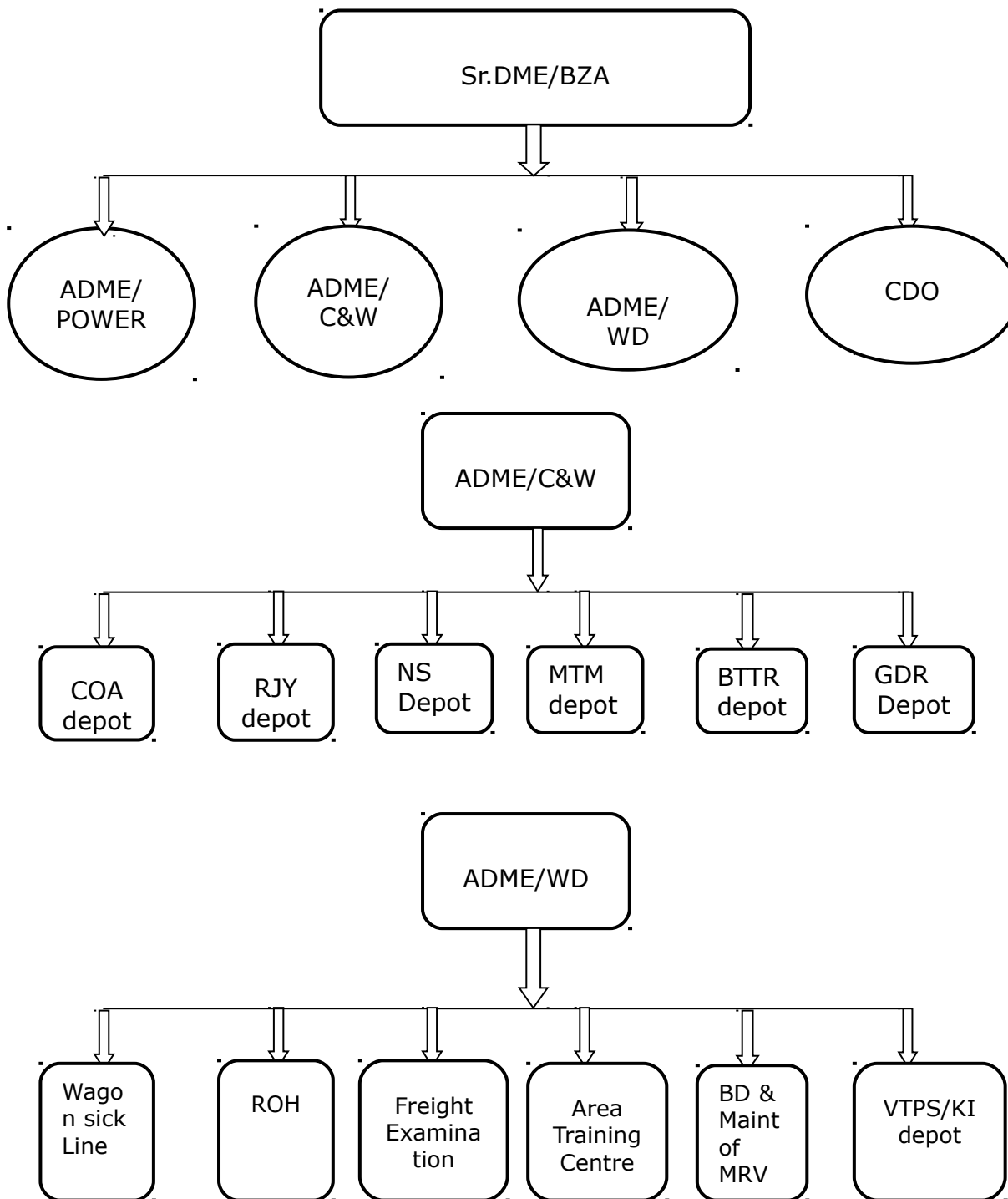
- 1.1 Indian Railways is a premier transport service provider to the nation and is vested with the responsibility of carrying bulk of freight and passenger traffic across the country at economical rates. The Indian Railways operates through 17 Zones with 69 Divisions to serve the above objective and its operations cover [twenty nine states and seven union territories](#) and also provide limited international services to [Nepal](#), [Bangladesh](#) and [Pakistan](#).
- 1.2 **GENESIS OF THE REPORT:** In view of major technological changes taking place in the Indian Railway system, it is imperative to identify activities that have become redundant and re-deploy/surrender the staff that become surplus. RITES in their report had recommended the concept of zero-base budgeting in manpower planning at least once in five years as in such budgeting; the Managers in the organization had to justify presence of every employee. In each Zonal Railway, Work Study Teams/ Staff Inspection Units (SIUs) undertake studies from time to time to identify such activities and suggest efficient methods of operation to affect manpower savings.
- 1.3 With this in view Indian Railways also embarked upon outsourcing various non-core activities and the staff hitherto engaged in such non-core activities is re-deployed in areas concerned with operational and safety aspects. With the outsourcing of the non-core activities, the Railway staff is placed in better places where their services are beneficially and effectively utilized, instead of keeping them in non-core activities, especially when such activities/ facilities are available in the open market at affordable rates.
- 1.4 BZA Division is one of the important Divisions of South Central Railway. Major works being carried out at C & W depots like primary maintenance, Secondary maintenance, terminal attention, attending sick coaches and platform duties, which can be termed as core activities. In addition the non-core activities like cleaning of coaches are also done. As per the instructions of Railway Board, cleaning of coaches, platforms etc. are to be gradually outsourced. As of now certain activities like garbage disposal, disinfecting of coaches, buffing of steel components in coaches, cleaning of Pit lines, Washing of Soiled Curtains, Supply and installation of VHF Controlled microprocessor based LED destination boards display system and maintenance, Mechanized cleaning of coaches, Exterior painting of shabby/faded coaches etc., have been outsourced at these C&W Depots.
- 1.5 In the light of the above, the Planning Cell working under the control of SDGM/SC has taken up work study on the "Review of Staff Strength of C&W Wing of Mechanical Department over BZA Division " and humbly presents this report.

