

सत्यमेव जयते

Goverment Of India

MINISTRY OF RAILWAYS
(RAILWAY BOARD)

INDIAN RAILWAY ROLLING STOCK CODE

OCTOBER 2022

PREFACE

The State Railway Code for the Mechanical Department was first published provisionally in March, 1940, and its first Reprint Edition was brought out in 1944. Subsequently, four editions were brought out in 1950, 1970, 1974 and 1991 as Indian Railway Code for the Mechanical Department (Workshops) incorporating correction Slips up to No. 7 of 2008. This code was further updated in 2016 with the introduction of new techniques and concepts in manufacturing and maintenance of rolling stocks, introduction of Group Incentive Scheme, Bio-metric Attendance System, Environment Management, Factory Act provisions, Enterprise Resource Planning, introduction of Information Technology etc. and renamed as “Indian Railway Rolling Stock Code".

Now, this code has been further revised incorporating the inputs from IRIMEE and Railway officers on important issues like, linkage of Bio-metric attendance with wages, costing and incentive, domain consultancy by the workshops, implementation of Workshop Information System, Umbrella works for PH-41 and many more.

This code supersedes all existing rules and orders issued by the railway board on the subject dealt within it. Unless any contrary intention is expressed or implied in the wording of the existing rules, the provisions of this code are mandatory and binding. For any deviation, the sanction of the‘ Railway Ministry should be obtained.

Any errors or omissions, which may be found in this edition, may be brought to the notice of the undersigned. Equally welcome are comments and suggestions.



(R.N.Singh)
Secretary, Railway Board

New Delhi
Dated .10.2022

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101. Corporate Objectives:

The corporate objectives of Indian Railways are:

a. To provide rail transport for both passenger and goods adequate to meet demand in areas where Railway operation confers optimum benefit to the economy, having due regard to the Government's policy of development of backward areas;

b. To provide such rail transport at the lowest cost consistent with
   i. requirements of the Railway users and safety operations,
   ii. adequate provision for replacement of assets and some provision for development of business and
   iii. the least amount of pollution of the environment ;

c. To work in association with or utilize other modes of transportation, such as pipelines and *road* transport, and to engage in ancillary activities necessary to sub-serve the above two objectives ;

d. To establish a corporate image of the Railways as being an up-to-date business Organization With the interest of the public and of the nation as its prime objectives ; and

e. To develop organizationally effective personnel with pride in their work and faith in the management.

(Para 219 of the Indian Railway Code for Administration and Finance)

102. *Mission Areas for Rolling Stock Vertical*

Note: The term Rolling Stock means Coaches, Wagons, Locomotives, EMU, DEMU, Trainset, MEMU, Tower Cars, Power Car, SPART, ART, ARMV, other special purpose coaches & wagons and rolling stocks.

Rolling Stock Vertical is primarily assigned with the responsibility for Design, Manufacture, deploy and maintain the Rolling Stock of Indian Railways. The mission areas for this activity are:

a. Evolving optimal designs for Rolling Stock, choosing the most economical option on a “life cycle costing basis”

b. Manufacture of the rolling stock at Production units or external Manufacturing Units to stringent standards in a cost effective manner

c. Maintaining the moving assets ensuring that they give optimal operational efficiency and safety *throughout their full codal life*.

d. Planning, procurement and maintenance of Machinery & Plant.

e. Ensuring realization of the full potential of the assets.

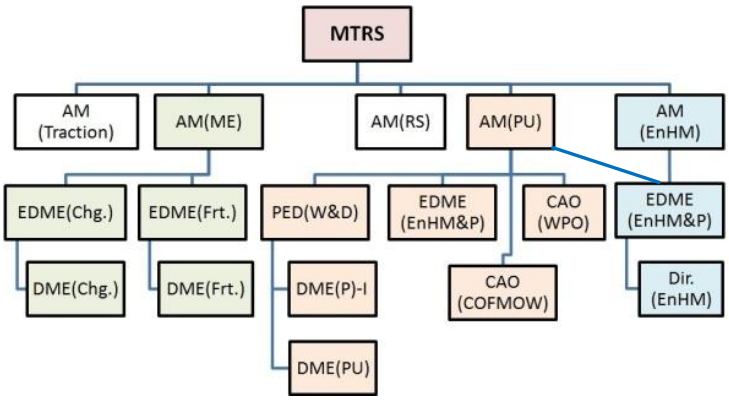
f. Adopting and maintaining the best practices in the industry with excellence in all areas of operation.

g. Arranging relief and rescue in any unlikely event of Railway disasters.

While pursuing the above mission, the orientation of Rolling Stock, Production/Maintenance *Vertical* should remain in complete consonance with Corporate Objectives of Indian Railways.

103. Organisation:

The organizational structure of the Rolling Stock production/maintenance *Vertical* is driven by the manufacture and maintenance philosophy of rolling assets and is shown in the chart below:



Area of responsibility:

- EDME(Chg.) – Responsible for all activities from design of new coaches to condemnation of coaching stock.

- EDME(Frt.) – Responsible for all activities from design of new wagons to condemnation of freight stock.

- PED(W&D) – Responsible for all activities of railway workshops and for development/ introduction of new/advanced/improved technologies in rolling stock.

- EDME(EnHM & Projects) – Responsible for all activities of cleaning/house-keeping of passenger carrying rolling stock and is nodal officer on GCC services. In addition, EDME (EnHM&Proj.) is also responsible for execution of project work related to rolling stock.

- CAO(COFMOW) – Responsible for all activities for procurement of M&P and other technological items for Zonal railways and PUs.

- CAO(WPO) – Responsible for all activities for establishing new infrastructural establishment for Rolling Stock.

While the manufacturing practices in the Workshops are shaped by the strategies that characterize the internationally acclaimed World class industries, the maintenance philosophy balances between the two extremes of –

a. Corrective maintenance: running the assets non-stop and attend only when they break down- thus enhancing availability at the cost of reliability.

b. Preventive maintenance: withdrawing from traffic for frequent and prolonged maintenance attention, enhancing reliability at the cost of availability.

Choosing a mid course between the two, Indian Railways contain the ineffective hours within the stipulated targets by restricting frequency and duration of preventive maintenance schedules. Emerging technologies with fit and forget components, enhanced quality conscience and principles of predictive maintenance further help in reducing the quantum of preventive maintenance with higher and higher levels of availability.

	Activities	Function of
a.	Evolve specifications and designs of the rolling stock and choosing the most economical option on a "life cycle costing basis".	Railway Board and RDSO
b.	Manufacture	Production Units, Zonal Railway Workshops and external manufacturers
c.	Periodical major overhauls and mid life rebuilds (MLRs) (see annexure 1.1)	Zonal Railway Workshops and MLR shops
d.	Top overhauls and minor schedules, Intermediate and routine overhauls	Locomotive sheds, Distributed Power Rolling stock (DPRS) Shed and the carriage, EMU, MEMU,Train set and Wagon depots
e.	Cleaning, topping up supplies, yard or pit line examination attention	Locomotive sheds, Distributed Power Rolling stock (DPRS) Shed and the carriage and Wagon, EMU, MEMU, Train set depots, fuel pads and outstation depots.

104. Railway Board and RDSO:

Complete rolling stock *vertical* reports to MTRS. AMs - ME, PU, Traction & RS report to him. Various directorates in Railway Board in charge for specific areas of rolling stock Workshops & Development functions, not only stipulate the philosophy for manufacture and maintenance, but also keep a close watch on the performance of the Railways. The motive power, PS & EMU, Carriage, wagon and testing directorates in the RDSO act as the depository of all technical knowledge in their respective domains and issue technical directives to the Production Units and zonal Railways, balancing between maintainability and ease of manufacturing.

105. Production Units:

Production units are headed by General *Managers/Chief Administrative Officers (CAO)* assisted by Heads of Departments in Mechanical, Electrical, Accounts, Engineering, Security, Stores and Personnel Departments at appropriate level. Since design and quality are very important, there shall also be Chief Design Engineers. Other broad organizational set up of Workshops as discussed in Paragraphs 108 to 133 below will apply mutatis-mutandis, to Production Units.

106. Zonal Railways:

The General Manager of Zonal Railway is the head of the administration and the organization. In discharge of his duties he is, assisted by a number of Principal Officers who are departmental heads of their respective departments.

107. Rolling Stock Maintenance Organization in Zonal Railways:

The Principal Chief Mechanical Engineer (PCME) is the Principal Head of the Mechanical Department reporting directly to the General Manager. His important function is maintenance of the rolling stock and other mechanical equipment of the Railway in good repair, as on this depends the safety and reliability of railway transportation to a very large extent. To enable him to carry out this duty, Rolling Stock Vertical of the Railways have within their control one or more workshops, in which Rolling Stock are periodically examined, repaired and overhauled before being

placed back on the line. Day to day maintenance of the rolling stock is done in sheds for various Rolling stock Locomotive Sheds, Distributed Power Rolling stock (DPRS) Shed, Coaching Depots, freight depots or other outstation maintenance points, all forming part of the divisional set up. The PCMEs assisted by heads of departments as shown below:

a. Chief Workshop Engineer (CWE): The direct control on the affairs of the workshops in the Zonal Railway is exercised by the "Chief Workshop Engineer" who is the administrative head of the department for workshops and responsible for total planning of workshops including coordination with stores department for all workshop matters. In all matters relating to policy formulation which concerns workshops in general and the Rolling Stock Vertical in particular, the CWE issues instructions in consultation with the PCME, who is the Principal Head of the Vertical. Responsibility for budgetary controls in the workshop rests with the CWE.

b. Chief Rolling Stock Engineers/Coaching (CRSE/Chg.) – CRSEs/Chg. exercises technical control over the coaching depots and other coaching activities in yards/ outstations CRSEs/Chg. will ensure that:

i. Availability and reliability of the coaching stock are above the levels fixed by Board from time to time.
ii. MLR, POH and other preventive maintenance schedules on the coaching stock including EMU/MEMU/ Train-sets are carried out in time and to the prescribed quality.
iii. Ready availability of spare parts and supplies for coaching stock in coaching depots and outstation depots.
iv. Rake links are made to maximize utilization without jeopardizing maintenance and safety.
v. Cadre management for maintenance staff including timely recruitment and training.

c. Chief Rolling Stock Engineers/Freight (CRSE/Frt) – CRSE/Frt exercises technical control over the freight depots and other freight activities in yards and outstations. CRSE/Frt will ensure that:

i. Availability and reliability of the freight stock are above the levels fixed by Board from time to time.
ii. POH, ROH and other preventive maintenance schedules on the freight stock are carried out in time and to the prescribed quality.
iii. Ready availability of spare parts and supplies for freight stock in freight depots and outstation depots
iv. To ensure maximum utilization of freight stock without jeopardizing maintenance and safety.
v. Cadre management for maintenance staff including timely recruitment and training.

d. Chief Electrical Service Engineers (CESE) – CESE exercises technical control on the department of electrical general service including passenger reservation system. CESE will ensure that:

i. Availability and reliability of Train lighting and Air conditioning in coaches.
ii. Planning, maintenance and periodic overhauling of Train lighting and Air conditioning in coaches.
iii. Maintain liaison with division and state electricity board for uninterrupted power supply.
iv. Ensure electrical power supply to railway residential, service building, stations and passenger amenities items.

i. He also assists PCEE for overall works of general services.

e. Chief Electrical Engineers/Rolling Stock (CEE/RS) – CEE/RS exercises technical control on the maintenance and operation of EMU/MEMU. CEE/RS will ensure that:

i. Availability and reliability of the EMU/MEMU stock are above the levels fixed by Board from time to time.
ii. Monitoring material availability, RSP items and procurement of stock items for EMU/MEMU.
iii. All planning works and coordination with workshop for EMU/MEMU POH.
iv. Cadre management for maintenance staff including timely recruitment and training.

i.

f. Chief Mechanical Engineer (Planning) – The CME (Planning) assists the PCME in all matters pertaining to Investment Planning i.e. requirements of Rolling Stock, Machinery and Plant and infrastructure creation under Works Program CME(Planning) will be the nodal officer for execution of all works under PH21, PH41 & PH42 of Demand No 16 and the planning process is elaborated in Chapter 11.

g. Chief Motive Power Engineer/ Diesel & R (CMPE/D&R) – CMPE/D&R will assist PCME in management of ARMEs/ ARTs/ SPART and 140 T Cranes and other items of Disaster management.

h. Chief Environment & House Keeping Manager (CEnHM) – CEnHM will be responsible for the following:

i. All activity related to environmental and housekeeping management.
ii. Monitoring of EnHM activities of stations, depot, colony etc.
iii. NGT works and compliance
iv. Monitoring of waste Management, ETP, CTS, OBHS etc., over Zonal Railways.

These HODs are assisted by Dy.CMEs, EMEs/SMEs & AMEs in Headquarters.

Note: In addition to above, additional designations can be assigned by PCMEs to additional posts like CME(EnHM), CME(IT), CTO, CAO(Project) etc.

108. Zonal Railway Workshops

The Zonal Railway may have one or more workshop for repair and periodic overhauling of Rolling stocks based on the requirements and constraints of location. In the same workshop, repair and maintenance of different types of rolling stock and locomotives can be taken up.

In addition to the repairs and reconditioning of rolling stocks and of plant and machinery, and manufacture of the spare parts for the repair thereof, these workshops may carry out work of the nature shown below: —

a. Construction and assembly of -
   i. Locomotives.
   ii. Coaching Vehicles,
   iii. Goods Vehicles.
   iv. Distributed Power Rolling stock (DPRS)

b. Manufacture of articles required by other departments of the Railways.

c. Manufacture or repair of rolling stock (conventional as well as DPRS) or components for—

i. Other Government Department.
ii. Other zonal Railways/Production units,
iii. Others.

Any other activity, as specified by the PCME.

109. Chief Workshop Manager (CWM)

The Chief Workshop Manager is posted as the officer in charge of the workshop. All the officers posted in the workshop will be under his direct administrative control analogous to that Divisional Railway Managers. CWMs (in SAG) of Workshop are given Financial as well as Administrative power at par with DRMs in Open line so far as areas within the Jurisdiction of CWM are concerned.

110. Chemist and Metallurgist

In one or more of its workshops, each Railway zone shall have a specialized Central Material Technology (CMT) Laboratory with expertise on the following aspects:

a. Testing and quality control (TQC): Testing chemical, physical, and mechanical properties of materials. The TQC should have adequate infrastructure such as metrology, hardness testers, organic and inorganic lab, testing of oils and fuels, optical microscope with image analyzer, UTM etc
b. Technical investigations including failure analysis (TIFA): Expertise in fracture metallurgy and tribology; ability to differentiate between service and process failures and suggest preventive measures.
c. Non destructive testing (NDT): To undertake testing and certification- keep abreast of NDT technologies and maintain documentation.
d. New materials technology (NMT): Develop facilities and knowledge to test the new materials such as polymers, composites, ceramics, additives, amorphous metals, insulating materials, etc. and to help the shed or shop exploit their special qualities to upgrade the materials and processes.

The officers (Chemists and Metallurgists) working in these specialized laboratories in Workshops and those working in the running sheds and depots aid in quality control in manufacturing and maintenance, involving special knowledge of modern chemical and metallurgical techniques. They will also help in failure analyses. The Chemist and Metallurgist who is in overall command of the Laboratory will report to the CWM or the officer in charge of the shed or depot, as the case may be.

111. Workshop Personnel Officer

The open line workshops have an establishment branch under a Personnel Officer (at an appropriate level decided by the Principal Chief Personnel Officer) working under the direct control of Chief Workshop Manager in matters of day to day working, but taking policy directives from Principal Chief Personnel Officer of the Railway. One of his main duties is to attend to all affairs regarding staff and workshop labour. He is responsible to the workshop for all matters relating to establishment such as recruitment, payment of wages and overtime, grant of leave and passes, complaints, discharges, payment of provident fund, gratuity and compensation, maintenance of service registers and other such records. Staff welfare activities like canteen, management of railway quarters, railway schools, supports & cultural activities are also handled by him.

112. Environment and Safety Manager (EnSM)

In 1986, the parliament enacted the Environment Protection Act. (EP Act.) for protection and improvement of environment, which includes water, air and land and also the inter relationship that exists among and between water, air and land and human beings, other living creatures, plants, micro-organism and property. Provision of safety officers in Workshops has been separately mandated in the Factories Act. Creating a work place safe not just for the employees, but the entire neighborhood in an environmentally responsible manner is a specialized activity of the Environment and Safety Manager (EnSM).

The EnSM should be fully conversant with these Acts:

The water- Prevention and Control of pollution Act 1974
The Air- Prevention and control of pollution Act 1981
The Environment (Protection) Act. 1986
The Hazardous Waste (Management, Handling and Trans Boundary Movement) Rules 2008
Factories Act,1948
Municipal Solid Waste (Management and Handling) Rules 2000. (These acts are reckoned in EMS 14001 and OSHAS 18001)

The responsibilities of the Environment & Safety Managers (EnSM) inter alia, are listed in Annexure 5.3 & 5.4 as Administration's duties & Responsibilities to workers. He will report to the Chief Workshop Manager and will oversee/inspect/control the activities of various departments on the subjects of environment protection & industrial safety. Industrial safety and adherence to the legislations like pollution act, factory act etc and assisting the CWM in his duties as the factory occupier are his functions.

Based on the strength of staff, required number of safety officers to work under ENSM will be provided.

For environment protection and industrial safety, a similar but smaller and lower level organization can be provided in bigger open line establishments like Loco sheds/Coaching Depots (conventional as well as DPRS) , as the impact of these subjects will be going up in the years to come.

113. Workshop Civil Engineer

Each workshop shall have an exclusive civil engineering department headed by an appropriate level officer, to ensure construction and maintenance of various fixed assets of the Workshops like sheds, buildings, roads, permanent way, pillars and gantries, toilets & washrooms, drainage & water supply systems and other civil infrastructure He shall work under the administrative control of CWM & technical control of PCE. The Civil Engineer shall be suitably empowered to finalize tenders also. A separate budget shall be provided for Civil engineering maintenance of workshops.

114. Workshop Electrical Engineer

Electrical Engineers in Workshops work under administrative control of Chief Workshop Manager. They are under the technical control of the Principal Chief Mechanical Engineer. Apart from rolling stock related maintenance, duties of Electrical Engineers include supply and distribution of electrical energy, the maintenance of electrical plants and machinery in the workshop.

115. Dy. Chief Mechanical Engineer (Dy.CME) / Workshop Manager (WM)

For workshops exclusively/largely meant for repair and rehabilitation of rolling stock, Dy.CME/WM is (are) posted under the administrative control of Chief Workshop Manager and technical control of Principal Chief Mechanical Engineer. The Dy.CME/WM is in charge of mechanical repairs of rolling stock and other typical mechanical engineering functions.

116. Workshop Accounts Officer

The workshops have an accounts and finance branch under an Accounts Officer at an appropriate level decided by the Principal Financial Adviser (PFA) ~~and~~. Workshop Accounts Officer is under the direct control of Chief Workshop Manager in matters of day to day working. He is in charge of all the costing and accounting of the workshops and is the Financial Adviser to the Head of the Workshops and is responsible for rendering him all the assistance and cooperation related to Finance function that may be required by the later. He may take policy & professional directives from PFA.

117. Dy. Chief Material Manager (Dy.CMM)

The workshops have a stores branch under a Dy. Chief Material Manager (Dy.CMM). He is responsible for the custody, replenishment and distribution of workshop stores. The Officer is under the direct control of Chief Workshop Manager in matters of day to day working and his exclusive charge will be supply management of the workshop in the most efficient manner possible and to maintain all records for the correct and prompt procurement/accountal of all stores/stores transactions. He may take policy directives from the PCMM.

118. Production Engineer (PE)

PE reports to CWM and is responsible for the work of the following sections:

a. Drawing office — Design
b. Drawing office — Plant
c. Drawing office — Jigs and Tools
d. Planning and rate fixing
e. Progress office
f. Tool Room
g. Inspection

For those workshops, which are under Group Incentive Scheme, PE reports to CWM and is responsible for the work of Industrial Engineering Department having the following sections:

a. Drawing
b. Tender section
c. General Section
d. Electronic Data Processing center /Computer center
e. ISO cell
f. Material Control Cell
g. Customer Service Cell
h. Incentive cell
i. Planning
j. Budget Cell
k. M&P cell
l. RSP cell

119. Important duties of the Production Engineer

a. Plan and ensure most economical and the best method of Production and the most economical use of machines;
b. Determine the standard time for each operation by following the analytical method of fixing rates; and
c. Design machines and tools to suit the needs of works passing through the shops.
d. Conduct work study whenever changes in work is necessary on account of introduction of new rolling stock, changes in schedule maintenance works, introduction of new machineries/higher productivity machineries, introduction of new method of works etc in group incentive workshops.

120. Production Engineer's office

a. Prepares design drawings and specifications for new standard parts and for the necessary jigs and tools;
b. Prescribes the nature and sequence of operations to be performed:
c. Inspects all manufactured parts: and
d. On completion of any series of operations, compares the times actually taken with those originally estimated by it, investigates all important differences and reports as to the causes thereof and remedies therefore.

121. Planning and Production Control

The efficiency of a Railway Workshop or a Production Unit is largely dependent on an efficient planning and production control organization. The broad functions of this department comprise of:

a. Pre-planning: Study of drawings and specifications, preparation of cost and details Books for each component; drawing up of lists of raw material or component requirements for ensuring its availability; maintenance of data for installed capacity; booked load; spare capacity, etc. for each machine group etc.

b. Drawing office: Scrutiny of drawings received; preparation of part drawings to facilitate manufacturing operations, designing various jigs and fixtures, templates, gauges, etc. for economical manufacture of components; maintenance of drawings for standard cutting tools etc., placing manufacturing orders on Tool Room, when required, etc.

c. Planning: This office plans the activities connected with production to ensure fullest use of the plant and other means of production; It makes all arrangements to work as smoothly and efficiently as possible. The functions of this office are broadly divided as under:

   i. Processing: The functions include preparation of scroll process sheets indicating sequence of operation, quantity of material to be used, the section or load centre where the operation is to be carried out, the requirement of machine groups, jigs, fixture and gauges, etc.

   ii. Rate fixing: The functions include maintenance of synthetic data for fixing rates (time) for individual operation, indicating allowed time in the process sheet for each of the operation involved; to scrutinize all completed piece work cards, issue of excess time cards etc.

   iii. Efficiency: This section deals with matters of general efficiency of the shops. Its activities comprise of review of existing practices, suggest improvement, keeping constant watch on off cuts and rejected materials

lying on the shop floor or stores scrap yard in order to suggest suitable usage of that materials etc.

e. Production control: Release of work orders for components assemblies etc. well in advance of the schedule of production; preparation of production schedule and distribution thereof in advance to all concerned for their guidance, arranging with stores departments for reservation of required material before actual release of work orders etc.

f. Progress office: This office keeps constant watch of Production of components, assemblies, erection etc. as per schedules laid down, preparation of monthly report of production and their deliveries, keeping liaison with shops and stores departments in the drawal of raw material and finished parts. Intersection and inter-shop movement of components; maintenance of records for number of orders received, orders completed for each batch etc.

g. Inspection: To inspect components, assemblies etc. on completion of each operation to ensure conformity to drawings and specifications, bringing to the notice of concerned authorities of deviation from drawings; and specifications for rectification and rejection; certification on the job card, and Route cards regarding quantities passed or rejected in respect of each operation etc. Inspectors are also deployed where ever required in checking materials or assemblies received from suppliers, for conformity to drawings and specifications.

122. Chief/Deputy Chief Mechanical Engineer (Information Technology)-CME/Dy.CME(IT)

With the introduction of Information Technology (IT) in workshops, each workshop shall have a CME/Dy.CME(IT) for Enterprise Applications and Industrial Automation (*EA&IA*) with a CORE team for implementation, change management and user support as a part of the production control organization in the workshops and PUs. Production Units to have CME/Dy.CME(IT) under administrative control of PCME.

Cadre of data entry operators for handling various IT applications like WISE, UDM, IMMIS, IREPS etc. will be under IT Manager in PUs/ Workshops.

CME/Dy.CME(IT) will support Production Engineer in the rolling out of IT module.

123. Workshop Security Officer (WSO)

Each workshop shall have a security officer from the Railway Protection Force (RPF) at an appropriate level, as decided by the Principal Chief Security Commandant of the Railway; He will work under the direct control of Chief Workshop Manager in matters of day to day working, taking policy directives from the Principal Chief Security Commandant.

123 (A). Workshop Health unit/Hospital

Each workshop shall have a health unit/hospital depending upon staff strength. Adequate number of doctors at an appropriate level and para medical staff shall be posted, as decided by the Principal Chief medical director of the Railway; health unit/hospital will work under the direct control of Chief Workshop Manager in matters of day to day working, taking policy directives from the Principal Chief medical director.

124. As an officer entrusted with the Industrial security, the WSO is expected to

a. Protect the railway premises and to safeguard railway property; ensure that the shop gates are kept under continuous watch, perimeter walls are robust and properly lit in the nights and adequately patrolled and the shops are free from thefts

b. Gather crime intelligence and take security arrangements to protect Railway Property so as to insure that shops remain sterilized and impervious to terrorists and thieves at all times; and free from intrusion by unauthorized persons, especially those with criminal intents or mala-fide intentions of theft of technology secrets.

c. Put in a system of screening and recording of all incoming and outgoing vehicles and materials

d. Equip the CWMs with intelligence reports, in real time, on emerging labour problems with a potential to manifest into works stoppages or disruptions and to assist the shop administration during strikes and lockouts.

e. Provide assistance to the shop officers particularly in conducting auctions or in matters pertaining to law and order by liaising with the local police officers, etc.

124a. The identified locations of workshop have to be covered under CCTV.

125. Workshop Supervisors

Along with officers as listed above, supervisors are posted in different grades. Each workshop is sub-divided into 'Shops' and sub-divisions and is supervised by Senior Section engineers (SSEs) and Junior engineers (JEs). Supervisors are technically qualified “Shop Floor Managers” acting as an interface between management and the workmen.

126. Assisted by the other supervisors and clerks, the senior most supervisor of a shop (generally an SSE) exercises overall command of the affairs of the shop. He ensures that his shop remains current in paperwork and achieves the desired outturn and quality. SSEs have a special responsibility to instill discipline and resolve conflicts; and hence they have to remain neutral and unbiased and equidistant from the staff unions/Associations.

127. Duties of Supervisors

The shop supervisors have a definite function in enforcing/ overseeing/ supervising the under-mentioned aspects:

a. Allocation of work and deployment of Staff & supervisors
b. Verification of timely and proper opening and closing of job cards
c. Enforcing quality through Supervision of work and stage inspections
d. Ensuring availability of tools and materials & Material handling / housekeeping equipment.
e. Ensure economy in use of raw materials.
f. Ensure punctuality in attendance, discipline and also presence of workers at the work spot during duty hours. Supervise the electronic staff attendance punching, discipline and also presence of workers at the work spot during duty hours.
g. Ensure supply of safety kits to workers and ensure adherence to safety regulations and safe work practices.
h. Ensure timely completion of work as per target set by the management.
i. Ensure proper up-keep and safety of Railway’s assets - both immovable and movable.

j. Ensure cleanliness of work premises and ensure good house-keeping by eliminating trash, filth, and foreign matters creating a cleaner workplace. Inculcate cleaning as a form of inspection and establish a clean-up time every day.
k. Ensure correct handling of material so that damage does not occur due to mishandling.
l. Inculcate and maintain proper work culture amongst staff.
m. Design and establish an efficient and neat layout so that one can always get just as much of what is needed and whenever needed.
n. Design of workstations: Design an efficient layout and ensure proper storage of tools, jigs and fixtures, raw materials, spare parts and semi- finished and finished work; and to put things in order (or organize them) according to a specific rule or principle.
o. Ergonomics: To optimize tasks and workstations form the point of view of common place postures and movements such as sitting, standing, lifting, pulling and pushing with least stress on ligaments, joints and muscles of the workmen; and modify them as needed with change of activity or workmen with different anthropometric background.
p. Environment: To create a conducive work environment free from avoidable heat, noise, pollution, vibrations and lack of illumination.
q. Ensure staff safety.
r. Issue of gate pass as per shop requirement.
s. Ensure staff welfare including sanction of leave, issue of privilege pass/PTO etc
t. Conduct market survey, initiate procurement of non-stock materials as per requirement, issue of technical suitability and rate reasonability.
u. Monitoring of availability of materials for day-today maintenance works.

Responsible for implementation of instructions and regulations issued by his superior officers.

128. Categorization of Shops

The Zonal Railway workshops have Process Shops (i.e. Manufacturing Shops) and Job Shops (i.e. Repair shops). Amongst the Process Shops are the foundries, Forge & Smithy, welding, fabrication shops etc. All the other shops are job shops. Each shop should be allotted a shop number by which it can be distinguished. Certain "Shops" may be sub-divided usefully into "sections" or sub-divisions and this should be done wherever possible.

129. The 'Shop' or 'Section' of a shop is the unit not only for purposes of technical control, but also for those of financial and cost control. The number of jobs in progress at any one point of time in any such compact unit is comparatively small and the margin of error in booking to each job the correct time and materials spent on it as low as practical. Any method of distributing overhead expenditure (on cost) attributable to such an unit amongst the jobs undertaken would give more reliable results than what would be the case if the distribution were made, either taking the workshop as a whole or as divided up into a few large units.

130. Maintenance and inspection of boilers

Boilers are maintained in accordance with the relevant provisions in the Factories act of the concerned State as well as Indian Boiler Act. PCME of each zonal railways becomes the Chief Boiler Inspector of Indian Railways, bestowed with the authority for inspection of in use/new boilers. An inspectorial organization with required number of inspectors is made available in certain workshops with earmarked Railway jurisdiction to perform the duties of inspection and certification of Boilers in use in various Railway units. These inspectors are specially trained and

may be working as a part of the Mechanical millwright/M&P maintenance organizations of such workshops. The authority of PCME as Chief Boiler Inspector will be exercised by an officer of not less than senior scale level, who is also in charge of M&P maintenance activities in such workshops. With steam locos having been removed from service in most of the Railways, the expertise for maintenance of boilers need to be sustained as a special skill/trade by exclusive training of selected supervisors & staff.

A Headquarter organization of Chief Boiler Inspector should also be available functioning under the workshop organization of HQs reporting to CWE. He will oversee the functioning of Boiler maintenance organizations of workshops. He will invoke the powers of PCME as Chief Boiler Inspector to serve notices for non compliance based on the stipulated acts on maintenance of Boilers.

131. Maintenance of Weigh Bridges & Weighing Scales

Weigh Bridges & Weighing Scales which are in commercial use in various Railway units have to be maintained in accordance with the relevant Acts on 'Weights& Measures', currently in vogue. In many Railways, Rolling Stock Vertical is given the responsibility for maintenance and certification of these Weigh Bridges & Weighing Scales. M&P maintenance organization of Railway Workshops are generally charged with this responsibility, either through their in-house expertise or through certified outside agencies. In some Zonal Railways, this responsibility is given to the Divisional *Rolling Stock* Vertical.

132. Classification of staff in Workshops

The staff employed in Railway workshops, other than Ministerial staff, may be classified under the following broad categories:

(i) Helper
(ii) Technician. Gr III
(iii) Technician Gr. II
(iv) Technician Gr. I
(v) Senior Technician
(vi) Junior Engineer (JE)
(vii) Senior Section Engineer(SSE)

133. Staff strength

Maximum number of staff in each grade that may be employed on a shop, under normal conditions should be fixed by the General Manager. Any variation in the number so fixed will require appropriate sanction.
Note: If the existing number of staff is in excess of the normal strength so fixed, vacancies shall not be filled up until the strength fixed for the workshop is reached.

134. Within the staff strength limits prescribed by the General Manager or any lower authority empowered to do so, the detailed distribution of staff under each trade category will be made by the CWM. This will be the sanctioned strength of each shop. The CWM should communicate to the Workshop Accounts Officer any variations made in the strength so fixed.

135. Agility

The annual orders of rolling stock (conventional as well as DPRS) (both numbers and variety) placed on the Production Units is driven by the emerging traffic needs, and shall not be constrained or expanded to match the production capacity. Likewise POH workload on the workshops, number and types of locos or coaches based in sheds and depots will be customer driven and not capacity driven.

In order to meet such fluctuations, Production units, workshops or sheds, must be agile like world class organizations i.e. capable of "quickly" adjusting to changing workload *(such as product mix or product volumes)* and thrive under conditions of constant and unpredictable change. Such agility is consciously built in by:

a. Incorporating flexible production systems and creating flexible structures,

b. Creating a strong base of multi skilled staff, cross trained to handle a variety of jobs. It shall be the endeavor of the Chief Workshop Managers to get every skilled artisan trained in more than one trade. After the employee passes the prescribed training course for the new skill, the same will be entered in the personal database of the employee.

c. Instant mobility of staff between sections, made smooth and seam-less, without establishment hurdles or delays

d. As the volume of work decreases or increases necessitating contraction or expansion of staff strength, fixing numbers in each shop with reference to the minimum requirements of the shop, making temporary additions for a limited period.

Fall back plans to quickly outsource critical items of work when the demand exceeds capacity.

136. Open Line divisions

Rolling Stock (both conventional as well as DPRS), on being inducted on line are allotted to loco sheds, Distributed Power Rolling stock (DPRS) Sheds, coaching, EMU, MEMU, Train set or freight car depots in open line divisions. Thereafter, the Home sheds or depots look after these assets during their entire codal life and keep them operational by-

a. Ensuring availability of spares and supplies (fuel, sand water etc) for locomotives, Distributed Power Rolling stock (DPRS) and coaches.

b. Undertaking preventive maintenance of locomotives, Distributed Power Rolling stock (DPRS) and ensuring their outage and deployment

c. Maintenance of carriages, wagons and other items of rolling stock (both conventional as well as DPRS) keeping the ineffective stock to the minimum

d. Safety examinations and unscheduled attention as necessary arising on line and at satellite sheds and outstation depots

e. Timely withdrawal from traffic and dispatching to nominated workshops for Periodical Overhaul and Mid life rehabilitation to MLR shops

f. Planning facilities for induction of additional assets or new trains

137. In addition, open line divisions have the following important functions:

a. To ensure that punctuality of trains remains unaffected by defects in the rolling stock (both conventional as well as DPRS) or Locos
b. Maintenance of crew booking points
c. Proper maintenance of running rooms
d. Ensuring coordinated disaster management and maintenance of rolling stock, (conventional as well as DPRS) and equipments needed for deployment in disasters
e. Ensuring effective manpower planning
f. Ensuring training of staff.
g. Ensure passenger amenities in trains like proper cleaning, provision of good quality linen, pest control, watering etc.,

138. Customer orientation

Generally speaking, Passengers spend more time in coaches than in terminals. The need for making customer friendly coaches with all amenities cannot therefore be overstated. Likewise, freight once loaded has to reach destination without damages and en-route detachments. RDSO, PUs and the zonal workshops contribute greatly in this effort, but it is the Divisions that act as a window to the customer and it is their performance that ultimately decides customer satisfaction.

139. Some of the instances that provoke customer complaints are:

a. Introduction of new or special trains without creation of supporting manpower and infrastructure,
b. Failure of Coach or linen cleaning and watering contracts coupled without any separable departmental staff to take over,
c. Failure of watering systems,
d. Theft of amenity fittings and damages by miscreants etc.,

140. Empowering Coach Maintenance & Disaster Management Wings

In an environment of inelasticity in creation of posts (and placing in position skilled persons at short notice) it is necessary that the officers in the open line heading coaching depots/Operation (Running) are given adequate special powers for the following:

a. Fall back options while designing cleaning and watering contracts in connection with maintenance/servicing of rolling stock
b. Hiring of mobile crane, welders, bulldozers etc across the counter at accident sites.
c. Execution of Composite contracts for Passenger amenity works

Such empowerment has been recommended by Railway Safety Review Committee (RSRC) also. Schedule of Powers in Zonal Railways should have necessary provisions for empowering the field officers on the above.

141. Unitary Command and Control

The unitary command & control of different wings/departments of loco sheds & mega coaching depots must function in manner similar to the practice in workshops as outlined in para 109.

142. Acts relevant to Rolling Stock Production & Maintenance Department

Officers and staff of the Rolling Stock Vertical must be familiar with the following Acts which have a bearing on their day to day functioning.

a. Factories Act
b. Industrial Disputes Act
c. Workmen's Compensation Act, 1923
d. The water - Prevention and Control of pollution Act 1974
e. The Air – Prevention and control of pollution Act 1981
f. The environment (Protection) Act , 1986
g. The hazardous waste (management, handling and trans boundary movement) Rules 2008
h. Municipal solid waste (Management and Handling) Rules 2000.
i. Indian Boiler Act
j. Weights and Measures Act
k. The Electricity Act 2003, etc.

Copy of Bare Acts can be downloaded from Government of India website ‘www.indiacode.nic.in’

143. Important Codes and Manuals of Indian Railways

Officers and senior supervisors of Rolling Stock vertical must also be conversant with the salient provisions in the following Manuals and Codes and abide by them in discharge of their duties:

Annexure 1.1

Mid Life Rehabilitation (MLR):

Except for the mainframe and superstructure of a Locomotive or rolling stock, rest of the components gets invariably renewed or repaired during Periodical overhauls (POHs) in workshops. Thus only the physical life of frame and structure has been central to decisions on codal life of the Locomotives or rolling stock, which once inducted, therefore stay for long years in service (25 to 40 years).

But the technology moves on and today's equipments come with many superior and cost effective features than that of yesteryears. Stand alone equipments are renewed piecemeal, whenever the renewal is warranted; however systems such as engine, propulsion or brake circuits, flooring and upholstery, wagon bodies etc are renewed en-block in line with latest technology in the middle of the codal life. Using this opportunity, the locomotive or rolling stock is also modernized, while getting a new lease of life. The Mid Life Rehabilitations are carried out either in exclusive MLR shops or in nominated Railway Workshops as decided by Board.

Production Units

Para No.	Title *(Ctl + Click on Para no.)*
201	General
202-03	Organization
204-05	Costing in Production Units of Indian Railways
206-07	Process Costing System:
208	Batch Costing System:
209	Features of Batch Costing System:
210	Batch size
211	Work Orders
212	Cost Classification
213-14	Materials
215	Pairing of Issue Notes and Advice Note of Returned Stores
216	Finished Parts Stores Depot:
217	Component Costing:
218	Assembly Costing
219	Collection of cost under Groups and Assemblies
220	Overheads
221	Allocation and Apportionment of Overheads
222-23	Quarterly Review
224	Job Costing
225	Workshop General Register:
226	Completion Certificate:
227-28	Drawl Books
229	Batch Cost Report:
230	Transfer of Final Cost to Railway Board
231	Cost Report to GM
232	Managerial Statements
233	Development Suspense
234	Transfer Price
235	Guidelines for Rolling stock manufacture by repair workshop

201. General

To attain self-sufficiency for Rolling Stock and other components meant for Indian Railways from within the internal resources of the country, Railway Production Units have been set up at different parts of the country which are functioning as independent units under the control of the Railway Board. These are:

a. Chittaranjan Locomotive Works at Chittaranjan for manufacture of various types of electric locomotives.
b. Diesel Locomotive Works at Varanasi for manufacture of various types of Diesel Locomotives, Diesel engines, standby Generating sets and their spares.
c. Integral Coach Factory at Perambur for manufacturing of coaching stocks of various types and their spares.
d. Rail Wheel Factory at Yelahanka for manufacture of various types of wheels, axles and wheel sets.
e. Rail Coach Factory at Kapurthala for manufacture of coaching stocks of various types and their spares.
f. Diesel Modernization Works, Patiala for midterm rehabilitation and modernization of Diesel Locomotives and manufacture of critical spares.
g. Rail Wheel Plant, Bela Distt Saran (Bihar) for manufacture of Wheeel.
h. Modern Coach factory, Lalgang, Raebareli (UP) for manufacture of coaching stocks of various types and their spares.

In addition to the above Indian Railways are in the process of adding new Production Units and Wheel and Wagon Manufacturing facilities at various locations.

202. Organization

All the production units will be headed by General Managers/Chief Administrative Officers who will be assisted by Heads of Departments in Mechanical, Electrical, Accounts, Engineering, Stores and Personnel Departments at appropriate level. Since design and quality are very important, there shall also be Chief Design Engineers. Other broad organizational set up of Work-shops as discussed in Chapter I of this Code will also apply *mutatis-mutandis*, to these production units.

203. The contents of all the other Chapters of this code are also applicable *mutatis mutandis* in Production Units. The contents of this chapter will also apply to workshops in open line engaged in manufacture of rolling stock, only for that activity alone. Some guidelines for these workshops have been laid down in para 335.

204. Costing in Production Units of Indian Railways

The basic purpose of costing in Railway production units is to arrive at the Cost of Manufacturing of each item of rolling stock so that decisions on acquisition of rolling stock can be made on a rational and scientific basis. This will be facilitated greatly after the introduction of ERP (Enterprise Resource Planning) systems in all the production units and workshops of IR. In order to enable introduction of ERP, Railway Board, Production units as well as Zonal Railways must have digitized database details of all assets right from the time of proposal for acquisition till their condemnation. Details of every expenditure on manufacturing and maintaining each asset of the mechanical department must be available on the system. Till ERP is fully introduced in all the railways, cost of manufacture of rolling stock will be worked out as described in the following paragraphs.

205. The system of costing will differ depending on the nature of work carried out. The systems to be adopted in Railway Production units are Process Costing System for wheel manufacture, Foundry Accounts and similar activities and Batch Costing System for Rolling stock production. Both the systems are explained in the following paragraphs.

206. Process Costing System

This system of costing is used for arriving at unit cost of cast iron melt in Railway Foundry workshops. The relevant direct material and direct labour forming Prime Cost of the process and in addition, indirect materials and labour are also charged to arrive at total Cost of the process. The total cost so arrived at is then divided by good castings to finally arrive at the unit rate of cast iron melt. The rate so arrived at forms the basic raw material Cost while computing the unit rate of Brake blocks manufactured. This may be extended to wheel manufacture and other similar activities.

207. The main features of Process Costing System are explained below:

A. The quantum of raw material used with rate is fed as input
B. Indirect materials like Ferro Manganese, Ferro Silicon, Fire bricks, Fire clay, Meltax, River sand etc. used are also to be given as input with Quantity and value to arrive at cost of indirect material.
C. Quantum of Coke utilized with rate also to be given for the month.
D. Direct Labour charges engaged in Casting/ Melting process for the month are to be booked to the work order.
E. Finally the indirect Labour expressed as a percentage of Direct Labour also should be booked to the work order meant for Casting.

The Total of (A+B+C+D+E)/ Good Casting will be unit rate of Cast iron melt.

Foundry outturn statement for…..month	M.207 A
INPUT	OUTPUT
C I Scrap *******	Good casting ******
Pig iron ******	Rejections ******
Runners ******	Runners ******
	Wastage ******
	Sculling ******
Total *******	Total *******
Note: The format is for guidance only and can be modified by the Pus/ Workshops depending upon actual inputs and outputs	

Process cost sheet for ……. Month											M. 207B
	OPENING BALANCE			RECEIPTS			ISSUES			Closing Balance	
PARTICULARS	QTY	RATE	AMT	QTY	RATE	AMOUNT	QTY	RATE	AMOUNT	QTY	AMT
A. Direct material											
CI Scrap											
Runners											
B. Indirect Material											
Ferro Manganese											
Ferro Silicon											
Fire Bricks											
Fire clay											
Steel Pipe											
Meltex											
River sand											
C. Coke											
D. Direct Labour											
E. On cost											
Total Cost									(A+B+C +D+E)		
Rate/kg									Total cost/Good castings		
Note: The format is for guidance only and can be modified by the PUs/ Workshops depending upon actual inputs and outputs											

208. Batch Costing System

Railway production units engaged in Rolling Stock manufacture activity will adopt Batch Costing System. The total cost incurred per batch is collected and divided by the number of items of rolling stock manufactured to arrive at the unit cost of items produced in that particular batch. On completion of the batch quantity Completion Report should be drawn within 6 months to arrive at the cost of production of the said batch and forwarded to Railway Board.

209. Features of Batch Costing System

a Each batch is assigned one work order number

b All elements of cost pertaining to that batch are collected and charged to that work order.

c Total expenditure is then divided by number of rolling stock produced in that batch to arrive at unit cost of rolling stock production.

d This enables unit cost comparison between two batches viz. current batch & previous batch.

210. Batch size

Orders on production unit for manufacture of locomotives, coaches etc., will be placed by the Railway Board. The Production unit should obtain necessary drawings and specification from RDSO / design office for the purpose of manufacture and use bill of materials (BOM) to generate the quantities to be procured by Stores Department. Wherever direct correlation between batch requirement of an item and drawl from store is not possible, the assessment of quantity is done by using a suitable forecasting technique. The total number of locomotives, coaches etc., should be split to convenient batches with due regard to the installed capacity and economy in production. The batch content should be decided by the PHOD of PU's. The production control should release the orders for manufacture of components, assemblies for different batch quantity of Rolling Stock. However, in cases where circumstances so warrant, orders may be released in split up batch quantities also.

211. Work Orders

The expenditure incurred by various Shops and Departments are collected under system of Work Orders as in the case of Workshop. Work Orders are of two kinds:-

(i) Production Work Orders for collection of cost of works / jobs undertaken in Shops; and

(ii) Non-Production Work orders for collection of indirect expenses which constitute Overheads.

The work order system on Production Units has been discussed in detail in Chapter VIII of this Code and will apply mutatis mutandis to Production units.

212. Cost Classification

The expenditure of a Production Unit is classified as under:-

(a) Direct Labor comprising of
  (i) cost of labor booked directly to Work Order / Batch Order based on the average hourly rate; and
  (ii) actual incentive bonus paid Work Order / Batch Order wise.

(b) Direct Stores; and

(c) Overheads

213. Materials

The materials directly required for the production and consumables are stocked in Stores Depot attached to the Workshops. The receipt, custody and issue of materials are done by the Stores Department based on the Issue Voucher generated by the Production Control. The raw materials are drawn through Material Requisition by Crediting Stores Suspense and Debiting WMS. All finished components held in Stores Depot under Stores Suspense are drawn by the Shops on Workshop Issue Slips for assembly or final fitment on the coach. The consumable stores for repair and maintenance etc. are drawn on Requisition-cum-Issue Note (Form 1523 or as prescribed in Stores Code or on specific material requisition).

The stores department in PUs deals with procurement of purchase, receipt, custody and the issue of materials, M&P, tools and consumables stores. They also deal with inventory management and disposal of scrap materials. It deals not only with items borne under stores suspense, but also functions as custody stock holder of charged off shop manufactured items pending their drawl by shops.

Receipt of Materials. The methodology to be followed for receipt of materials from trade is indicated in store code. Materials when received in the receipt ward are checked with relevant purchase order and after inspection and acceptance by the inspecting officer, a receipt note is granted which shows the allocation as final head or stores suspense. The materials are then passed on to the ward keeper or the concerned department. Imported stores are verified with reference to the "advice of dispatch". These vouchers are posted as receipts in the numerical and priced ledgers and accounted for by debit to "stores suspense" or the final head as the case may be, by contra credit to purchases. If in any month the receipt note is received before the actual receipt of the material the debit is held temporarily under the "Stores-in-transit" account till the materials are received.

In case of imported stores, the value of materials as ascertained from Invoice Distribution statement together with sea-freight, port and custom charges etc. is debited to stores suspense (or final head of a/c) contra credit to purchases imported to the extent of prime cost and different standing work orders for sea freight, port charges, custom duty etc. The credit understanding work orders for sea-freight etc. are cleared on receipt of debits for these charges.

Materials manufactured in shops are accounted for through material tags and priced at price list rates. The value of the material is debited to stores suspense by contra credit to workshop manufacture suspense account. Material no longer required by shops and offices are returned to stores depot on 'Advice Note of Returned Stores' and the value thereof is accounted for as debit to 'stores suspense' and credit to shops or departments concerned against specified work orders or final heads of accounts.

Transfer of materials from one U.L. No. to another within the same Depot is made through Book transfer forms. Adjustments necessitated by stock verification are made through Departmental or Accounts stock verification sheets surpluses being shown as debit and deficiencies as credit to stores suspense by contra credit or debit to stock adjustment account as the case may be.

Materials are sometimes supplied to outside firms or Railways for fabrication, reconditioning etc. These are done by placing a fabrication contract on such units. The issue of material for fabrication /reconditioning /repair and receipt of fabricated reconditioned /repaired material is done through suspense issue note and suspense receipt note respectively. Details of this process is available in store code. In these cases usual issue notes are prepared and the value debited to 'miscellaneous Advances'. Where the materials are received back duly fabricated or reconditioned they are received on usual Receipt Notes which are valued at the original cost of materials plus fabrication charges and accounted for a debit to 'stores suspense' by contra credit to 'Miscellaneous Advances'. The extra credit balance lying under 'Miscellaneous Advances' represents fabrication charges and is cleared on payment or adjustment as the case may be.

Issue of Materials: Some of the various issue vouchers through which issue of stores is made and counted for are given below (Details are available under Store order:

a. Material Requisition: Raw materials and semi finished goods required for manufacture in the shops are drawn through material Requisition. This form, duly printed by the Electronic Data Processing Section is released by the progress office and after necessary posting in the numerical and priced ledgers, is accounted for by debit to various work orders concerned and credit to stores suspense.
b. Workshop Issue Slips: All finished components held in stores depot under 'Stock suspense' are drawn by the shops on workshop Issue slips for assembly of final fitment etc. This form shows, interalia, complete allocation including the reference to the Batch No. etc. for which materials is required. This form duly printed by the EDP Section, is released by the progress office. These are posted in Numerical and Priced Ledgers and accounted for by debit to various work orders and credit to stores suspense.
c. Issue Notes for consumable stores etc: Consumable stores for repairs and maintenance etc. are drawn on Requisition-cum-issue Notes (Form S. 1523 or as prescribed in Stores Code) which after posting in numerical and priced ledgers, are accounted for as debit to various work orders concerned and contra credit to stores suspense.
d. Issue Notes for Sales: Materials sold to outsiders, railways or employees are transacted through Issue Notes, (Form S-1314 or as prescribed in Stores Code) and accounted for by debit to sales and credit to 'stores suspense'/W.M.S.

Integrated System of Stores and Cost Accounting- The details of this available in store code. In brief Store Accounting has been mechanized in the various production units in a manner whereby on the one hand the Stores Accounts Section is able to obtain tabulations and summaries for the purpose of reconciliation and compilation of monthly Stores Accounts pertaining to transactions for purchase Workshop manufactured materials, returned stores, issue of stores, adjustment of debits and credits against departments etc. It enables the costing section to obtain tabulations and summaries work order-wise in separate series of production and non-production of work orders for compilation of workshop manufacture suspense account. The tabulations obtained for various purposes will be reconciled by the Electronic Data Processing Section with various control figures before they are released.

214. For the material issued from store depot, the value of the stores issued should be debited against the relevant batch orders. The summary of the issues made to the relevant batch orders are to be grouped and indicated in the main sub ledger. Stores overhead at the prevailing percentage are also to be added.

215. Pairing of Issue Notes and Advice Note of Returned Stores

Copies of Requisition-cum-Issue Notes (S.1523 or as prescribed in Stores Code) are to be received electronically in Costing Section. Each of these Issue Notes is paired with the corresponding copy received electronically after pricing from the Stores Accounts Section to see that:-

(i) the shop serial number (i.e. Requisition Number) of the Issue Notes for each shop are continuous and that the breaks in such continuity, if any, are satisfactorily explained;
(ii) The Issue Notes are received strictly according to the schedule i.e. by evening of the day following the date of issue;

(iii) The issue notes are correctly prepared according to instructions issued for the purpose; and

(iv) The work order number as quoted and the quantity of stores shown as received tally with the quantity shown as Issued in the copy received from Stores Accounts Section.

Similarly, copies of Advice Notes of Returned Stores (S-1539) received from the Shops are paired with corresponding copies received from the Stores Accounts Section to see in addition that there is no delay in affording credit and that there is no difference in quantities. This procedure has been dealt elaborately in Stores Code.

216. Finished Parts Stores Depot

In Production Units Finished Parts Stores Depot is the depot which stocks final manufactured goods under 'stores in stock'. In some cases, store depot also provides warehousing to the finished goods without taking these into books. These are the custody stores for finished parts. In respect of custody stores only 'Bin cards' and Numerical Ledger Cards are maintained by the ward keepers. The Finished Parts stores maintain the stock of only finished, semi-finished and rough components or assemblies. Cost and Detail Nos. / Part Nos. assigned for individual components and assembly serves as pricelist number.

In respect of Finished Parts Store manufactured in Production Shops, the materials, while delivering to the Stores Department, are to be priced at prevailing estimated rate as provided in the workshop voucher based on para 317 below. These final rates of components are to be worked out for pricing and on completion of the Work Order batch. The final rate of component thus worked out updates the cost of finished stores part. Any difference between the old and new rates, if required is done by debiting to WMS.

217. Component Costing

This is to be done only for item borne in the stores suspense. In respect of the furnished part-stores, an estimate is to be prepared before authorization of the work order. Production work orders for manufacture of components are released by quoting the order and batch numbers and cost and detail numbers/Part Number. Stores and labor required for the work order are to be booked and the estimated cost is to be advised to the stores accounts office to enable pricing of the item at the time of handing over to stores depot. The finished materials sent from shop to stores is initially priced at the estimated cost by debiting stores and crediting the respective work order. On completion of the work order, the difference between the estimate and actuals has to be advised and necessary adjustment is to be carried out in the books.

218. Assembly Costing

The manufacture of Rolling Stock should be conveniently split up into a few divisions called groups, each group being composed of several assemblies. Each assembly is composed of several components each of which is indicated by Cost and Detail members/Part Numbers, which facilitate ascertaining of costs of assemblies and components from same labour and material booking documents with the help of machines. Production work orders for manufacture of components etc. are released by quoting the order and batch numbers and cost and detail numbers/Part Number. All Production documents viz. Material Requisitions, Job Cards, Squad Cards, Workshop issue slips, Material Tags etc. shall bear the order and batch numbers and cost and detail numbers/Part number. The labour and material charges booked through these documents are punched with all necessary particulars including order and batch nos. and C & D Nos. Batch-wise tabulations of

labour and material charges and direct man-hours are then taken out in the "Electronic Data Processing Centre". Charges/Credits booked through out turn statements, miscellaneous adjustment memo, Material tags, Advice of Returned Stores are also tabulated batch wise separately. These charges/ credits shall be posted in the Workshop General Register under different elements of cost from month to month and progressive totals cost. These charges so collected under a batch constitute progressive cost of manufacture of the batch. The punched cards are sorted out by batches and groups and also by batches and assemblies and tabulations—group-wise and assembly-wise made out. Since the charges are tabulated by batches, groups and assemblies from same punched cards the totals of labour, material, overheads and man-hours by assemblies should agree with the total of the relevant batch. This reconciliation should be ensured by the "Electronic Data Processing Centre" before releasing the various tabulations to Costing Section.

219. Collection of Cost Under Groups and Assemblies

The charges/credits appearing in the tabulations by groups and assemblies should be posted in the cost sheets for the groups and assemblies under different elements of cost and direct man-hours from month to month, each monthly figure being reconciled with corresponding figure available by batches in the Workshop General Register. On receipt of the completion certificate for .a batch, the totals of each group and assembly to end of the last month of booking of charges should be struck under different elements of cost and direct man-hours.

220. Overheads

Besides direct expenditure on labour and materials incurred on a job, there are certain expenditures which cannot be directly charged to jobs but included in the cost of production on certain equitable basic. These indirect expenditures are termed in production units as overheads. The overheads in a production unit are classified on commercial pattern into four categories to ensure proper control and equitable distribution of indirect expenses on cost of production. These are as under:

a. Factory overhead
b. Administrative overhead
c. Township overhead
d. Stores overhead

Separate standing work orders are issued for collection of overhead expenditure in respect of each of the above classification. For facility of collection, analysis and control of overheads falling under the above categories, separate expense numbers are allotted. The vouchers containing a charge to overhead expenses should bear the appropriate allocation as under:

S.W.O. No. Overhead Expense No. Shop/Department.

Factory Overheads

This should generally comprise of:

a. All indirect expense of production shops.
b. All indirect expenses of production-cum-service shops.
c. Expenses of Apprentices attached to main shops
d. Expenses of Dy.CME (W)/Work Manager’s office including planning and progress, preplanning, estimating etc. offices.
e. Expenses of time keeping organization.
f. Expenses of works canteens including meal sheds.
g. Depreciation of Building, Plant and Machinery of shops and Departments mentioned above.

h. Electric charges consumed by departments and shops mentioned above.
i. Credit for return of materials, interest and profit earned for works done for outsiders etc.

Administrative Overheads

These include:

a. Expenses of General Managers office and other general administrative offices.
b. Electric charges, as consumed by various offices included in (a) above.
c. Credits on account of return of materials, diet charges etc.

Township Overheads

These comprise of:

a. Expenses of civil engineering depts.
b. Expenses of water works, sanitation, horticulture etc.
c. Electricity consumed by the above departments and township.
d. Depreciation of Buildings, Plant and Equipments etc. of above Departments and Township.
e. Credit for recovery of house rent, electricity and water charges from staff and outsiders and return of materials etc. by the Departments mentioned above.

Stores Overheads

These comprise of:

a. Cost of stores department in headquarter or elsewhere.
b. Depreciation of buildings and equipments of the various stores offices/Deptts .
c. Inland handling and freight charges not allocated to stores directly.
d. Clearance from Stock Adjustment Account.
e. Cost of pattern supplied by the Administration to suppliers as per agreement.
f. Cost of replacement and rectification of defective and deficient materials supplied by the stores departments and not recoverable from Firms.
g. Credit for return of materials allocable to stores Depts. And for incidental, freight and departmental charges realised on sales.

Chief Mechanical Engineer of every Production unit will arrange to issue in consultation with associated finance fresh work orders for Overheads required for their units and the same should be reviewed once in 5 years.

221. Allocation and Apportionment of Overheads

Administrative and Township Overheads are levied on direct wages of Production Jobs including incentive bonus and overtime payment. The percentages of Factory Overhead are worked out separately shop-wise, while the Administrative and Township Overheads are worked out as a percentage for the entire Workshop. A single percentage rate should be worked out for Stores Overhead for levy on Direct Stores. Chief Mechanical Engineer and Controller of Stores of every Production unit will arrange to work out these percentage rates in consultation with associated finance based on the actual expenses of the previous year and budgeting. The overhead percentages should be revised after revised estimates are submitted. In the case of work done for Government departments other than Indian railways, Railway PSUs, other PSUs, Private parties and export, profit shall be charged over the total estimate cost as a percentage, as per the extant instructions of Railway Board. In order to be competitive in international markets, the General Manager of a zonal Railway/Production Unit/Chief Administrative Officer of Production unit shall with the concurrence of FA & CAO have the power to reduce the quantum of fixed over heads and profit for exports, in accordance with special instructions in vogue.

Nature of Work	Direct Labor (1)	Direct Material (2)	FOH (3)	AOH (4)	TOH (5)	SOH (6)	EXCISEDUTY (7) @ applicable rate on Cl.1 to 6	PROFIT (8)	Proforma Charges & Special packing (9)
Capital/ RSP/DRF	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NIL	NIL
For other Indian Railways	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NIL	NIL
Railway Public Sector Under takings & Govt. Departments	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Percentage of (1+2+3+4+5+6)	Actuals
Private parties & other Public sector Under takings	Yes	Yes	Yes *	Yes *	Yes	Yes *	Yes *	Percentage of (1+2+3+4+5+6)	Actuals
Exports	Yes	Yes	Yes *	Yes *	Yes *	Yes *	Yes *	Percentage of (1+2+3+4+5+6) *	Actuals

* For exports, fixed components of these overheads and profit can be reduced by GM with the concurrence of FA & CAO.

Proforma Charges.—Proforma charges mentioned in above table comprise of:

(i) Dividend.—Dividend charges payable to General revenue for a year at the applicable rate should be calculated on Capital-at-charge to end of the previous year plus half of the (anticipated) capital outlay for the year and should be distributed over the number of locomotives coaches etc. to be produced during the year and shown proforma on the cost report.

(ii) Special Contribution to Provident Fund or Gratuity.—The liability for these charges should be calculated at 1/24 of the total salary and wages for the year less the estimated amount of payment on this account during the year and distributed over the total number of locomotives, coaches etc. to be produced during the year and shown proforma on the cost of report.

(iii) Share of Cost of Railway Board and Audit (Railways).—The share of cost on this account as advised by the Railway Board every year is also distributed over the total number of locomotives, coaches—etc to be produced during the year and shown proforma on the cost report.

Working out Percentages for Overheads: The overhead percentages for a financial year are worked out on the basis of indirect expenditure provided through the original Budget estimates of labour, material and other expenses are first analysed by the various Departments. While expenses provided for the departments other than shops are wholly indirect, the provision made for shops comprise both direct and indirect, charges. The breakup of the indirect expenses under various shops is furnished by the Production office on the basis of past actuals, latest trends and anticipated changes. Item-wise provisions of indirect expenses are then tabulated in a statement wherein expenses of the departments falling under different overheads are grouped. The percentage of expenses of service shops and departments etc. to the beneficiary departments will then be worked out on the total

indirect expenses of shops and departments available in the statement mentioned above. The aggregates of indirect expenses after including results of apportionment as mentioned above will represent the Factory overheads for different production shops, Administrative and Township overheads for the workshop as a whole. These are related to the corresponding estimated 'direct labour' or 'direct stores', as the case may be and percentage, rates worked out on the following formulas:-

$$\text{Factory overhead \% (FOH)} = \frac{\text{Total FOH for the shop}}{\text{Total direct labour of the shop}} \times 100$$

$$\text{Administrative overhead (AOH)\%} = \frac{\text{Total AOH}}{\text{Total direct labour of the entire factory/Workshop}} \times 100$$

$$\text{Township Overhead \% (TOH)} = \frac{\text{Total TOH}}{\text{Total direct labour on the entire factory/workshop}} \times 100$$

$$\text{Stores Overhead \% (SOH)} = \frac{\text{Total SOH}}{\text{Total direct stores}} \times 100$$

222. Quarterly Review

A review of efficiency of overhead percentages should be made quarterly by Production Engineer/Dy.CME (Production) jointly with workshop Accounts Officer with reference to total actual expenditure incurred vis-à-vis that recovered at the overhead percentages. The outcome of this review in the form of management summary should be brought to the knowledge of Chief Workshop Engineer for the management review and over head cost control exercise. A comparison of these actual overheads with recoveries made through estimated percentages will reflect over/under charges for the month under different overheads. If these are found unduly large, the percentages are revised without waiting for the August Review, Revised Estimates or Final modification.

223. The Under / Over charges at the end of the year should be less than 5% so as to make Overhead budget realistic and the same must be cleared before the end of the Financial Year.

224. Job Costing

Details of job costing have been discussed in Paras 706 to 714 of this code.

225. Workshop General Register

The detailed compilation of Workshop General Register has been discussed in Chapter-8. All the data should be captured batch-wise, shop-wise, month-wise and tabulated in the labour sub ledger based on which the labour schedule should be generated. The Workshop General Register should be posted with the details in the labor sub ledger and details of stores drawn against different batch order in the main sub ledger. The workshop general register should reflect the monthly booking of stores and labor including the overheads batch-order wise, shop wise and month wise up to the month of accountal. The credits shall be posted in the WGR under different elements of cost from month to month and progressive total cost. The credit to the WGR are transferred from the out turn statement based on the transfer railway transactions/the amount deposited by the outside bodies against deposit works.

226. Completion Certificate

After delivery of the locomotives, coaches and Wagons to the allottee railways and after all vouchers have been properly transacted in respect of different batch orders completion certificate should be issued by the progress office. The completion report has to be sent to Accounts Department for further preparation of cost reports. The completion report should also contain the details of the dispatch particulars of all the rolling stock authorized against batch orders. This should be issued within a month from the date of dispatch or the last coach/locomotive/wagon so that the target laid down in Para 308 for drawal of Completion Report is achieved. A Completion Certificate should also be issued by the Stores Department stating that all vouchers pertaining to the batch have been passed on to the Accounts Office.

227. Drawal Books

A record is maintained by the Shop Progress persons for all items that go into a rolling stock. This book shows the vouchers no. or dates on which materials are drawn to enable the Progress persons to keep a watch that all items are transacted for the correct quantities required for a batch. The Section Officer (A/cs) of the Costing Section should test check the entries in these books to ensure that they are properly maintained to serve the purpose for which these are intended.

228. On receipt of completion certificate from the progress office, the costing section should obtain a certificate from stores accounts section and time keeping to the effect that all the Material and Labour of the batch have already been included in the accounts Thereafter cost of the batch is compiled by summarizing the costs of groups and assemblies under different elements of costs as booked in the workshop General Register to end of the month in which Completion Certificate is received.

229. Batch Cost Report

The cost report should be drawn by the costing section of FA & CAO based on the actual booking made in the WGR batch wise. The comparison of the man hours booked with the previous batch order of the similar product and comparison of the materials booked in the current batch order with previous batch order. In case of new type of rolling stock the comparison may be made with the estimated cost. The quantum of stores variation item wise should be indicated in the Material Analysis Statement. CME's office should analyse the reasons for variations in respect of the booking of Labor and Stores and furnish the remarks based on which the batch cost report will be compiled. The format of the Batch Cost Report is as below.

M.229

R.S.P. Ref.No. & Quantity
Month of Commencement :
No.of Units included in this Batch :
Month of Outturn of last unit in this batch:
Date of last unit delivered :
No.of Units produced so far inclusive of this batch:
Date of Completion Certificate:
Completion Report Due before
Number of rejections in inspection in this batch
Extra cost incurred due to rejections

			(In Units of Rs.)
S.No.	DETAILS	BATCH NUMBER-BATCH SIZE	PER UNIT (COST/BATCH SIZE)
	MANUFACTURING COST:		
1.	Direct Labour+Incentive Bonus+ OT Allowance		
2.	Direct Stores		
	OVERHEADS:		
3.	Factory Overheads		
4.	Administrative Overhead		
5.	Stores overhead		
6.	Township Overhead		
	Total Overheads (3+4+5+6)		
7.	Total Manufacturing Cost (1+2+3+4+5+6)		
8.	Excise duty on the above on (7)		
9.	Cost of items supplied by Board		
10.	Total Cost (7+8+9)		
	Proforma Charges		
	Dividend		
	Share of Cost of Rly. Board, Audit etc.		
	Govt. contribution under new pension scheme		
11.	Total Proforma Charges		
12.	Total Cost including Proforma Charges		
	Approximate amount of depreciation included in the Overhead		
	Man hours Spent		

(Amount adjustable to Railway Board)

Amount adjusted to Rly.Board for the Estimate Cost for this batch ---
Actual Cost of this batch-- -- -- ----
Difference being Debit/Credit adjustable to Rly Board (for being

transferred to Allottee Rlys). -------

230. Transfer of Final Cost to Railway Board

Proforma charges comprising of dividend and share of cost of Railway Board & Audit (Railways) and special contribution to PF or Gratuity should also be indicated while finalizing the cost report. The details regarding the credit transferred to the batch order based on the transfer price should also be indicated in the cost report. The difference between the actuals and transfer price as per finalized cost should be

indicated in the cost report and the same should be transferred to Railway Board as further charges against RSP in which the rolling stock has to be taken up for manufacture.

231. Cost Report to GM

The costing section under FA & CAO should prepare an analysis of direct man hours, direct stores utilized viz-a-viz the previous actuals. This note and the draft batch cost report should then be put up to G.M for approval. The draft cost reports before being put up to G.M for approval should be sent to Principal Heads of all the concerned departments. The very purpose of this report is to examine the cause for vide variation between the current batch and the previous batch of production and this will aid management to identify the area where control of expenditure is possible.

232. Managerial Statements

The following is an illustrative list of Managerial statements that should be prepared on the computer system for every Production unit.

Day end reports

a. Percentage of absenteeism
b. Total Gate Attendance Hours Vis-a-vis Job Card Hours
c. Number of Rolling Stock manufactured
d. Idle time booked with reasons, shop wise
e. Reconciliation of Time Taken with Gate Attendance and reasons for variations.
f. Urgent requirement of materials (Both stock & non stock)

Weekly reports

a. Outturn of Rolling stock Type wise
b. Labor hours spent on each type of Rolling Stock turned out during that week
c. % of outturn achieved compared with the Target
d. Over Time booked if any to meet the target
e. Reason for slow or staggered working (if any) on account of want of material or otherwise.
f. Position of Material availability to ensure smooth functioning in the ensuing week.

Monthly reports

a. Outturn of Rolling stock type-wise compared with the Target
b. Unit Cost of Manufacture of Rolling stock type-wise compared with previous month’s actual.
c. of Direct and Indirect man hours.
d. Incentive bonus data

Quarterly Report

a. Overhead expenditure.

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Based on the above list, GM of every Production unit should decide in consultation with FA & CAO, and others executive Heads of Departments, the formats of statements needed for Managerial control according to their local needs. These should be discussed in the meeting of GM with Principal HODs. There should be a constant endeavor to reduce costs without compromising the quality.

233. Development Suspense

The difference between the sale price and the actual cost of production/works undertaken in respect of outside parties including exports, representing profit/loss on the transaction should be credited/debited to Development suspense account by the production units. The balance under Development suspense shall be non-lapsable and can be carried forward after an Annual Review made by G.M and FA&CAO. Out of the profit accruing from sales to non-railway customers and exports charged to the Development Suspense, General Managers are authorized with the personal concurrence of FA&CAO to facilitate undertaking works for non railway customers (NRC).

234. Transfer Price

The transfer price for each product manufactured by Production units should be fixed duly taking into account the actual cost of the product of the previous year as per the cost report duly providing for escalation in respect of direct labor, stores etc. The transfer price should be the base for transfer of debit through Railway Board to other Railways for the rolling stock supplied. The transfer prices are the provisionally predetermined prices which are advised by the production units to Railway Board for approval in various budgetary reviews. However, the same should confirm to Government accounting Standards. In respect of manufacture of a new type of rolling stock, the transfer price should be fixed based on the estimate duly taking into account the current labor rate, current direct stores and prevailing overhead percentages. The credit for the rolling stock dispatched should be realized based on the transfer price. The difference between the estimated transfer price and the actual cost would be known on finalization of the cost report. This difference debit/credit is to be adjusted against specific RSP and the same should be transferred to Consignee Railways through Railway Board. Necessary provision of funds for making the above adjustments are also to be made in the RSP budget by the production units. The Transfer price should be revised only once a year at the time of Revised Estimate (RE).

235. Guidelines for Rolling stock manufacture by repair workshop

Some of the repair workshops are engaged in manufacture of Rolling stock for other Railways (supply to Railway Board) and also Railway and other PSUs. The following guidelines are laid down.

a. In general all provisions contained in this chapter from Para 306 to 334 except 333 are applicable to production shops of Repair workshops engaged in the activity of rolling stock production.
b. However, the levy of Shop and general on cost for the production shops may be charged as a percentage of Direct labour as per the present practice in repair workshops
c. The amount of depreciation and repairs and maintenance to Plant & Machinery, buildings of shops involved in production activities should be charged to Factory overheads while arriving at the predetermined rate for Labour on Cost and Stores on Cost respectively of production shops.
d. While booking the expenditure of feeder shops for the production activity, all basic elements of cost (material, labour and on costs) along with applicable percentage of proforma oncost on the total labour cost of feeder shops must be levied.

Employees' Duties and Responsibilities

Para No.	Title *(Ctl + Click on Para no.)*
301	Hours of Work
302-04	Working Hours
305	"Gate Attendance System"
306	Deliverables of a modern "Gate Attendance System"
307	Modernization of "Gate Attendance" system using smart card and biometrics
308	Biometric System of "Gate Attendance"
309	Time Office
310	Opening and closing of workshop gates
311-12	Late Attendance
313	Work during meal hour and on Sundays
314	Attendance of Supervisory Staff
315	Working Hours of Shop Clerks
316-318	Employee's Biometric Identity Number (BIN)
319	Leaving shops during working hours
320-323	Duty Certificate
324	Night Shift
325-26	Overtime Requisition
327	Overtime Register
328-329	Overtime Allowance
330-331	Material Gate Passes
332-334	Muster Roll cum Labour Pay Sheet
335	Deductions for Absence
336	Chart of Labour Charges
337	Extract Pay sheet
338	Inter-shop Transfers
339	Staff Register
340	Hours of work
341	Exemptions to limitation of hours of work
342	Remaining on duty
343	"Attendance in LCDs"
344	Modern Gate Attendance System for LCDs"
345	Disaster Management
346	Accident Relief & Medical Equipment Train
347	Accident Relief Trains
348	Breakdown staff
349	Accident checklist
350	Reprovisioning in ART/ARME
Annexure 3.1	Important provisions of hour of work and period of rest Rules-2005

301. Hours of Work

Railway Workshops that come within the definition of "Factories" or declared to be "Factories" in *The Factories Act, 1948* are regulated by the provisions contained in this statutory act. The General Manager shall appoint the Chief Workshop Manager or any other officer by designation as *"The Occupier of the Factory".* The occupier shall be vested with ultimate control over the affairs of the factory, in order *to* fulfill all the relevant provisions in the said Act.

302. Working Hours

Working hours of labour in Railway Workshops are normally eight and a half hours on week days and five and a half hours on Saturdays, thus making a total working week of 48 hours which translates into an 8-hour day on a six day week. Any departure from an 8-hour day involving payment of a day's wages for less than 8 hours work requires the specific sanction of the Railway Board, but the actual working hours and their distribution between the days of the week may be altered in accordance with local requirements subject to the limitations in Para 403 below:

303. Important limitations in Working Hours imposed by *The Factory Act*, 1948 in Chapter 6 Sections 51-56 are:

a. Weekly Hours-- No adult worker shall be required or allowed to work in a factory for more than forty-eight hours in any week.
b. Weekly Holidays.—No adult worker shall be required or allowed to work in factory on a Sunday unless he has or will have a holiday for a whole day on one of the three days immediately before or after that Sunday.
c. Where any worker works on Sunday and has had a holiday on one of the three days immediately before it, that Sunday for the purpose of calculating his weekly hours of work should be included in the preceding week.
d. Daily Hours—No adult worker shall be required or allowed to work in a factory for more than nine hours in any day.
e. Intervals for Rest. The periods of work of adult-workers in a factory shall be so fixed that no period shall exceed five hours and that no worker shall work for more than five hours before he has had an interval for rest of at least half an hour. State Government may, however, grant exemption so that the total number of hours worked by a worker; without an interval does not exceed six.
f. Spread Over—The periods of work of an adult 'worker in a factory shall be so arranged that inclusive of his intervals for rest, they shall not spread over more than ten and a half hours in any day.