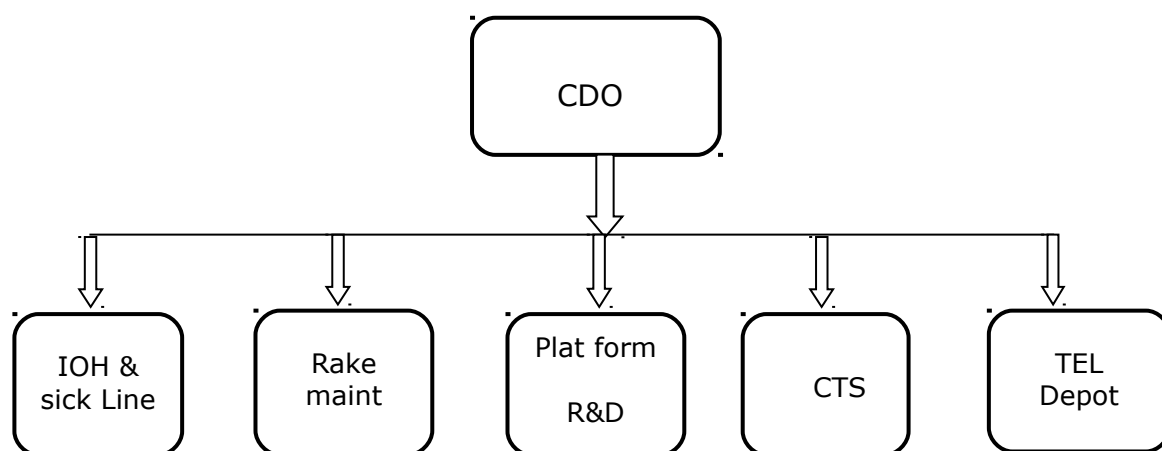
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2.0 பிழைப்பு-2 டிஜிட்டல் / EXISTING SCENARIO:

2.1 ORGANISATION: The Mechanical Department of Vijayawada Division is headed by Sr. DME and assisted by ADME/power, ADME/C&W, and ADME/WD & CDO.

2.2 Organization chart





2.3 The central activity of C&W organization of Mechanical department is maintenance of coaching stock and Goods stock. The Key duties consists Rake Maintenance, Intermediate Overhauling, Maintenance at sick line, Receiving and dispatching of trains, Primary and terminal maintenance of rakes.

2.4 Various activities of coaching depots are as follows:

Primary maintenance	<u>Technical Staff (Gr. C)</u> 1. Pit line examination & repair. 2. Side's examination & repair. 3. Air Brake testing & repair. 4. Dashpot cleaning. 5. Ensuring CBC parts & tightness of yoke pin & yoke supporting plate bolts with torque wrench. <u>Gr. D staff:</u> 1. Trolley cleaning. 2. Tool bag and material handling. 3. Greasing of CBC components.
Secondary Maintenance	<u>Technical Staff (Gr-C)</u> 1. Pit line examination & repair 2. Sides examination & repair 3. Air break testing & repair 4. Buffer & Screw Coupling Oiling 5. Trolley cleaning 6. Tool bag and material handling. 7. Extra/Stock coaches maintenance. <u>Group-D Staff</u> 1. Interior cleaning. 2. Exterior Washing. 3. Watering. 4. Attending Carpentry repairs. 5. Attending Pipe fitting repairs.
Miscellaneous works	<u>Technical Staff (Gr. C)</u> 1. Conducting Rolling in & Rolling Out examination. 2. Conducting box feeling with non-contact thermometer Attending Engine on Train (EOT) & dispatch. 3. Attending public complaints. 4. Closing shutters & doors on arrival of train. 5. Padlocking of coaches after completion of maintenance

	<p>and opening pad locks on platform.</p> <ol style="list-style-type: none"> 6. Collecting of BPC from incoming trains. 7. Issuing of BPC for outgoing trains. 8. Recording of buffer heights of both SLRs. <p>Group D staff:</p> <ol style="list-style-type: none"> 1. Interior cleaning and watering of trains.
R & D	<p>Technical Staff (Gr. C)</p> <ol style="list-style-type: none"> 1. Conducting Rolling In & Rolling Out examination. 2. Conducting box feeling with non-contact thermometer & recording. 3. Attending Engine on Train (EOT) & dispatch. 4. Attending public complaints. 5. Closing shutters & doors on arrival of train. 6. Padlocking of coaches after completion of maintenance and opening pad locks on platform. 7. Collecting of BPC from incoming trains. 8. Issuing of BPC for outgoing trains. 9. Recording of buffer heights of both SLRs. <p>Group D staff:</p> <ol style="list-style-type: none"> 1. Interior cleaning and watering of platform turn-round trains.
Stores & Material Handling (Including Store & Sub-store staff)	<ol style="list-style-type: none"> 1. Local purchase. 2. Procurement of materials from other Depots /Workshops. 3. Material & Wheels transportation. 4. Bogie (Unit exchange) transportation. 5. Material handling. 6. Material issuing. 7. Scrap disposal to scrap depot. 8. Repairs & maintenance of minor cap lamps. 9. Indenting & Procurement of M&P, T&P and general items. 10. Preparation of cleaning kits. 11. Issuing & collection of cleaning kits round the clock. 12. Issuing material for night maintaining trains. 13. Monitoring must available items. 14. Round the clock Rake maintenance position repeating to C&W Control/SC.
IOH	<p>Technical Staff (Gr. C)</p> <ol style="list-style-type: none"> 1. Attending IOH schedule by unit exchange at an average of 1.5 coach/day. 2. Loading /unloading of unit exchange bogies. 3. Checking of quality of unit exchange bogies. 4. Lifting of coach using synchronized jacks and bogies run out. 5. Taking reading like Wheel dia, Buffer heights, Crown clearances, Bolster clearances, application of CBC gauges etc. 6. Fitting of safety loops vertical shock absorbers etc. 7. Air Break testing with SCTR. 8. CDT system testing and attending repairs. 9. Tool Room attenders. 10. Record maintenance. <p>Ancillary Staff (Gr. C)</p> <ol style="list-style-type: none"> 1. Carpentry & Pipe fitting works of IOH coaches. 2. Interior & Exterior paint touchup.