304. If *"The Occupier of the Factory"* considers it necessary that certain staff has to be exempted from the above conditions on some occasions, the sanction of concerned state Government should be obtained through the General Manager in terms of Section 64 of Factories Act 1948 before such exemption is given effect to.

305. Gate Attendance System:

A modern "*Gate Attendance System"* for workshop applications must fulfill the following bare minimum requirements:-

a. Entry and exit of every person (no matter, how high in the hierarchy) through the main gates should be verified and recorded except the time of mass entry/exit at the beginning/end of each session of work. Such records should be immune to manipulation.
b. A person entering the main gate cannot exit except when the work session ends, unless and until he passes through the verification system which records his time of exit.

c. The employee alone can mark his attendance for him and not others. Impersonation should not only be impossible but also monitor able.
d. All workshop main gates should be adequately manned when fully open during the peak hours of entry/exit. During the rest of the time these gates should be closed and sealed, leaving only one manned access controlled wicket gate permanently open during all hours for entry/exit with special authority.
e. The number of identification-cum GA marking devices should be such that all the designated employees can use the system in not more than 15 minutes at the beginning and end of sessions of work, handling the peak hour rush.
f. CCTV should be fixed in all main gates as well as locations where computerized 'identification cum GA marking' is done.
g. In order that no data gets lost due to disasters such as crashing or hacking of the system, there should be proper data security and backup arrangement. The system should conform to a defined disaster recovery plan and also should be able to withstand prolonged periods of power cuts.
h. The system should provide online information to the management, about number of workmen inside the workshops shop-wise, at any point of time.
i. The data captured should be integrated with the enterprise application for making wage payments.
j. It should be impossible to have duplicate recording and there should be an automated system to take care of such errors.
k. The wicket gate provided at the main gate for entry/exit on occasions other than the beginning/end of work sessions should be access controlled to allow entry/exit only with Smart Card, supported by the requisite authority. This also should be linked with the computerized GA system.
l. In order that the employees are motivated to carry their personal mark of identification (such as the smart card), it should be made multi-purpose i.e. the employee's pass, medical identity, provident fund, leave and other data should be implanted in such device.
m. The gate of entry for shunting and receipt/ dispatch of rolling stock (both conventional as well as DPRS) shall be monitored and kept closed and sealed during rest of the times.
n. The system should give out exception statements of violations of any statutory working hour limitations (Para 402), pertaining to:-
    - Total daily Hours
    - Total Weekly Hours
    - Sunday working rules
    - Weekly Holidays
    - Rest Intervals.
    - Spread Over

o. The GA marking system should have a dual verification method, either through smart card combined with biometric authentication or through biometric verification alone to be available as a standby.
p. All entry and exit points of the workshops should have security cameras along with data retrieval and storing facilities for any review on a later date. The data should be stored at least for a month.

306. Deliverables of a modern "Gate Attendance System"

A modern *"Gate Attendance System"* for workshop applications must fulfill the following bare minimum requirements:-

a) Entry and exit of every person (no matter, how high in the hierarchy) through the main gates should be verified and recorded except the time of mass entry/exit at the beginning/end of each session of work. Such records should be immune to manipulation.

b) A person entering the main gate cannot exit except when the work session ends, unless and until he passes through the verification system which records his time of exit.
c) The employee alone can mark his attendance for him and not others. Impersonation should not only be impossible but also monitor able.
d) All workshop main gates should be adequately manned when fully open during the peak hours of entry/exit. During the rest of the time these gates should be closed and sealed, leaving only one manned access controlled wicket gate permanently open during all hours for entry/exit with special authority.
e) The number of identification-cum GA marking devices should be such that all the designated employees can use the system in not more than 15 minutes at the beginning and end of sessions of work, handling the peak hour rush.
f) CCTV should be fixed in all main gates as well as locations where computerized 'identification cum GA marking' is done.
g) In order that no data gets lost due to disasters such as crashing or hacking of the system, there should be proper data security and backup arrangement. The system should conform to a defined disaster recovery plan and also should be able to withstand prolonged periods of power cuts.
h) The system should provide online information to the management, about number of workmen inside the workshops shop-wise, at any point of time.
i) The data captured should be integrated with the enterprise application for making wage payments.
j) It should be impossible to have duplicate recording and there should be an automated system to take care of such errors.
k) The wicket gate provided at the main gate for entry/exit on occasions other than the beginning/end of work sessions should be access controlled to allow entry/exit only with Smart Card, supported by the requisite authority. This also should be linked with the computerized GA system.
l) In order that the employees are motivated to carry their personal mark of identification (such as the smart card), it should be made multi-purpose i.e. the employee's pass, medical identity, provident fund, leave and other data should be implanted in such device.
m) The gate of entry for shunting and receipt/ dispatch of rolling stock (both conventional as well as DPRS) shall be monitored and kept closed and sealed during rest of the times.
n) The system should give out exception statements of violations of any statutory working hour limitations (Para 402), pertaining to:-
    i. Total daily Hours
    ii. Total Weekly Hours
    iii. Sunday working rules
    iv. Weekly Holidays
    v. Rest Intervals.
    vi. Spread Over
o) The GA marking system should have a dual verification method, either through smart card combined with biometric authentication or through biometric verification alone to be available as a standby.
p) All entry and exit points of the workshops should have security cameras along with data retrieval and storing facilities for any review on a later date. The data should be stored at least for a month.

307. Modernization of "Gate Attendance" using smart card and biometrics

In a rapidly changing world, technologies available for identifying staff and visitors are continually emerging. And to meet the challenges posed by frauds, criminals and terrorists, workshops should keep pace with these technological

changes. The best of today's technology may become obsolescent tomorrow and therefore workshops should keep upgrading their *"attendance and payroll systems",*.

It shall be mandatory to introduce computerized Gate Attendance System using Smart Cards and Biometrics at all workshops, production units and open line establishments with security walling in a time bound manner on priority.

308. Biometric System of "Gate Attendance"

This system is best suited for sectional attendance verification without supervision as a replacement of the present supervisor assisted attendance. All work sections should be provided with biometric readers in adequate numbers to automate the process of sectional attendance verification.
Gate Attendance Rules with Biometric or with any modern systems.

Implementation of biometric attendance will be mandatory in depots, sheds and workshops. Apart from Finger print recognition, face / Iris recognition machines will be introduced in gradual manner. Attendance by manual registers shall be completely withdrawn and adequate redundancy should be built into the system to take care of breakdown of a particular equipment, server, power supply etc. to ensure that attendance is permitted only through Digital Biometric mode.

309. Time Office

The *"Time Office"* is responsible for maintaining the initial records of Attendance which are also eventually the records of payment. The time-keeping and time-booking functions have been integrated and the organization decentralized shop-wise so that the attendance of the employee as-well as his employment on various jobs are recorded on the shop floor by the clerks of time office. The Time Offices under the control of a senior subordinate designated 'The Head timekeeper' are placed under the administrative control of the Workshop Accounts Officer who is responsible for correct payment as well as correct accountal of wages from the very moment these transactions are initiated. All differences between the initial records of payment and of allocation (viz. attendance records derived electronically from the system, Time sheets / job cards) are brought to the notice of Workshop Accounts Officer and set right. Head Time Keeper ensures that necessary information is filled in Muster roll cum Labour Pay Sheets and these are transmitted promptly to the Pay Bill Section of the Chief Workshop Manager's office for completion and submission to the Workshop Accounts Office for internal check and arranging payment. Once biometric systems are in place, time office functions should shift entirely to the machine.

(i) Apart from this, Biometric attendance should be made the basis for recording works, costing and incentive by time clerk in the time office.
(ii) Time office is not in existence in new workshops as well as the workshops in which biometric systems has already been implemented. In such workshops, the biometric machine are connected with central server of Gate Attendance System(machine) and the machine generated attendance record is being used for wage and incentive calculation.

310. Opening and closing of workshop gates

Clocks will be prominently displayed in all the gates. These clocks must be *GPS based* as also with the Smart Card/biometric entry/exit GA time recording systems, wherever located. Half an hour before work commences in the morning, the workshop siren should be automatically sounded by a timer activated from the clock in the Main gate, which in turn should enable opening of all the gates.

While the main gate will be kept open half an hour before for mass entry/exit of staff and closed half an hour after every shift, during the other occasions same will remain closed, allowing only restricted entry/exit through wicket gates. The siren

should be programmed to automatically sound 15 minutes before the work starts in the morning or later shifts, before meal hour commences, before meal hour ends etc and at any other times as locally decided. In these days of improved staff literacy and the implications of noise pollution caused by the sirens, the need for a siren itself may be reviewed in consultation with staff.

311. Late Attendance

The payroll system which is networked with the Biometric equipment should automatically regulate payments so that those who came late after 5 minutes but up to half an hour in the first period are treated as late by half an hour in that period and lose wages only for half an hour, while those who came late by over half an hour lose half a day's pay *in the case of shifts with two sessions of working and full day in the case of shifts with single session working.* Workmen coming late after expiry of the concession of 5 minutes in the second period shall be treated as absent in that period.

312. The Head Time Keeper of shop is responsible for seeing that all the rules and regulations issued by the Chief Workshop Manager for the opening and closing of the gates are strictly complied with..

313. Work during meal hour and on Sundays

For technical reasons, a few of the staff such as furnace or Forge men may with the sanction of the State Government under paragraph 404 may be required to work during meal interval. Similarly Millwright staff, Crane Drivers, Boiler Firemen and Boiler makers may be required to work during meal hour and on Sundays, when engaged on work of repairs to plant and equipment. The Head Time Keeper should maintain a register of the men so employed, till eventually the IT based system takes over this function.

314. Attendance of Supervisory Staff

All supervisors should be in their respective shops at least five minutes before the final siren sounds or starting of duty hours.

If GA marking is supervised, concerned supervisor in charge of ‘GA marking in’ should attend the shop 15 minutes before the work session commencement hours. He may leave the shop 15 minutes before the closing hours of that work session. Another supervisor who is in charge of ‘GA marking out’ for the same session may come late at the beginning of the session, but leave the shop late by 15 minutes..

315. Working Hours of Shop Clerks

Shop clerks should work to workshop hours.

316. Employee’s Biometric Identity Number (BIN)

Every workshop staff including officers and supervisors will be allotted a Biometric validated Identity Number (BIN), as reflected in his/her Smart card and all other financial documents. The biometric system should give the shop management the number of staff inside the shop on each shift or any such data specially asked by the occupier. The system should also eventually modify the absence records as absence without intimation, various types of leave and rest under Factory Act so as to enable print outs of “Habitual Absentee” statements, shop wise, every quarter, arranging the list in the order of irregularity to enable managers to initiate suitable action.

317. Acceptance of medical certificate for absence will be governed by the extant Establishment/Railway Medical Manual rules.

318. The following procedure should be followed in dealing with cases of unauthorized absence. In case of absence of less than three days duration, the shop in charge will decide the action to be taken. For absence between 3 and 6 days the Assistant officer and for absence over 6 days the Senior Scale officer concerned will take disciplinary action against the absentee. The Shop in charge will be responsible to see that each case of unauthorized absence receives the attention at the appropriate level as stipulated above.

319. Leaving shops during working hours

All staff other than the shop in charge wishing to leave the workshops during working hours for any reason whatsoever should be in a possession of a machine numbered 'Gate Pass' (Form M.319). If anyone has to leave the shop during working hours, he/she should obtain a slip from the superior (supervisor) and present it to the Time-clerk for issue of a gate pass, in which reason for exiting should be recorded. Before the Time Clerk gives the signed Pass to the worker, this form should be presented in the gate before recording his exit, reason for which will be linked to this machine number on this permit. Finally the gate pass has to be returned to SSE office that issued the said pass.

Form *M 319*

GATE PASS No.....
Dated.....20

Railway.....
Shop No.....
Workshop.....

Ticket No..... going on official / private work / to Hospital for .... hours, the remaining part of the day from.....O'clock.

……..
SSE/Shop Incharge;
Shop No …….

***Note**: The gate passes should be prepared in duplicate and the duplicate copy retained as block copy.*

In case of Biometric attendance system, if an employee desires to leave the workshop during shift hours, he must punch out in the biometric system and again punch in on the return (If the same is permitted) during the same shift.

320. Duty Certificate

In the case of a worker going on an official duty (and not for his personal work such as obtaining passes and PTO's etc.) outside the works, he will be provided by the SSE/SE's Office with the Duty Certificate (Form-M 320). On the presentation of the Duty Certificate the Time Clerk will prepare a Gate Pass after ensuring that the work order to cover the period of duty is clearly quoted, and will observe the same procedure as described in the para 420. When the worker exits through the gate and later enters the shops, the machine number of the Form M-420 should be keyed in the Biometric system. These 'Duty Certificates' should be kept filed (in order of date of return from duty) with the Time Booth of the shop concerned.

Form M-320

Railway.....
Workshop.....

DUTY CERTIFICATE

Date of leaving Works
W.O. No. of the job left.
W.O. No. of the job for 'time on duty'
Brief Descript ion of Duty.
No. of Hours each date on duty

Date	1	2	3	4	5	6	7	8	9	10	11	12	13
Hours.													
Date	14	15	16	17	18	19	20	21	22	23	24	25	26
Hours.													
Date	27	28	29	30	31								
Hours.													

Date of completion of duty
Date of return to Works

SSE/SHOP INCHARGE

Signature &, Designation of the
Official Supervising work on Duty

321. Gate Passes for Private Purposes—Gate passes for private purposes may be issued during either the first period or the second period, subject to the condition that re-entry into works will not be allowed during that period and the period of absence will be treated as leave for half a day if there are two periods on that day or leave for a day if there is only one period on that day. Gate passes should also be given to men attending railway dispensaries as outdoor patients. When, however, they are advised by a railway medical officer to go to other medical hospitals, such as a dental hospital they should return to the workshops and apply for leave to do so.

322. If workmen leave the shops to go to hospital for treatment and are detained for more than half an hour they should be paid for the time, provided the medical officer in charge of the dispensary certifies that they were unavoidably detained; otherwise, the absence should be treated as leave for full or half a day as the case may be, with allowances (if due) or without allowances as the workmen may choose payment being allowed at the ordinary rate for the actual hours of work put in by the workman during that period. Such payments should be restricted to six such occasions in a year. But this should be eventually simplified with the use of *"enterprise health system"* application, integrated with the workshop application. If a person enters the shops merely for the purpose of taking leave, he should not be paid for the time taken to do so.

323. Gate passes issued to persons injured on duty should show the time at which they met with the accident and bear the remark "hurt on duty".

324. Night Shift

When it is found necessary to work night shifts, the SSE of the shop should submit applications to the Dy. CME/Works Manager indicating the no of staff section wise and their smart card numbers with necessary justification for the night working. Copies of this should be given to the concerned night shift supervisor and the time office. Here again the workmen attending night shift should key in the machine

number of Form M- 324 so that the payroll system recognizes this for the purpose of night shift allowance.

Form M-*324*

Railway …..……
Workshop …….
Shop No. …….

Persons Required to work night shift during the week ……. to …….
REQUIRED FOR NIGHT SHIFT ON ….....

Section	BIN	Justification	Employee Identification No.(BIN) (if available) of the previous worker, if a job in progress or a suspended job is to be continued.

…….. ……..
SSE/ SHOP INCHARGE

Sanctioned/ Not sanctioned
……
Works Manager

When a worker works on a shift which extends over midnight, the following day for him shall be deemed to be the period of twenty four hours beginning when such shift ends, and the hours he/she has worked after midnight shall be counted in the previous day.

325. Overtime Requisition

In any workshop, long term planning and day to day activity planning must ensure that the outturn is achieved without overtime working. Overtime working is not in the best interests of the employees' health and hence no overtime should be booked except in very exceptional and urgent circumstances, that too after exploring the possibility of rescheduling jobs that are urgent ahead of those not so urgent. Employees who work on over-time should also "punch in and punch out" in the gate attendance system. There shall be no overtime booking on sections under incentive schemes (Para 526 refers).

326. In case staff are to be booked on overtime, prior sanction of the Chief Works Manager should be obtained in writing by the SE/SSE by submitting an Overtime Requisition (Form M. 326) in duplicate one copy being sent to the Time Office and the other to the Accounts Office. This will show the Ticket (read Smart card) Nos. of the men required, the supervisor under whom they would work, and justification for overtime. The number of such hours booked with reasons should be put up to HOD/PHOD at HQrs for approval. Instructions issued by the Railway Board from time to time in this regard should be strictly followed. Overtime worked in one week should not be counted against 'short' time worked in another. *No overtime should ordinarily be worked in shops unless under the supervision of a junior engineer.*

Form M-326

OVERTIME REQUISITION

Date : ……

Over Time requisition of Shop No. ……..
Workshop ……
for ……

Sl. No.	BIN	Designation	Rate of pay	Name of Supervising JE	Hours to be worked	Reasons of working overtime

……
SSE/SHOP INCHARGE
Shop No....

Sanctioned/ Not sanctioned

……
Works Manager

327. Overtime Register

a. Overtime is not booked for work spanning less than half an hour. All overtime worked will be listed in an OVERTIME REGISTER (form M-327) which will be put up to the SE/SSE for attestation. All additions, deletions and corrections in this Register should be made only under attestation of the SE/SSE.

b. In case a workman gets hurt on duty or leave the works on a Gate Pass during the period of over-time suitable remarks showing the exact time of leaving the Works should be recorded in the O.T. Register to ensure drawal of overtime allowance for the number of hours actually worked.

c. If overtime is worked not in continuation of the normal shop working hours but after being allowed rest in terms of the Factories Act, the workmen should make suitable biometric exit and entry, for which provision of equipment can be made in the shop for the convenience of those not wishing to go out of the shop during the rest time.

Form M-327

Railway ……..
Workshop. ……

REGISTER SHOWING OVERTIME WORKED IN SHOP No.....ON.....

BIN	No. of Hours on Overtime			Reference to sanctioned Overtime Requisition
	From	To	No. of Hours	

Details of staff booked on overtime.
……

Time Booth Clerk.
SSE/SHOP INCHARGE.

328. Overtime Allowance

In regard to grant of overtime allowance, Section 59 of *"Factories Act, 1948"* provides as under:-

a. Where a worker works in a factory for more than nine hours in a day or for more than forty eight hours in any week, he/she shall be paid in respect of overtime work, wages at the rate twice his/her ordinary rate of wages. Overtime under Section 59(1) of the Factories Act, 1948 should be calculated on a daily basis or weekly basis, whichever is more favorable to the employee.

b. Supervisory staff employed in railway workshops as are specifically made eligible for payment of overtime under Section 64 of the Factories Act, 1948, may be paid overtime for extra hours worked in excess of the statutory hours of work prescribed under the Act as per the provisions made in sub-para (1) above.

c. The total number of hours of work for overtime work of a worker shall not exceed the limit laid down for any quarter ending March, June, September and December in the Factories Act of 1948 or that, if any, as laid down by the appropriate State Government.

Note: Ordinary rate of wages means the basic wages plus such allowances including dearness allowance, compensatory (city) allowance and house rent allowance as also including the cash equivalent of the benefit accruing through the concessional sale to workers of food grains and other articles, as the worker is for the time being entitled to, but does not include a bonus.

329. Subject to the provisions of the preceding paragraph the following rules should be observed in regard to the grant of overtime allowance to the extent these rules are not inconsistent with any existing rules or orders issued by the Railway Board for any particular railway:—

a. Workmen may be paid overtime for the actual number of hours worked beyond shop hours in the interest of service at the rate of I/208th of the monthly pay including Dearness Allowance and Additional Dearness Allowance for every hour so worked. For the purpose of calculating overtime, fractions of an hour in the total of the overtime worked in a wage-period should be ignored if they are less than 30 minutes and those of 30 minutes or more should be counted as an hour.

b. Workmen sent out from shops temporarily to work at their headquarters station should not be allowed overtime allowance unless they work beyond shop hours.

c. Workmen sent out from shops with engines and vehicles on trial trips as well as staff sent out from shops to work at outstations temporarily, should be paid overtime for the actual number of hours worked beyond shop hours. This should be taken as illustrative and not exhaustive. Any staff sent out from the workshop on duty should be allowed overtime, if otherwise entitled to at single rate. No distinction should be made between staff sent on duty with engines or vehicles on trial trips and others sent on duty as, for instance, for attending to cash safes etc. Irrespective of whether such staff are actually engaged in work, the total period during which they remain on duty beyond shop hours should be counted as duty for allowing overtime at single rate.

d. Workshop staff who are required to proceed to outstations on duty either with materials which are required to be supplied to the stations where required or to fetch them from outstations, should also be paid overtime in the same way as is admissible in the case of workshop staff sent out from shops with trial engines or vehicles provided that the time spent in journeys is not taken into account for computing the hours of work for payment of overtime.

e. Since daily allowance and overtime allowance are given for different sets of conditions, both these types of payment should be made provided the conditions prescribed are satisfied in each case.

f. A record of overtime worked must be kept.

330. Material Gate Passes

When material is required to be sent out of the shops, a (machine numbered) gate pass (M. 330) must be issued, with a complete list of the material passing out.

Form M-330

MATERIAL GATE PASS

S. No. …….

…….Workshops

…….Railway

Pass T/S No.		Name		Designation		
Item No.	Description of the articles	No. of package		No. and date Of voucher or other authority on which the material is sent	Work order No.	To whom sent & purposes for which sent
		Unit	Qty.			
1						
2						

Items ……only

Signature
SSE/Shop Incharge
Shop No….

Office ……
Date.....

Note: *The Gate Passes should be prepared in duplicate and the duplicate copy retained as block copy.*

331. Material gate passes may be issued by SSEs for the material going out of workshop gate. Some of these materials are non-returnable and some are returnable to shops. The indication to this effect should be given on the material gate passes. Such gate passes should be collected at the gate by the R.P.F. staff who should see that the tools and materials in excess of those authorized by the pass do not go out of shops. The collected material gate passes should be sent by the R.P.F. staff to the Workshop Accounts Office. The Gate Passes received in the Accounts Office should be paired off with the counterfoils of the SE/SSE's books of the respective shop& and checked to see that:—

a. Shops have indicated 'Returnable'/'Non-returnable' on the material gate passes.
b. When returnable materials are received back, the shop supervisor has given the remark on the block foils of the concerned material gate passes under his dated initials.
c. Accounts Office should check the continuity of material gate passes received from R.P.F, gate office by pairing the machine numbers.
d. While pairing the collected copies of the material gate passes with the block foils, the Accounts Office should give indication of pairing on the collected foils and block foils. The block foils of returnable material should be specifically seen to ensure that materials have been received back within reasonable time.

Discrepancies if any found should be pointed out to the Works Manager for taking necessary action.

332. Muster Roll cum Labour Pay Sheet

Accounts of Labour employed should be maintained in the workshops in two series; one for the purpose of payment and the other for the allocation of labour charges to the jobs upon which the workmen are employed. For the first purpose Gate Attendance captured by the Bio-Metric system is treated as the initial record of attendance, taking the place of Muster Rolls. The result of attendance of each staff for each day will be recorded at the close of the month in the system in appropriate columns, viz. 'Time lost/gained' (as relevant to the incentive scheme if any) and 'overtime'. The processes of entering the Total time gained/lost', 'Total Hours worked during the month, Total time for deductable absence from the wages', Deductable absence for 'DA', 'OT due under the Factories Act' and 'other overtime' will then be completed after which necessary information will be copied out in the columns concerned of the Labour Pay sheet, which will then be passed on to the Pay Bill section of the Executive Office for completion and submission to the workshop Accounts Office for internal check and arranging payment.

333. The labour Pay Sheets showing the name, BIN and other particulars of each employee and deductions to be made from each should be kept ready long before the last day of the month. These should be completed in respect of the hours attended and the gross and net wages and overtime earned from the information contained in the attendance system. This pay sheet must be automatically generated by the “Pay Roll System” based on inputs from Time office and “Bio-metric system”. Head Time Keeper who will be held responsible for the correct preparation of the Labour Pay Sheets in all respects and for their punctual submission according to the schedule laid down.

334. The Head Time Keeper working under the Workshop Accounts Officer will be responsible for the completion of Muster Roll cum Labour Pay Sheets up to the stage of recording of 'deductable absence' and Overtime including the rate of pay and D.A. against each employee’s BIN, daily and monthly reconciliation of the time booked as per time sheets/job cards with the time as was done with Muster Rolls/G.A. system. In the Workshop Accounts Office the Labour Pay Sheets should be subjected to a cent per cent internal check in respect of the deductions.

335. Deductions for Absence

Deductable absence should be shown in Muster-Roll-cum-Labour Pay Sheet in days and hours.

a. For absence for less than a day except a half-day—Deductions from the monthly pay will be made at the rate of 1/208th of the monthly pay for every hour.
b. For absence for half a day or full day: A half a day will be the first or second period of work on any day on which the workshop remains open for both the periods.

Deductions for half a day or full day will be at 1/60th or 1/62nd etc. 1/30th or 1/31st etc. of monthly pay, as the case may be.

336. Chart of Labour Charges

After the Muster Roll-cum-Labour Pay Sheets have been checked, the gross amount of wages charged in the Pay Sheets for each shop should be entered in the Chart of Labour Charges (M-336) which should be put up to the Workshop Accounts Officer along with the checked Labour Pay sheets. Before signing the Accounts enfacement on the Labour Pay Sheets, the Workshop Accounts Officer should see that there are no large fluctuations in the amounts charged in the Labour Pay Sheets of a shop from month to month.

Form M-336

CHART OF LABOUR CHARGES

Shop to which Labour Pay Sheet relates	Labour Charges			
	April	May	June	and so on
	Amount	Amount	Amount	Amount
Shop No. 1 Shop No. 2 and so on				

Initials of Workshop Accounts Officer.

337. Extract Pay Sheet - In the case of men who have to be settled up, payment should be arranged for an "Extract Pay Sheet" and an appropriate remark should be made against the entries in the main pay sheet which should be neatly cancelled by a line in red ink drawn across them.

338. Inter-shop Transfers

The wages of the workman who is transferred from one shop to another will be drawn only in the shop in which he is employed on the last working day of the month on the basis of report from the Gate Attendance system and advice of Transfer (Form M.–338) received by the Time Clerk of the shop to which the workman has been transferred.

Form M-*338*

Railway….. …
Workshop……..

ADVICE OF TRANSFER

Name	BIN	Designation	Rate of Pay	Date of Transfer	Reference to the authority for transfer

……
Head Time Supt.

(Wherever biometric systems are in position, gate attendance statement can be obtained from computer both at the relieving and reporting shops and there is no need to enclose this statement)

339. Staff Register

A staff register will be maintained showing for each workman his latest rate of pay. This register will be made use of for entering rates of pay in the Labour Pay Sheets. A copy of each notification affecting rates of pay of workers will be supplied by Establishment section of the CWM's Office to the Time Booth Clerk with all promptitudes and not later than the date from which the change in rule is to take effect. This register should be reviewed and signed by Head Time Keeper every month.

Locomotive sheds and Carriage and wagon Depots (LCDs)

340. Hours of work

Locomotive sheds and Carriage and wagon Depots (LCDs) are situated in the open line Divisions. Work schedule of employees in LCDs including payment of overtime allowance are governed by the Railway Servants (Hour of Work and period of rest) rules 2005 circulated under RBE No. : 131/2005 dated 09.08.2005. According to these rules, employees in the open line are divided in four categories depending upon the nature of work with a different set of rules for each of these categories in respect of working hours. Employees in LCDs generally fall into the following three categories:

a. Essentially intermittent
b. Excluded
c. Continuous.

Some of the important provisions of these rules for these three categories are given in Annexure-4.1

341. Exemptions to limitation of hours of work

Temporary exemptions to these limitation of hours of working may be made by the officer controlling the depot or shed if he/she is of the opinion that such temporary exemptions are necessary to avoid serious interference with the ordinary working of the railway or in cases of accident, actual or threatened, or when urgent work is required to be done to the rolling stock (both conventional as well as DPRS) or in any emergency that could not have been foreseen or prevented, or in other cases or exceptional pressure of work.

342. Remaining on duty

Wherever due provisions have been made for the relief of an employee, he/she shall remain on duty until relieved, notwithstanding the provisions in these rules.

343. "Attendance in LCDs"

Presently, entry and exit of employees in LCDs are recorded by dropping of tokens witnessed by a supervisor and later correlated by time clerks for claiming of salary overtime etc. In order that the provisions of the IR Act are scrupulously adhered, and staff payments are linked to their attendance and work output, every major LCD *(employing 500 employees and above)* needs to put in place a fool proof/Tamper proof "Attendance System". Such a system becomes all the more important in LCDs, where staff punctuality has a direct bearing on the punctuality of the trains and the image of the Railway. LCDs are also constantly exposed to risks of sabotage by terrorists, thefts of material form rolling stock (both conventional as well as DPRS) before dispatch leading to unsafe condition etc.

344. Modern Gate Attendance Systems for LCDs

In the interests of the installation security, better control and on line integration with enterprise applications, all major LCDs should be equipped with a boundary wall and a biometric system in a phased manner. The system should fulfil conditions set out in Para 406 above, with minor modifications to suit local conditions.

345. Disaster Management

Disasters occur at any time with no prior warning and the attendant tragedy often numbs the employees at the site into inaction. Disasters can be due to natural causes such as floods, earthquake etc or man- made like railway accidents, collapsed structures etc. Staff assigned with breakdown duties thus has a crucial "life-saving" responsibility to provide relief and rescue to the victims at the site apart from restoring rail traffic.

346. Accident Relief & Medical Equipment Train

In order to minimize death and injuries, relief teams should make all efforts to reach the site within the Golden Hour (within an hour after the injury occurs) and extricate accident victims to expedite trauma care. Towards this end, each Railway Division should be equipped with an appropriate Accident Relief and Medical Equipment train (ARME) positioned at the divisional Headquarters to enable the Divisional officers and break down staff to proceed to the site of accident along with Doctors. Operation/maintenance of such trains shall be governed by the safety/medical manuals in vogue.

347. Accident Relief Trains

In addition, an all- purpose Accident Relief Train (ART) must be stationed either at the Divisional HQrs at a junction point, where a major LCD is situated. This train formation shall have a high capacity Breakdown diesel crane and not more than 8 vehicles. The ARME/ARTs must be cleared for running at least at the maximum permissible sectional speed of the section and maintained as such at all times by giving timely POH and other schedules as prescribed. All relief trains should be equipped with food, water, power and communication facilities that can sustain at least for a week without replenishment so as to withstand prolonged isolations that occur in natural disasters.

348. Breakdown staff

An accident at an accident site such as the toppling of the crane or snapping of wire rope etc is the worst image-wrecker that any Railways can ever afford. It is the direct responsibility of the Divisional administration to select and train for every ART at least two teams of Breakdown staff and to ensure

a. That every member of the Breakdown staff is certified as competent and fit
b. That there is an existence of record of such assessment undergone by the employee.
c. Suitable arrangements are in place to examine this record periodically and update the assessments.
d. That every BD staff is issued with means of identification and
e. Staff undergoes refresher courses at the periodicity prescribed.
f. The breakdown staff should have extra monthly allowance to attract efficient and committed personnel for rescue and relief operations. They must also be provided with the benefit of modern communication facilities individually such as wireless sets/ mobile connectivity.

349. Accident checklist

The Accident and Crane manuals published by Railways contain checklists with duties and responsibilities of the senior most mechanical officer, the control and maintenance staff and the BD staff in the unfortunate event of an accident. It is necessary that copies of these checklists are not only given to the BD staff, but also prominently displayed in the control office, ARTs/ARMEs/SPARTs.

350. Reprovisioning in ART/ARME

After every accident, equipments and supplies in the relief trains will need immediate repair or replenishment, in order instantly to restore their *"battle-worthiness"*. Towards this end, immediate reprovisioning of spares and supplies must be done and the relief trains must be kept in a state of readiness for the next emergency that may be lurking in the corner. Adequate financial powers must be vested with the Divisional authorities and the ART in charges to effect such purchases by the use of extant rules for 'spot purchase' and 'procurement without tender'. Thus Zonal SOP should specifically delegate powers to divisional Store officers under these categories to take care of the material requirements for effective Disaster Management.

Annexure-3.1

Important provisions of "Hours of Work and Period of Rest" Rules-2005

3.1.1. Essentially Intermittent category

An employee is said to be on "essentially intermittent(EI)" roster, when it has been declared to be so by the prescribed authority on the ground that the daily hours of duty of the railway servant normally include periods of inaction aggregating to fifty percent or more (including at least one such period of not less than one hours or two such periods of not less than half an hour each) in a total of twelve hours duty (on the average over seventy-two consecutive hours), during which the railway servant may be on duty, but is not called upon to display either physical activity or sustained attention; A railway servant whose employment is essentially intermittent shall not be employed for more than seventy-five hours in any week. Staff on EI rosters shall be granted a rest of not less than twenty-four consecutive hours including a full night for every week commencing on a Sunday.

3.1.2. "Excluded" category

An employee is said to be on "excluded" roster, if he/she is employed in a managerial or confidential capacity or in duties that are supervisory.

3.1.3. "Continuous" category

All other employees in LCDs are on "Continuous" rosters. A railway servant whose employment is continuous shall not be employed for more than fifty-four hours a week on an average in a two weekly period of fourteen days. Staff on continuous rosters shall be granted a rest of not less than thirty consecutive hours for every week commencing on a Sunday.

Administration's Duties and Responsibilities to workers

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401. Introduction

With the avowed objective of improving productivity in workshops, the Railway Board took a decision to introduce some form of incentive scheme in 1949. The first formal incentive scheme was introduced in Chittaranjan Locomotive Works in December 1954. The initial success of the scheme known as "payment by results" manifested in extending it to other Repair Workshops and Integral Coach Factory. The salient features of the incentive scheme are discussed in paras 402.

402. Features of the Chittaranjan Scheme

a) The workers in an incentive shop are classified as Direct, Essentially Indirect and Indirect Workers: -

i. Direct workers are those engaged in work, whose quantum can be assessed through time studies.

iv. Essential Indirect workers are those who contributed to the continuity of the work and whose services are essential but whose work cannot be assessed through time studies. Supervisors up to the rank of Charge man are also included in this category.

v. Indirect workers are those who are provided for cleaning etc. do not contribute directly or indirectly to production and do not earn any incentive bonus.

vi. Apprentices are not eligible to participate in the incentive bonus scheme.

b) Basic wage is guaranteed to all the workers.

c) Time is the yardstick for measuring work. The various operations in the workshops are subjected to time study in accordance with the standard practices of work measurement.

d) The allowed time is so fixed that a workman of normal ability may earn 33-1/3%, bonus over and above his basic wages in respect of period spent on piece-work jobs.

e) This allowed time includes all allowances such as fatigue, general handling, gauging (as relevant) and production bonus allowance.

i. General handling & contingencies: allowance up to 10% or as advised by board time to time is given.

ii. Gauging allowance: allowance up to 5% or as advised by the board time to time is given.

iii. Fatigue allowance: allowance up to 12.5% or as advised by the board time to time is given.

f) The allowances are built up cumulatively and works out to 65 to 73 % of the time taken by the workman of normal ability as seen from the table below:

Chittaranjan scheme Visa-vis ILO	Normal-ized time of an 80 rating person	Built in bonus %	Contin-gency %	Fatigue %	Gauging, if applicable %	AT reduction by RB in %	Total W/out Gauging Hrs
Original 1954 scheme	100 hrs	33.33	12.5	25	5		187
Modified in Year1999	100 hrs	33.33	10	12.5	5		165
Modified in 2009	100	33.33	10	12.5	5	5	157
Modified in 2019	100 hrs	33.33	10	12.5	5	5	149

g) The ceiling limit of profit is fixed at 50%, of the time taken in each of the operations/GA hours.

403. Prerequisites for introduction of Incentive Scheme

The proposal to bring the direct workers, essentially indirect workers and staff of service shops under the coverage of Incentive Scheme shall be dealt with on the basis indicated in the broad guidelines laid down by the Railway Board from time to time and shall be sanctioned by the General Managers under their own powers. Following points are kept in view while introducing incentive scheme in shops/sections of a workshop: —

a) Whether a list of items to be manufactured or repaired in the section/shop in which incentive scheme is proposed to be introduced has been prepared.
b) Whether adequate load to meet the increased capacity generated as a result of introduction of Incentive scheme has been ensured.
c) Whether proper computation and the time studies have been carried out.
d) Whether allowed time have been approved by the Production Engineer/Works Manager.
e) Whether quota cards have been introduced and the allowed time established before any system of payment by results can be introduced, the allowed times computed from basic data should be checked to see that they compare favorably with those actually required to carry out the job.
f) Whether the strength and categories of indirect workers including those declared essentially indirect have been fixed as a result of proper analysis and approved by Chief Mechanical Engineer.
g) Whether the strength and categories of staff of direct workers have been determined with reference to the workload on the different load centers and sections. The No. of effective hours available per shift per month will be taken as 200 and with the addition of 33-1/3% representing the average efficiency under incentive scheme, 267 man hours per man per month shall be the basis for working out the number of direct workers.
h) Whether the number of supervisors has been determined according to actual need keeping in view the supervisory ratio authorized by Railway Board from time to time.
i) Whether regular supply of raw materials has been ensured. Also whether arrangements have been made with the stores departments for their reservation before the release of work orders.
j) Whether a system of periodical oiling of machines tools and plants and other preventive maintenance measures have been introduced.
k) Whether a proper system of inspection has been introduced.
l) Whether action has been taken to introduce biometric punching of entry and exit.
m) Whether production forms on the Chittaranjan Locomotives Works pattern have been introduced.
n) Whether computers for making production documents are in place.

404. Allowed Time

This is assessed on the assumption that under non-incentive conditions, an average employee will work at a rating of 60 units. The same worker while working under incentive conditions would be expected to improve his rating to 80 units i.e. 33-1/3% more. It is expected that an average worker would complete an operation in 3/4 of the allowed time. The time saved/lost on the time allowed in each operation is calculated separately for each worker and the gain/ loss can not be carried over to the next month. The ceiling limit of profit is fixed at 50%, of the time taken in each of the operation.

Allowed time of elemental activities should not be stagnant for more than five years. Allowed time for elemental activities has to be reviewed at least every five years by work study, in CLW pattern as well as in Group Incentive Scheme, taking to in to account the changes in process, inputs of M&P & materials as well as the effect of learning due to expiring gained.

405. Timing of Operation

The only positive check on the efficiency of labor is the systematic comparison of' time taken for a known job with that allowed for it careful experimentation, the conditions of work such as speeds and feeds, quality of material, promptness of supply services, being all sufficiently fixed and standardized so as to enable just comparison being made. Time standards should be fixed for individual operation on or with the aid of particular machines and materials and the time taken by individual worker should be carefully recorded before it is decided whether the required standard of efficiency has been attained.

406. Time Study

The system envisages fixation of time standards for each operation, through a time study to determine the time necessary to carry out a given activity as accurately as possible from a limited number of observations, at a defined standard of performance. Before starting a time study it is necessary to undertake method study and work -simplification.

The time Study is the detailed record of series of events on a floor cycle, which accounts for all elements of work both effective and ineffective idle time (during which man, machine or both are idle), the effective time having been rated and ineffective time classified. Each operation is split into elements which are basic parts of the operation and consists of one or more motions regularly combined in the same sequence to establish a definite purpose. These movements are termed as elements and can be classified into constant and variable.

Constant elements are those which have a standard time allowance for the same set of conditions while variable elements are those where time will change in allow for variation of work required in accordance with the dimension or the condition of setting; Time Studies are then taken separately to establish definite and tangible data for the performance of above elements. It is essential that wasteful motions and time taken thereon are not accounted for. Elements should be chosen with clearly defined break points as for example where the worker changes his hand from one level to another or puts down one as ride and picks up another. After observations, the actual time of each element is normalized depending up to the rating performed by the worker.

407. Synthetic Times

Synthetic time standards are time standards built up (synthesized) from element times, previously obtained from direct time studies. Sufficient time studies are taken to arrive at synthetic data such as:

a. Manipulation values.
b. Loading and unloading values.
c. Setting up values.
d. Changing tool values.
e. Preparational values.

The average normalized values obtained out of series of similar studies or standard given by the machine manufacturer is taken as basis for the synthetics.

408. Rating

Rating is the assessment of the skill and effort involved in each element and every element should be rated independently of previous elements. The principle of rating is that an average worker when working at such a speed and with such an effort that he is just earning basic pay i.e. working at a time or day work rate under non-incentive conditions is said to be working at a 60 rating. This can be interpreted as saying that he is producing 60 units of work per hour. This same average worker when working under a properly applied incentive scheme works at a speed and with such effort as to earn 33-1/3% more i.e. at an 80 rating, can then be said to be producing 80 units of work per hour. If he is working at half the effective speed, he is working at 30 rating or alternatively if he is working at double the effective speed, he is said to be working at 120 rating. Similarly other ratings are assessed by comparing the worker under study with the rating of an average worker. Different operative workers performing the same job are studied and the results checked by superior rate fixers which finally be endorsed by the Senior Section Engineer of the rate fixing department.

409. Normalizing

On completion of the time study, the actual times of all the elements in the work cycle should be converted to time at 80% rating i.e. the time which the average worker should take to do each element when working under a correct incentive scheme. This conversion is done by the following calculation:

Normalized Time = Actual time x observed rating / 80 i.e. Incentive rating

Additional allowances as given in the table at Para 502-f are added to the above.

410. Preparational Time (PT)

Whereas the operational time is per piece, the preparational allowance is added per batch which allows a worker to prepare to take up a new job such as collecting tools and drawing raw materials, obtaining necessary instructions etc.

411. Extra Time

Extra time over the allowed time can be allowed due to:

a. Excess machining work required on castings forgings bars etc.
b. Hard material/alternative material.
c. Defects in the machine for which the worker is not responsible.
d. Change in batch quantity against a work order.

The rate fixer will fill up an excess Time Card and issue it to the supervisor concerned who will get it countersigned by the SSE hand over to the Time Booth clerk for connecting up with the relevant job/squad cards. At least 10 to 20% of excess time cards in manufacturing shops and 2 to 5% of inspection cum computation sheets should be personally checked by PE/APE.

“Extra time” taken must be submitted to the workshop in charge in the form of an exception report every month; the issues contributing to “repeated bookings” of extra time shall be addressed to prevent recurrence.

412. Job Cards/Squad Cards

Job card /squad cards are basic documents on the basis of which incentive bonus is calculated. Allowed time for the job is indicated in each job

card. Once the job is done, same is passed by inspector and certified by Rate Fixer. Such completed job/squad cards should be sent to Incentive Bonus section within 48 hours of completion of the job.

413. Out-turn

Results of Incentive working will be determined on the total quantity "passed" in respect of each operation as recorded on the job-card. The "passed" out-turn should be recorded by the inspector concerned on job cards under his dated initials. The inspector examining and passing the work in regard to both quality and quantity should not be under the influence of any of those participating in the incentive bonus scheme. *The computation sheets should be finalized within two working days after passing of final inspection.*

414. Simplification of accountal of Time Taken with computerized GA.

With the introduction of computerized GA system, accountal of Time Taken in job cards for the monthly accountal period can be simplified by accounting the total number of jobs passed by inspector for the respective accountal period of the month instead of maintaining Allowed Time vis a vis Time Taken for each job card passed. Based on this, bonus earned for any month can be calculated as under:-

a. Total GA hours (under incentive) clocked as recorded by his entry and exit.
b. Aggregate of the Allowed time of all jobs completed
c. His hourly rate and the bonus based on the formula= (b-a)*c.

415. Time Saved/Time Lost

(i) The difference between the "time allowed" and "time taken" is the time saved, if the former is greater than the latter and "time lost" if it is otherwise, the allowed time will comprise of the following:

a. Time per piece multiplied with the quantity passed by inspection.
b. Preparatory time per batch-, and
c. Extra time allowed by the rate fixer as per extra time card.

(ii) Where two or more workers are engaged on the same job, the net time saved/lost from each squad card as worked out will be distributed over the workers in proportion to the time taken by each of them.

(iii) Allowed time on job cards should be printed by the computer. The allowed times on squad cards should be supported with detailed printed/cyclostyled inspection cum computation sheets. Hand written/typed allowed times on job cards/inspection cum computation sheets should be countersigned by PE/APE. The job cards and other production documents shall be printed through the computer. Suitable specific electronic security checks on the computer system would have to be incorporated to prevent possibility of tampering with the job data for different shop manufactured items.

416. Material Scrap

Normally incentive bonus is payable on quantities of work which conform to laid down standards and pass inspection. However, if the inspector certifies rejections as owing to Material scrap. The reject of out-turn will also be taken into account up to the percentage of work done on the rejects, for calculation of the "total time allowed and consequently the net time saved/ lost.

417. Guaranteed Basic Wages

The basic wages of all workers are guaranteed irrespective of their results of Incentive Bonus, but losses during any particular month are

adjustable against the profits of the same month. Special procedure should be laid down to electronically disallow completed job cards of one wage period accounted in the bills of any other month than the current bill. Details of painted numbers of Locos, coaches or wagons turned out every month from the workshop or Production Unit must be fed into the system at regular *intervals*. Job cards pertaining only to those of the rolling stock turned out during the month should get accounted; and they should be accounted in the same month and the system should reject any accumulation.

418. Incentive Bonus Rates and ceiling on profits in CLW scheme

Time saved or lost will be evaluated at the Incentive Bonus hourly rates as fixed by the Railway Board for different categories of staff from time to time and circulated to Railways. Time saved or lost will be evaluated at the Incentive Bonus hourly rates. Ceiling limit on profits has been fixed at 50% of the standard basic wages in respect of each worker *on simplification of the system as in para 414.*

419. Abnormal Profits

The ceiling limit on profit is fixed at 50% of time taken/GA hours. When large profits (above 50%) are made more or less consistently or by the majority of workers, the causes contributing to this result should be carefully analyzed and any defects discovered, rectified.

Allowed times can be revised if improved machine tools are installed or other time saving devices are introduced and also if there is any error in computation or in printing. Revised timings thus to be issued with the approval of Production Engineer should be effective from the date of issue without any retrospective adjustments.

420. Losses

It is expected that the average worker will complete an operation in 75% of the allowed time when he will earn 33 1/3 % bonus. If allowed times are realistic and established, there should be no reason why an employee of average ability should incur losses instead of making profits. Therefore where losses, however, small are made more or less consistently by the majority of workers, the inducement offered by the incentive scheme has ceased to exist. Hence detailed investigations must be made to ascertain the cause and take remedial measures including improvement of methods.

421. Incentive Bonus to essential indirect workers and Junior Supervisors

a. *Supervisors at the level of Junior Engineers as* essential indirect workers participate in the incentive bonus. Their earnings are to be restricted to 80% of the average percentage of profit earned by direct workers of the incentive section supervised by them.
b. The Shop in charge shall submit the information monthly to the Incentive Bonus section in respect of Direct workers, Essential Indirect workers and the supervisory staff in the following format, duly countersigned by Assistant Works Manager by the second of the month following that to which this relates.

Form 421 A

Railway.....
Work Shop. .....
Monthly list of "Essential Indirect Workers" serving Direct workers in Section No..... of Shop No..... during the month. .....

Part 'A'

S.No.	Ticket No.	Name	Category	Rate of Pay	Remarks

Part 'B'

Ticket Nos. of Direct workers served by the "Essential Indirect Workers".

S.No.	Ticket No.	Name	Category	Rate of Pay	Remarks

Assistant Works Manager
SSE

Form 421 B

Railway.....
Work Shop. .....
Statement of "Essential Indirect Workers" serving Direct workers in Section No..... of Shop No.....

Part 'A'

Name	Designation	Ticket No.	Rate of Pay	Category No.	Remarks

Part 'B'

Ticket Nos. of Bonous workers served under the supervision of

S.No.	Ticket No.	Name	Remarks

Assistant Works Manager
SSE

Note: A separate statement is required for each supervisor.

422. Incentive Bonus to Senior Supervisors

Senior Engineers and Senior Section Engineers supervising incentive sections shall be paid a monthly bonus of 15% of their basic pay. This bonus will be suitably attenuated to debit for the days of absence. Thus the monthly bonus of will be = 0.15 X ratio of no of days he was on duty to the total no of working days in the month. The senior supervisors are entitled to this bonus, even while supervising essentially indirect workers (EIWs). When supervising incentive and non incentive sections, the bonus shall however be reduced in the ratio of labor hours under incentive section to total labor hours of incentive and non incentive section.

423. Payment of incentive bonus

(a) Direct workers. Payment of incentive bonus to Direct workers is made monthly along with the monthly salary. The payment of bonus to direct workers is made on the basis of net time saved. The total of time taken as recorded on job cards is deducted from the total allowed time obtained from job cards passed by the inspectors. Time saved/lost /month is worked out with the restriction that the time saved is not more than 50% of the GA hours. The net time saved is multiplied by the prescribed rate of the category of worker and bonus paid accordingly.

(b) Essential Indirect Workers and Junior Supervisors are paid bonus at 80% of the average bonus earnings of the section. For this purpose a concept of standard hour is used to simplify calculations for hours of work per month. The formula for working out .standard hours is:

$$\frac{\text{Total No. of G.A. card hours actually worked by the direct workers during the preceding 6 months/one year}}{\text{Total No. of hours which the workers should have worked as per the Scheduled working hours during the preceding 6-months/one year.}} \times 208 \text{ hrs}$$

Standard No. of hours can be worked for the workers is a whole or for certain divisions of the works. Standard hours thus worked out shall remain current for the ensuring 6 months/12 months after which it will again be revised. The average percentage of profit of direct workers of each section is calculated separately as follows:

$$\text{Section Percentage} = \frac{\text{Total net time saved by the section}}{\text{Standard Hours X No. of direct workers in the section.}} \times 100$$

Note : Leave reserve should be included in above calculation.

Accordingly bonus payable to the essential indirect workers is =
Section percentage / 100 X 80/ 100 X No. of G.A. card hours X Hourly rate of category of worker.

In case of JEs the bonus is paid as per the above formula.

Note: *The bonus payments of the supervisors supervising the direct worker under incentive scheme as well as direct workers under non incentive, calculated as per the above, formula should be further multiplied by the ratio of the Direct Workers under the incentive scheme to direct workers under incentive scheme plus direct workers under non incentive scheme supervised by them.*

424. Incentive to staff in the service shops

Such of the service shops and sections of mill Wright and tool and template shops where workload can be measured and quantified should be covered under incentive scheme as for direct workers. But where it cannot be undertaken and where the maintenance staff are wholly engaged in the servicing maintenance and repairing of machinery, plant and equipment of various shops, should be covered under incentive scheme as essential indirect workers. The following guidelines should be adopted:

a. The machinery, plant and equipment maintenance should be completely segregated into individual groups attached to specified manufacturing and

production shops;

b. For each such maintenance group a work register must be maintained indicating the jobs done in each shift with the commencement and completion time thereof. This should be countersigned by the JE/SSE every day. This is necessary because on the basis of the information contained in this register idle time of machines due to breakdown will be assessed.
c. Gang strength should be fixed after hiking random study of the activities of these gangs and the workload involved in the shops/sections where they are attached.
d. In the case of absenteeism in the maintenance gangs, the deficient numbers should be made good from the general pool of workers of the millwright shops and on the specific request made by the gang in-charge.
e. Payment of incentive to 'Essential Indirect Workers" should be related to their performance for this purpose a minimum monthly machine breakdown leading to idle time of direct workers should be fixed. When this target is exceeded, no incentive payment will be made to the maintenance gangs.
f. The amount of incentives bonus should be worked out as for "Essential Indirect Workers" staff, with reference to average percentage of profits earned by direct workers of the shops/ sections to which they are attached. Supervising the service shop artisans who have been brought under incentive scheme will also be eligible for 80% of the average percentage of bonus earnings of the sections to which such service shop men are attached.

425. Workers booked on Incentive and day work systems

Ordinarily a worker booked on Incentive system should not be utilized on 'day work' and vice versa during the same wage period except in very special circumstances.

426. Overtime working in Incentive sections

There should not be any overtime booking in sections under incentives.

427. Idle time

Apart from wages having to be paid for no work done, idle time entails huge avoidable losses in production. All possible steps should therefore be taken for preventing idle time. The time taken up in delays and holdups, due to breakdown of service or plant or any other cause for which the direct worker cannot-be held responsible should be booked to "idle time" and all time so booked should be carefully investigated, responsibility for the delay or break-down located and such steps, as may be, considered desirable, taken to prevent such waste.

To record idle time, there shall be an "idle time card" for each worker for each month. These cards will depict the reasons as detailed below on the re-verse of the idle time cards for the analysis of idle time. These cards will remain in the custody of time booth clerk and shall be punched on/off with the commencement/cessation of idle time on the authority of idle time slips issued by JE. Idle time cards shall be signed by JE and countersigned by SSE and shall be sent to the accounts office along with the job cards.

Idle time shall be chargeable against shop on cost work order. However, idle time up to 15 minutes in each case may be allowed to be booked against job card concerned and not accounted for as idle time.

Idle time can be booked on account of the following reasons:

a. No power.
b. Machine repair.

c. Lack of material
d. Lack of tools
e. Waiting for work
f. Crane repair
g. Miscellaneous.

428. Deduction from supervisors for idle time

The JE of a shop are directly responsible for (i) lack of work and (ii) lack of tools. Therefore, for the idle time arising out of these two causes, proportionate deductions on the following scales should he made from the percentage incentive bonus earned by the concerned supervisors.

S.No	Idle time for direct workers	Percentage incentive bonus to be debited
1	2% and above but less than 5%	10%
2	5% and above but less than 15%	20%
3	15% and above	No Bonus

If data for idle time not available at the time the bills for incentive bonus are prepared, the position should be reviewed subsequently and necessary adjustments carried out through the bill for the next month.

429. Allocation of bonus

a. The amount of Incentive bonus of direct workers shall be chargeable to the work order concerned. The amount of bonus of Essential Indirect workers and the supervisory staff shall be chargeable against shop on cost work order to be opened for this purpose.
b. For the purpose of allocation, the time saved up to the ceiling limit of 50% of the time taken/GA hours as evaluated at hourly rate shall be taken into account. Time lost which shall be taken into account for calculating the net amount payable, shall be ignored. The difference between the amount allocate and paid shall be charged as shop on cost.

430. Extension/ Contraction Proposals

The following points should be kept in view while dealing with the Extension/ Contraction proposals of incentive scheme in the sections already operating under the scheme: -

The proposal for extension should only be made out wherever there is an increase in the work load on the nature of work for which an incentive proposal has already been noted and reasons for increase in work load have been brought out.

a. No increase has been made in the original allowed lime and that any increase in the strength of staff is proportionate to that indicated in the original proposal.
b. Number of Essential Indirect Workers and Indirect Workers is strictly below the caps prescribed.
c. In cases of extension, the possibility of using the same unskilled staff for material handling movements under the extended load should be carefully checked, in case of contraction of incentive scheme, the possibility of reductions of unskilled staff should be carefully checked,
d. The provision of supervisory staff should be critically examined. In cases of merger of sections, the possibility of reduction of supervision shall be properly looked into.

431. Capping on IW and EIW strength

The following targets should be worked in respect of unskilled staff engaged as indirect and essential indirect workers. As the infrastructure and methods of operations improve, this ratio can be further reduced by Chief Workshop Managers.

Name of the sub-shop	Maximum Strength of unskilled workers engaged as indirect and essentially indirect workers.
Erecting	15% of the total strength of the erecting/shop.
Welding	12-1/2% of the total strength of the Welding shop.
Carriage Building	10 % of the total strength of the Carriage Building shop.
Carriage Repair	10% of the total strength of the Carriage Repair/shop.
Paint	10% of the total strength of the Paint shop.
Trimming	10% of the total strength of the Trimming shop.
Wagon Building .	12% of the total strength of the Wagon Building shop.
Wagon repair	15% of the total strength of the Wagon Repair shop.
General Iron Foundry	20% of the total strength of the General Iron Foundry.
Brass Foundry	25 % of the total strength of the Brass Foundry.
Smith & Forge	10% of the total strength of the Smith & Forge Shop.
Machine	10% of the total strength of the Machine shop.
Wheel	10 % of the total strength of the Wheel shop.
Tool Room	10 % of the total strength of the Tool room.
Millwright	25 % of the total strength of the Millwright.

General Iron Foundry	25% (instead of 20%) of the total strength of the General Iron Foundry.	Increase EIW staff %age because engagement of EIW staff is high as per nature of the work or applicable as per requirement decided by competent authority.
Smith & Forge	15% (instead of 10%) of the total strength of the Smith & Forge Shop.	
Wheel	20% (instead of 10 %) of the total strength of the Wheel shop.	
Millwright	50% (instead of 25 %) of the total strength of the Millwright.	
*Calculation formula for EIW staff = EIW staff (excluding JE) x 100 DW+EIW staff ((excluding JE) JE is not included as they have to monitor peripheral work as well		

432. Checking of Job Cards

The job cards received in Incentive section of the Accounts Office should be checked to see that:

a. These have been inspected and signed with date by the shop inspector for the quantity passed;
b. All corrections in the *pre*-printed job cards bear the dated signature of the shop rate fixer under his designation.
c. Total of the 'Time Taken" as struck on the job cards by the Time booth clerk tallies with the details on the job cards.
d. "Total allowed time" will be worked out on the basis of the 'passed' outturn. The allowed time as appearing on the job card should be checked with that approved by the P.E. by comparison with the master planning card or list of allowed times approved by Production Engineer. For this purpose, a copy of each master-planning card should be supplied by die P.E. to W.A.O. This check may be exercised as a percentage post check (under orders of the

FA&CAO) in such a way that all "allowed times" get checked in rotation.

e. Time saved/lost for each operation shall be worked out taking care that the time saved against job card/squad card is restricted to 50 % of checked up "time taken" as recorded on each card. *If simplification of job card accountal is adopted as per para 515, the limit of 50% of time saved over time taken should be adopted for the entire accountal month for each worker.*
f. Hand written job cards are certified by AWM/P.E.
g. Excess time card is attached with the job card wherever "excess time card' is indicated.
h. Out-turn statements are certified by the Inspector and are signed by the shop supervisors. For excess time and for the items of work not covered by the approved list there should be signature of the rate fixer.
i. It should be crosschecked that No. of direct workers, essentially Indirect Workers and supervisors in whose favor bonus has been billed for, are not in excess of the sanctioned strength.
j. All the job cards as per monthly statement showing serial nos. of job cards supplied during the month as received from the time booths have been taken into account.
k. Proportionate deductions are made from the profits earned by the JEs and SEs, if idle time of production workers on account of lack of work and lack of tools is 2% and above.
l. Amount of bonus to JEs is in the ratio which the total No. of direct workers under incentive bears to total number of direct workers in the section.
m. Detailed instructions for checks to be exercised on the job cards and bills of incentive bonus may be laid down by the Financial Adviser & Chief Accounts officers of each railway to suit the local requirements.
n. The idle time cards attached with the job cards should be checked with idle time slips issued by shop JEs. All the idle time cards should have been personally checked by Works Manager/Assistant Works Manager within 24 hours of being punched "IN".
o. Job cards should be supported by suspension/ resumption slips if there have been punching -OFF" and punching "IN" due to suspension/ resumption of jobs. Suspended job should be rigidity checked by Works Manager/Assistant Works Manager and suspended jobs for one month to another month should be checked by Production Engineer/Assistant Production Engineer.

433. Group Incentive scheme

The group incentive scheme has following aims:

a. Improved output performance of shops and sections
b. Improved quality of workmanship
c. Reduced absenteeism
d. Improved man power ratio.

For a new PU or Railway workshop *where* an incentive scheme is proposed, GIS shall be introduced. *In* the PUs or Shops where Chittaranjan pattern is already in vogue, GIS shall be progressively implemented.
Incentive scheme was introduced with an objective of improving productivity in workshops. Outsourcing of activities is another means to improve productivity, as such New PU or railway workshops must weigh the pros and cons of outsourcing vs. Incentive scheme before introducing the same.

434. Main Features

Main features of this scheme are:

a. Built on the fundamental logic of linking bonus to physical output which--
- ⋆ Shall be transparent and identifiable as the final product and
- ⋆ not lend itself for reworking or recycling.

b. In units having a broad product matrix, the unit of output is standardized in terms of SPUs (Standard Production Units)
c. Classification of employees into direct, indirect and EIW categories is replaced by a new classification based on groups
- ⋆ Production shops, with 100% bonus
- ⋆ Support shops at 80% of Average Incentive earned by Production shops and
- ⋆ Support departments at 50% of Average Incentive earned by Production shops.

d. Covers all manpower – supervisor upto JE, skilled and unskilled
e. Individual groups are chosen such that the products manufactured/repaired by them are directly dispatchable in numbers. If they produce/ repair different products with varying man-hours, such products are expressed in an equated SPUs.
f. Groups are to be as small and as cohesive as possible.
g. SE & SSE's earn bonus a maximum of 15% of their basic pay, subject to the condition that, their production shops earns incentive bonus equal to (or) above 15%. If it is less than 15%, they will get as per the shops earnings.
h. There is deduction in this system against the quality factor and excess detention of products/rolling stock
i. Irrespective of work content of each type of rolling stock/product, the unit of account is in 'SPUs'.
j. The incentive earnings is purely dependent if the out turn of the system crosses over and above the outturn based on 100R.
k. Here, if the percentage of heavy repair rolling stock/product be received more at par with the product mix, the incentive gets affected.

Annexure 4.2 compares the features of the Group incentive scheme with those of the earlier Chittaranjan model.

435. Special Management responsibility in incentive schemes

With a thorough understanding of the limitations of both the incentive schemes managements in Workshops and Production Units have a special responsibility to maximize returns from incentive payments by constantly fine tuning the schemes and ensuring that efficiency and enterprise are only rewarded.

436. Training

The responsibility for equipping an employee with necessary skills and knowledge to discharge his/her duty rests with the employer. When the employee is not sure of his/her skills or knowledge of rules, he/she tends either to make mistakes or altogether avoid his legitimate duty or activity under some pretext due to fear of flouting an unknown rule, damaging a machine, facing the ignominy of vigilance complaints, peer sneer etc.

While the establishment related issues of training are spelt out in the Establishment Manual, the exposure necessary for employees in various activities in a Production Unit, Repair Workshop, Loco shed or C&W depot is elaborated here.

Management must aim to train up every employee of the unit for at least two percent of their man-days every year on any need based subject or standard syllabus adopted for promotion /refresher courses.

CWMs of workshops must be suitably empowered for hiring of outside trainers and training agencies as well as arranging training of railway staff in private institutions.

437. Categories of Employees

Employees can be divided into three groups:

a. Skill based - for e.g. artisans
b. Rule based - for e.g. senior supervisors and junior management.
c. Knowledge based - for e.g. senior management

As seen from the table below, there are no tight compartments and some overlap of traits between the groups is not only essential, but also inescapable. Apart from improving attitude and commitment to organization, Training courses should intensively target the core competence on aspects as highlighted in this table:

	Training to concentrate on			
Designation of Trainee	**Skills**	**Rules**	**Knowledge**	**Strategy**
Unskilled to Skilled				
Skilled to JEII, JE I				
JEII, JE I to SE/SSE				
SE/SSE to Junior officers				
Junior to Senior officers				
Senior officers				

Remarks:

a. Irrespective of the grade of entry, every employee should be given a short orientation course on his/her first appointment, explaining organizational structure, work environment and basic rules of the Railway and how he/she is expected to conduct himself/herself.
b. Special care must be taken to ensure that employees are not qualified routinely without acquiring necessary skills before being deployed in "safety critical work", that is likely to affect safety of the organization or the society at large (fitters or electricians for e.g. deployed in wiring, maintenance of brakes etc). It is incumbent on the management to ensure that-

- ⋆ The employee is competent and has developed adequate skills in that trade and is so certified fit to undertake that work by an competent agency like NCTVT.
- ⋆ There is an existence of an adequate record of training and an assessment as said above undergone by the employee and that the employee has been issued with means of identification.

c. Promotion to any of the entry grade should be preceded by a structured training. In fact, such training will be a "*pre-requisite"* for promotion to the entry grades (skilled artisan, JE II, SSE, junior scale/assistant officers etc.).

438. Training of new comers

Just as a person's character is shaped by the love and care he/she received in the infant days, an employee's commitment and competence is made or marred by how an organization treats him in the initial years. Every new comer to the organization should have a focused, albeit short training, exposing him to the organizational structure, basic conduct and discipline rules,

organizational goals and what the organization expects from an employee. The syllabus for this training should be carefully crafted and reviewed periodically, at least once a year. Once trained and certified fit, these persons should be employed straightaway in core activities to derive the full benefits of their commitment and competence.

439. Multi-skilling

In order to strengthen Plant agility and labor mobility, best plants across the world train their employees in 5 to 6 trades. Inside their production shops people are cross trained to operate all machines in a cell and many firms have as many as six job descriptions for their employees.

For training artisans in additional trades, the Directorate General of Employment & Training, Ministry of Labor & Employment, Government of India (http://dget.nic.in/mes/index.htm) has designed “modular employable courses”. These short courses enable a person to do other jobs requiring different skills.

In order to improve the productivity standards of the employees, appropriate multi skilling with “Modular Employable Skills” must be attempted progressively through specific administrative orders. To start with, technicians being rotated through various work centres demanding similar skills should be tried so as to make them familiar with the working of different work centres/sections, say once in five to seven years. This will improve their employability and promotional prospects, besides the productivity. This will also pave way for optimization of manpower to suit the changing pattern of workload.

Every employee who widens the span of skills/knowledge should be rewarded generously.

440. Designing of courses and employee involvement

Apart from mandatory training courses, special courses are needed to hone the skills of employees. Here it may be necessary to involve the stake holders and ask them areas where they feel some exposure is necessary to improve their functioning. Some examples are - rate fixers looking for training on work study, millwright fitters on CNCs, electricians on locomotive circuits, supervisors on 6 sigma or 5S Kaizen, clerical staff on Word Processing, drawing office staff on AutoCAD for, Crane usage on accident sites for BD staff and a variety of such topics.

Employees may not be aware of the menu that the world of training can offer them and the Director/IRIMEE/other Centralized Training Institutes (CTI) shall circulate details of these courses every quarter, and also help by conducting these courses in the workshop BTCs or divisional training centers.

The list sent by IRIMEE/other Centralized Training Institutes (CTI) should be exhibited for the notice of the employees and formal consultations made to know their perceived training needs.

441 Improving trainee Participation

It is necessary that the training programs are run with full attendance with employees carefully chosen for each course. In order that the fruits of the vast infrastructure reach the targeted employees and training slots do not remain unutilized, the following action must be taken:

a. Period of training to be kept less than 7 days more so for older employees with family commitments.

b. Compulsory training Programs may include an element of lucrative sojourns to a good industry combining with a tourist spot.
c. Assure trainees of getting posted back to the same station after the program.
d. Decentralize the training to Divisions and workshops to the extent possible so that each Division/Workshop has a training center liberally equipped with class rooms, latest training gadgets, teaching aids, equipment, etc. The minimum requirement must be stipulated by Railway Board and this must be reviewed once in 5 years by Railway Board.
e. In addition PUs and zonal Railways should have a running arrangement with renowned training institutions for specialized courses.
f. Promising employees with excellent performance records and trainees who excelled in their courses may be incentivized by deputing them to training in premier Institutions inside and outside the country.
g. Create advisory boards for every training Institution with retired officers and supervisors of academic and professional eminence, whose collective thinking with years of experience can provide valuable inputs in deciding the courses, course content and the target audience.
h. Adequate resource personnel in the form of faculty members/Instructors/ identified Key Resource Persons (KRPs) who are regular employees must be made available as trainers. The incentive for teaching staff must be adequate to attract talent.

It is important to realize that every rupee spent on training is a good investment and not a wasted expenditure.

442. Salary Payment.

All regular salary payments will be made through Banks by electronic means of transfer (like Electronic Clearing System, Electronic Funds Transfer etc.) All miscellaneous payments like supplementary bills, advances, arrear payments, PF withdrawals etc. shall be planned to coincide with monthly salary and shall be prepared in the appropriate payroll system and merged with salary. However, the Chief Workshop Manager in consultation with their associate finance can arrange for cheque payment only for miscellaneous payments in an emergency.

Annexure 4.1

Managerial And Exception Statements to be generated by the system

Four levels of managerial statements are required for analysis and effective utilization of manpower.

i. Individual Shop level
ii. Workshop level
iii. Head quarters level.
iv. Railway Board- mostly exception statements, arising out of comparing the vital statistics of shops.

a. The details of GA hours logged by the shop/section /division/workshop etc; the detail should be available up to each employee.
b. Load lifted by the shop/ section /division/workshop etc; the detail should be available up to each employee.
c. Details of incentive earned shop/ section /division/workshop etc; the detail should be available up to each employee.
d. Details of idle time, missing hours of shop/ section /division/workshop etc; the detail should be available up to each employee.
e. List of regular absentees and DAR action details.
f. List of poor incentive performers.
g. Load center/section/shop wise rejection/rework details.
h. Load center/section/shop wise +timing/-timings booking.
i. For POH of every type of Rolling stock, man hours consumed in each shop and for the total workshop and the national best figures. (Painting man hours of a GS coach in one shop for example to be compared with the paint shop in another zone).
j. Failure on line of stock within-

* 3 months of POH/Rebuild/Manufacture of coaches
* 100 days for POH/Manufacture of wagons
* One year for POH/Rebuild/Manufacture of Locos

k. Accident indicted quality problems reported by divisions.
l. Incidence of wagon Heavy Repair within 2 POHes of new manufacture or previous Heavy repair.
m. Incidence of corrosion in Coaches within 10 years of manufacture/Rebuild or 5 years of previous corrosion repair.

Annexure 4.2

Comparison between Chittaranjan and Group Incentive Scheme

	Chittaranjan Incentive Scheme (CIS)	**Group Incentive Scheme (GIS)**
	There are two Groups of Staff. ⋆ Direct Workers. ⋆ Essentially Indirect Workers.	Shops are categorized as follows: ⋆ *Production Group* ⋆ *Support shops.* ⋆ *Support Dept*
1	All Incentive shops are DW & EIW, where DWs gets 100% and EIWs get 80% of DWs.	⋆ Production shop 100% incentive. ⋆ Support Shop 80% of *"Average Incentive of Production shops".* ⋆ Support Departments 50% of *"Average Incentive of Production Shops".*
2	SE & SSE in shops get 15% incentive bonus on their Basic pay. Their bonus is not linked with the bonus earned by shops.	SE & SSE's earn bonus a maximum of 15% of basic pay, subject to their production shops earning incentive bonus equal to (or) above 15%. If less than 15%, they will get as per the shops earnings.
3	There is no penalty clause included in this system for deduction from the outturn in respect of quality factor.	There is deduction in this system against the quality factor and excess detention of rolling stock.
4	Here allowed time is assessed for each and every nature of repairs on the product/wagon.	Irrespective of work content of each type of stock, unit of account is in 'SPUs'.
5	Even a PU or workshop produces less than even the minimum targeted outturn that was achievable under Non-incentive conditions, a section in that PU/Workshop if it completes its quota can still earn bonus.	Unless there is physical dispatch, there is no incentive earning.
6	Quality is achieved by the Inspection staff and no bonus is payable for jobs not passed by inspection.	Physical parameters as reported by the user are quantified to measure Quality and determine the bonus.

Annexure 4.2A

All Incentive shops are DW & EIW, where DWs gets 100% and EIWs get 80% of DWs.	⋆ Support shops at 80% of weighted Average Incentive earned by Production shops and ⋆ Support departments at 50% of weighted Average Incentive earned by Production shops.

Annexure 4.3

Administration Responsibilities on Industrial Safety & Environment Management

Industrial Safety

a. Putting in place, fire fighting systems and to ensure its efficacy in times of distress by conducting regular drills.
b. Evolve an Emergency Preparedness Plan‖ for the shop and ensure that it works by frequent mock drills.
c. Battery management and handling as per rules.
d. Maintenance of fire extinguishers, fire hydrants and static water tanks and other equipments
e. Setting up of disaster management system and to conduct periodic drills to deal with any eventuality.
f. Medical examination of operators of dangerous machines.
g. Accident preventive measures, counseling, safety propaganda campaign.
h. Training in Safety & Environmental issues:
i. Conduct safety audits internally and externally and implement recommendation based on audits.
j. Investigation and enquiry of accidents of major nature.
k. Other safety related activities.
l. Training employees in reducing repetitive motion injuries.
m. Eye water wash facility for staff working in welding and painting area.
n. Assessment and provision of personal protective equipment like industrial safety shoes, helmets, goggles, ear muffs, nose mask and gloves.
o. Testing and examination of EOT cranes, hoists, lifting tackles pressure vessels, power presses, grit blasting plant, Forklifts, mobile cranes by competent personnel.
p. Work permit system for contract workers
q. To ensure that contract labour, when employed, use necessary protective clothing.
r. Orientation programme on industrial safety and environment must be arrange for all new entrants of workshop including contract labor, vocational trainees etc.

Environment Management

1. Air management

a. Ambient air quality monitoring
b. Stack monitoring of furnace gases
c. Remedial measures to improve air quality in consultation with Pollution Control Board (PCB)
d. Identification of sources of dust and airborne particles and their elimination
e. Effective operation and maintenance of air pollution equipment like wet scrubbers and dust collectors
f. Afforestration including development of green area.

2. Water management

a. Construction and maintenance of Effluent treatment plants as necessary.
b. Regular sampling and evolving control measures to neutralize Toxins and Pollutants.
c. Sewage collection, treatment and disposal
d. Identification and origin of water pollutants and their disposal
e. Supply of potable water
f. Recycling waste water where economically and/or ecologically justified.
g. Rainwater harvesting.