Sick line	<p><u>Technical staff (Gr.C)</u> Lifting of coaches for 1. Wheel changing. 2. Spring changing. 3. Alternator replacement. 4. V-belt renewals. 5. Alternator pins & bushes replacements. 6. Heavy under gear/bogie repairs. 7. Miscellaneous works like modifications & trail runs. 8. Checking & testing of newly built & Off-POH coaches.</p> <p><u>Ancillary staff (Gr.C)</u> 1. Heavy Carpentry repairs. 2. Interior & Exterior paint touchup. 3. Berth & rexine repairs. 4. Pipe fitting & plumbing repairs. 5. Welding works on bogie as well as in coach. 6. Air Compressor attenders.</p> <p><u>Group 'D' staff</u> 1. Lifting of coaches using motorized & manual jacks. 2. Fork lifter drivers. 3. Mobile crane drivers.</p>
Computer & Statistical work.	1. Maintaining Management of Information Systems. 2. Maintaining History cards. 3. Daily yard position work. 4. Train section record maintenance. 5. Personal section record maintenance. 6. Assisting of office work. 7. Sending POH coaches to workshops. 8. Feed back of Off POH coaches. 9. PCDO work & Broucher updating. 10. Miscellaneous works.
Mechanized cleaning of coaches	1. Physical verification of cleaning chemicals stock available with contractor. 2. Physical verification of implements & machinery available with contractor. 3. Verification of Rodent control methods. 4. Checking of cleaning quality in coaches. 5. Collecting of Score Cards, Bill preparation, imposing of penalties. etc.
Special Works and M&P	1. Maintenance of M&P. 2. M&P schedules attending. 3. Providing shims on CBC rakes. 4. Ensuring CBC parts & tightness of yoke pin, yoke supporting plate and supporting device bolts with Torque wrench. 5. Attending repairs to CDT System on train. 6. Maintaining water hydrants on pit lines. 7. Modification works. 8. Other special works
Schedules & Disinfestations	1. Attending 'A' Schedules for rakes like Dash pot oiling. Side bearing oiling. ACP testing, Dirt collector cleaning, Paint touchups Water tank flushing etc. 2. Monitoring of Disinfestations of AC & Non AC coaches

	contract work. 3. Monitoring of Disinfestations AC & Pantry coaches once in a week and Non AC coaches twice in a month
Coaching Batch	1. Round the clock attention of minor repairs on train itself without detaching the coach like broken springs changing attending slack BSS hangers. Attending broken dash pot protection covers, defective break cylinders changing, broken equalizing stays changing, defective DVs changing, bent CBC operating handles changing, etc., on train itself. 2. In addition to this checks & repairs the coaches which are nominated for train service before attaching. 3. Lifting of coaches for V-belts changing. 4. Assisting in carpentry and pipe fitting work for rake maintenance.
Turn Round	Interior dry cleaning, toilet cleaning, watering of coaches is done for trains which returns from the platform.
Rolling in & Rolling Out	This activity is carried out for all Primary, Secondary and Turn Round trains.

2.5 SCALE CHECK OF MECHANICAL DEPARTMENT (C&W)/BZA:

S.No	Designation	Scale & Grade	Sanction	Actual	Vacancy
	Supervisors				
1.	SSE	9300-34800+4600	92	80	12
2.	JE	9300-34800+4200	45	49	-4
3.	SE(Drawing)	9300-34800+4600	1	3	-2
4.	CMS.I	9300-34800-4600	2	0	2
5.	Sr.Instructor	9300-34800+4600	1	1	0
6.	Jr.Instructor	9300-34800+4200	1	0	1
	Sub Total		142	133	9
	Artizen Gr.C				
7.	MCM Technician/Fitter	9300-34800-4200	221	200	21
8.	Tech Gr-I	5200-20200+2800	435	243	192
9.	Tech Gr-II	5200-20200+2400	68	94	-26
10.	Tech Gr-III	5200-20200+1900	40	122	-82
	Sub Total		764	659	105
11.	Helper.I	5200-20200-1800	264	112	152
12.	Helper.II	5200-20200-1800	95	266	-171
13.	S/Safaiwala	5200-20200-1800	9	3	6
14.	Safaiwala	5200-20200-1800	1	5	-4
	Sub Total		369	386	-17
15.	MCM B/Smith	9300-34800+4200	2	2	0
16.	B/Smith Gr-I	5200-20200+2800	4	2	2
17.	B/Smith Gr-II	5200-20200+2400	1	2	-1
18.	B/Smith Gr-III	5200-20200+1900	0	2	-2
	Sub Total		7	8	-1
19.	MCM Carpenter	9300-34800+4200	4	3	1
20.	Carpenter Gr. I	5200-20200+2800	7	7	0
21.	Carpenter Gr. II	5200-20200+2400	1	1	0
22.	Carpenter Gr. III	5200-20200+1900	2	1	1
	Sub Total		14	12	2
23.	MCM Painter	9300-34800+4200	2	2	0
24.	Painter Gr. I	5200-20200+2800	4	1	3
25.	Painter Gr. II	5200-20200+2400	0	2	-2