3. Other majors

a. Solid waste management solutions e.g waste of compost, waste to energy plant etc.
b. Eco friendly faecal treatment/ disposal arrangements.

c. Solar energy plants including PV modules for off-grid applications .
d. Energy efficient lighting fixtures.

Mandated Procedures and Other Improvements on Industrial Safety and Environment Management.

a. Obtaining license for operation of factory from Chief Inspector of Factories.
b. Obtaining license from Chief Controller of Explosives for usage and storage of flammable, compressed/liquefied gases if any.
c. Obtaining consent for operation of factory from Pollution Control Board (PCB).
d. Obtaining approval for any alterations, extension or inclusion of M&P items and fixed structure from Chief Inspector of Factories.
e. Submitting annual environmental audit report
f. Filing periodical returns as per acts.
g. Coordination with PCB and Factory Inspectorate for sampling, testing, and issue of Licenses.
h. Coordinate with external laboratories for conducting tests.
i. To conduct energy and fuel audits and to reduce their consumption in a graduated manner.
j. Periodical environment audits
k. Setting up of environment laboratory where necessary.
l. Maintenance of fixed structures.

In case of repair workshops, separate cleaning area should be created outside the workshop security zones, where incoming coaches and wagons are cleaned thoroughly by a separate contract. In the divisions, On-Board Housekeeping System (OBHS) should be adopted to ensure faster cleaning of coaches. The effluent water may be recycled and the debris should be cleared by the same contractor on a day to day basis

Waste generation

Any by product of the repair/manufacturing processes and activities executed inside the workshop premises, not useful to the Railways is termed “waste”. Waste in any form is a cost to the Railways and therefore generation of waste must be creatively and actively eschewed. Accordingly an important environmental initiative is to frequently review input material specifications, processes and final products so as to minimize, if not, completely eliminate pollution or hazardous and other wasters through capital and process improvements. The efficacy of these initiatives may be assessed by the reduction in the “solids-per-pound of product” from the workshops, as well as waste liquid discharged, the eventual goal being Zero waste discharge.

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CHAPTER 5

Materials Management in Railway Workshops

Para No.	
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502	Sources from which Materials are obtained by shops and maintenance depots
503	Demands for materials to match with budget
504	Workshop Inventory Management - stock and non-stock items
505	Raw material norms
506	Sub Stores
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524	Other Miscellaneous Charges
525	Miscellaneous stores sub ledger
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Annex. 5.1-5.3	Labour & Stores sub ledger

501. Introduction

From the point of view of indenting, the requirement of materials for PU/Workshop/LCDs can be divided into following three categories:

(i) Stock items – These are items of regular requirement which are stocked in the stores depot and indented by Stores department.
(ii) Non stock items – These are the items which are indented as and when required.
(iii) M&P items – In a workshop Machinery and Plant are required in the conversion process of incoming material into finished Goods.

From the point of view of processing, the stock and non stock items can also be classified as raw material, semi-finished goods and finished goods.

502. Sources from which Materials are obtained by shops and maintenance depots

Materials for jobs undertaken in the workshops are obtained from following sources:-

a. Workshop Stores Main Depot, attached to workshops.
b. General Stores Depot
c. Other Division or Railways
d. Workshops (manufactured items)
e. Orders placed by Principal Chief Material Manager (PCMM) for direct delivery of non -stock items

M&P items from suppliers against orders placed by PCMM/COFMOW(Central Organization for Modernization of Workshops).

503. Matching Budget with Demand for Materials

Materials are purchased based on estimated annual requirement for stock items. In case of non stocked items, the demand for materials matches with the budget provision. In case of stocked items there may arise a situation wherein, the demand for quantities made by the end user may not match the budget provision. The mismatch may happen when the Budget provided does not match the projected cumulative Estimated Annual Consumption (EAC) value in a year. To avoid such situation, it shall be necessary that provision in the budget of the end user matches with the approved Estimated Annual Consumption for stock items of end users. The budget thus provided will have contra provision in Stores Budget as provided in Stores Code Chapter31.

504. Workshop Inventory Management - stock and non-stock items

Stock items inventory is covered in the stores code and management of stocks in the stores depots is the function of the stores department.

However, stock items are often drawn in excess of a day‘s / week‘s requirement and this forms part of workshop inventory and the cost passes through the workshop manufacturing suspense. A foolproof system of accountal of drawal of stock items and usage and a periodic accountal of shop inventory is essential. For each job / job lot, material drawn and utilized has to be reconciled before closure of the job card.

Non-stock items inventory is in charge of the shop supervisor. It is essential to keep a record of all items lying on the shop floor and these have to be stocked in countable/weighable lots for inventory checks. For non -stock items the shop in-charge should maintain a record of receipts, utilization, stock on hand and price at which procured. This will avoid multiple and wasteful

procurement of non -stock items. Non-stock items, which are regularly procured, should be converted to stock items.

505. Raw material norms

The quantum of raw material for a job is computed on the basis of size and shape of the semi-finished / finished product, the standard size of raw material supplied as available in the market and the cutting diagram.

At times the raw material standard sizes undergo changes and it may be economical to redo the cutting diagram with a view to reduce cutting wastages.

Raw material norms should be worked out for every major job and revised once in 3 years, keeping in view availability of new sizes of raw materials. Responsibility for this should be clearly defined in the organization of the PU/ Workshop or the sheds/depots . This should result in reduction of wastage and cost savings.

506. Sub-stores

Every segment of a PU/ workshop as well as LCDs should have an attached sub -store under the control of the shop supervisor. The sub store should have a proper storage system with enough capacity to store one full working day‘s requirement and entire materials drawn by NS indents. The item locations should be properly labeled and documented. Drawal from main stores to sub-stores should be on a daily basis against stock requisitions.

Accountal against job and cards should be on basis of actual usage. The items in the sub stores will be on shop suspense account till it is charged to the job card.

507. Pairing of Issue Notes.—

Workshop issue notes prepared by the Workshop Stores Depot on the form prescribed in paragraph 10523 of the Indian Railway Code for the Stores Department would be received daily in the Workshop Accounts Office, after scrutiny by the Officer-in-charge of workshop or other officer of the Mechanical Department. On receipt of the above issue notes, the Workshop Accounts Office is responsible for seeing that—

1. the shop serial numbers (i.e. Requisition Numbers) of the issue notes for each shop are continuous and that breaks in such continuity if any, are satisfactorily explained;
2. the issue notes are received strictly according to schedule i.e., by the evening of the day following the date of issue;
3. the issue notes have been correctly prepared according to the instructions issued for this purpose; and
4. The issue notes are 'paired' with the Bill copies with the Store Debit summary of Issues as laid down in paragraph (508).

In a computerized system of generation of ‘issue notes’ for the complete requirement of a work order, such pairing procedures may become either fully or partially redundant, to be done in a much simplified form.

508. The copies of the issue notes received from Shop Foremen through the Officer-in-charge of workshop should be sorted out and arranged in chronological order. Each of these issue notes should be paired with the corresponding one received with the Store Debit summary from the Stores Accounts Office and the former compared

with the latter, in respect of allocation (work order number) and quantity of stores shown as having been received in the shop.

509. Provisional Adjustment of Issue Notes.—

If any issue note is not received from the shop in time and the allocation on the copy of the issue note accompanying the Store Debit summary is incomplete, efforts should be made to ascertain the work order number to which the amount is chargeable. If the allocation cannot be ascertained before the month's accounts have been closed, the amount of each such issue note should provisionally be adjusted against a suspense work order entitled "wrong work order" which should be cleared in the subsequent month by being finally adjusted against the correct work order or work orders on receipt of the shop copy of the issue note. A register showing the issue notes thus adjusted provisionally should be put up monthly to the Workshop Accounts Officer by the first week of every month, who would be responsible for seeing that the correct allocation is ascertained as expeditiously as possible and that the appropriate adjustments are made.

510. Main Stores Sub-ledger.

After the pairing referred to in paragraph 608 has been carried out, which should be completed expeditiously on receipt of Stores Debit Summary in the Accounts office, the value of stores should be abstracted for each shop under the various work orders in the stores sub-ledger.

A sample sub ledger form in the computerized format is enclosed as Annexure 6.1, which is common for all types of labor and stores charges. Railways can redesign this form to suit their working.

511. Adjustment of cost of stores received from depots.

The grand total of all sub ledgers shall be struck and agreed with the totals of the monthly stores Debit summary. After this is done, the debit raised by the Stores Accounts Office, shall be accepted and allocated to "Workshop Manufacture Suspense Account."

512. Stores purchased Direct.—

As soon as the stores are received against the orders placed either by the Principal Chief Material Manager (PCMM) or by the depot store officer, Executive officer of workshop should send a copy of receipt note / receipted challan to the Workshop Accounts Officer.

513. On receipt of the receipted challan /receipt note referred to above, the Workshop Accounts Officer should price it at the rate quoted therein, after verifying the rate with that given in the Stores Order.

514. The amount of the receipted challan/ receipt note should then be journalized by credit to "Purchases" and debit to "Workshop Manufacture Suspense Account."

515. The amount thus debited to the head "Workshop Manufacture Suspense" should be summarized by individual work orders in a separate Stores Sub-ledger to be posted for each shop separately from the receipt notes received from the officer-in-charge of workshop vide paragraph 612 above.

516. At the close of the month, this Stores Sub-ledger should be totaled and summarized. A sample summary sub ledger format is shown in Annexure 6.2 which can be modified to suit Railway’s requirement.

517. The grand total of this summary should be agreed with the total credits to "Purchases" during the month.

518. Stores Sub-ledger for Credits

Detailed instructions for the accountal of "Returned Stores" and "Manufactured Stores" and for the preparation of forms of "Advice Notes" and "Material supplied to Stores" in connection with such stores have been laid down in chapter 15 of the Indian Railway Code for the Stores Department. The credits received in connection there with should be summarized as credit Stores in the Sub –ledger to be maintained for each shop, separately for "Returned Stores" and "Manufactured Stores". The reconciliation of these credit stores sub-ledgers with the monthly credit summary received from Stores accounts office should be carried out in the manner as for debits.

519. Stores Sub-ledger for Out-turn of Process shops

The debits to work orders from the Manufacturing Accounts of Process Shops are explained in Chapter 7. These also should be summarized in a separate Stores Sub -ledger in the same form as used for the main Stores Sub-ledger.

520. The Stores Sub-ledger referred to above should be closed by the 12th of the following month and the grand total reconciled in the manner stated in the following paragraph.

521. The total of the Stores Sub-ledger, referred to in paragraph 619 above, should be agreed with the total issues shown in the manufacture out-turn statements of the various process shops and other shop manufactured items handed over to stores for consumption during POH in workshops.

522. Stores Charges Write-back Order

Stores drawn against Standing Work orders should not be used later on for different works. Materials for more than one work order generally should not be drawn against one issue note. In case of violation, Write Back Order (WBO) to be issued immediately for accountal in the same month (Ref: Stores Code Vol II para 1514)To regularize any incorrect allocation of stores charges to' work orders, write - back orders should be made out given in Annexure 6.3 and debits to the correct work orders and minus debits to work orders from which the charges are written back should be summarized in a separate Sub-ledger technically called the Adjustment Sub-ledger, to be prepared for each shop separately.

523. Before inclusion of the write-back orders in the Stores Sub-ledger, it should be seen that the work order numbers quoted therein are current, the reasons for the adjustments have been clearly given in sufficient detail, the arithmetical calculations are correct and that the write-back orders bear the signature of an officer.

524. Other Miscellaneous Charges

Besides the labour and stores charges which have been described in the preceding paragraphs certain miscellaneous charges are also booked to —'Workshop Manufacture Suspense Account — .These charges are generally comprised of the following items: —

(1) Municipal Taxes as Wheel Tax and License for Motor Lorries.
(2) Cost of electric current.
(3) Water charges.
(4) Shunting charges.

(5) Demurrage charges.
(6) Carriage of materials.
(7) Other charges

525. Miscellaneous Stores Sub-ledger.—

All bills in connection with the above items should first be got verified and allocated by the Officer-in-charge of workshop or other Departmental Officer concerned and thereafter passed for payment, or adjusted in transfer, by debit to relevant work orders and abstracted in the Miscellaneous Stores Sub-ledger to be maintained for each shop separately.

526. Summary Sub-ledger.—

In addition to the Sub ledgers for different shops, a summary of all Sub-ledgers should be prepared in a form similar to Annexure 6.2, showing the total amount under the various sub-ledgers referred to above.

527. The totals of the various columns shown in the summary sub-ledger should be checked with reference to the following: —

(1) Store Debit Summary received from the Workshop Stores Main Depots as well as from General Stores Depots.
(2) Debits raised by divisions and foreign railways
(3) Cash Book debits, i.e., payments made for municipal taxes, license fees and direct purchases of stores.
(4) Issues from workshop manufacturing accounts.
(5) Write-back orders.

528. This summary should then be submitted to the Section Officer (Accounts) for his signature, who should, before signing it, satisfy himself about the correctness of the entries included therein.

529. The charges abstracted in the various Stores Sub-ledgers (referred to in earlier paragraphs) by shops and by work orders should be transferred to the main stores sub-ledgers of the respective shops, after the correctness of the former has been verified.

530. The charges for stores booked on each work order in the main Stores Sub-ledgers of different shops should be posted in the Workshop General Register shop by shop, in the same way as the charges for Labour.

Annexure 5.1

Labour & Stores sub ledger for the month of _____ year_____

Allocation	WO No.	Lab. hrs.	Lab. chgs.	Bonus Amt.	Stores Dbt.	Lab. on cost	Mat. on cost	Admn./ Prof. on cost	Total	Stores Crt.	Ret. stores
Total											

Annexure 5.2

Summary of labour & stores sub ledgers for the month of _____year_____

Shop	Lab. hrs.	Lab chgs.	Bonus amt.	Stores. Dbt.	Lab. On cost	Mat. On cost	Admn./Prof. on cost	Total	Stores Crt.	Ret. stores
Total Grand										

Annexure 5.3

Railway_____
Department_____
Office_____
Adjustment memo by the _____ showing adjustment to be made in the accounts for the month of _____ year _____

Particulars of Transactions	Circumstances under which the write-back is proposed or authority for transfer	Amount		Head of account to be credited	Head of account to be debited
		Rs.	P.		

No._____
Dated_____ Forwarded to the
_____
_____ _____
for acceptance allocation and early return.

Signature
_____
Designation_____

No._____
____ Dated_____
Accepted for Rs._____ from the accounts for month_____ year _____ By debit to Revenue/Capital
Signature of Accepting Officer_____
Designation_____

Chapter 6

Costing in Workshops

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Annex. 06.1	Revised Costing System

601. Introduction

Costing is the process of classifying, recording and ensuring appropriate allocation of expenditure so as to accurately arrive at the cost of the final product or service of a workshop or production unit. Costing of each and every activity will help the workshop to measure its efficiency and improve it. A proper costing system will inculcate the habit of working out viability of a product or service before taking decisions on producing it or buying it.

602. Costing in Workshops of Indian Railways

The costing systems or Costing manual in any production unit if already in vogue at the time of introduction of this code , shall continue to remain effective unless otherwise decided to be replaced by the costing system suggested as per Rolling stock Code with the approval of General manager on recommendations of PCME and concurred by PFA.

The basic purpose of costing in Railway workshops is to arrive at the Total Cost of Ownership of each item of rolling stock so that replacement decisions can be made on a rational and scientific basis. This process can be more effective only after the introduction of ERP (Enterprise Resource Planning) systems in all the workshops of IR. In order to enable introduction of ERP, Railway Board as well as Zonal Railways must digitise on a data base details of all assets right from the time of proposal for acquisition till their condemnation. Details of every expenditure on maintaining each asset of the unit must be available on the system. Till ERP is fully introduced in all the railways, cost of repair of rolling stock will be worked out as described in the following paragraphs.

603. The system of costing will differ depending on the nature of work carried out in workshops. The systems to be adopted in Railway workshops are Process Costing System (for Foundry Accounts & similar activities), Job Costing System, (For Shop manufactured items), Batch Costing System (for Rolling stock production) and Revised Costing system (for arriving at Unit Repair Cost (URC) of Rolling stock given POH). Process Costing system and Batch Costing system are fully explained in chapter 3 and are applicable to workshops engaged in production of rolling stock and also undertaking Foundry activities. Job Costing system and Revised Costing System are explained in the following paragraphs.

604. Job Costing System

This system will be followed by all the workshops engaged in manufacture of spare parts required during POH of Rolling Stock in Indian Railways. This system is used to arrive at unit rate of manufacture in respect of shop-manufactured items. The technique of Standard Costing is applied in this system and the expenditures are collected element wise under the respective work order and the exact cost per unit is arrived at. The actual cost so arrived at is compared with the standard already set for material and labour. However, these items are manufactured for internal consumption only. Under this system, the expenditure for each specified item of manufacture is collected under one Work Order and on completion of ordered quantity the Final Completion Advice (FCA) is sent to Costing section for generation of Cost sheet and arriving at unit rate of manufacture item wise.

605. Features of Job Costing System

a. For each item of manufacture there is Allowed time against each process of work.
b. Standard quantity of raw material to be drawn with the specification is also given.

c. The unit cost of manufacture is arrived from cost sheet for the particular work order wherein, all elements of cost are charged to that work order.
d. Total cost divided by the quantity completed for that work order will give the unit cost of item manufactured.
e. The standard fixed helps comparison of unit cost with other shops or with trade cost.
f. The jigs. fixtures or special tools required should be decided on. Particulars of jigs and tools required should be passed to the Jig and Tool Drawing Office, who should prepare the necessary drawings. The layout of operations together with particulars of jigs to be used and lists of material required should be passed on to the Progress Office.

606. Planning

When a new standard part is to be manufactured for stock purposes, the drawing as finally approved should be sent to the Workshop Production Office where the following procedure should be adopted by the Planner and Rate Fixer, working under the supervision of the Production Engineer.

a. The number of parts to be manufactured should be decided.
b. The drawing should be examined to see if there are any alterations required to design, in order to reduce the cost of production
c. When parts are made from castings, it should be decided whether the moulds are to be made on a Moulding Machine or by hand.
d. The Section and length of material, required for making one part should be recorded (This applies to parts not made from castings).
e. The details of various operations and types of machines, on which the parts are to be made, should be set out, estimated times being fixed for each operation on the best data either available or obtained for the purpose.
f. The jigs. fixtures or special tools required should be decided on. Particulars of jigs and tools required should be passed to the Jig and Tool Drawing Office, who should prepare the necessary drawings. The layout of operations together with particulars of jigs to be used and lists of material required should be passed on to the Progress Office.

607. The Progress Office should then issue pattern requisition and prepare process sheets described in para 608.

608. Process Sheets

Process Sheet in Form No. M.0608 is compiled by the Planner who first enters the usual information in the different cages on the heading portion. The planner then details the operations required to manufacture components/assembly in their sequence. Against each operation, in the appropriate columns, he enters the operation number, the Shop number and the Section in which the operation is to be done and the code of the machine on which the operation will be performed.

a. The Operation is briefly but precisely stated. The Process Sheet is checked by the in charge, Processing Section and initialed in token of his approval. It is, thereafter forwarded to the Rate Fixing Section. The Rate Fixer fills in the necessary information regarding PA and AT(Preparatory Allowance and Allowed Time) in the appropriate columns.

b. Process Sheet is the basic record. It is filed in the Planning Office. Whenever any change in the process is decided, it is noted on the back of the relevant Process Sheet indicating the authority and the reasons for the change. Each alteration is initialed by the incharge, Processing Section in token of its record. All alterations

to processes are advised to the Rate Fixing Section. The process sheet and other production documents will be printed through the computer.

Form M 608

PROCESS SHEET

Control Work order No	Set Nos.	DATE REQD. LATEST STARTING DATE	
Sub-Work Order	Name of Part	NQ/Set	Batch No.
Component of	Drawing No.	Priority	

MATL. SPECN: MATERIAL SIZE & LENGTH/PIECE

Route	Delivery to		Kgs.	
Dept.	M/C Class	Operation	Time	No. off.

609. Revision of Control Work Order Series

The series of the control work orders should be revised after every half year and all cases of sub-work orders remaining incomplete for more than 3 months after the old series has been revised should be listed by the job costing section and reported to the Works Manager for taking special steps for their completion.

610. Recoupment of Stock

All orders for newly designed parts, that have not previously been stocked, should emanate from the Progress Office. When a part becomes a stock, item, the Officer-in-charge of the Workshop Stores should be made responsible for arranging for recoupment as soon as the stock reaches the fixed minimum. A computerized requisition for such recoupment should be placed by the Stores Depot in duplicate in an appropriate form.

611. Issue of Production Documents

Job Card (Normal Production Work): The time worked by workmen (other than squads) on individual operations is booked on this card. Computerized Job cards are printed by the Production Control separately for each operation indicated on the Route Card and sent direct to the shop concerned simultaneously when the Route Card and other forms are handed over to the Stage Progress Section. When a job is

taken up the operator punches ‘ON’ (the time of commencement) the job card with the aid of the Time Clock installed beside the Time Booth. Similarly, when the job is finished the operation punches ‘OFF’ time on the Job Card. The time taken by the operator for each date, the operation remained in progress, is recorded by the Time Booth Clerk in the columns provided for this purpose on the reverse o the Job Card. On completion of the operation, the Job Card is passed on to the shop Inspector for certifying the quantity passed. On receipt back in the Time Booth the Card is passed on to the Incentive Bonus Section of the Workshop Accounts Office.

Job Card (Replacement Work): This document is exactly the same as the form the Job Card (Normal Production Work) except that it’s use is confined to the “replacement” work and is in pink colour for easy identification.

Job Card for squad work.—This card will be used for each of the workmen (including the leading hand) handling the operation covered by the squad summary card. Sufficient number of such blank Cards will be supplied to the shop in charge. At the time of starting the job, the supervisor will enter the Ticket No. of the leading hand on the squad summary card and hand it over to the leading hand along with a separate job card for him and for each man in the gang, duly filled in, in respect of Ticket No. category, work order number and operation No. and signed by the supervisors concerned. The leading hand will punch 'on' the squad summary card and the job-cards of the men in the gang and hand over all the punched on cards to the Time Booth.

Squad Summary Card.—Squad summary card will be used for consolidating the labour hours of men employed on squad work. One such card is supplied for squad work of each operation of the work order, to the shop supervisor .This card is punched 'on' by the leading hand at the time of starting the job and punched 'off' by him again on its completion.

Proceeding Time Card.—In respect of jobs are which remain in complete during the month, the time put in during the month is transcribed by the Time-clerk in the "Proceeding Time Cards" showing, Ticket No. work order No. and the hourly rate for costing. Such cards are sent to the costing section. A note of the proceeding time is also kept in the original job card against the space provided for this purpose. The proceeding time cards also given a distinct serial number each month by each time booth. The arrangement of Proceeding Time Cards will however, not be required to be followed where compilation of workshop Manufacture Suspense Account has not been mechanized as the accounts will continue to be compiled under the head - and hand method by making use of the Time sheets/tally sheets.

Material Requisition: This form serves as an authority for the Shop Superintendent to draw material as specified therein for manufacture of components etc. against a specific work order, etc. This form is printed through computer shows all particulars as shown on the top portion of the Route Card. Necessary cages are provided on the reverse of the form for the particulars and the value of the material issued. The number of copies of Material Requisition to be prepared should be settled in consultation with the PFA in accordance with the Stores code.

Form M. 611A

MATERIAL REQUISITION

<table>
<tr><td>Control Work Order No.</td><td>Quality On Order</td><td>Date Required</td><td>Requisition No.</td><td>Shop</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">Latest Starting Date</td><td colspan="2">Requisition Forwarded</td></tr>
<tr><td>Date</td><td>Signature</td></tr>
<tr><td rowspan="2">Sub-Work Order</td><td rowspan="2">Name of Part</td><td colspan="3">Material Issued</td></tr>
<tr><td>Date</td><td colspan="2">Signature</td></tr>
</table>

Component of	Drawing No.	Priority	Material Received	
			Date	Signature
Material Specification	Material Size & Length/Piece		Recorded	
			Date	Signature
Route	Delivery To	Kgs		
Issue Note No.		Dated	P.L.No.	

Value	Price	Pro of	Class of Store	Qty.	Demanded	Qty Issued

27-1 RB/ND/90

Material Requisition (Replacement)-: This form is the same as that of the Material Requisition for production work except that its use is confined to replacement work duly authenticated by appropriate rejection advice. This form is issued in pink colour for easy identification.

Form M 611B

MATERIAL REQUISITION REPLACEMENT WORK

Control Work Order No.	Quality On Order	Date Required	Requisition No.	Shop
		Latest Starting Date	Requisition Forwarded	
			Date	Signature
Sub-Work Order	Name of Part	Material Issued		
		Date	Signature	
Component of	Drawing No.	Priority	Material Received	
			Date	Signature
Material Specification	Material Size & Length/Piece		Recorded	
			Date	Signature
Route	Delivery To	Kgs		
Class of Stores		P.L. No.		

	Kgs	Rate	Unit	Value (Rs)	Closing Balance
Quantity Demanded ..... Quantity Issued					

Material Tag : This form is printed through computer and remains tagged with the material right from the time the raw material is drawn till the component/assembly is delivered to the Stores Department so as to identify the sub-work order to which it relates.

Form M. 611C

MATERIAL TAG

Control Work Order No.	Quality On Order	Date Required	THIS LABEL MUST STAY WITH WORK		
Sub-Work Order		Name of Part			
Component of		Drawing No.	Priority		
Material Specification			Material Size & Length/Piece		
Route		Delivery To	Kgs		
Receipt Note No.		Dated			
Value (Rs)	Price	Proof	Class of Store	Qty Ordered	Qty Received
Depot Closing Balance			Quantity ..... Date ..... Signature		

Material Tag (Replacement Form): This form is same as of the material tag for ordinary production work except that its use is confined to replacement work. This form is issued in pink colour for easy identification.

Form M. 611D

MATERIAL TAG REPLACEMENT WORK

Control Work Order No.	Quality On Order	Date Required
		Latest Starting Date
Sub-Work Order	Name of Part	THIS LABEL MUST STAY WITH WORK
Component of	Drawing No.	Priority
Material Specification		Material Size & Length/Piece
Route	Delivery To	Kgs

612. Route Card

The route card which shall be in Form M. 612 is the authority for the shops to undertake manufacture of the component/assembly for which it is issued. This is an exact replica of the Process Sheet (Form M. 608) with adequate space provided for the inspection staff to record the results of inspection or checking on completion of each operation. The Route Card is issued by the Production Control (through the Progress Office) to the Shop initiating manufacture and thereafter it accompanies the material till its delivery to Stores on completion of all operations. The Stores Depot acknowledges, on the Route Card, receipt of the component/assembly sent to the Depot from the Shops in the case of shop manufactured items. The Shop in charge thereafter passes on the Route Card to the Progress Office. The Progress Office sorts out the Route Cards by different Control work orders after scrutinising that necessary references of material requisitions and piecework Job Cards have

been entered therein and forwards the Route Cards to the Job Costing Section of the Workshop Accounts Office. Normally, only one Route Card is issued to cover the number of components/ assembly on outer against a sub-work order.

Form M 612 ROUTE CARD

Control Work Order No.	**Quantity on order**	**Date Reqd.**	**Requisition No. Shop**			
		Latest starting date	**Requisition Forwarded**			
			Date	**Signature**		
Sub-work order	**Name of part**	**Material Issued**				
		Date	**Signature**			
Component of	**Drawing No.**	**Priority**	**Material Received**			
			Date	**Signature**		
Matle. Specn.	**Material size and length/piece**		**Posted**			
			Date	**Signature**		
Route	**Delivery to**	**Kgs.**	**Qty. produced**	**Qty. Passed**	**REJECTS**	**Inspectors Signature**
					Mat.	**Man.**
Dept.	**M/C Class**		**Operation**	**Time**	**No. off.**	

P
……
A
……
P
……..
A
……..

Note: Operating Times and Prices given are "for each" unless otherwise stated.

Reverse of Form M. 612

Class of Stores			P. L. No.		
Qty. Demanded	Kgs.	Rate	Unit	Value	Closing Balance
Qty. Issued					

613. Work order System in Workshops

The work order should be so designed to capture the related expenditure of a particular job and this eight digit Work order on sight should also convey the purpose/ details for which it is undertaken. At any given point of time the work order should depict the clear picture of expenditure booked and outturn achieved. This system has been elaborated in Chapter 7.

614. Any product or service undertaken needs to be financially viable, economically and socially workable. For this purpose the costs are basically bifurcated into Prime Costs (consisting of Direct labour and Direct material) and Overheads or On costs (consisting of Indirect labour and Indirect material). The proportion of each of these three basic elements of costs viz, Direct labour, Direct material and Overheads to the total cost of the product or service will highlight the essentiality of that element to the final product or service. This basic analysis will help the workshop identify the areas so as to exercise control over expenditure. Various Elements of costs and their accountal is discussed in the following paragraphs.

615. Prime Cost

Direct labour and Direct material which are essential and directly allocable to the final product or service are known as Prime costs. Direct labor cost should include incentive bonus and overtime payment. While booking the cost of direct materials, consumables that are expensive or used in substantial quantities must be included.

616. Direct Labour

Direct labour hours should be captured from the job cards or squad cards for the respective work order. In the Workshop General Register and Labour Sub ledger the Direct labour hours so captured may be multiplied by the Average Hourly Rate which is to be computed on monthly basis so as to reflect the labour payment of that particular month. Since the work shop payment data is ready immediately with technical advancement, same month's data should be utilized for computation of Average Hourly Rate. The capturing of labour hours work order wise on day to day basis, arriving at the total hours on the date of closure of job cards should be directly captured by the computers. Write Back Order in respect of labour booking will notunder any circumstances be permitted. Such a system should be implementable after installation of ERP in workshops/PUs.

617. Direct Material/Stores

Issue note is the basic record for drawal of stores. The stores drawal must be commensurate with the physical outturn ensuring minimum shop floor inventory. It is possible to indent for the combined quantity where material is common for more than one activity (eg.) Material may be common for POH of Passenger Coaching Vehicles and POH cum Corrosion of Passenger Coaching Vehicles and POH of Other Coaching Vehicles, POH of EMU/MEMU or even Wagon POH in the same workshop. However, at the time of preparation of issue note, Write Back Orders to the respective Head of allocation should also be prepared simultaneously to ensure correct booking to the respective work. The quantity drawn is multiplied by the Book Average Rate already available in the system P L number-wise in respect of Stock items to arrive at material cost in respect of Stocked items. In respect of Non Stock items the input is given by Workshop Accounts office consignee wise (shop wise) and the material cost is incorporated in the Workshop general register (WGR) for the respective Head of allocation. On any account WISE (Workshop Information System) should be linked to MMIS (Material management Information System) to clearly record the stores drawn by workshops. Until implementation of Rolling stock wise costing, the common material for coach and wagon POH can be allowed to be drawn against one work order. However, later the same may be written back to the respective work based on the material issued.

618. Accountal of Material cost for costing data

The generation of costing data will be based on consumption of materials and the input regarding consumption of material (stock, Non stock as well as consumables that are expensive or used in substantial quantities) for type wise

rolling Stock should be supplied by shop floor and the same is to be averaged amongst the number of rolling stock turned out in that particular type for Group A cost of material, and any specific material used for any individual rolling stock is to be booked to that rolling stock. Wherever the cost of high value consumables can be directly identified with the work should be allocated directly to that work.

619. Overheads/ on costs

The expenditure required to be incurred for completion of a product or service but, which cannot be directly allocated to the product or service and can only be apportioned on some logical basis is known as overheads. In Railway workshops, On- costs may be classified in to Shop on cost (comprising of Labor and Material), General On cost (comprising of Labor and Material) and Administrative On costs. Expenditure for contractual activities/outsourced work, which are directly going into the manufacturer or final outcome of a product, should be directly added to that particular product.

620. Shop & General On Costs

a. Shop On Cost: Shop On Cost includes all on cost incurred within an accounting unit, such as a shop or a department or a section. The following are examples of such On Cost:

i. Wages, overtime etc. of workshop apprentices attached to particular shops, JEs, unskilled labour except when employed as direct labour tally men, store men, and of shop clerks

Note: Expenditure on clerks who are working on the shop floor but are responsible for Time-Keeping and Time Booking functions under control of the Accounts department, will continue to be charged to final heads of account under the Rev. abstracts concerned.

ii. Leave pay, idle time, sick hurt and holiday pay, travelling allowances and arrear pay, and pay allowed to men on volunteer duty or part-taking in sports.
iii. Shop scrap (credit) i.e. scraps which cannot be allocated to jobs.
iv. Stationery and forms used in shops.
v. Defective and spoilt work, in the case of experimental work.
vi. Power chargers, whether electric pneumatic, gas or hydraulic which can be directly allocated to shops.
vii. Wages of operators of automatic machines, not otherwise allocated.
viii. Wages, overtime etc. of men employed on mechanical transport in the shop.
ix. Wages, overtime etc. of all general labour in shops including those employed on transport.
x. Hammer driving in shops.
xi. Small differences between muster rolls and time sheets (paragraph 0520).
xii. Consumable stores for shop use, such as
    i. Oil for lubrication of machinery and shafting oil and waste for cleaning machines.
    ii. Sponges, emery and glass cloths, soap, pumice, acid, glue and chamois leather.
xiii. Charges for coal and coke in the smithies.
xiv. Lighting charges in shops.
xv. Fine creditable to works.
xvi. Suspension allowances.
xvii. Wages etc. of shop messengers.
xviii. Working expenses of crane and shunting engines, lorries, auto trucks, traversers etc. which can be charged to shop on cost.
xix. Small tools for shop use.

b. General on Cost: General On Cost denotes all On Costs other than Pro Forma on Cost/Administrative on Cost that is incurred in common with more than one shop or department within a workshop. General On Cost will include:

i. Leave, sick, hurt and holiday pay paid to workshop employees whose wages are not charged to shops, such as the yard establishments.
ii. Wages, overtime etc. of staff, such as the workshop apprentices, tool keepers, not attached shops.
iii. Freight charges that cannot be directly allocated to jobs.
iv. Electrical power, which it is not possible to allocate to shops.
v. Hydraulic and pneumatic power and gas that cannot be allocated to shops.
vi. Wages paid in lieu of notice to workshop staff not charged to shops.
vii. Replacement of articles stolen or lost.
viii. Expenditure on apprentices' school and hostel (Net).
ix. Working expenses of crane and shunting engines, lorries, autotrucks, traversers etc., provided for the use of the workshop when not chargeable to Shop on cost.
x. Working expenses of central works pumping plant.
xi. Experimental work, when not more appropriately charged directly to the job itself.
xii. Water charges that cannot be allocated to shops.
xiii. Wages, overtime etc. of general labour in yards and shunters.
xiv. Sanitary arrangements in workshops.
xv. Messengers' wages, uniforms etc. when not allocable to shops.
xvi. Consumable stores for general use not allocable to shops.
xvii. Maintenance of mess rooms.
xviii. Yard lighting.

The above list is only illustrative and not exhaustive. Chief Workshop Manager of every workshop will arrange to issue in consultation with associated finance fresh work orders for on-cost required for their workshops and the same should be reviewed once in 2 years. These on-cost expenditures are to be charged to various works undertaken in the respective shop and general on cost are common to workshop as a whole. On costs are always expressed and levied as a percentage of Direct labour including incentive Bonus and overtime paid in that work order.

Standing Work Orders for General On Cost: The expenditure chargeable to General On Cost, that is actually incurred, will be booked understanding work orders for such On Cost separately under labour and materials, the wages of workmen being booked as "General On Cost (labour)" and the remaining as "General On Cost (materials)". The number of such work orders should be sufficient to yield at least the following analysis of such expenditure.

a. Cost of operating general plant and equipment (labour and materials).
b. Yard lighting (materials).
c. Yard staff wages including wages of collies (labour).
d. Leave, sick hurt, holiday and notice pay of men whose wages are not charged to shops, such as (3) above (labour).
e. Wages, overtime & c. of apprentices not working in shops (labour) and the net expenditure on their school, hostel, & c. (materials.)
f. Freight bills which cannot be conveniently allocated to specific work orders (materials).
g. Cost of consumable stores for general use not allocable to shop oncost (materials).
h. Other items of general Oncost (labour and materials).

Standing Work Orders for Shop On cost: The expenditure on labour and materials of the nature of on cost actually incurred in individual shops should be collected under a sufficient number of standing work orders, separately under "labour" and "materials" as in the case of general on cost. The following work orders provide the minimum analysis considered essential:

a. Wages, overtime, & c. of chargemen, mistries, unskilled labour except when employed as direct labour, tallymen, store men, shop clerks, messengers, belters, oilers and other such labour (labour).
b. Leave pay, idle time, holiday pay, & c. (labour).
c. Defective and spoilt work in the case of experimental works (labour and materials).
d. Power and lighting including coal and coke (materials).
e. Loose tools and hand machine tools (materials).
f. Shop scrap, i.e. scrap which cannot be allocated to jobs (materials).
g. Consumable stores, such as oil, waste, & c. (materials).
h. Furniture and sundries (materials).
i. Other items of shop Oncost (labour and materials).