		Sub Total	6	5	1
26.	MCM Revitter	9300-34800+4200	2	1	1
27.	Revitter Gr.I	5200-20200+2800	5	3	2
28.	Revitter Gr.II	5200-20200+2400	1	2	-1
		Sub Total	8	6	2
29.	MCM Welder	9300-34800+4200	10	10	0
30.	Welder Gr. I	5200-20200+2800	20	6	14
31.	Welder Gr. II	5200-20200+2400	3	10	-7
32.	Welder Gr. III	5200-20200+1900	2	7	-5
		Sub Total	35	33	2
33.	Machinist MCM	5200-20200+4200	0	0	0
34.	Machinist Gr.I	5200-20200+2800	1	1	0
35.	Machinist Gr.II	5200-20200+2400	2	1	1
36.	Machinist.III	5200-20200+1900	0	1	-1
		Sub Total	3	3	0
37.	Crane Driver.I	5200-20200+2800	3	3	0
38.	Motor Driver.I	5200-20200+2800	0	2	-2
39.	Motor Driver.II	5200-20200+2400	1	1	0
40.	Motor Driver.III	5200-20200+1900	4	2	2
		Sub Total	8	8	0
41.	CC Maistry	5200-20200+1800	0	1	-1
42.	Office Boy	5200-20200+1800	2	0	2
		Sub Total	2	1	1
43.	Ch.OS	9300-34800+4600	1	3	-2
44.	OS-I	9300-34800+4600	6	8	-2
45.	OS-II	9300-34800+4200	14	14	0
46.	Head clerk	9300-34800+4200	15	18	-3
47.	Sr. clerk	5200-20200+2800	11	9	2
48.	Jr. clerk	5200-20200+1900	7	7	0
		Sub Total	54	59	-5

2.6 Summary of staff position of Mechanical (C&W) department of BZA division:

	Designation	Sanction	Actual	Vacancy
1.	SSE/JE/Drafts man/Instructor	142	133	9
2.	Technician fitter	764	659	105
3.	Technician Black smith	7	8	-1
4.	Technician Carpenter	14	12	2
5.	Technician Painter	6	5	1
6.	Revitter	8	6	2
7.	Welder	35	33	2
8.	Machinist	3	3	0
9.	Khalasi Multipurpose	359	378	-19
10.	Safaiwala	10	8	2
11.	CC Maistry/ Office Boy	10	9	1
12.		1358	1254	104
13 +	Office staff	54	59	-5
	Grand Total	1412	1313	99

2.7 Duties of C&W staff

Rolling In & Out Examination

There are certain types of defects in rolling stock which can only be detected during the motion of train. To detect such type of defects, rolling in & out examinations are adopted. Unusual sound due to flat tyres, whistling sound from bearing, hanging fittings, any spring broken brake binding.

Terminal Examination

- 1) Temperature of the axle boxes to be checked with the help of non-contact infra red thermometer
- 2) Under gear parts should be examined for any abnormality.
- 3) Lavatories of the coaches should be properly cleaned.
- 4) Any complaint from the passenger to be attended promptly.

IOH/POH Examination

- 1) Tolerances of bogie components to be checked like draw bar, springs, Brake hanger
- 2) Check free height of primary suspension springs and oils, bolts and nuts.
- 3) Corrosion repairs to be carried out.

Schedule A/B

- 1) Test the working of brake cylinders for proper application and release.
- 2) Thorough inspection of brake pipe, feed pipe and their connecting pipes to brake cylinder, distributor valve, Auxiliary reservoir and hose coupling for leakage and attention.
- 3) Carry out manual brake release test on every coach to ensure proper functioning of release lever of distributor valve.
- 4) Micro switch of ACP should be tested by electrical staff for proper functioning.
- 5) Clean dirt collector filter.
- 6) Test the working of slack adjuster
- 7) Intensive cleaning of toilets
- 8) Thorough flushing of tanks
- 9) Checking of water pipes, flush pipe
- 10) Thorough inspection and repairs of draw gear
- 11) Thorough dis-infection of all compartments
- 12) Thorough inspection and repairs of buffers
- 13) Oil in hydraulic dash pots should be checked
- 14) Thorough inspection and repairs of commode chute

2.8 Description of cleaning activity during PM/TM

A. Primary cleaning of coaches

The scope of work for different types of coaches has been detailed as follows.

- a) Exterior coach cleaning including end panels and amenity fittings inside.
- b) Interior coach cleaning including
 - i. Lavatories including the side panels and the amenity fittings inside.
 - ii) Wash basins both inside and outside toilets
 - iii) Aluminium chequered plate or door and vestibule area.
 - iv) Coach interior wall panels.
 - v) Cushioned berths including Rexine.
 - Vi) Window glasses and mirrors
 - vii) Interior floor particularly the areas below the lower berths
 - viii) Aisle portion and between berths, vestibules area

B. The cleaning activity of the coaches should be done as per the sequence given below.

1. Water tank arch

2. Floor under berths
3. Roof of coach and toilets
4. Berth Rexines
5. Body panels near window bars
6. head stains
7. removal of graffiti and stickers
8. edges of squatting pan foot steps
9. pan stains/muck near vestibule areas
10. Turn under near foot steps
11. Window sills

2.9 Detailed scope of work for primary/Terminal cleaning of coaches

I) External Cleaning:

- a) All old labels/reservation charts tied/pasted on the window bars panels or kept in label holders should be removed.
- b) Papers glued on panels should be soaked thoroughly with water and removed.
- c) Before starting the cleaning operations all shutters, both glass and venetian, should be pulled down on the side which is taken up[for washing and cleaning
- d) While pulling down the Venetian shutters, they should be dusted hard from inside to dislodge the dust.
- e) Destination boards should be removed and cleaned separately.
- f) Destination boards should be removed and cleaned separately
- g) The area underneath destination boards shall be duly scrubbed and cleaned roof top ventilators and curved surface should be brushed to dislodge the dust.
- h) Side body, end body, window sills, shutter windows
- i) Roof top ventilators and curved surface should be brushed to dislodge the dust
- j) Sole bars not covered by external body panels should be brushed to make them clean and tidy.
- k) Hand rails, window bars and steps should then be washed and wiped clean free of dust and dirt. Care should be taken to wash and clean body panels under the cleaning.
- l) All water & detergent marks shall be removed after the cleaning.
- m) Trolley frame frontage- the extruded fittings of trolley, trolley frame and wheel disc shall be cleaned. Muck and dirt shall be removed.