621. Annual Budgeting for on costs is necessary since large payments to employees like Productivity Linked Bonus, DA Arrears etc. are paid once or twice a year but these on costs are to be recovered throughout the year. The on-cost budget should be prepared taking into account the probable outlay on indirect and direct expenditure during the ensuing financial year. As the actual on cost will be collected under On cost work order and the same will be recovered at predetermined rates on Direct labour including incentive and over time payment, effort must be made to recover the maximum possible amount.

622. Quarterly Review of on-costs

A review of efficiency of overhead percentages should be made quarterly with reference to total actual expenditure incurred vis-à-vis that recovered at the overhead percentages. A comparison of these actual overheads with recoveries made through estimated percentages will reflect over/under charges for the month under different overheads. If these are found unduly large, the percentages are revised without waiting for the Annual On cost Budget so as to minimize the difference between the actual and the predetermined percentage. The Under / Over charges at the end of the year should be less than 5% so as to make On cost budget realistic and the same must be cleared through the final Heads before the end of the Financial Year.

Senior scale/JA grade executive officer in charge of Production Control Organization should review the trend of on-cost budget every quarter, jointly with workshop Accounts Officer. The outcome of this review in the form of management summary shall bring to the knowledge of Chief Workshop Manager for the management review and 'on-cost' control exercise.

623. **(a)** Direct Labor, Direct material, Shop On cost and General On cost need to be charged to all types of works executed at workshop irrespective of their nature. Proforma on cost and other charges will be charged as a percentage of direct labour (including incentive & Over Time Payment) labour on cost to be charged only for works of Rebuilding/modification under RSP as well as works of repair/rebuilding/rehabilitation done for outsiders. Method of charging of various elements forming part of proforma on cost to be done based on an annual budgeting exercise as given below in a tabular form. Explanation on proformaoncost budgeting can be seen in chapter 8.Profit will also be charged for work done for outsiders, based on the prevailing instructions. In order to be competitive in works done for outsiders, the General Manager of a zonal Railway

shall with the recommendation of PCME and concurrence of PFA have the power to reduce the quantum of Proforma on cost and or profit either wholly or in part in accordance with special instructions in vogue. It should be examined whether Railway gains any advantage, financial or otherwise, by the remission and the fact that the Railway did not actually incur any identifiable overhead charges should not by itself be treated as necessary and sufficient reason for foregoing the recovery of such oncost. The following table shows the details of recovery of costs.

Table

Sl.No.	Cost elements	Revenue works	Rehab/Modfn under RSP	Deposit works for outsiders	Export Pricing/Marginal Costing
1.	Direct labour	Yes	Yes	Yes	
2.	Direct Material	Yes	Yes	Yes	
3.	Shop & Genl labour on cost	Yes	Yes	Yes	
4.	Shop & Genl stores on cost	Yes	Yes	Yes	
5.	Freight	Nil	Yes	Yes	
6.	Storage & sup.	Nil	Nil	Yes	
7.	Proformaoncost (PFOC)			Yes	
	(a) Sup. at higher level	Nil	Nil	Yes	
	(b) PF & Grat.	Nil	Yes	Yes	
	(c) Repairs & maint.		Yes	Yes	
	(d) Interest	Nil	Nil	Yes	
	(e) Depreciation		Yes	Yes	
8.	Profit	Nil	Nil	Yes	
9.	Contingencies	Nil	Yes	Yes	
10.	Taxes	Nil	Nil	Yes	

For manufacturing activities including rolling stock construction done under RSP/Capital/DRF for railways as well as for outsiders under Deposit by repair workshop, charging of overheads will be done in accordance with the relevant provisions in chapter 2 viz., 'Production Units'.

(b) Marginal Costing is a costing technique wherein the marginal cost, i.e. variable cost is charged to units of cost, while the fixed cost for the period is completely written off against the contribution. The term marginal cost implies the additional cost involved in producing an extra unit of output, which can be reckoned by total variable cost assigned to one unit. It can be calculated as:
Marginal Cost = Direct Material + Direct Labor + Direct Expenses + Variable Overheads

(c) Classification into Fixed and Variable Cost: The Variable costs viz Direct Labour and Direct material cost have one to one relationship within level of outturn and will be accounted for as given in para 616 and 617. However most of the elements of Shop on Cost and General On cost described in para 620 are fixed in nature as far as work done for external non Railway Customers remains relatively small percentage of overall direct labour consumed. For example change on expenditure delta x on account of shed and yard lighting will not change whether or not work for outside party is undertaken or not unless it is so large that administration decides to introduce third shift .

(d) Opportunity cost – The concept of opportunity cost is extremely important to understand since in several cases due to inflexible costing system in government which is many a time based on historic data and not real time, opportunities are lost which result in less intensive utilisation of workshop assets and consequent loss of revenue. Opportunity costs represent the benefits an individual, investor or business *misses out on* when choosing one alternative over another. Hence when estimating cost of offering Rolling stock or services by conventional method as given in para 00623 of IRRSC. Opportunity cost should be calculated if there is substantial probability of business being negotiated in competitive environment which may be lost if right pricing is not done. Opportunity cost may be calculated in following manner –

OC= FO-CO

Where OC= Opportunity cost, FO- Return on Foregone option (i.e costing at discounted price) , CO- Return on Chosen Option

If chosen option of conventional costing gives nil probability of business then OC=FO

As long as OC is positive, discounted price option is viable. If OC becomes zero or negative, conventional price option should be adhered to.

(e) The current costing methodology as per para 0623(a) requires costing for Rolling stock supply and maintenance to be carried out for third Party after adding Prime (Direct Labour+ Material) & Shop & General On-cost plus Proforma On cost & Profit .Some flexibility is provided with power to reduce Proforma On cost & Profit wholly or partly at the level of General Manager with the concurrence of FA&CAO. However in rapidly changing business environment where decisions have to be conveyed to Outside parties in matter of few days otherwise business would be lost, this methodology is too slow particularly as the priorities of General Managers in Open line are almost entirely focused on Freight and Passenger operations of Railways. While existing provisions on costing may be considered sufficient for regular Railway works. However the system suffers from the drawback that overheads are calculated once in a year and are not reflective of current values. The provision of quarterly reviews as contained in para 0622 is largely restricted to comparison of booking review in On -costs vs. Actuals whereas revision is done only during Annual on-cost Budget at the end of the Financial year.

(f) As and when a unit brings in additional business, overhead per unit go downwards in adaptive accounting system. However in fixed accounting system these are not captured and are not reflective of actual. Therefore costing for Non Railway Customers as per current agreements or as given in para 0623 (a) will be adopted where the customers are required to avail services from Railways on nomination basis or are covered by long term arrangements like defence and Postal dept. However in environment where work is awarded by competitive bidding or negotiated by PSUs and other Non-Government entities including foreign buyers and where there is strong possibility of Price being a prime consideration for business being awarded or otherwise and where Opportunity cost (revenue) if discount is offered is positive, following methodology of costing will be offered -

i) In cases where work is likely to be awarded on single or limited tender, costing will be offered as per para 0623(a) however if the purchaser insists on negotiations the following discounts can be offered by CWM or SAG officer in-charge without Finance concurrence if he has compared market price of similar products and has recorded reasons including price analysis that entire Direct cost will be recovered even after discount –

- Nil discounts on Direct Material + Labor cost
-25% Discount on Shop on cost and General On cost
-up to 50 % Discount on Performa on Cost and Profit

ii) Discounts to be offered with approval of PHOD (PCME) with concurrence of associated workshop Finance.

- Nil on Direct Material & Direct Labor Cost
- Upto 75 % on Shop and General On Cost
-upto 85% on Performa On Cost and Profit

iii) If the Railways directly or through Railway PSU (RITES, IRCON or any other Railway/PSU) has to offer price in competitive bidding, the cost of product as well as market price and cost of competitors should be analyzed in writing and price decided beforehand. Discounts can be offered during initial bidding or during negotiations. Discounts can be offered to the same extent as described in para during initial bid or at the stage of negotiations. Records should be submitted to Finance for Post Audit after completion of work order to check that direct Labour and material have been fully recovered.

iv) If full discount of Proforma on-cost and Profit is proposed to be offered for meeting the competition, provisions in Para 0623(a) may be adopted with approval of General Manager after concurrence of Finance.

(g) GM of PUs is empowered for:

i) Reduction of Fixed overhead to the extent of 100% irrespective of the quantity produced

ii) Waiving off Contingency and warranty charges

iii) Waiving off cost due to contribution to Pension Fund

iv) Reduction of Depreciation Reserve Fund to the extent of 100%

(h) Since employees are paid a guaranteed wage regardless of their level of output, GM of a PU should be empowered to waive off the wages of the direct labor and to include only the incentive component, for export pricing, in case the surplus capacity of a PU is being used to meet the requirement of the customer.

624. Costing of POH of Rolling Stock

Importance of proper maintenance of rolling stock for providing safety and comfort to the Traveling Public is well recognized. The basic maintenance of coaches EMU/MEMU and wagons is done in workshops during periodical overhaul. It is, therefore, necessary that special efforts are made to ensure good workmanship and ensure quality of repair during POH in workshops so that the coaches give reliable service on line. Open line depots have been equipped for carrying out safety checks and maintenance of passenger amenities in coaches. Hence, it is reiterated that adoption of the right repair practices during POH in workshop is of paramount importance.

625. Variation of unit repair cost from work shop to workshop and also in the same workshop from quarter to quarter, differences with regard to classification of repair in Mechanical and Electrical departments have led to the necessity of streamlining the booking of material and labor to POH, IOH and to other repairs. In the process of streamlining the following are to be ensured.

Defining standard Allowed Time for POH based on

a. Must Change Items and Schedules of normal POH
b. Condition of Rolling stock. Unscheduled repairs based on the condition of the rolling stock may be booked to Corrosion repair activity where separate work order exists to collect the expenditure under POH cum Corrosion activity.
c. Cost of replacement of High value items

Para reference of respective Coach/ Wagon Maintenance Manual published by the Railway Board must also be given against each of the above classification. Similar standards must be prescribed for Mid Life Rehabilitation. (MLR).

i. Existing procedure regarding collection of Expenditure for POH and POH cum corrosion may be continued as the same is in line with Finance code Vol.II

ii. Corrosion repair, though a part of POH should be collected separately and added to POH cum Corrosion activity.

626. The necessity of knowing the cost spent on each type of Rolling Stock has led to new system of arriving at POH unit cost per Coach, per Wagon and per Locomotive, Per EMU/MEMU.: The Revised Costing system (RCS) which arrives at Unit Repair Cost of each Loco has already been implemented in all workshops in respect of POH of AC Locos and Diesel Locos in Indian Railways. Under this system, the bills to other zonal Railways are based on the Loco wise Unit Repair Cost generated under the system and transfers to Revenue in respect of POH to Home Railway Locos are also based on the Revised Costing system bills. This system is realistic as the actual labor and Material utilized per Loco along with Labor and Stores On cost is the transfer price. The salient features of Revised costing System are in Annexure-I.

627. Revised Costing System already implemented in electric and diesel Loco workshops of Indian Railways aims at arriving at loco wise costing wherein the POH (Periodical over Haul) cost is grouped into three categories viz. Group A (dealing with all scheduled repairs ie. POH: Group B (dealing with items changed/ replaced on condition basis) and Group C (cost of replacement of High value items). This is the only system where the cost of POH of Rolling stock based on the material consumption and not drawal. This system must be extended to coaches and Wagons after setting standards for POH of Coaches and Wagons.

628. The following steps must be taken by HOD incharge of workshop at HQ of a Railway along with respective CWMs of all workshops for introduction of Coach wise, wagon wise costing.

a. Defining Must change items (with reference of Coach and Wagon Maintenance Manual) and categorizing them as Group A for type-wise Rolling stock.
b. Identification of Cost Centers engaged in specific portion of POH activity
c. Defining items to be replaced based on condition (with reference to Coach & Wagon Maintenance Manual) and categorizing the same as Group B.
d. Listing some of the High value Items requiring to be replaced on necessity and branding the same as Group C along with a list of Capital Spares.
e. Arriving at type wise Rolling stock cost data in time to prefer other Railway debits and also for Home Railway transfer to Revenue Demand.
f. Ensuring proper linking of costing data with Financial Accounts.
g. Creation of a network of computers so as to capture cost data on a real time basis at the shop floor itself.

629. Reconciliation and merger of Costing records with financial records

All workshop expenditures are routed through Workshop Manufacturing Suspense and clearance of Workshop Manufacturing Suspense to various Final Heads should be on the basis on Costing data generated for type-wise Rolling Stock. All Budgetary Reviews should be based on the type wise cost of Rolling stock available as per Cost records. The Balance under WMS as at the end of the financial year should only reflect the value of work in progress to be completed in the ensuing month. Clearance or credits in respect of completed work for the financial year must be chased before the closure of March accounts to ensure minimum balance under WMS.

630. Managerial Statements

An illustrative list of Managerial statements that should be prepared on the computer system for every workshop is given below. This can be abridged or elaborated based on local needs.

1. **Day End Reports To CWM**
   a. Percentage of absenteeism
   b. Total Gate Attendance Hours Vis-a-vis Job Card Hours
   c. Number of Rolling Stock attended on each bay
   d. Idle time booked with reasons, shop wise
   e. Reconciliation of Time Taken with Gate Attendance and reasons for variations.
   f. Urgent requirement of materials (Both stock & non stock)

2. **Weekly Reports to CWM and CWE (items e & f)**
   a. Outturn of Rolling stock Type wise
   b. Labor hours spent on each type of Rolling Stock turned out during that week
   c. % of outturn achieved compared with the Target
   d. Over Time booked if any to meet the target
   e. Reason for slow or staggered working (if any) on account of want of material or otherwise.
   f. Position of Material availability to ensure smooth functioning in the ensuing week.

3. **Weekly Reports to CWE**
   a. % of outturn achieved compared with the Target
   b. Position of Material availability to ensure smooth functioning in the ensuing week.
   c. Any special problem faced by CWM.

4. **Monthly Reports to CME/CWE as part of MCDO**
   a. Outturn of Rolling stock item-wise and type-wise compared with the Target
   b. Unit Repair Cost of Rolling stock item-wise and type-wise compared with previous month's actual.
   c. Suggestions to overcome shortcomings experienced during the month under review.
   d. With a view to encourage Workers participation in Management suggestions from grass root level for system improvement may be called for, studied for feasibility and implement with due reward immediately.

a and b of monthly reports may be utilized by Railway Board to fix the annual targets and fix transfer price for POH.

5. **Quarterly Report**
   a. On Cost review done by executive and workshop account officer

Based on the above list, CWM of every Workshop should decide in consultation with FA&CAO (S&W), CMM, and executive Departmental officers, the formats of statements needed for Managerial control according to their local needs and get them incorporated in the Management Information/ERP system. These would be reviewed periodically by concerned PHOD and should also be discussed in the General Manager's meeting with PHODs. There should be a constant endeavor to reduce costs without compromising quality.

631. Use of costing data

The practice of incremental budgeting must be dispensed with and the Budget Estimates should be proportionate to the physical outturn projected during the various Budgetary Reviews. The Budgetary Reviews submitted by workshop should be based on the costing data for type wise rolling stock.

Annexure.6.1

Revised Costing System

This system of costing contemplated by RITES aims at arriving at the POH cost incurred per loco. This is the only system available to arrive at unit repair cost in respect of major repair activity.

FEATURES:

1. The cost incurred is divided into three categories viz. Group ‘A’, group ‘B’ & group ’C’.
2. Group ‘A’ cost is the usual scheduled repair to be attended to in respect of all locos and hence the total cost incurred under this group is averaged amongst the locos turned out during that month.
3. Each group is divided into various cost centers based on work and the cost will be collected cost centre wise.
4. Group ‘B’ cost is cost incurred on each loco based on the condition of individual loco.
5. Under this group ‘B’ additional expenditure on account of 6P/ABC/DBC/ spl etc. are brought in to account.
6. Group ‘C’ cost will reflect the high value items replaced in respect of individual loco turned out during the month.
7. All expenditure booked cost centre wise are apportioned to the locos turned out during the month based on standard p d ratio(based on equated output)
8. The greatest advantage of this system is that the stores cost is based on consumption and not drawal.
9. This enables comparison of unit repair cost of locos every month.
10. For comparison purpose, only group A cost is taken as standard POH cost.

This system helps in identifying the excess drawl of material against LOCO POH as the consumption alone is accounted in the bills.

Execution of works in Workshops/PUs

Para No.	Title *(Ctl + Click on Para no.)*
701	Works undertaken in Workshops
702-03	Estimates
704-06	Estimates for Rolling Stock additions & workshop M&P Items for Workshops & Sheds
707-11	Estimates for Renewals and Replacements
712-13	Estimates of work for outside agencies
714	Charges for preparation of estimates
715	Interest Charges
716	Sanction for works to be executed in Workshops
717	Verification of Estimates
718-19	Certificate of Accounts Verification
720	Sanction to Estimates
721	Record of all Estimates
722	Currency of Sanction
723-25	Postal Vans
726-29	Saloon carriages & other vehicle reserved for exclusive use of other deptt./Ministries
730	POH of Rolling Stock hired to/owned by defence deptt.
731	Loaning/Hiring charges for Rolling Stock loaned/hired to Outside parties and Government Departments
732	Loaning/hiring charges of the Rolling Stock
733	Hire charges for Plant & Machinery let out to Contractors
734	Sale of Heritage Rolling Stock
735	Sale of In-service MG rolling Stock
736	Methodology for sale
737-739	Execution of Works
740	Analysis of expenditure
741-42	Work-order system
743	Revenue Standing Work orders
744	Other Standing work orders
745	On-cost Work orders
746	Raw material stock work orders
747	Manufacturing work orders or Division work orders
748	Part, Group and repair work orders
749-751	Work order Register
752	Advice of Completion
753	Monthly Statement of completed work orders Compilation of the Workshop Manufacture Suspense Account
754	Work shop Manufacture Suspense Account
755	Workshop General Register

756	Check sheet
757	Calculation of On-cost Charges
758-767	Out-turn Statement
768	Workshop Deposit Schedule
769-770	Workshop Account Current
771	Workshop Manufacture Suspense Account Journal Entries
772	Up-to-date totaling of Workshop General Registers
773	Review of Workshop General Registers
774	Irregular booking of charges
775	Workshop Subsidiary Balance Register
776	Labour Book
777	Reconciliation with the General Books
778-780	Review of Balance under “Workshop Manufacture Suspense Account”
781-782	Completion Reports
783-785	Completion Report Register
786	Adjustment of charges and Credits reported on completed works
787	Productivity Review
Annexure 7.1	Flow of data for WGR & WMS account current

701. Works undertaken in Workshops

No works other than those chargeable to Demand Numbers – 05, 06 or 07 (Abstracts C, D and E) may be carried out in a workshop without an official order from the competent authority(CWE) for the work being undertaken in the workshops. Detailed estimates for works to be undertaken in Railway workshops should be prepared in the following cases:

a) All works whether chargeable wholly or in part to Capital/DF/DRF/works of special nature, such as special overhauls of rolling stock even though chargeable to ordinary revenue.
b) Works undertaken for outsiders, other Railways and other Government Departments or Ministries.
c) Consultancy to industry based on Domain Knowledge base of the workshop. However, while doing so if use of designs/ drawings issued by other Railway units or Intellectual Property issue of RDSO, HQ or any Production unit is involved, prior approval shall be obtained from such unit.

Note:

(i) The provision of this Para shall not apply to the manufacture of rolling stock or other works undertaken in Production Units against orders placed by the Board for supply to Railways.
(ii) Definition of works cover both works contract & service contract.

702. Estimates

All proposals for the construction of new work or purchase of new or replacement of the existing assets should be presented along with proper justification, in the form of Abstract Estimate supported by Rate proof, rate analysis and Rate of Return in the case of new assets for scrutiny and vetting by the Associate Finance. Preparation of Estimates, financial vetting of the same and sanction etc. shall all be done as far as possible on line on the computer system.

703. Detailed Estimates should be prepared and shall be sent to the Workshop Accounts Officer for scrutiny and vetting. Thereafter, the vetted estimate is processed for sanction of the competent authority.

704. Estimates for Rolling Stock additions & Workshop M&P Items for Workshops & Sheds:

Estimate for Rolling Stock Addition

In the case of rolling-stock to be built and provide inter alia for the following items being shown separately:

a. Locomotives and Wagons:

i. Cost of engines or wagons including sea freight, etc. in rupees at the prescribed rate of exchange if obtained from abroad and if obtained in India the likely Contract Price, **last accepted rate etc.**
ii. Customs duty (if obtained from abroad)
iii. Freight and/or haulage charges when chargeable direct to work as forming part of cost of stores
iv. Sundry stores for erection
v. Labour for erection
vi. Shop On cost (for erection)
vii. General Oncost (for erection)
viii. Percentage charges for freight on stores (such stores the cost of which is not inclusive of such charges)
ix. Proforma Oncost, to the extent chargeable

x. Contingencies
xi. Write-back of the original cost of replaced stock: In the case of replacement, renewal and abandonment works only
xii. Credits for released material: In the case of replacement, renewal and abandonment works only
xiii. D&G charges

b. Coaching Stock:

i. Cost of underframes with wheels and axles etc including sea freight in Rupees at the prescribed rate of exchange, if obtained in India
ii. Customs duty (if obtained from abroad)
iii. Freight and/or haulage charges when chargeable direct to work as forming part of cost of stores
iv. Body fittings and stores including paint obtained for construction, inclusive of customs charges, if any
v. Electrical Equipment
vi. Timber
vii. Sundry Stores
viii. Labour
ix. Shop Oncost
x. General Oncost
xi. Percentage charges for freight on stores (such stores the cost of which is not inclusive of such charges)
xii. Proforma Oncost, to the extent chargeable
xiii. Contingencies
xiv. Write-back of original cost: In the case of replacement, renewal and abandonment works only
xv. Credits for released material: In the case of replacement, renewal and abandonment works only
xvi. D&G Charges

The proposals shall be submitted in such full and fair measure containing all information which can be reasonably be provided for appreciation of the proposal under consideration. The proposals need to include codal life of assets and reason for procurement along with adequate justification and administrative approval of competent authority for such procurement/manufacture.

Estimates for Workshop Machinery

Estimates for the provision of workshop machinery should show:

a. The cost of each machine, including sea freight in Rupees at the prescribed rate of exchange, if obtained from abroad; or the contract price, if obtained in India
b. Customs Duty (if obtained from abroad)
c. Freight Charges when chargeable direct to work as forming part of cost of stores
d. Foundation Charges
e. Wiring Charges
f. Erection Charges
g. Shop Oncost
h. General Oncost
i. Percentage charges for freight on stores (such stores the cost of which is not inclusive of such charges)
j. Pro forma Oncost, to the extent chargeable
k. Contingencies
l. Write-back of original cost: In the case of replacement, renewal and abandonment work only
m. D&G Charges

705. The provision for timber, body fittings and for sundry stores should be based on actuals for similar or other vehicles previously built duly giving suitable allowance for fluctuations in prices and other known changes. Estimates for electrical equipment should be obtained from the Chief Electrical Engineer.

706. The financial justification for the work should be briefly explained and a certificate to the effect that the funds are available should be appended. Allocation should be indicated clearly. If no provision has been made or the provision made in the budget is less than the amount of the estimate, it should be clearly stated that how the expenditure would be met. In every such case, savings expected in the provision of other items in the budget should be indicated with reasons for the same. Mere budget certification is not sufficient for funds to be provided. The officer proposing the work must certify that funds shall be made available.

707. Estimates for Renewals and Replacements

Estimate for renewals and replacement of the asset should be accompanied with the details of distinguishing codes and numbers, date of purchase, age of the asset, original cost charged to capital and released materials. The note should indicate the floor area or the carrying capacity of the Rolling Stock and other appropriate information of the Rolling Stock replaced.

708. It should be critically examined whether it would not be possible to avoid or postpone such replacements by adopting methods of 'reconditioning' at a cost that could be justified financially. The total cost of reconditioning of an asset should be charged to ordinary repairs and maintenance in the same way as the cost of other repair works. In all cases, in which it is considered necessary to replace an asset, instead of reconditioning, it should be examined whether the average annual cost of service of an asset is the sum of Annual Expenditure that would be incurred in connection with upkeep operation, maintenance and repairs of the asset;

a. The Annual sinking fund payment to the depreciation fund, and
b. The annual interest charges on the cost of the asset.

The prevailing rate of interest should be adopted for the calculation of sinking fund payment to depreciation fund.

709. If the expenditure on a work or project is likely to exceed the detailed estimate amount sanctioned, a revised estimate should be prepared in the same form and in the same degree of details as in the original estimate and submitted for the sanction of the competent authority at such time before or during the work when the engineer in charge of the work is of reasonable belief that the work may not be completed in the existing estimated cost. The excess or savings under each sub-head of estimate against the latest sanction should be elucidated. In cases where the work is in an advanced stage and likely to be completed before the preparation of revised estimate, the excess should be dealt with in the completion report, with the prior approval of competent authority subject to the condition that engineer in charge shall certify that delay would lead to affecting quality and cost of the work of consideration. The competent authority should intimate the fact to the Accounts Officer. Revised estimates should also be submitted in the case of change in scope of work or material modifications in the sanctioned estimate (Para 1109 to 1113 of Indian Railway code for the Engineering Department).

710. The sanction of detailed estimates/revised estimates for works originally sanctioned at the time of inclusion in the budget and excess over the abstract cost not within the GM's competence should be obtained from Railway Board.

711. Sanction of the competent authority with the concurrence of Finance at appropriate level for sanction of Estimate/Revised estimates with variations and Material Modification should be got done in accordance with the prevailing Schedule of Powers, advised from time to time.

712. Estimates of Work for Outside Agencies

Works for the manufacture or repair of articles or supply of material for Public/Private bodies may be undertaken in Production Unit/Workshops only if the PHOD of Production Unit/Chief Workshop Manager of Railway Workshop is satisfied that surplus capacity exists in the Production Unit/Railway Workshop after meeting the Railway's requirement. A check list as under may be prepared and the proposal should have the personal sanction of PHOD of Production Unit/Chief Workshop Manager of Railway Workshop with the concurrence of Associated Finance.

a. Is the interested buyer genuine?
b. Can the work be done without affecting current Railway works?
c. Is the price optimum?
d. Is the delivery schedule workable?

The charges for the work should be calculated as explained in Para 723 of this Code. **The work should be undertaken only after 20% of the estimated cost of the work or Rs. 50 lakhs, whichever is** less has been deposited in advance by the party ordering the work. The balance payments regarding the work shall be deposited with the Railways as per the contract terms approved by the competent authority.

713. The formal acceptance of the estimated cost should be obtained from the officers ordering the work, before taking up the works. It should be clearly stated that the actual cost of the work even if it exceeds the estimate will be realized. The estimated cost shall incorporate due supervision, direction & general charges.

714. Charges for preparation of Estimates

For the works ordered by other Govt. or non-Government Departments private bodies and individuals, charges for preparation of estimates should be recovered from the parties ordering the work **at a rate of 5% of the total estimated cost for works costing below Rs.10 lakhs and 2% of the total estimated cost for works costing above Rs.10 lakhs.** The parties should be intimated in advance about the liability to meet the charges and their acceptance should be obtained before the work of preparation of estimates is taken in hand. In respect of local bodies and private bodies or individuals, the estimate preparation charges should be obtained in advance. In exceptional cases, General Manager of the Railway/Production unit can waive these charges with the concurrence of PFA. If the work is subsequently taken up, these charges may be taken as advance payment for the deposit work.

715. Interest Charges

When expenditure chargeable to capital is incurred on works for use by another Department/Ministry, interest should be charged during the period of construction, subject to recovery of Interest and Maintenance charges under the rules in force. The interest charges should be calculated annually on the total capital outlay up to the end of the previous financial year and half the outlay of the current financial year. The prevailing rate of dividend should be charged as rate of interest. The amount recoverable for any financial year should be adjusted in the books of the Railway as a miscellaneous receipt under major head “145 – Indian Railway Commercial / Strategic Lines Miscellaneous Receipts”.

Interest should also be charged for the works done by Railways at the cost of other departments and handed-over to that department on half the sum of unadjusted outlay at the beginning and end of the year.

716. Sanction for Works to be executed in Workshops

All works of capital nature undertaken in Railway Workshops should have the prior sanction of G.M. or of an Officer to whom the powers have been delegated by G.M. Provision of funds must also be ensured before the commencement of the work.

717. Verification of Estimates

All estimates must be verified by the associate Accounts Officer before they are sanctioned by the competent authority. The object of this preliminary check of estimates is to avoid irregular sanction to expenditure and all the principles of internal check such as propriety of expenditure, the existence of budget provision, the competence of sanction etc. must be ensured. The Accounts Officer should also clearly state that incidence and allocation have been verified. However the submission of an estimate to the sanctioning authority should not be delayed when there is any doubt as to the correct allocation of the estimated cost and the question at issue will take time to settle. In such cases, the approximate allocation between Capital, Capital Fund, Depreciation Reserve Fund, Development Fund and Ordinary Revenue may be certified by the Accounts Officer, as far as it is possible for him to do so, and the sanctioning authority may sanction the estimate, if otherwise in order, leaving over the question of final allocation for subsequent consideration.

718. Certificate of Accounts Verification

All estimates verified by the Accounts Officer should bear a certificate of such verification. The form of the certificate may be as under:

"Incidence and allocation verified (subject to the check note attached). This requires the sanction of....."

719. A copy of the estimate as verified by the Accounts Officer, together with a verbatim copy of his check note, if any, should be submitted to the authority competent to sanction the estimate. In forwarding an estimate for sanction, it should be clearly mentioned whether it has been accepted by the Accounts Officer as unobjectionable. In cases where the Accounts Officer has recorded any objection, the attention of the sanctioning authority should be drawn to the Accounts Officer's check note stating the objection.

720. Sanction to Estimates

Advice of all sanctions to estimates by the competent authorities should be communicated to the Accounts Officer and to the Chief Auditor of the Railway in such form as may be prescribed by such authorities. A copy of the sanctioned estimate should also be furnished to the Accounts Officer.

721. Record of all Estimates

Details of all estimates received in the Workshop Accounts Office for verification should be available in the Computer system in the format prescribed by PFA.

722. Currency of Sanction

The sanction to an estimate will ordinarily remain current for a stipulated period from the date on which it has been accorded according to the guidelines from Railway Board, unless it has been renewed for and explicitly indicated for a further

term by the acceptance of a revised estimate. Acceptance by competent authority however, of a budget estimate which includes specific provision for expenditure on a work which is in progress may be regarded as reviving for the year in which provision is made, the sanction to the estimate, regardless of the stipulated limit of period. But if no work has been commenced on a sanctioned estimate within two years of the date on which the sanction was accorded, such sanction should be held to have lapsed and fresh sanction should be obtained from the competent authority by the submission, of an up-to-date estimate.

INCIDENCE OF COST OF WORKS DONE FOR OTHER DEPARTMENTS / MINISTRIES

723. Postal Vans

The minimum standards for equipment in the postal portion of coaching stock should be decided by the Railway Board in consultation with the postal department and should be advised to the Zonal Railways and workshops. The vehicles are of two types.

a. The vehicles owned by Railways.
b. The vehicles owned by the Postal Department.

For the Vehicles owned by the Railways, the Interest and Depreciation charges shall be paid by the Postal Department. **The prevailing rate of dividend should generally be charged as rate of interest**. For the vehicles owned by the Postal Department, Railways shall recover the POH and maintenance charges incurred by it from the Postal Department. The Capital cost of the new vehicles constructed for the exclusive use of the Postal Department on their requisition shall be borne by that department and the capital cost of vehicles which are also used by the Railways shall be borne by Railways. In the latter case, the postal department shall pay interest and depreciation charges.

724. When the existing vehicles have to be converted fully or partially on the requisition of Postal Department, they shall pay all the costs, viz., cost of alteration, the cost of transportation of such vehicles to the workshops and from workshops to the station where it is to be delivered and interest on capital cost of the complete vehicles or part of vehicles, so long as they remain in the exclusive use of Postal Department and not surrendered by them.

725. When Postal Department formally surrenders the vehicles or part of the vehicles, the capital cost of which had not been paid by the department, they shall pay the cost of conversion of such vehicles for the use of general traffic, the cost of transportation of such vehicles to workshops and from workshops to the station at which required after conversion. In the case of payment of capital cost of such vehicles surrendered by the postal department, the Railways shall refund the sum less the cost of any special fittings and also less the cost of converting such vehicles for general traffic purposes, to the postal department.

Saloon carriages and other vehicles reserved for the exclusive use of departments/ministries of Govt. Of India and State Governments

726. The department / Ministry of Government will be responsible for obtaining the prior sanction of the competent authority to the provision of any vehicles reserved for the exclusive use of that department. Design of all rolling stock should be to Railway standards as approved by RDSO and must receive the prior approval of Railway Board. The vehicle with electrical and movable equipment and furniture will be provided at the cost of Railways. The total cost of construction of the vehicles will be borne on the books of the Railways. The Department shall pay annual charges **calculated on the following lines.**

i) **Interest @ the prevailing rate of dividend on the present day cost.**
ii) **Depreciation @ based on the codal life of the asset as prescribed in Finance Code.**
iii) **Repair & Maintenance charges based on the following**
   1. **Estimate framed on the latest unit cost for POH and IOH costs**
   2. **Repair/Replacement of special high value items on actual basis and**
   3. **Running repair charges to be included as a %age in the haulage charges**

Depreciation will not be charged on the vehicles in service for more than codal life. Haulage charges at the prescribed scheduled rates will also be levied.

727. When any alterations or addition to the body or to the equipments and fittings are carried out at the request of the using department, the actual cost of such additions or alterations shall be paid by the using department. The work should be undertaken only after the competent authority of the using department undertakes to defray its actual cost.

728. When it becomes necessary to replace vehicle or equipment reserved for other departments, it shall be provided at the expense of the Railways. The user department shall pay the actual cost of converting the replaced vehicle for use as ordinary stock, when the replacement is required by the using department before the expiry of its codal life. Such requirement shall be explicitly expressed by the deptt./ministry using the vehicles. When a new vehicle has been built in replacement of existing one, Interest, Depreciation and repairs and maintenance charges shall be paid annually.

729. A Proforma Capital and Revenue Account of all such vehicles should be kept. Along with a common account for all vehicles, a separate account for individual vehicle shall be maintained in the computer system. The Capital account should show the Capital cost of the saloon. The revenue account should indicate the expenditure incurred from year to year by Railway on repairs and maintenance of the vehicles. The expenditure on empty haulage charges should also be included in the Revenue account.

POH of Rolling stock hired to/owned by Defence Department.

730. The mechanical department of the owning Railway is responsible for collecting the information of POH done on both Railway-owned and defence-owned coaches and wagons and not the workshops.

POH should be carried out on the due date with the highest priority and proper quality and it shall be noted that the location and movement of rolling stock is the prerogative of Defence department and Railway workshops by themselves should not unilaterally move defence-owned stock. The owner of the stock shall ensure that adequate information is available about the stock.

The Railway numbers for each coach/wagon is allotted and painted on the coach/wagon. The location and the maintenance requirement like POH/ROH/IOH due dates shall be available with the base depot as well as Directorate of Milrail. The MCO organization which has presence all over the IR network shall be included in the ERP for Rolling Stock so that the information about each defence-owned coaches and wagons is available promptly.

In the case of Defence owned stock repair & maintenance charges should only be charged based on the following

a) **Estimate framed on the latest unit cost for POH and ROH/IOH**

b) Repair/Replacement of special high value items on actual basis and
c) Running repair charges to be included as a %age in the haulage charges

There is no need to charge the Interest and Depreciation charges in respect of defence owned stock.

In the case of Rolling stock owned by the IR and hired to Defence Department the Defence Department shall pay annual charges calculated on the following lines

i) Interest @ the prevailing rate of dividend on the present day cost.
ii) Depreciation @ based on the codal life of the asset as prescribed in Finance Code.
iii) Repair & maintenance charges based on the following
a) Estimate framed on the latest unit cost for POH and IOH
b) Repair/Replacement of special high value items on actual basis and
c) **Running repair charges to be included as a %age in the haulage charges**

The above rule shall also be applicable on any previous bills/outstanding which are pending on account of objections/disputes raised by Defence department on the above grounds.

A Proforma Capital and Revenue Account shall be maintained by Executive Department for all such vehicles to see that the recoveries made from the Defence department do not fall short of the actual expenditure incurred by the Railways.

731. Loaning/Hiring charges for Rolling Stock loaned/hired to outside Parties and Government Departments

The present day replacement cost of the rolling stock shall form the basis for calculation of hiring/loaning charges for rolling stock loaned/hired to private parties/Government departments. The cost of the rolling stock as given in Pink Book for any given financial year shall be taken as the present day cost. In the event of non-availability of the present day cost of the rolling stock, the same may be arrived at by taking the last known cost and multiplying the same with increase in the prices since then. The present day cost can be worked out on the basis of printed figures as published by Ministry of Industry for price in case of transport equipments or in absence thereof by adding 18 points for each year to the index. The present day depreciated cost for the stock shall be worked out using the formula as per Para 777 of Financial Code Vol-I.

732. Loaning/hiring charges of the Rolling Stock

a. Interest and dividend charges shall be worked out on the basis of prevalent dividend rate as advised by IRCA over the present day cost of the stock.
b. Depreciation @ based on the codal life of the asset as prescribed in Finance Code.
c. Loss of earnings to Railways arisen out of the loaning or hiring of the stock to the outside parties/Government Departments shall be worked out at 4% of the depreciated cost of the stock.
d. The POH cost shall be worked out at 4% of the present day cost of the stock uniformly.
e. In addition, 5% may be added to cover special repairs and contingencies.