II) Interior cleaning of AC coaches

- a) The entire coach length shall be swept dry manually and all litter, dust & debris shall be collected in a polybags to be disposed of at nominated Bin later.
- b) Interior panels, berths/seats, wash basins, mirrors – all ceiling panels should be wiped with a duster and all permanent stains/head grease, dirty spots of interior paneling/Rexene, etc should be cleaned with a duster dipped in detergent solution, wiped clean and dry.
- c) Aluminum chequered plate in doorway; corridors between lavatories should be cleaned.
- d) Vestibule area shall also be cleaned with the help of detergents.
- e) All grease should be removed and all windows, window sills, shutters, etc, should be cleaned with wet duster. Muck and dirt, which gets collected in the corners should also be scrapped and cleaned.
- f) The window glasses should be cleaned with detergent solution and wiped dry with a squeeze in such a manner that the glass should be transparent after cleaning.
- g) To remove dirt, stains due to coffee/tea, betel spittoon etc and clean the ceiling and floor of the coach.

- h) Dust bin from AC coaches should be emptied and cleaned with chemicals and rinsed
- i) The magazine pockets should also be cleaned of rubbish and paper litter, if any.
- j) Side wall fittings including tumbler holder and small luggage racks should be cleaned.
- k) All varnish finished, painted or polish finished panels or laminated plastic panels should be dusted and wiped dry. Oil stains or head stains, if any, should be cleaned either with mild detergent solution or cleaning fluid taking care not to affect the surface being cleaned.
- l) Electroplated fittings should also be dusted and, if required, cleaned with detergent solution and wiped dry.
- m) Cushions should be cleaned with a duster. Oil or head stains and dirty spots, if any, should be cleaned with mild detergent solution and wiped dry.
- n) All window sills should be cleaned with wet duster. Muck and dirt which gets collected in the corners should also be scraped and cleaned.
- o) The window glasses should be cleaned by detergent solution and wiped dry with a dry duster.
- p) The sliding and other doors should be wiped dry, the dust from the corners and ends cleaned and removed.
- q) Oil/head stains or dirty spots, if any cleaned with a duster dipped in detergent solution and wiped dry.
- r) The mirrors in the compartments should be cleaned with a duster and stains, if any, removed with detergent solution.
- s) The window panes shall be cleaned with glass cleaning agent and dried.
- t) Table tops in the compartment should be cleaned with cloth dipped in detergent solution and wiped dry.
- u) The PVC floor and the corridor should be swept dry with bvrush banister and sweepings collected in a dust bin. The floor of the coach should be cleaned thoroughly and all wet muck shall be picked up to leave it clean & dry.
- v) Under no circumstances should sweepings be thrown on the washing line.

III Clearance of garbage

- a) Dust bins should invariably be carried to dust boxes placed at either ends of the washing line platforms for emptying. After dry sweeping, they should then be wiped, with wet sponge cloth.
- b) All stains should be removed by hard rubbing with the cloth dipped in detergent solution and a dilute solution of deodorant.
- c) Grooves of alarm chain handle along with the handles should also be cleaned well.
- d) In case of AC coaches, waste paper basket, etc, should be emptied in to a dust bin and cleaned. Almirahs hangers stools, side tabled, loose cushioned arm rests, foot rest, etc, should be cleaned with a duster and polished items/panels should be touched up where required.
- e) The carpets should be brushed once a month, carpets should be aired in open, preferably in sun, and dusted outside. Before they are replaced, the floor should be swept and thoroughly cleaned.
- f) The wash basins in the compartments should be cleaned with effective detergent and wiped dry.
- g) It should be ensured the drain hole and the drain pipe are clear and water drains out speedily and smoothly.
- h) All Brass and electroplated fitting should be cleaned and metal polished wherever necessary.
- i) The vestibule area shall be washed and cleaned thoroughly with brushes to remove all deposits., it shall be sprayed with phenyl for hygiene feeling.

- j) In the end, all windows should be closed and approved brand of insecticide/flit oil should be sprayed in the coaches. The doors of the compartments should be closed.

IV. Interior cleaning of non-AC coaches

- a) Clearance of garbage and disposal; the entire coach length shall be swept dry manually and all litter, dust and debris shall be collected and disposed of at nominated Bin later.
- b) Interior panels; all ceiling panels should be wiped with duster. Oil as well as head stains or dirty spots, if any, should be cleaned with duster dipped in detergent solution and wiped dry.
- c) All warmish finished, painted, polish finished or laminated plastic panels should be dusted and dry cleaned.
- d) Oil stains or head stains if any should be cleaned either with mild detergent solution or cleaning fluid taking care not to affect the surface being cleaned.
- e) Window sills, shutter windows; all windows sills should be cleaned with wet duster. Muck and dirt, which generally gets collected in the corners, should also be scraped and cleaned. Window glasses should be cleaned by detergent solution and wiped with dry duster.
- f) All doors should be wiped dry, dust from the corners and oil/ head stains or dirty spots, if any removed with duster dipped in detergent solution and wiped dry.
- g) PVC floor; the floor of the coach should be thoroughly cleaned and all wet muck shall be picked up to leave it to clean and dry.
- h) Seats/ berths: wooden seats and seat frames should be cleaned, if necessary washed, especially at crevices and corners and then disinfected. The Rexine seats/ berths should be cleaned with cloth dipped in a soap solution followed by wet cloth.
- i) The vestibule area shall be washed and cleaned thoroughly with brushes to remove all deposits. It shall be sprayed with phenyl for hygiene feeling.
- j) Interior cleaning of parcel, luggage and brake vans; the entire interior portion i.e side walls, luggage racks, floor etc. should be washed with water swept clean and all drain holes opened up. Dog boxes should thoroughly washed disinfected and its drinking water trough well cleaned. The vestibule area shall be washed with HP jet and cleaned thoroughly with brushes to remove all deposits. It shall be sprayed with phenyl for hygiene feeling.

V. cleaning of toilets

- a) For cleaning door and side walls above waist level should not be hosed with water, but should be thoroughly cleaned in detergent solution taking the care that no water goes in to the mirrors.
- b) The dirty spots should be removed with the use of detergent solution. The ceiling and the side walls should thereafter be wiped dry.
- c) The side walls below waist level and the banjo shutters should be hosed with water and thoroughly cleaned.
- d) Any scribble or sticker on walls available on lavatory panels should be removed.
- e) The mirrors should be wiped with a dry glass duster and if necessary, cleaned with detergent solution and again wiped dry.
- f) Wash basins should be cleaned with detergent powder and wiped dry with a duster.
- g) The lavatory floor should be first sprayed with detergent. And then washed with manual scribbling brush.
- h) Indian style commode pans should be cleaned with detergent. All stains or dirty spots on the stainless steel pan should be removed with toilet cleaning agent.
- i) The European style commode should also be washed thoroughly with cleaning agent.
- j) The plastic commode seats and covers should be washed with detergent solution and wiped dry.
- k) The commode chutes should be cleaned with a circular brush and concentrated cleaning agent to remove scaling throughout its length.
- l) Disinfectant solution should be sprayed in the lavatories.
- m) In case of Air- conditioned coaches, plastic container should be cleaned and detergent containers filled with liquid detergent. Pine oil or room freshener should then be applied/ sprayed.
- n) Over head tanks should be completely felled with fresh water.
- o) The floor shall be scrubbed, washed and dried before completing.

VI Watering of coaches:

- a) Ensure all the coach tanks are filled with water through side filling point from the existing water hydrants by using suitable water hose pipes.
- b) After watering, the water hose pipes should be secured in the brackets provided to the pipeline posts to avoid hanging of pipes.
- c) It should also be ensured before departure of the train, again water tanks are filled with water.

VII collection and disposal of garbage:

All the garbage should be collected should be dumped at municipal garbage collection point every day.

2.10 Work Load coaching depots

- 1. IOH of the coaches
- 2. Attention to sick coaches for wheel changing/other repairs.
- 3. Schedule attention to coaches
- 4. Maintenance of Milk tankers, Inspection carriages, Tourist coaches etc.,

2.11 Primary maintenance-CDO/BZA Depot

S.No.	Train No	Description	No. of rakes	Load/ coaches	Bare requirement
1	12711/12712	BZA-MAS-BZA	1	24	24
2	12795/12796	BZA-LPI-BZA	1	20	20
3	12713/12714	BZA-SC-KRNT-BZA	1	20	20
4	12717/12718	BZA-VSKP-BZA	1	24	24
5	17225/17226	BZA-UBL-BZA	2	15	30
6	17208/17207	BZA-SNSI-BZA	1	15	15
7	17215/17216	BZA-DMM-BZA	1	15	15
8	57225/226	BZA-VSKP Pass	3	13	39
9	57278/277	BZA-MAS-BZA Pass	4	12	48
10	57271/272	BZA-RGDA-BZA Pass	2	18	36
11	57231/232	BZA-COA-VSKP-BZA Pass	2	15	30
	Total	6 Exp+ 4 Pass	19	191	301

2.12 Terminal Attention trains of CDO/BZA:

S.No	Train No.	Description	No. of rakes	Load
1	56503	BZA-SBC-BZA	1	14
2	57502	BZA-UBL-BZA	1	14
3	57241	BTTR-BZA-BTTR	1	12
4	57277	BZA-GDR-BZA	1	12

2.13 Plat form Activities of CDO/BZA:

S.No	Activity	Daily trains	Non-Daily trains	Total
1	Safe to Run examination (Rolling in & Rolling out)	86	206	292
2	Watering	69	20	274
3	Train Termination	33	8	41
4	Trains originating	8	2	10
5	Power change/Reversal	35	49	84

2.14 Primary maintenance-NS depot

S.No.	Train No	Description	No.of rakes	Load/ coaches	Bare requirement
1	17256/17255	HYB-NS-HYB	5	23	115
2	17241/17242	NS-VSKP LNK	2	6	12
3	17214/17213	NS-KZJ-NSL	3	21	63
4	17231/17232	NS-GNT-NSL			
	Total	4 Exp	10	50	190

2.15 Primary maintenance- COA Depot

S.No.	Trai No	Description	No.of rakes	Load/ coaches	Bare requirement
1	12737/12738	COA-SC (GOUTHAMI)	2	24	48
2	12775/12776	COA-SC-COA	1	17	17
3	17209/17210	COA-SBC-COA (SESHADRI)	4	20	80
4	17205/17206	CCT-SNSI	2	21	42
5	17203/17204	CCT-BVC			
6	17221/17222	COA-LTT-COA	1	19	19
7	57257/57258	COA-TPTY-UBL PASS	4	16	64
	Total		14	117	270

2.16 Primary maintenance-MTM Depot

S.No.	Train No	Description	No.of rakes	Load/ coaches	Bare requirement
1	17211/17212	MTM-YPR	1	18	18
2	17249/17250	MTM-SC-MTM	2	18	36
	Total	2 Exp	3	36	54

2.17 Turn Round Trains

BZA	COA	NS	MTM
56503	17644	17403	17401
56502	57232	57265	57229
57241	57256	57381	
57277			

2.18 Type of schedules carried out for Coaching trains

- 1) A schedule
- 2) B schedule
- 3) C schedule
- 4) IOH schedule
- 5) Terminal Maintenance
- 6) Primary Maintenance

2.19 Coach holding

S.No.	Depot	Coach holding
1	BZA	301
2	COA	270
3	NS	190
4	MTM	54
	Total	815

2.20 Wagon holding

S.No.	Depot	wagon holding	Total Wagons
1	BZA	101 Rakes	5800
2	COA	4 Rakes	220
	Total	105	6020

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3.0 ಐದೊಂಟು ÷ ÷ ಮೊದೊಂಟು ÷ ÷ ಐದೊಂಟು / CRITICAL EXAMINATION:

3.1 On critical examination of the scale check of Mechanical (C&W) department of Vijayawada Division, it can be seen that out of sanctioned strength of 1412 staff, (including office staff) 1313 staff are working at present with 99 vacancies in different grades.