The hire charges of the stock per annum shall be worked out by summing up the above charges and hire charges per day shall be worked out accordingly. The hire charges per day should be arrived at by HOD/HQ of the Executive Department and vetted by FA & CAO/S&W. The operating and maintenance charges such as the cost of fuel, lubricating oil, crew charges and haulage charges shall be assessed by

Divisional Officer In charge and got vetted by the Divisional Finance. The estimate of charges recoverable towards leasing of loco shall be furnished to the Zonal Railways HQ finance along with Draft agreement for vetting. The following documents shall accompany the draft agreement.

a. Copy of vetted computation sheet of hire charges.
b. Copy of vetted statement of Operating and Maintenance charges, crew charges and haulage charges.

Specific clause for siding charges, Departmental charges and haulage charges shall have to be provided in the draft agreement.

733. Hire charges for Plant & Machinery let out to Contractors

It should be ensured that the hire charges for the Railway's Plant and Machinery hired to the contractor for use on the work being executed by him shall be decided in advance in consultation with Finance and incorporated in the special conditions of contract.

a. The cost of plant for the purpose of calculating the hire charges shall be its present day market value plus freight and all other incidental charges, to which supervision charges at 12 and 1/2% on total cost will be added.
b. The hire charges per annum will be calculated at the following rates on the cost of the plant as per (a) above.
    i. Interest on Capital cost at the ruling rate of dividend payable by the Railways to the General Revenue.
    ii. Ordinary repairs and maintenance charges at 5%
    iii. Special repairs and maintenance charges at 10%
    iv. Depreciation charges at the rates mentioned in Para 3505 of the Way and Works manual.
    v. An additional 10 % on the total of I & IV above to meet contingencies.

The hire charges per day shall be arrived at by dividing the annual hire charges vide (b) above by 270, which shall be assumed as number of working days in a year for this purpose. These hire charges shall be payable from the day the plant is handed over to the hirer to the day it is returned by the contractor to the Railway administration. However, during this period, if the plant remains out of order or reasons beyond the control of the hirer or is sent for periodical overhaul, such periods shall not be counted for levy of hire charges provided a certificate to that effect is given by the Divisional Officer in charge.

734. Sale of Heritage Rolling Stock

Heritage rolling stock has been defined as follows:

a. All types of steam locos
b. All NG coaches and wooden body/saloons/special coaches of all gauges.
c. Oldest of a particular kind/class/special purpose rolling stock.
d. Rolling stock over 100 years old.
e. Rolling stock identified/selected to be of special significance.

The sale of heritage rolling stock shall be initiated only by the Heritage Directorate.

The sale shall be processed further as per extant instructions.

Heritage rolling stock shall be offered for sale to other Government/Quasi-government, private institutions/Individuals in the country and abroad, if it is not required by the Railways. For executing the sale of these rolling stocks, following procedure shall be followed, which is subjected to modification from time to time by Railway Board Circulars.

- Sale to educational institutions/Museums/Government bodies/Trusts as per extant instructions, at 50% of the scrap value without adding overhead

charges, profit and antique value. This shall be applicable for sale within the country. Further waiver in sale price can be considered in specific cases by the competent authority in consultation with associate finance.

- Sale to private rail-road companies /Institutions/Trusts/Individuals shall be made at full scrap value without adding overhead charges, profit and antique value. Special relaxation or discount shall be offered in deserving cases by the competent authority in consultation with Associate Finance.
- In all cases, the cost of transportation/restoration shall be borne by the purchaser in full.
- All cases of sale to parties abroad shall be referred to Railway Board for a decision.

735. Sale of In-service MG rolling Stock

The following are the guidelines for sale of surplus MG rolling stock for the clients abroad.

Sale of surplus Rolling stock to be done at 125% of scrap value subject to the following conditions, which are subjected to modification from time to time by Railway Board Circulars:

a. Stock is surplus and condemned.
b. Replacement of stock is not required.
c. Components of rolling stock not being removed but can be used by IR.
d. The stock is not required to be kept from heritage point of view.

Taxes and duties will be charged extra as prevailing. The cost of POH and modifications of the rolling stock in Railway Workshops will be charged extra if required by the purchaser.

736. Methodology for Sale

The in-service rolling stock (both conventional as well as DPRS) identified for sale is to be processed for condemnation of competent authority. The under-mentioned action shall follow condemnation.

a. Necessary write-back adjustments to Capital shall be made on sale of the rolling stock (both conventional as well as DPRS).
b. Necessary deletion advice shall be issued by the rolling stock (both conventional as well as DPRS) section.
c. The sale shall be processed through Stores Department and the sale value shall be credited to the owning Railway.

The cost of reconditioning /refurbishing shall be assessed and the estimate shall be vetted by the associate finance. The work shall be undertaken on Deposit terms and hence the estimate prepared keeping in view the instructions relating to the preparation of Deposit Work estimates.

In the event of considering grant of any concessions in the charges for the work executed on Deposit Work terms, concurrence of PFA and sanction of GM shall be obtained. Necessary deposit shall have to be made by the purchaser before commencing the work. Estimate preparation charges at prescribed percentage as stated in Para 715 shall have to be levied and collected in advance, which may be taken as advance payment if the deposit work is taken up.

The second-hand value of the Rolling Stock (both conventional as well as DPRS) shall have to be assessed as per the codal provisions and the estimate thereof have to be processed through Stores Department for the concurrence of Stores Accounts and sanction of GM.

Two separate proposals, one for reconditioning and POH/Schedule attention and the other for the sale value of the Rolling Stock (both conventional as well as DPRS) have to be processed simultaneously and the total cost shall be arrived at duly keeping in view the appropriate profit.

737. Execution of Works

All works in workshops should be carried out as rapidly as possible. Due importance should be given to the allocation of funds. The general rule In regard to the building of rolling stock is that all stock should be built as per the designs approved by the Railway Board. Prior approval of Railway Board is necessary for building of stock to new designs and no expenditure should be incurred without the approval of Board. In the case of coaching stock, all designs whether already approved by Board or new ones, should be submitted for the prior approval of Railway Board. No expenditure should be incurred on materials and on any work being taken in hand until the Board‘s approval is obtained.

738. The expenditure in a workshop needs to be analyzed for cost of labour, materials and on-cost. The initial records of wages and materials are to be maintained separately in the manner laid down in Chapter-7.

739. The shop or section of each shop is the lowest unit of workshop organization for the purpose of maintaining the records of initial accounts. The expenditure should be analyzed shop by shop, even if the work on the same job is being carried out in more than one shop, since the initial accounts of each shop are maintained separately. It is convenient to bring the shops in to the system of work orders. The work order numbers should be allotted by distinguishing numbers coupling with the numbers for the standing work orders.

740. Analysis of expenditure

Apart from analyzing the costs as prime costs and overheads as laid down in Chapter-7, the expenditure should also be analyzed account-head-wise, viz., Capital, Capital Fund, DRF, Revenue etc. Both identification and classification of expenditure in a workshop are required for billing and recovery of expenditure incurred from another department or division of the Railways or from outsiders.

741. Work-order system

Work order system in the workshops should clearly identify the activity and allocation to ensure correct work order booking and should reflect in the Workshop General Register against the relevant activities performed.

742. The essential features of any good work order system are conformity with the accounts classification and elasticity. The system of work orders should provide for the minimum analysis required and further analysis by the orders of the Railway Board issued from time to time, by the need for inter-departmental adjustment and by the need for minimizing the waste.

743. Revenue Standing Work Orders

The work orders which have to conform to the revenue accounts classification should be numbered in eight digit code. The work order system in practice in certain workshops/PUs have undergone changes in order to further stream line the same and identify the work order with correct Accounts allocation. Hence the work order numbering system stated in paras 843 to 848 may require further revision. Hence, Planning organization of workshops may issue various work orders as per the concordance/ work order master, to be prepared every five years with the

concurrence of associate finance. Same shall indicate the basis for allocating different type of work order numbers.
General guidelines for the prevailing work order system subject to changes to be introduced from time to time, are as under.

a. First digit represents the Division code. Division code should be allotted to each division of each Zonal Railways accordingly as per the local requirements.
b. Second digit represents the Department code. Identical department code suitable to all Zonal Railways should be allotted as below.
    0 for Construction Organization
    1 for Traffic and Commercial
    2 for Electrical
    3 for Mechanical
    4 for Medical
    5 for General, Personnel, Accounts and Head Quarters
    6 for Security
    7 for S & T
    8 for Stores
    9 for Works
c. Third digit represents the last digit of the Year.
d. Fourth digit represents the Workshop Code.
e. Fifth & sixth digit represents the shop code.
f. The last two digits represents the serial numbers of the work order. Each work order should be identified with the name of the work. The correlation between work order and revenue allocation should be based on the name of the work primarily instead of work order number. That is, if we type the name of the work, the software system should automatically identify the Revenue allocation to which the expenditure is charged. Serial numbers shall begin as '001' on 1st of April every year.

744. Other Standing work orders

The following are certain classes of standing work orders other than the Revenue standing work orders.

a. On cost work orders
b. Raw material work orders
c. Manufacturing Work orders
d. Part, group and Repair Work orders
e. Inter-departmental work orders

745. On-cost Work Orders

Expenditure incurred on labour and materials which cannot be directly booked to any particular work order can be directly charged to on cost work order. Careful analysis should be carried out about the on cost expenditure to have an effective control over such expenditure and to have correct distribution. The distribution of on cost expenditure should be done on the basis of percentage estimated after the preparation of annual on cost budget. The actual on cost expenditure should be compared with the percentage estimated in the budget.

The on cost work order will be of eight digit codes.

a. First and second digits '50' would represent on cost work order.
b. Third digit represents the last digit of the year.
c. Fourth digit represents the Workshop code. The workshop codes now in existence in each zonal Railways shall be adopted for this purpose.
d. The fifth & sixth digit represents the shop code.
e. The last two digits represents the serial number of on cost work orders. The workshop in charge shall list out the items of works under which the

labour and material expenditure chargeable to on cost as per the local requirements.

746. Raw material stock work orders

The cost of raw materials drawn from Stores stock and purchased from open market should be booked to the set of work orders opened to accommodate the cost of raw materials, instead of booking directly to the repair or manufacturing work orders. A separate work order should be opened for booking raw material drawn by work shop every day. The same work order has to be cleared by debiting the consumption to the relevant Revenue/ Capital / manufacturing work order with corresponding credit to the Raw material work order. The standing work order for raw material should consist of eight digit code. The balance under this work order represents the shop floor stock lying in the sub stores and will be part of WMS balance.

a. The first and second digits '39' would represent the stock work order.
b. Third digit represents the last digit of the year.
c. Fourth digit represents the workshop code.
d. The last four digits represent the serial number of stock work order and will be designed by respective CWMs while issuing booklet for work orders. The issue of raw materials to the work orders shall be evaluated and fed in the computer for generation of Stores sub-ledger and WGR.

747. Manufacturing work orders or Division work orders

These work orders shall have eight-digit codes as under:

a. First digit represented by '6'.
b. The second digit represents the Departmental code as given in Para 743.
c. Third digit represents the workshop code.
d. Fourth digit represents the shop code.
e. Fifth digit represents the Division code. The codes of divisions allotted in each Zonal Railways may be adopted for this purpose. Other Zonal Railways shall be represented by '9'.
f. The last three digits represent the serial number of the work order. The expenditure incurred on manufacturing work orders undertaken for divisions and departments of Home Railway and other Government Railways.

748. Part, Group and Repair Work Orders

The manufacture of similar items required by various consignees of Home Railway, other Government Railways and Stores Department shall be grouped together and shall be undertaken. The expenditure incurred on such works should be booked to these work orders and bills may be raised on the consignees as per the estimated rate arrived at for each financial year.

The eight digit code will be as under:

a. First digit denotes: 1-first half of the year (i.e April to September) (or) 2-second half of the year (i.e October to March)
b. Second digit denotes Last digit of the year code
c. Third digit represents: 0- fresh order (or) 1- repeat order
d. Fourth digit represents – Workshop Code
e. The last four digits represent the serial number of the work order

749. Work Order Register

All works carried out on requisitions placed on the workshops should be carefully registered and serially numbered in Work order Register. Separate registers shall be maintained for different departments and divisions with utmost care. The

work order register shall provide all relevant information such as Date of commencement, Date of completion, description, Quantity, head of allocation to be so charged, by whom ordered etc. This register should be maintained on the computer and shall be accessible as a 'read only' file to all concerned.

750. Copies of all work orders should be made available for verification to Workshop Accounts Office. The Accounts office should check them to see that the numbering has been correctly done, that the work has been sanctioned by competent authority, that funds are available and that all other relevant rules and orders have been observed.

751. Before issuing a Work Order, the following aspects must be ensured:

a. It should be seen that the acceptance of estimated cost has been obtained for the works undertaken for Government departments, where charges are to be adjusted through transfer transactions.
b. It should be ensured that the sanction of PHOD of the executive department has been obtained and the estimated cost has been deposited for the works undertaken for Railway employees.
c. For works undertaken for outsiders, whether the work has the sanction of competent authority, the estimated cost has been deposited in advance, and in the event of excess over the estimated cost, the acceptance of the party to pay the excess before the delivery of the item has been obtained.

No formal work orders need be issued in the case of repairs and maintenance works and the indenting department is responsible for sanction and availability of funds.

752. Advice of Completion

It should be ensured that there is no delay in booking of charges under work orders and issuing of completion advice. It is one of the important duties of the Accounts Office to see that the procedure for chasing delays and irregularities is effective.

753. Monthly Statement of completed work orders

When a work order is completed, it should be returned by the shop to the office of issue with the date of completion marked thereon. A statement of completed work orders will be generated by Accounts office as part of MIS, Workshop Accounts Officer shall nominate the supervisor who would be responsible for ensuring that all expenditure relating to such completed work orders has been correctly booked and accounted.

COMPILATION OF THE WORKSHOP MANUFACTURE SUSPENSE ACCOUNT

754. Work shop Manufacture Suspense Account

All expenditure incurred by workshops in respect of Production and maintenance of Rolling stock are routed through this account. Since the funds for the above activities are met out of Railway's own resources this may be treated as Capital Fund and payment of dividend to General Revenues may be dispensed. If in any financial year, when the Capital Fund is not operated, the expenditure may be charged to the Capital.

755. Workshop General Register

The Labour and Stores Sub-ledgers having been totalled, the totals of (a) Labour charges and (b) Stores and Miscellaneous charges, for the month relating to each work-order should be transferred to Workshop General Register (M.755) and

posted under the relevant work-orders, shop by shop, care being taken to see that no item is left out in posting.

Under mechanized system, Labour charges and the Stores and Miscellaneous charges for the month relating to each work-order as produced, by the machine tabulations as also direct Man-hours should be transferred to Workshop General Register and posted under relevant work-orders, shop by shop, care being taken that no item is left out in posting. On completion of posting in respect of work-orders, the totals for the month as also to the end of the month are struck for each work-order under element of cost and direct man-hours. There should be a linkage between AFRES, PRIME, Workshop Information System for labour element and MMIS for stores element as far as possible.

For a better understanding, a flow diagram indicating the flow of accounting data through various documents is given in Annexure 8.1.

WORKSHOP GENERAL REGISTER ***Form M.755***

W.O. No.....	Particulars.....	Estimate Ref.....
For whom executed.	Authority.....	Estimate cost.....
		Head of Account……..
Date of commencement……..		Date of completion……

Debits			Credits			
Months	Shop No.	Direct Man-Hours	Direct Labour	Incentive Bonus	Stores	Total
1	2	3	4	5	6	7

Overheads					Work on cost			Admin on cost/ Proforma on cost	Total On cost	Grand Total
FOH	AOH	TOH	SOH	Total	Labour	Stores	Total			
8	9	10	11	12	13	14	15	16	17	18

Credits		
References	Amount Adjusted	Balance out standing
19	20	21

Note: Columns 1 to 7 and 18 to 21 are common to Production Units and Zonal Railway Workshops. Columns 8 to 12 related exclusively to Production Units and columns 13 to 17 relate to Zonal Railway Workshops.

756. Check sheet

Simultaneously with the posting of Workshop General Register, a summary of sub-ledgers (labour and stores) called Check Sheet should be prepared in form M.856 given below. This is done with a view to Checking correctness of the post-ing of labour and stores, including miscellaneous charges, in Workshop General Register and to ensure that the amounts are correctly transferred to the outturn statements M.760 Parts I and II against each work order operated upon in the workshop during the month The check-sheet should be totaled down and cross wise. The grand total of the check-sheet for the month under 'labour' should be equal to the total of the debits appearing in the Labour Schedule and that under 'Stores' should be equal to the total debits appearing in the Stores Summary Sub-ledger **(M.516).**

In the case of computerized tabulations, simultaneously with the posting to Workshop General Register, the stores and labour charges together with on cost/ overheads thereon (but excluding direct man-hours) as available in various tabulations are posted independently in the check-sheet for each work order in the same detail as in the Workshop General Register.

On completion of posting, the totals for the month are struck for each work order under different element of cost and reconciled with those appearing in the Workshop General Register to ensure correctness of the postings.

Form M.756

CHECK SHEET

SHOP……

Work Order No.	Direct				Overheads				
	Labour	*Incentive* bonus	Stores	Total	FOH	AOH	TOH	SOH	Total
1	2	3	4	5	6	7	8	9	10

Work on cost			Admin on cost/Proforma on cost	Total On cost	Grand Total	Credits
Labour	Stores	Total				
11	12	13	14	15	16	17

Note: Columns 1 to 5, 16 and 17 are common to Production Units and Zonal Railway Workshops. Columns 6 to 10 relate exclusively to Production Units and Columns 11 to 15 relate to Zonal Railway workshops exclusively.

757. Calculation of On-cost Charges

(a) Works On Cost

In cases where mechanized tabulations for labour and stores etc. charges are not used, the following procedure should be adopted for calculation of works oncost. In case of mechanized tabulations available for posting of workshop general register the overhead charges will be available for posting in the Work-shop General Register and the check sheet from machine prepared tabulation.

After all the sub-ledgers have been posted in the Workshop General Register, the works oncost charges (both labour and material) in respect of each of the work orders, except the work orders for oncost should be calculated on the direct labour charges including incentive and OTA payments booked against each work order, at the percentage rates (for labour and material) in force for the time being for each shop (**Paragraph 725**) and posted in the appropriate column of the Register (M.755). The total of works oncost charged to the various work orders on a percentage basis should be booked as credits under the oncost work orders, the actual charges under the latter being first summarized at one place. The difference between the debits and credits under the oncost work orders should be adjusted against the final heads of account for 'Overcharges and Undercharges—Oncost' in abstracts C and D (**See paragraph 726**).

(b) Proforma on cost

The word ‘Pro-forma Oncost’ commonly known as indirect charges intended to include all oncost which is not included in the cost of work done in railway workshops but which should be so included in commercial costing. This consists either of expanses charged directly to final heads of working expanses (e.g. General superintendence, depreciation) or of charges not included in the working expenses of the railway

Annual Budget of Pro Forma On cost—An annual budget of Pro Forma Oncost should be prepared for each railway workshop and submitted to the General Manager through the Prinicipal Financial Adviser on or before the 1st December each year. This should be based on figures from January to December of the current calendar year, i.e. on 'actual' as far as available and on 'estimates for the remaining period, and should be modified by known changes in conditions and other relevant factors. This shall show the - annual estimated charges attributable to:—

(1) Supervision.
(2) Contribution to Provident Fund and Gratuity special contribution to provident Fund and pensioner liabilities in respect of works staff.
(3) Repairs and Maintenance.
(4) Interest
(5) Depreciation.

(1) Supervision:—The pay leave salary, allowance, contribution to Provident Fund, gratuity, Special contribution to Provident Fund, Annual contribution to Staff Benefit Fund &. c. of all personnel of the Mechanical Department directly concerned with each workshop (i.e. including only a share of the Chef Workshop Engineer and his Headquarters staff but including whole or the Deputy Chief Mechanical Engineer, Workshops, and all establishment under him; and of the Accounts, Electrical Engineering, Stores Cash and Pay, Railway Protection Force, Medical & c. Departments, whose duties are concerned directly with the workshop, should be included under this head. The amount of rents, rates and taxes in respect of workshop buildings, offices & c. should also be included under this head.

(2) Contribution to Provident Fund, Gratuity-Special Contribution to Provident Fund, Pensionary Liabilities in respect of works staff:- Annual Contribution to Staff Benefit Fund in respect of Works Staff and the expenditure to Provident Fund and Gratuity/ Special Contribution to Provident Fund pensionary liabilities in respect of all Workshops Stall both supervisory and labour, the annual Contribution to Staff Benefit fund in respect of such staff and the annual net expenditure in running the canteens attached to workshops should be estimated as closely as possible.

The amount of provident fund contribution payable should be taken as equivalent to the total amount of the deduction in the shape of provident fund (under new pension scheme)subscriptions and the amount of gratuity may be worked out based on the current year's actual disbursement and the number to retire in the next budget year.

The amount of pensionary liabilities in respect of pensionable staff should be the amount shown against pension fund under Demand No. 14-Abstract M. The Per capita pension is to be calculated by dividing the amount under appropriation to Pension Fund by the actual number of employees of a Zone/PU at the end of previous financial year.

(3) Repairs:—The amount of expenditure on repairs and maintenance of workshop buildings, plant and machinery should be carefully estimated.

(4) Interest:—The interest on total outlay on land, buildings plant and machinery should be calculated at prevalent rate of dividend payable by the railways to the general revenues as may be fixed from time to time. The total outlay being worked out or estimated as accurately as possible.

(5) Depreciation:—The depreciation on buildings (including floors) should be calculated at two per cent on the total outlay.The depreciation of plant and machinery should be calculated at five per cent on the total outlay.

Distribution of Pro Forma Oncost.—The percentages of the total Pro Forma Oncost under the five heads, indicated above, to the total labour of the whole workshop, should then be worked out.These percentages will vary from workshop

to workshop and from year to year, owing principally to alterations in the total outlay, the variations in the quantum of the total labour in the shops and any changes in the rates of interest charges to be applied.

Inclusion of Pro Forma Oncost in the Cost of Work.—The percentages of Pro Forma Oncost, as worked out above for each workshop, will be brought into use whenever it is found necessary to include one or all of these items of Oncost in the cost of the work, e.g. when work is undertaken for private parties, other Departments or Ministries of Government or on capital account .

When work done is of capital nature, the cost of the work should include all items of Proforma Oncost other than supervision, interest, annual contribution to Staff Benefit Fund in respect of works staff and the net expenditure in running the canteens attached to Railway workshops irrespective of the fact whether the cost is charged to Capital, Depreciation Reserve Fund, Development Fund. Accident Compensation, Safety and Passenger. Amenities Fund. No Proforma Oncost should be levied on works chargeable to Ordinary Revenue, Accident Compensation, Safety and Passenger Amenities Fund and Development Fund. When work is done for other Departments or Ministries of Government, other railways or for the public, all items of Pro Forma Oncost are chargeable but the General Manager may in exceptional circumstances, waive in full or in part the levy of such Oncost, in consultation with the Financial Adviser and Chief Accounts Officer, for reasons that should be recorded.

758. Out-turn Statement

The total (debits) for the month, in respect of each work order under labor Stores and On-cost charges and the grand total should be struck in the Workshop General Register and an Outturn Statement (M.858) should then be prepared showing all the work orders, whether in hand, or completed in the workshops, the outlay on which is awaiting adjustment; and the expenditure that has been incurred on each of them. This statement is necessary for the purpose of charging the total expenditure incurred in the workshops to the account heads concerned.

WORKSHOP OUTTURN STATEMENT **Form M.758**

For the Month of..... 20…….

Previous Expenditure					
Work Order No.	Allocation	*Authority*	For whom executed	Particulars	Estimates
1	2	3	4	5	6

Previous Expenditure			**Charges during the month**		
			Direct Charges		
Opening Balance	*Adjusted during the month*	*Unadjusted*	*Direct Labour*	Incentive Bonus	*Direct Stores*
7	8	9	10	11	12

Charges during the month				**Works Oncost**	
Overhead Charges				Labour oncost	Stores Oncost
Factory Overhead	Administrative Overhead	Township Overhead	*Stores Overhead*		

13	14	15	*16*	17	18

Admin on cost/ Proforma oncost	**Grand total**	**Credits during the month**	**Closing Balance**
19	20	21	22

Columns 1 to 12 and 20 to 22 are common to Production units and zonal railway workshops. Columns 13 to 16 are only for Production units and Columns 17 to 19 are only for zonal railway workshops.

Compiled by.....Checked by

Accounts Officer

759. The postings in the Outturn Statement of the charges for the month against each work order should be compared with those in the Check-Sheet. This comparison will bring out errors, if any, in the posting of the Workshop General Registers from the various sub-ledgers, as also of the Outturn Statement from the Workshop General Registers, which should be investigated and rectified.

760. The Outturn Statement (M.758) should be prepared in two parts- Part I and Part II. Part I will show all outlay (separately against each work order) adjustable during the month and Part II will show outlay on works in progress and completed works which are awaiting acceptance by the parties ordering them.

761. Part I of the Outturn Statement should be arranged and posted under the following heads:—

Part 1 (Adjusted items)

I. Home Line Capital Works—
- a. Locomotives (Capital 2110)
- b. Carriages (Capital 2130)
- c. Wagons (Capital 2140)
- d. Machinery & Plant (Capital 4100)

II. Depreciation Reserve Fund Works

III. Development Fund Works

IV. Works chargeable to Open Line Works—Revenue

V. Capital Stores Suspense—
- (i) Manufactured Stores
- (ii) Returned Stores

VI. Home Line Revenue Account-
- a. Locomotives (C220-260: 320-360; 520-560) Showing No. of Units and their Units cost.
- b. Carriages (D 220-260: 420-460) showing No. of Units and their units cost.
- c. Wagons (D320-360) Showing No. of Units and their units cost.
- d. Plant & Equipment (E.320; E350)
- e. Service Motor Cars (E. 362).
- f. Furniture and Office Equipment (E. 361)

VII. Work done for—
- a. Divisions.
- b. Home Line Departments.
- c. Foreign Railways.

d. Other Government Departments & Public bodies.
e. Home Line Railway Employees.

762. The following classes of expenditure are adjustable during the month in which the expenditure is incurred:—

a. Expenditure on Works of Mechanical Department charged to Capital, Capital Fund, Development Fund and Depreciation Reserve Fund.
b. Expenditure on Revenue Works of Mechanical Department.
c. Expenditure on Deposit Works.
d. Expenditure debitable to other Railways in respect of repair to their Rolling Stock.

Note (i): In regard to item (c) in case where the outlay for the month is in excess of the amount at credit of deposits, the expenditure should be adjusted through the outturn statement Part I to the extent of the amount of deposit available and the expenditure in excess of the deposit should be allowed to remain outstanding in suspense and shown in Part II of the Outturn Statement. The Officer-in-charge of the Mechanical Workshops should be advised to obtain additional deposits, to cover the outstanding expenditure and further charges likely to be incurred on the work from the party concerned.

Note (ii): In regard to item (d) the expenditure may be debited directly to the head "Transfer Railways" and Transfer certificates issued without the accepted vouchers but giving full description to the Rolling Stock repaired. The responding Railways should accept the Transfer certificates in the same months accounts by debiting the amount -provisionally to final heads with reference to the particulars of rolling stock repaired, the acceptance of the charges by the departments concerned being watched through an 'acceptance register' to be maintained for the purpose.

763. The following are the classes of expenditure which bills have to be got accepted before adjustment: —

a. Outlay on works executed for other departments of the Home Line.
b. Outlay on works executed for other Railways other than those in respect of repairs to their Rolling Stock, vide para 869.
c. Outlay on works executed for other Government Departments.
d. In all these cases the outlay incurred will remain outstanding in Part II till such time as the bills issued against the parties concerned are received back duly accepted. Such of the items as have been accepted should be shown in Part I of the Outturn Statement in the month in which the acceptance has been received and the necessary debits raised against the parties concerned in the same month’s account. (In the case of works executed for the other departments of the Home Line, the debits may, if found convenient, be adjusted in anticipation of the acceptance of the bills issued).

764. Part II of the Outturn Statement should be classified under the following heads:—

PART II (Awaiting Acceptance)

a. Manufacturing works
b. Stores Department works
c. Works done for the Home Line Departments and Divisions.
d. Works done for Foreign Railways, other Government Departments, Railway Employees and private bodies.
e. Works executed on 'grouping' work orders.

765. In posting Part I and II of the Outturn Statement the following procedure will be used:

Part 1

a. Such of the items relating to previous month as are to be adjusted during the month should be copied from the Outturn Statement Part II of the previous month and posted in column 10 of Part I and columns 8 and 9 of Part II of the month concerned.

b. Outlay relating to a month and cleared in the same month (paragraph 869) should be posted against the respective work orders in columns 14 to 20 of Part I from the Workshop General Registers.

Part II

c. "Previous Expenditure" in respect of items other than those falling under (a) above should be posted from Outturn Statement Part II of the previous month.

d. "Expenditure during the month" should be posted from the Workshop General Registers.

766. The two parts of the Outturn Statement (Part I & II) should be totaled down and crosswise. A summary by accounts classification, showing the total expenditure chargeable to various sub-heads of account, should be prepared in the case of Part I. A similar summary by the various heads described in paragraph 770 should be prepared in the case of Part II. These summaries should form part of the respective parts of the Outturn Statement.

767. The total of the summary of Part II should be carried over to that of Part I and the grand total of the two parts exhibited in the latter.

768. Workshop Deposit Schedule

With a view to ensure that no private work is undertaken in the shops without the necessary deposit being received in advance as required under the rules (paragraph no.813) and to watch the progress of expenditure against deposit in each case, a "Deposit Schedule" in form M.768 should be prepared every month. The column "Balance of Deposit" of the form should be posted from the closing balance shown in the previous month's schedule, the column 'Deposit received during the month' should be filled from the intimations of deposits received during the month, care being taken to see that the total of this column agrees with the corresponding credits to 'Deposit Miscellaneous' in respect of 'Debits during the month' should be posted from the works to be executed in the workshop, and the column out-turn Statement Part I

Workshop deposit schedule **Form M.768**

month _____.

Work No.	**Order Date**	**Particulars**	**By whom Ordered**	**Estimated cost**	**Balance of Deposit from the previous month**
1	2	3	4	5	6
					Rs. P.
Total					

Deposit during the month	Total	Debits to deposit during the month	Balance at credit of deposits at the end of the month	Remarks
7	8	9	10	11
Rs. P.	Rs. P.	Rs. P.	Rs. P.	
Total				

769. Workshop Account Current

An Account Current of the transactions pertaining to "Workshop Manufacture Suspense Account' for each workshop should be prepared monthly in Form M.769 given below. This account should show the total debits and credits to the Workshop Manufacture Suspense Account under the heads provided in the form and the opening and closing balances.

"***Note:*** *Since the manufacture in the Production Units varies from unit to unit, no standard form for use by them in respect of Account Current is prescribed. The Production Units are left free to devise their own form for the purpose to suit their local conditions. However the same format must be used for the whole financial year*"

Workshop Account Current ***Form M.769***

Particular	Details	Amount	Total	Particulars	Details	*Amount*	Proforma on cost	Total
1	2	3	4	5	6	7	8	9
i) To Opening balance				(i) By Capital works				
(ii) To labour				(ii) By Works chargeable to Depreciation Reserve Fund.				
(iii) To Cash				(iii) By Works chargeable to development Fund.				
(iv) To Stores				(iv) By Works chargeable to open line Works-Revenue				
(v) To other Charges (Fuel and other misc . charges.				(v) By Revenue- Works & operation				
(vi) To Workshop Transfers				(vi) By work done for the Stores Deptt. (i) Manufacture Material (ii) Returned Stores				
(vii) To freight charges				(viii) By work done on Deposit A/C (Deposit misc.)				
				(ix) By work done for Home line Division and departments (Transfer Divisional)				
				(x) By work done for Foreign Riys. Govt. Deptts. etc.				

				(Transfer Rlys.)				
				(x) By work done for other workshops (Intershop transfers)				
				(xi) Total credits during the month				
				(xii) By closing balance				
Grand Total				Grand Total				

Workshop Accounts Officer

770. For preparing the the following instructions should be observed:—

A. Posting the Debit Side—

a. "Labour"— The figures appearing in the Labour Schedule should be posted against this head.
b. "Cash"—Debits to Workshop Manufacture, Suspense Account which comprise of the contractors' bills for direct purchases etc., motor license fee, municipal taxes etc., should be posted from the Monthly Classified Abstract of Cash Transactions (A. 1106).
c. "Stores" should be posted from the Daily Summaries of Issue Notes (S. 2702) for the last day of the month received from the Stores Accounts Office.

Note:—Before posting the stores account debits, they should be agreed with the corresponding figures in the Stores Summary Sub-Ledger.

d. "Other Charges" including Intershop transfers should also be posted from the Stores Summary Sub-ledger.

B. Posting the Credit Side—

The credit side should be posted from the Summary of Outturn Statement Part I and should be supported by detailed schedules. The closing balance should be worked out by deducting total credits during the month from the total debits including the opening balance and it should agree with the balance shown in the Outturn Statement Part. II.

Note: *A register of cumulative Workshop Account should be maintained in the Production Units showing the monthly expenditure as appearing in the Month Account Current as also the cumulative expenditure for month to month, both for debits as well as credits for a financial year. After the Accounts of a financial year is closed the Production Units should prepare Manufacturing Account and the out-turn statements for the year in their prescribed proforma and submit the same as Annexures to the Appropriation Accounts*

771. Workshop Manufacture Suspense Account Journal Entries

Journal entries (Capital and Revenue) of all transactions affecting workshop Manufacture Suspense Account should be prepared monthly for the Account-Current **(M.769)** for incorporation in the General Books of the Railway. The following instructions should be observed in preparing the journal entries:-

A. Debit side of the Account-Current.—

(i) such of the debits as have already been incorporated in the General Books of the Railway through the journal slip of accounts receiving credits e.g. Stores debits. Fuel and other Miscellaneous Charges including Inter shop transfers. Cash debits, should not be included in the journal slips of the Workshop Manufacture Suspense Account.

(ii) The amount on account of Labour should be debited to 'Workshop Manufacture Suspense Account' by credit to 'Labour Suspense' through a Capital

Journal entry (The Muster Rolls/ Labour Pay-sheets having been passed for payment and debited already to 'Labour Suspense').

(iii) The amount of freight charges should be debited to 'Workshop Manufacture Suspense Account by minus debit to 'Abstract K" Two journal entries are necessary in this case (Capital and Revenue).

B. **Credit side of the Account-Current** —The credit transactions relating to 'Workshop Manufacture Suspense Account should be journalized by per contra debits to the different heads of account appearing on the credit side of the Account-Current. Care should be taken to see that the credits already accounted for in the General Books e.g. credits for issues of manufactured material and return of surplus stores to the Stores Department which have already been included in the General Books at the time the credit transfer certificates received from the Stores Accounts Office are accepted and omitted from the monthly journal Slip of 'Workshop Manufacture Suspense Account.

772. Up-to-date totaling of Workshop General Registers

After the journal entries of the 'Workshop Manufacture Suspense Account' have been prepared, up-to-date totals should be struck in the Workshop General Registers **(M.755)**. The credit side thereof should be posted, where necessary e.g., in the case of work orders for other Government Departments and private bodies and the outstanding balances worked out. These balances should be tallied with the corresponding balances in the Outturn Statement Part II. Discrepancies, if any, should be promptly investigated and adjusted. Special efforts should be made to clear up irregular balances, if any (paragraph 774).

773. Review of Workshop General Registers

The Workshop General Registers (M. 755) should be reviewed monthly to see that all works shown therein are current. The work orders on which no expenditure has been booked for three consecutive months should be reported to the Workshop-in-Charge and advice of completion called for (see also paragraph 752). Necessary customized forms have to be developed to enable review of WGR by respective Workshop and Accounts Wings.

774. Irregular booking of charges

On receipt of an advice of completion of a work order from the Works-in-charge, the date of completion should be noted against that work order in the Workshop General Register **(M. 755)**. If charges are booked by the shops against a work order which has previously been reported as completed, the matter should be reported to the Works-in-charge and steps taken to rectify the irregular booking.

775. Workshop Subsidiary Balance Register

The balance under each of the suspense heads operated upon in the Workshop Accounts Officer (e.g. Workshop Manufacture Suspense Account, Labour Suspense Account and Development Suspense Account) should be reconciled and proved with the General Books every month. For this purpose a subsidiary register should be maintained in the following form, in which should be shown opening balances, debits and credits during the month and the closing balances. The debits and credits should be posted from the Journal. Separate pages should be opened in this register, or separate registers maintained if more convenient, for each suspense head of account. The correctness of the balances in this register should be certified by the Books Section. Any discrepancy found as a result of this reconciliation should be promptly investigated and the Subsidiary Balance Register **(M. 775)** together with the result of reconciliation, put up to the Workshop Accounts Officer within 10 days of the close of the Accounts for the month.

Note. Development Suspense Accounts pertain to Production Units only.