3.2 Primary maintenance & Sick line attention of coaches is being carried out at BZA, NS, COA and MTM depots and turn round/Terminal maintenance of coaches is being carried out at BZA, NS, COA, MTM, GDR, TEL, RJY and BTTR stations.

ROH (Regular Over Hauling) maintenance & Sick line attention for Goods (air brake) wagons is being carried out at ROH depot/BZA and BPC is being issued for CC/premium/End to End Rakes at BZA, COA, KI station Goods yards.

Regular maintenance for ART & MRV is being carried out by Mechanical (C&W) department at BZA, RJY and BTTR stations.

3.3 Major changes have taken in the working system of Mechanical (C&W) department, as some works are being done on contract/outsourcing. Recently, the Mechanical department has out sourced number of activities in a big way like House Keeping Services, Linen management, mechanized cleaning of coaches including depot cleaning, garbage collection and disposal etc.,.

In order to have first hand information the Work-study team visited all the units, depots, sections, yards and offices of the Mechanical department of BZA division and observed the working pattern, various processes involved in maintenance of activities.

The Work-study team made an analysis on the requirement of staff based on the following parameters.

- a) Contract/Out sourcing activities in Mechanical (C&W) department
- b) Requirement of staff for Mechanical department (C&W) basing on Yard stick and practical observation.

3.4 Contract/Out sourcing activities in Mechanical (C&W) department of BZA Division.

S.N	Name of the work	Unit/section
1	Mechanized cleaning of coaches including depot cleaning, garbage collection and disposal at coaching depot/vijayawada	BZA
2	Mechanized cleaning of coaches including depot cleaning, garbage collection and disposal at coaching depot/kakinada	COA
3	Mechanized cleaning of coaches including depot cleaning, garbage collection & disposal at coaching depot/Machilipatnam	MTM
4	Mechanized cleaning of coaches including depot cleaning, garbage collection and disposal at coaching depot/Narsapur	NS
5	Disinfestation/Pest control in AC & Reserved coaches and rodent control in coaching yards at BZA, COA, MTM & NS.	BZA, COA, MTM & NS
6	Disinfestation/Pest control in Unreserved coaches at BZA, COA, MTM & NS.	BZA, COA, MTM & NS

7	Linen washing/Cleaning of bed roll for trains originating at BZA	BZA
8	Distribution of Linen in Tr.No.12737/38 (Gouthami exp), 12775/76 (Coconada exp), 17249/50 (MTM-SC-MTM)	COA
9	Coach cleaning of 12710/12709 SC-GDR-SC Simhapuri exp under terminal attention at GDR	GDR
10	AMC of Gas pipeline system in Pantry cars at CDO/BZA	BZA
11	AMC of EIMWB (Weighing bridge)	BZA
12	AMC of EIMWB (Weighing bridge)	BTTR & RJY
13	AMC of EIMWB (Weighing bridge)	COA & SLO
14	Transportation of Railway coach under frame trollies/Railway material	BZA
15	Maintenance, house-keeping and supply of subsidized food at NS and Rest Rooms at MTM & BVRM	NS, MTM & BVRM
16	Annual maintenance contract for ASKA emergency inflatable lighting systems over BZA division	BZA, BTTR, RJY
17	Leasing of welding activity to undertake wagon repairs in PKPK (Krishna patnam) siding for a period of 2 years	BTTR
18	Annual maintenance contract for HRE at BTTR	BTTR
19	Periodical maintenance contract of portable/chemical fire extinguishers for various types over BZA division	BZA division
20	Mechanized washing of AC coach curtains at BZA, COA, NS & MTM coaching depots over BZA division	BZA, COA, NS & MTM
21	EMS-Monitoring of Air, water & Noise pollution levels at coaching & wagon depots/BZA	BZA
22	Maintenance of water hydrants HP Jet points at PF No.1 to 10 on BZA Rly station	BZA
23	CAMC for CNC surface wheel lathe of HYT make Machine No. CNC-SWL-71 at ADME/WD/BZA	BZA

3.5 Requirement of staff for Mechanical department (C&W) is calculated based on Yard stick and practical observation as follows

3.5.1 Primary maintenance (taken no. of coaches to be attended per day):

S. No	Coach type	Yard stick per Coach	BZA	Staff required	NS	Staff required	COA	Staff required	MTM W/L	Staff required
1	S.F	1.1	88	97	0	0	41	45	0	0
2	Mail/Exp	0.9	45	41	50	45	60	54	36	32
3	Pass	0.75	58	43	0	0	16	12	0	0
Sub Total				181		45		111		32
Total staff required for Primary Maintenance									369	

3.5.2 Terminal/Turn round maintenance:

S.No	Coach type	Yard stick per Coach	BZA W/L	Staff required	NS W/L	Staff required	COA W/L	Staff required	MTM W/L	Staff required
1	S.F	0.26	0	0	0	0	0	0	0	0
2	Mail/Exp	0.23	0	0	18	4	18	4	18	4
3	Pass	0.18	52	9	26	5	26	5	13	2
Sub Total				9		9		9		6
Total staff required for Turn round Maintenance									33	

3.5.3 Pass through trains at BZA Station:

S .N o.	Coach type	Staff required
1	4staffx 3shiftsx 10PFs	120

3.5.4 Sick line attention:

S.No.	Yard stick per Coach (On coach holding)	BZA	Staff requi red	NS 190	Staff requi red	COA 270	Staff requir ed	MTM 54	Staff require d
1	0.14	301	42	190	27	270	38	54	8
	Sub Total		42		27		38		8
	Total staff required for Sick line attention							115	

3.5.5 Material storage/Accountal on practical observation:

S. No	Yard stick	BZA W/L	Req. Man power	NS W/L	Req. Man power	COA W/L	Req. Man power	MT M W/L	Req. Man power
1	10 men for 150 coach holding and more	281	10	190	10	270	10	54	5
	Sub Total		10		10		10		5

3.5.6 Ancillary staff:

S.No.	Yard stick	BZA	Req. Man power	NS	Req. Man power	COA	Req. Man power	MTM	Req. Man power
1	4.5 men for 30 coaches	301	45	190	28	270	41	54	8
	Sub Total		45		28		41		8
	Total Ancillary staff required							122	

3.6 Summary of requirement of staff for coaching depots

S.No.	Activity	BZA	NS	COA	MTM	Total staff
1	Primary maintenance	181	45	111	32	369
2	Turn-round maintenance	9	9	9	6	33
3	Pass through trains	120	0	0	0	120
4	Sick line attention	42	27	38	8	115
6	Material storage	10	10	10	5	35
7	Ancillary staff	45	28	41	8	122
8	MRV	6	0	0	0	6
	Sub Total	523	156	225	54	800

3.7 Man power requirement for coaching stock at Way side stations

SN o	Activity	Yard stick per Coach	OGL	BTTR	GDR	TEL	RJY
1	Rolling In & out	4 staff in each shift x 2 shifts	8	0	8	8	8
3	ART	-	0	20	0	0	20
4	MRV	-	0	6	0	0	6
5	Enroute watering	-	0	0	2	2	0
	Sub Total	-	8	26	10	10	34

3.8 Summary of requirement of staff for way side stations for coaching trains:

S.No.	Activity	OGL	BTTR	GDR	TEL	RJY	Grand total
1	Rolling In & out, en-route watering etc	8	26	10	10	34	88

3.9 Man power requirement for Goods Wagons at ROH Wagon Depot and Way side stations as per yard stick and practical observation:

S. N	Activity	Nature of work	Yard stick in man hours	BZA W/L	Req. Man power	COA W/L	Req. Man power	KI W/L	Req. Man power
1	Sick line	Wheel changing	14	2	4	0	0	0	0
		Heavy repairs	6	5	4	0	0	0	0
		Other repairs	12	6	9	6	9	4	6
2	ROH	BCN	125	7.13	111	0	0	0	0
		TW	60	0.83	6	0	0	0	0
		BVZC	120	0.5	8	0	0	0	0
3	Goods train exam for BPC				0		0		
	CC Rake exam		100	Two batches for shift	40	One Batch for shift	20	0	0
	Non CC Rake/End to end		40					0	0
	Premium rake		50					0	0
4	Body repairs		20	2	5	0	0	0	0
5	Train examination after tipping (3 men per shift)		-	0	0	0	0	3 shifts	9
6	Stores issues, material stacking		-	-	8	-	2	-	0
7	On line staff for way side repairs		-	-	5	0	0	0	0
8	Lorry gang for material collection		-	0	8	-	2	0	0
9	M&P		-	0	0	-	2	0	0
10	DV & SAB Over hauling		-	-	5	-	2	-	0
11	Ancilliary staff		-	0	32	-	4	-	2
	Sub Total				245		41		11

3.10 Summary of requirement of staff for Goods stock

S.No.	Activity	BZA	COA	KI	total
1	Sick line, ROH, BPC, en-route troubles	245	41	11	297

3.11 Summary of requirement of staff for C&W department:

S.No.	Activity	Requirement of staff
1	Requirement of staff for coaching depots	800
2	staff for way side stations for coaching trains	88
3	requirement of staff for Goods ROH & Way side	297
4	Sub Total	1185
5	LR @ 12.5%	149
6	Sub Total	1334
7	Ministerial staff	54
8	Staff for Statistical work	10
9	Control office	10
	Total	1408

3.12 Summary of staff of Mechanical (C&W) department of BZA division

	Designation	Sanction	Actual	Vacancy
1.	SSE/JE/Drafts man/Instructor	142	133	9
2.	Technician fitter	764	659	105
3.	Technician Black smith	7	8	-1
4.	Technician Carpenter	14	12	2
5.	Technician Painter	6	5	1
6.	Revitter	8	6	2
7.	Welder	35	33	2
8.	Machinist	3	3	0
9.	Khalasi Multipurpose	359	378	-19
10.	Safaiwala	10	8	2
11.	CC Maistry/ Office Boy	10	9	1
12.	Office staff	54	59	-5
	Grand Total	1412	1313	99

3.13 Comparative statement of requirement of staff against sanctioned strength of Mechanical department (C&W)/BZA:

Department	Sanction	Actual	Vacancy	Requirement	Excess on requirement
Mechanical (C&W)	1412	1313	99	1408	4

The sanctioned strength of mechanical department (C&W) is 1412, actual staff is 1313 and the requirement is worked out to 1408 and found 4 staff is excess on requirement.

Hence, recommended as follows.

3.14 Recommendation-I:

- It is recommended to surrender 4 posts from sanctions, which are excess to the requirement at Mechanical department (C&W) over BZA division.

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4.0 ᐃᐃᐃᐃᐃᐃᐃ ᐃᐃᐃᐃᐃᐃᐃ **FINANCIAL REPERCUSSIONS:**

4.1 When the recommendations are accepted, the recurring savings on surrender of the 14 posts of Mechanical department (C&W) over BZA Division will be as follows:

Sl. No	Category	Scale		No. of posts	Mean Pay	DA @ 9 %	Emoluments P.M (in Rs.)	Total Emoluments P.A (in Rs.)
		From	To					
1	Group-D	18000	56900	4	37450	3371	163284	1959408
TOTAL				4				1959408

On implementation of the recommendation, annual savings of **Rs. 19.59 Lakhs** will be accrued.

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5.0 çöüçÃððððÃðÚððû R E C O M M E N D A T I O N :

Sl. No.	Description	Para No.
01	– It is recommended to surrender 4 posts from sanctions, which are excess to the requirement at Mechanical department (C&W) over BZA division.	3.14

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