Workshop subsidiary balance register **Form M. 775**

Head of Account.....

Month	Opening balance	Debits	Credits	Closing balance

776. Labour Book

For the purpose of recording details of the outstanding balance under the suspense head 'Labour' and for effecting a reconciliation with the General Books, a register (Labour Book) showing the opening balance, credits during the month, debits during the month, and the closing balance under 'Labour Suspense' should be maintained in the following form. The credits should be posted from the Labour Schedule and the debits should be posted from the various abstracts of bills passed for the month. This register should be posted by individual bills.

Form M. 776

(Form W.1322)

LABOUR BOOK FOR THE MONTH OF----------

(1) Opening balance

(2) Credits during the month

_____

_____

(3) Total

(4) Debits during the month

(5) Closing balance.

777. Reconciliation with the General Books

The balance under 'Workshop Manufacture Suspense Account' and 'Labour Suspense', appearing in the Account—Current (M. 769) and the Labour Book (M. 776) respectively, should be compared with the corresponding balances shown in the Workshop Balance Register (M. 775) after the balances in the latter have been reconciled with the General Books. The differences between the two sets of figures should be analyzed and a Discrepancy Statement prepared in Form (M.777) given below. The discrepancies should be investigated and necessary adjustments carried out to clear them. Special attention should be paid to old discrepancies. The Discrepancy Statement together with the Account Current and the Labour Book should be put up to the Workshop Accounts Officer every month. The action taken to clear the discrepancies should be stated in the 'Remarks' column of the Discrepancy Statement.

Form M. 777

DISCREPANCY STATEMENT OF
WORKSHOP MANUFACTURE SUSPENSE ACCOUNT/LABOUR SUSPENSE
..... Shops.....for the month of.....

Item	Particulars	Month in which the discrepancy originates	More in account	Less in account	Remarks
			Rs. P.	Rs. P.	

Total..... .....
Deduct column less in account.....
Net difference.....

778. Review of Balance under "Workshop Manufacture Suspense Account"

The balance under the 'Workshop Manufacture Suspense Account' should be reviewed monthly to see that —

a. all the items are current and have been undertaken after the issue of a proper work order, under the sanction of a competent authority;
b. details consist of nothing else except labour, material and work on cost charges expended on unfinished jobs or completed jobs awaiting adjustment:
c. there are no credit items in the detail of balance and if there are any such items, they are noted for immediate adjustment.
d. in the case of jobs undertaken for outsiders, a sufficient deposit has been made, where such a deposit is required by rules, and on the first appearance of a work it is seen that an estimate is on record, containing the extra percentage charges required under the rules, and accepted by the party ordering the work and
e. there are no inefficient balances and the periodical adjustments in respect of 'overcharges and undercharges" under the oncost, manufacture and repair work orders are carried out regularly and the outstanding are not allowed to accumulate.

779. The works on which no expenditure is incurred for three consecutive months should be specially brought to the notice of CWM.

780. The results of the WMS review should be put up to the Financial Adviser and Chief Accounts Officer at least once a year.

781. Completion Reports

As soon as the advice of completion is received (Paragraph 752) the clerk who maintains the Works Register should prepare a Completion Report in Form No. M. 781 The figures of actual expenditure as well as those of estimated amount should be shown in the same details in which the estimate has been prepared and sanctioned, but before preparing the Completion Report it should be seen that (1) all charges under different sub-heads of estimate have been booked, (2) the Difference in value if any has to be accounted within the same financial year (duly obtaining the certificate to that effect from the respective supplier) and (3) credit for released material has been adjusted.

Form M. 781

…….. Workshops
Completion Report

No. Date.

Completion Report of.....
……
Authority..... Estimate No..... of…….
Name of Office in charge of the work.....
When commenced.....
When completed .....

Sub-heads of estimate	Previous Batch/ as As estimated		As executed		Difference		Remarks
	Quantity Number	Amount	Quantity Number	Amount	Excess (+)	Saving (-)	
1	2	3	4	5	6	7	8

Explanations for variations shown in columns in 6 and 7 above.

Dy. Chief Mechanical Engineer

782. The Completion Report should be submitted to the authority competent to sanction the excess, after scrutinizing the explanation regarding excesses over estimates obtained from the Works Manager or the Deputy Chief Mechanical Engineer, as the case may be. Completion Reports which do not show any excess over the estimate should be filed after obtaining the explanation for the saving, if any, from the Works Manager or the Deputy Chief Mechanical Engineer and after endorsement of a certificate of verification thereon saving of over 15 per cent should be reported to the Chief Mechanical Engineer.

783. Completion Report Register

The Accounts Office should watch through a register (M.781) that the completion reports involving excesses over sanctioned estimates are received back duly sanctioned from the authority competent to sanction the excess,

784. A note should also be recorded in the Works Register under the work concerned in the following form

"Work completed and completion report prepared and submitted to ..... on ..... for sanction."

785. All completion reports should be entered in the Completion Report Register. This register shows the following details:—

a. Serial Number.
b. Date of submission.
c. Particulars of work.
d. Estimated cost.
e. Booked expenditure.
f. Reference to works register.
g. Department.
h. Work order number.
i. Reference to sanction to the excess, where necessary.
j. Remarks.

786. Adjustment of charges and Credits reported on completed works

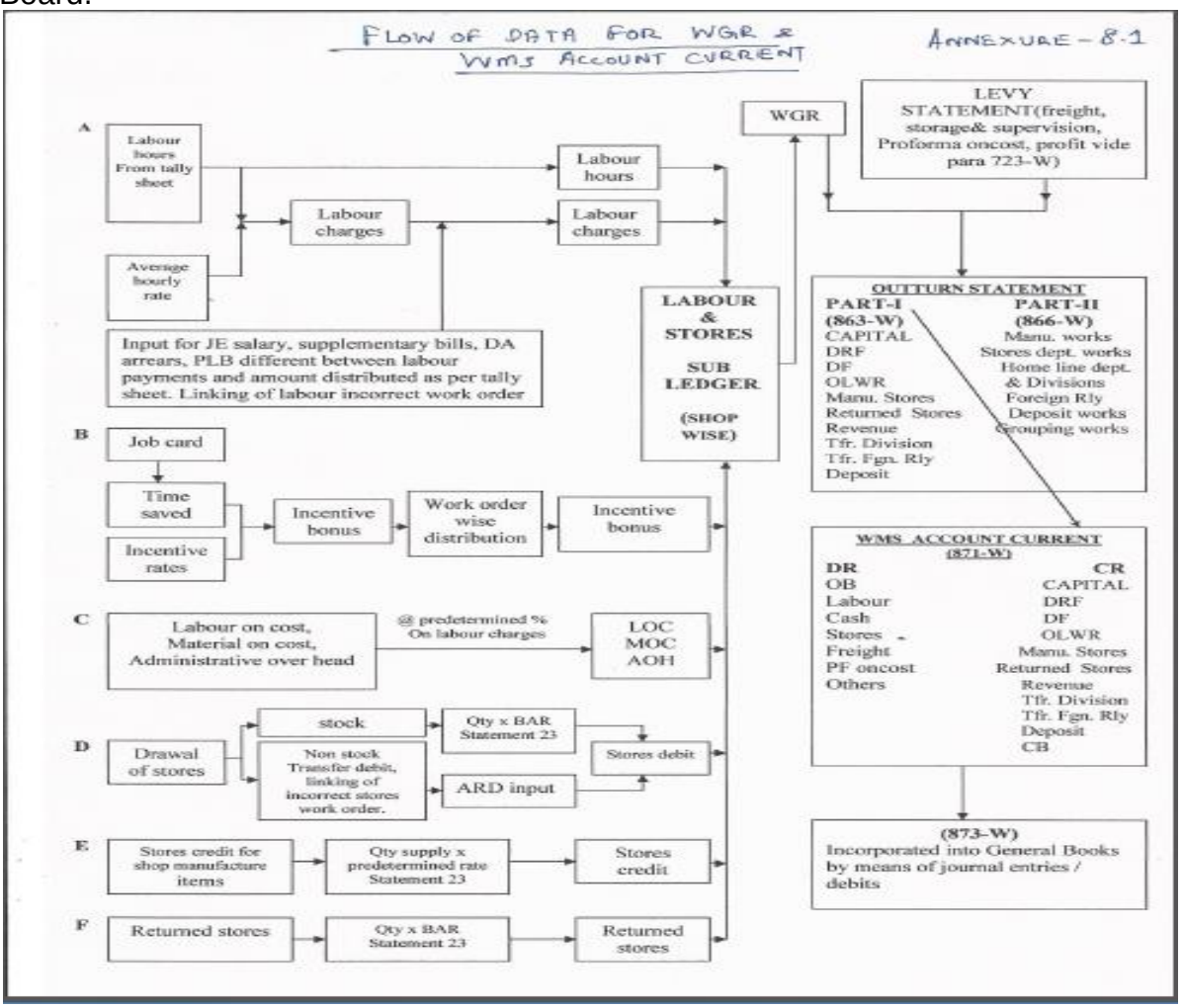
The following procedure should be followed in cases of charges and credits reported on completed Works necessitating the revision of Completion Reports—

a. If charges or credits are received for a work after the submission of a Completion Report not yet sanctioned, a revised Completion Report should be prepared and necessary postings should be made in the Works Register against the work concerned.

b. If charges or credits are received after sanction to the completion report for the work, the extent of amount chargeable to ordinary Revenue maintenance and credits against abstract Z-650 without opening the account of the work shall be decided by CWM in consultation with FA & CAO at the beginning of each financial year. When charges or credits exceeds that amount, account of the work should be re-opened and necessary adjustment made there under. In the case of works done for private parties or other Government Departments or Ministries, the actual amount spent on the work should be recovered even though the completion report may not be revised.

787. Productivity Review

All M&P items procured on the basis of financial justification should be subjected to productivity review every year. Apart from the M&P items, all the workshops should be subjected to productivity review periodically. This review shall be undertaken on workshops selected by GM. A list of such workshops together with programme shall be put up by PCME to GM through PFA with necessary recommendation as to the workshops earmarked for application of test. The report shall be sent by CWM, PCME and PFA. PCME shall submit the report to the General Manager, who shall forward the report along with his own comments to Railway Board.



Information Technology

Workshop Information System (WISE)

Para No	Title
0801	Introduction
0802	Workshop Information System (WISE)
0803	Brief Scope
0804	WISE Infrastructure
0805	Benefits Accrued
0806	Training
0807	System Security
0808	WISE
0809	Business Process Flow
0810	Workshops covered under WISE
0811	Integration with other applications
Annex. 8.1	WISE Architecture
Annex. 8.2	Management Dashboard and Reporting for Workshops
Annex. 8.3	List of Abbreviations used

801. Introduction

Mission

Periodic Overhauling (POH) Workshops form the backbone of Indian Railways that keep Rolling Assets in good fettle and carryout structural and technological rehabilitation. Workshops carry out all types of repairs and reconditioning of Rolling Stock and the manufacture of spare parts for the repairs thereof. Workshops have been a focus of IT enablement from the very beginning and initially UNIX-COBOL based application packages were implemented in Workshops in the years 1986 to 1988.

In this regard, an IT based system viz. Workshop Information System (WISE) has been developed and implemented across all IR POH workshops. The WISE system has been designed in such a way that it can cater to all Indian Railway Workshops. All Rolling Stock including Coach, Wagon, Diesel Locomotive, Electric Locomotive, DEMU, EMU/MEMU, OCVs, special stock etc have been provisioned for inclusion in the system. Mapping of Rolling Stock with Workshop has been configured in the system. Workshops are able to do predictive analysis of their assets and maximise asset utilisation to meet the customer demands.. WISE application enables Workshop to transform their business processes and improve performance.

Vision

To establish an effective, reliable, user-friendly and integrated IT system for Workshops for overhauling of Rolling Stocks, with ease in data entry to provide secure & correct information anywhere, on demand through the use of the latest technology solutions.

Plan

To cover and implement maintenance activities in the workshops to provide 360 degree view of total Rolling Stock assets under Maintenance and their maintenance life cycle across various units of IR and advance prediction of asset demands to production or maintenance requirement. To improve efficiency through Online Assembly Tracking and effective inventory management.

802. Workshop Information System (WISE)

The Workshop Information System (WISE) aimed at providing a computerised system to assist in all aspects of overhauling of Rolling Stock Assets in Indian Railway Workshops. The Project covers complete Design, Development, Implementation and Support of Centralised Application for management of Indian Railway Workshops.

803. Brief Scope

It includes providing a fully functional Workshop Information System (WISE) at maintenance/ POH workshops of Indian Railways, which covers complete Customization, Development & Implementation of application for workshop users, Zonal HQ and Railway Board.

804. WISE Infrastructure:

In the fast changing world of IT, it is inappropriate to rigidly define in detail, the infrastructure requirements; and hence an outline is spelt out below:

a. Centralised Custom built application which is designed and developed by CRIS for IR Workshops.
b. Integration with CMM, FMM, UDM, IMMIS, IPAS, HRMS and eDRISHTI administer data exchange amongst, facilitating to get real-time reports.

c. Integration between divisions, Zonal Headquarters, Railway Board.
d. Application is accessible through the internet.
e. Single point access to all managers through a common web portal: ROAMS-Rolling Asset Management System. All applications WISE for Workshops, CMM for Coaching Depots and FMM for Wagon Depot are part of ROAMS. ROAMS provides seamless experience to all the users to execute their functionalities through common user interface.
f. ROAMS system can be accessed from anywhere and includes the multi layer access to its users.
g. Dashboards - Displays comparative analysis of data for the login of RB, HQ, workshops (CWM). Online web-reports and Pivot reports are available to all the Workshop users.
h. Hardware at Central location at CRIS data centre including development and Implementation having servers such as Database, Application, Web, and Development.
i. Shop hardware includes Client terminals with UPS.

The Architecture of WISE is depicted in Annexure - 8.1.

805. Benefits Accrued

1. Minimum paper work and required reports/ information is available over the application with any time access on a real time basis.
2. Visibility of Rolling Stock, its maintenance during the entire life span, maintenance history, Material and Man hour Consumption.
3. POH arising for next 1 year can easily be seen.
4. After all this data will get accumulated, the application may suggest predictive maintenance.
5. Optimization of shop floor inventory.
6. Visibility of detailed inventory data including multi location inventory.
7. Seamlessly integrated with the Depot application viz. CMM and FMM applications and Material Management applications viz. IMMS and UDM, enabling no data entry from the workshop users and avoiding data redundancy.
8. Efficient feedback and interaction mechanism between Workshops, Zonal HQ and Railway Board.
9. Easy job traceability.
10. Enabler to reduce the cycle time.
11. Enabler to reduce Rolling Stock holding in workshops.

806. Training

Training and continued retraining are essential to develop IT temper amongst workshop personnel. Training to be provided to staff nominated for concerned Workshops viz. Shop users in Application software by CRIS technical support team. A Management level training for Zonal Head quarters and Railway Board. Training to the nominated end users and core team members is provided in suitable batches of appropriate duration as and when required. The core team further assist the end users to get onboard in the application.

User training should be available for Workshops and for apex users. CRIS provides training in the Train The Trainer (TTT) concept. In this, super user is trained who in turn trains the end users.

807. System Security

The WISE system provides adequate security such as user Identification (User-ID), passwords, CAPTCHAs, provisions for digital signatures/ authentication of critical transactions to ensure that only the authorized personnel can have access to data, stored in the system.

System Security features:

a. Provision of Multi layer Authorisation/access that varies to different users.
b. Only the system administrator and his/her assistants are able to access the databases and programs should be given corresponding access rights.
c. Provides recording of the identification detail of the person who accessed the system to view data, enter, modify or deleted a data for investigation purposes if required.
d. Built in versions of records in which record created by, record created on (system date), record changed by and record changed on (system date) are maintained whenever any transactions committed by users.
e. The WISE system also caters to exigencies of data breach, denial of service, protocols to address security breaches and mechanisms / procedures that may be initiated in case of such breach of the system.

808. WISE Modules

The WISE Modules covers various aspects of Rolling Stock inside the Workshops related to Maintenance, Material Management, Assembly overhauling, Production, Management Dashboard, and Master Data Management. WISE Modules has been implemented in all POH workshops of Indian Railways.

100% implementation and operationalisation of WISE Modules is to be ensured by Zonal Railways HQs/CWMs of workshops. All important parameters of workshops like outturn, cycle time, Rolling Stock holding, man hour deployment and quality indices should be accessed by CWMs/Zonal Railway HQs/Rly. Bd. through WISE only. Data retrieved through WISE will only be considered as authentic data for workshops. The details of various WISE Modules are as follows:

1. Rolling Stock Module:

Rolling Stock module covers the maintenance aspect of rolling stock inside the workshop. Different rolling stock types like Coach, Wagon, Diesel Loco and Electric Loco arrives at workshop for maintenance schedule like POH/IOH/NPOH/Special Repair (SR) etc. In Rolling Stock Module, Coaching/Freight Depot marks POH and detaches the Rolling Stock in CMM/FMM. The marked rolling stock gets reflected in the respective workshop in the WISE portal. Workshop users need to receive the rolling stock inside the workshop from the forecasted list. In case the desired rolling stock is not available in the forecasted list, workshop users can receive that rolling stock with the help of Rolling Stock-In process in WISE.

After the arrival of rolling stock, Workshop users should create maintenance job orders by selecting the respective task list and specifying the desired quantity with man-hour for that particular rolling stock's maintenance. Workshops should record Quantitative/Qualitative parameters of Rolling Stock with the help of Parameter Recording functionality. Workshop users can berth a Rolling stock in a particular shop line and bay by use of the Berthing process. There is a process of Change Repair type through which the workshop can mark a Rolling Stock for Special Repair, MLR and initiate for Condemnation.

The Rolling Stock recommended for condemnation can be approved by CWM or it can be further forwarded to Zonal HQ for approval. After condemnation approval a Rolling Stock can be converted to NMG, RCC, RA, other departmental stock etc. with the help of Activity Type assignment. Workshop should complete all the maintenance related activities like assembly dismantling, creation/completion of assembly maintenance job order, closing of all the maintenance job orders of rolling stock etc. before offering that Rolling Stock to NTXR. NTXR can either mark Fit or Reject the offered rolling stock. In case of Rejection, NTXR needs to specify the defect reason. After NTXR fit, the workshop cannot perform any maintenance related activity for that particular Rolling Stock in WISE. Workshop users can then dispatch

the Rolling Stock from the workshop by specifying the POH date (dispatch date) and Next POH date for the dispatched Rolling Stock.

Workshops should perform all the transactions in the WISE system on a real time basis as it is being done physically in their workshops. The brief of the functionalities under Rolling Stock Module is as below:

SN	Functionalities	Functionality in Brief
1.	Forecasting/Rolling Stock under Transit	Rolling Stock (RS) which were marked for POH by depot application (CMM/FMM) appears in the WISE application. User takes receipt of RS in Workshop Holding.
2.	Rolling Stock In/ Reception at Workshop	This functionality facilitates workshop users to receive the Rolling Stock directly into WISE in case it is not detached for POH by depot application.
3.	Berthing of Rolling Stock.	This functionality facilitates workshop users to berth a Rolling Stock in a particular shop line and bay. It lists down the status of all the line positions whether it is occupied or vacant. Each workshop can pre-define berthing capacity in WISE.
4	100 Days failure marking and feedback.	It helps users to record failures which happened within 100 Days of POH.
5	Job creation on Rolling stocks.	It helps workshop Inspection users to create Job orders(operations and quantity) as part of pre-inspection under different shops on Rolling Stock which can then be further assigned to shop users.
6	Stage Inspection	After a job order is created and assigned to a shop user for maintenance, any further operation if required to be added, the same can be appended.
7.	POH Progress Recording	Different stages of Rolling stock inside the workshop can be recorded. A report is also provisioned in which users can view Rolling stock wise days consumed in various stages.
8.	Job confirmation/ completion on Rolling stock by Shop/Sections	Shop users can view the Job orders assigned by the corresponding inspection shop. Shop users can then start and complete the job order.
9.	Change repair type	Based on the condition of Rolling stock the repair type of Rolling stock can be changed by this feature. Rolling stock repair type can be initiated for Condemnation, Special Repair, MLR etc.
10.	Rolling Stock Holding	It displays the list of Rolling stock which are currently present in the holding of the workshop. It also displays the details of the RS and its current status.
11.	Rolling Stock Holding Parameter wise	It facilitates workshop user to view type wise count of Rolling Stock with hyperlink to drill down to individual Rolling stock level.

12.	Daily Position of Day's target, Month's target, & cumulative year target and working days.	Based on the month-wise target outturn and holidays defined by the workshop, system displays month-wise Till-Date Target, Cumulative outturn.
13.	Incoming Out turn details of Rolling stock.	Rolling stock wise Incoming history and outturn history report can be fetched with related attributes.
14.	Provision of Zonal Rolling Stock holding list.	Workshop can access Zonal Rolling stock holding and filter data on any column.
15.	POH history of Rolling stock.	Multiple visits of Rolling stock for POH in the workshop is recorded in WISE and the same can be traced through this report. This shows the entire Rolling Stock maintenance cycle.
16.	Rolling Stock Conversion	It facilitates workshop users to process Rolling Stock type modification i.e POH + Conversion and Condemnation + Conversion based on the condition assessed by the workshop user.
17.	Rolling Stock Condemnation- Proposal, Approval & Integrated with Other application	Rolling stock condemnation can be initiated by workshop SSE. This list will be visible to CWM for approval. CWM can approve it or can forward it to HQ for onward approval. Once condemnation approved by concerned authorities, the same is updated across the other related application.
18.	NTXR Offering, Approval, Rejection with reasons and re-offering of Rolling Stock	Rolling Stock can be offered to NTXR. Based on NTXR findings, Rolling Stock can be marked fit/reject. NTXR can reject by recording assembly group wise defects noticed on Rolling Stock.
19.	Bio Toilet Fitment Process	User can record details of Bio-Toilet fitment by workshop by specifying Rate contract type, Waste Transport Arrangement Type (P-trap/S-trap) etc
20.	Rolling Stock Dispatch	Rolling stock can be dispatched from Workshop by specifying Dispatch timestamp, Return Date, Division, Depot etc.

2. Material Module:

One of the most important things that are needed while Rolling Stock undergo repair is material. Every workshop has a facility to store material locally. These can be termed as local store/Workshop sub store/Consignee store. Users mainly draw material from the store depot associated with Workshop. These materials are delivered to the store depot by its Vendors through purchase order or it can be manufactured by Workshop under store work order. Workshop should put requisition to store depot and draw material. It can be consumed on Rolling Stock, Assemblies, Sub Assemblies, Person (in form of consumable items, tools etc) and consignee shop.

WISE application retains the material master in its database which regularly syncs with the IMMS database. The inventory details of the store depot are available in WISE through integration with IMMS. Users can check the position of inventory of any particular PL at any store depot PAN India basis. In the same fashion, local

inventory details are also available in the WISE application through integration with UDM.

Material consumption is being done through WISE application. Material once consumed through WISE application, is debited from the inventory of UDM in real time through integration. Users can find reports on material consumed on Rolling Stock and assemblies. Apart from this, users can mark the deficiency and damage (DDR) after rolling stock is received in the Workshop. The report generated through WISE should be considered for making any claims from divisions or depots or relevant concerned authorities. By doing material consumption throughout the year, the application is able to produce Annual Average Consumption for previous year, the application also produces the arising for the next year. Based on these two factors, Annual Anticipated consumption (AAC) can be prepared and submitted to the finance and store for vetting and fund availability. The brief of the functionalities under Material Module is tabulated as below:

SN	Functionalities	Functionality in Brief
1	Stock On Hand position at Stores Depot and Workshop's Shop/Section Store	The Stock / Inventory position of any material available in any Store depot of IR.
2	Deficiency recording against Rolling Stock.	Once a Rolling Stock is received by Workshop, it marks the damage and deficiency list on coaches. Material list and current rates are readily available with workshop through WISE.
3	Material Requirement Planning / AAC	It captures the Anticipated Annual Consumptions & compares it with last 3 years.
4	Shop floor Inventory Control	All inflows and outflows of material inside the workshops have been covered. Therefore real time inventory positions are readily available.
5	Warranty Claim Process	There are two ways to claim the warranty- i. When the Rolling Stock is new and some components have failed before the first POH, the workshop records the same in the WISE to claim the faulty material to the Production Unit. PU gets notified and takes the corrective actions. ii. When the Rolling Stock is dispatched by workshops after POH, it is under warranty for 100 days. The defect arising on an open line can be raised through application (CMM/FMM). Workshops would see the claim raised in WISE and update the action taken.
6	Consumption of material on Rolling Stocks.	After material received by Shop/section local sub-stores, it has to be issued to Rolling Stock in Holding. Consumption of material is only allowed before it gets offered to NTXR. The inventory of the shop/section sub-store subsequently gets decreased. This generates a detailed report of RS wise material consumption in WISE. It also helps to check/ trace what materials are booked by workshops in every visit of the Rolling Stock.

7	Must Change Items	Must-change item list can be prepared by Workshop themselves according to their requirement; it facilitates the User to consume it on- whole or on-part, at the time of Material issue/consumption to RS.

3. Assembly Module:

Assembly module covers the processes related to assembly overhauling i.e dismantling of assembly from Rolling Stock/superior assembly, installation of assembly to Rolling Stock/Superior assembly, assembly maintenance job order creation, man-hour and quantity booking and parameter recording on assembly. It also covers the assembly being received from the division/depot for overhauling in workshops. Workshop can exchange an assembly being taken from division/depot with the assembly dismantled from Rolling Stock.

Workshop should complete all the maintenance related activities like closing of all the maintenance job orders on assembly, completion of Assembly BOM structure and Parameter recording before FIT marking of assembly. The brief of the functionalities under Assembly Module is as below:

SN	Functionalities	Functionality in Brief
1	Assembly maintenance solution on sub-assemblies.	Process Life-cycle includes dismantling, overhauling and installation of sub- assemblies. Users can dismantle assembly from Rolling stock and Sub-assembly from Assembly.
2	Generation of Assembly tree on the basis of Assembly BOM (Structure)	For each Rolling Stock type, Assemblies can be generated in a hierarchical manner based on BOM (Bill of materials) defined for Rolling stock type in WISE.
3	Assignment of workshop Assembly Asset number based on the BOM (Structure)	Workshop can assign its local assembly number to all assemblies to a RS at the time of dismantling of assembly and also at the time of installation of assemblies to RS. .
4	Assembly received for maintenance from division	Some Assemblies like Bogie, Wheelset etc. arrive at workshops from Depots/Divisions for IOH maintenance. Provision is available to receive the same.
5	Assembly dispatched to divisions	Workshops dispatches Overhauled (Repaired) assemblies to Depots/ Divisions against assemblies received for IOH maintenance.
7	Assembly received from Stores	New assembly supplied to workshops from Stores Depot for installation to Rolling Stock. WISE is provisioned to take receipt of the same.
8	Dismantling/Assembling of sub-assemblies.	Dismantling of sub- assemblies from superior Assembly or Rolling Stock and overhauling at Assembly shops/sections and installation of sub-assemblies to superior assembly.

9	Wheel Condemnation	Wheel Condemned by workshops as per requirement of RWF (Rail Wheel Factory) Bangalore. RWF gets comparative statements based on workshops and time periods on condemned wheels.

4. Production Module:

Workshops are also involved in the activities related to manufacturing of items. These sometimes are requested by divisions through Divisional work order, store depots through store work order or for self use though internal work order. Workshop needs to define the finished product first under the master data in the application. After that Bill of material has to be defined (raw material or semi finished material) along with the operations to be performed on the raw material.

Requisitions received from various above units should be created in form of demand and subsequently converted to production order which in turn is assigned to shops for pushing their work. Quantity produced, quantity passed, quantity rejected have to be recorded after each of the operations defined in the application. Route card, job card and squad summary card are generated through the WISE application. The brief of the functionalities under Production module is as below:

SN	Functionalities	Functionality in Brief
1	Work Order Master, BOM, Routing	It states that the item to be prepared, how it is to be prepared in which shop.
2	Demand Creation	Demand for inter shop work order, store work order and internal Workshop order has to be created.
3	Production Order	Demand can be clubbed and item manufactured in batches
4	Inspection	It approves or rejects the qty produced.
5	Report	It generates job card report, squad summary report and route card.

5. Management Dashboard Module:

In order to provide the top management with important data, a ready to use functional and updated dashboard has also been provided to CWMs, CWEs and Railway Board. Through this dashboard the officers can access details of target vs outturn, cycle time of various types of Rolling Stock, workshop wise, and also month wise. Data which can be additionally accessed from the dashboard is Workshop Ineffective percentage, Sick vs Outturn percentage, Rolling stock more than 30 days in workshop, Man hours per Rolling Stock and Local passing. At present the dashboard displays information at the Indian Railway level. Performance of different workshops are being regularly monitored by the Railway Board with the help of this dashboard.

The features of Management Dashboard and Reporting of Workshops beingis provided to CWM, Zonal HQs and Railway Board is at Annexure –

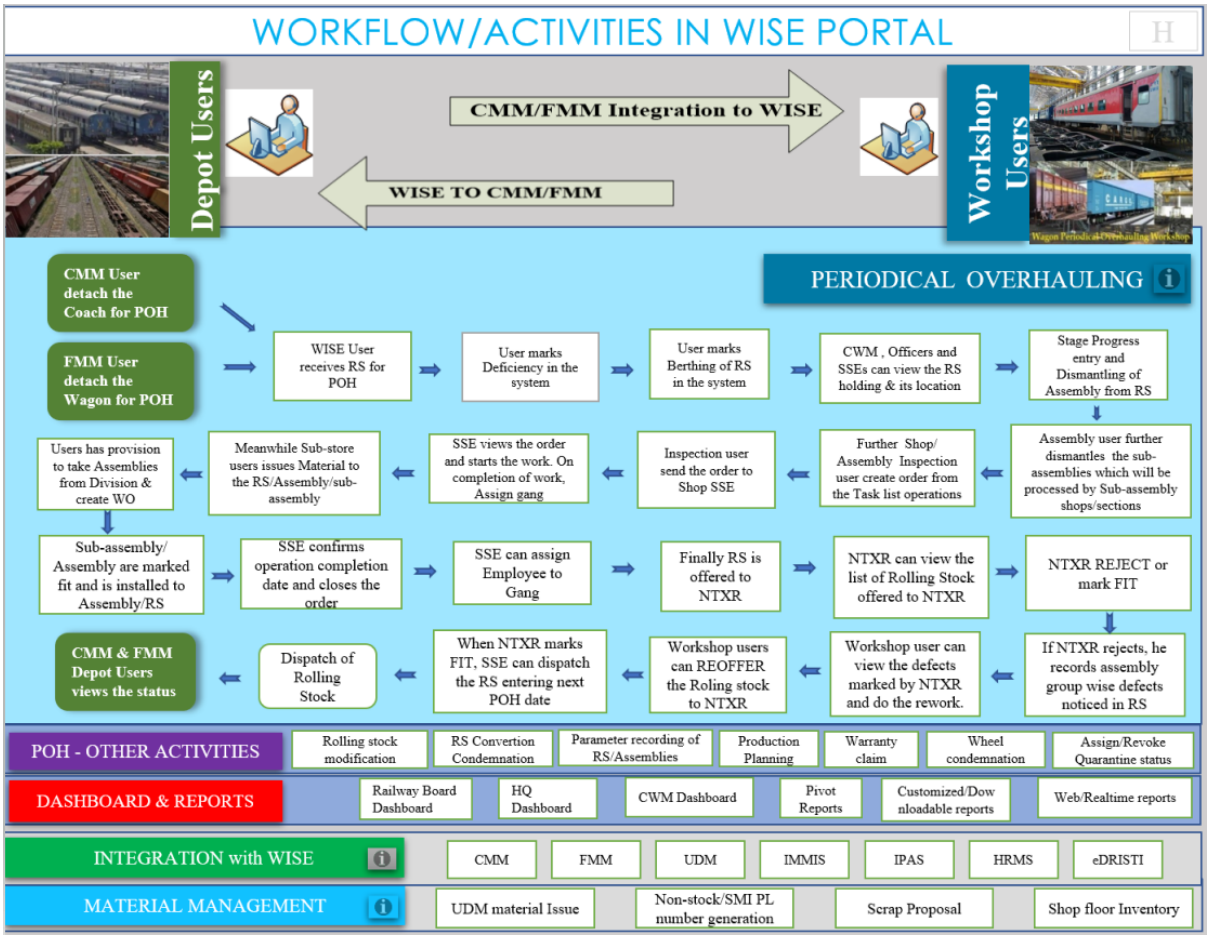
6. Master Data Management Module:

The interfaces for entering master data into the application have been developed and provided to the users. Coach Master, Wagon master, material master and employee master data need not to be entered by the user as it is automatically

synced with respective applications like CMM, FMM, IMMS and IPAS respectively through integration. For other master data like task list master (operation master), Storage Location (shop master), consignee master, Rolling Stock and Assembly must change master should be entered by users for which suitable interfaces have been provided. The brief of the functionalities under Master Data Management Module is tabulated as below:

SN	Functionalities	Functionality in Brief
1	Holiday Master creation	Users can fill Workshop Holidays entries in Master, once in a year. Helps create a workshop wise Calendar. This would facilitate users to keep track of working days/ month and completed working days/ month/Calculation of Cycle time.
2	Setting Target Outturn	Monthly Target can be filled by users and the system calculates the monthly target vs actual and annual target vs actual.
3	IR Sheet master creation	Master task list of all operations can be entered by users. These operation lists are visible to inspection users for creation of Job-orders, can choose appropriate operations from the Master task list, after pre-inspection of Rolling stock and thereafter shop users would do work on Rolling Stock and complete the work.
4	Storage Location Master	Each shop/section consists of a custody store where Store issued materials are kept, WISE is provisioned with the same (Virtual store) from where the materials are consumed to the Rolling Stock
5	Consignee Code Master	Material is issued by stores to a Consignee code. These consignee codes have to be maintained by the individual workshop.

809. Business Process Flow



Overview of workflow depicts how data traversing from CMM/FMM application to WISE application as the Rolling stock is detached by Depot user. After the receipt of Rolling Stock in WISE, workshop activities commences, the Shop/section users starts making entries in WISE, namely, Deficiency marking, Berthing, Stage progress, Assembly dismantling/installation, Material issue, Order creation/release/completion, Gang assignment, Mark-fit of assemblies, RS offer to NTXR, Mark fit/reject by NTXR and Dispatch of RS. Once the outturn of Rolling stock in WISE is done, data flows into CMM/FMM application.

Further activities in WISE includes RS/Assemblies, Parameter recording, Production planning, Wheel condemnation, RS Modification, RS Conversion, RS Condemnation, Warranty claim and Scrap proposal are recorded in WISE application.

810. Workshops Covered under WISE

SNo	Workshop Code	Workshop Name	Commenced Since
1	LGDW	Carriage Workshop Lallaguda, Secunderabad, SCR	12-06-2018
2	TPTW	Carriage Repair Shop Tirupati, SCR	20-06-2018
3	RYPW	Rayanpadu Workshop, SCR	21-06-2018
4	MTNW	Matunga Workshop, CR	05-07-2018

5	AMVW	Alambagh Workshop, NR	28-11-2018
6	MYSW	Mysore Workshop, SWR	12-12-2018
7	LPLW	Lower Parel Workshop, WR	14-12-2018
8	WRSW	Raipur Workshop, SECR	24-12-2018
9	NBQW	New Bongaigaon Workshop, NFR	11-01-2019
10	PWCW	Perambur(C) Workshop, SR	22-01-2019
11	PWLW	Perambur(L)Workshop, SR	23-01-2019
12	GOCW	Golden Rock Workshop, SR	24-01-2019
13	KPAW	Kanchrapara Workshop, ER	01-03-2019
14	UBLW	Carriage and Repair workshop,Hubli, SWR	01-03-2019
15	LLHW	Liluah Workshop, ER	09-04-2019
16	JUDW	Jagadhari Workshop, NR	23-04-2019
17	KGPW	Kharagpur Workshop, SER	10-05-2019
18	MXIW	Mahalaxmi Workshop, CR	10-05-2019
19	JURW	Jodhpur Workshop, NWR	18-05-2019
20	IZNW	Izzatnagar Workshop, NER	10-07-2019
21	KOTAW	Kota Workshop, WCR	17-07-2019
22	GKPW	Gorakhpur Workshop, NER	19-08-2019
23	CBSW	Locomotive Charbagh, NR	11-09-2019
24	JHSW	Jhansi Workshop, NCR	27-09-2019
25	PRLW	Parel Workshop, CR	16-10-2019
26	AICW	Ajmer Carriage Workshop, NWR	19.10.2019
27	MCSW	Mancheswar Workshop, ECoR	24-10-2019
28	DBSW	Dibrugarh Workshop, NFR	18-11-2019
29	BPLW	Bhopal Workshop, WCR	06-01-2020
30	JCMW	Carriage MLR Workshop, Jhansi, NCR	06.02.2020
31	DHDW	Dahod Workshop, WR	01-06-2020
32	JMPW	Jamalpur Workshop, ER	04.07.2020
33	KWVW	Kurduvadi Workshop, CR	19.08.2020
34	KLKW	Kalka Workshop, NR	11.01.2021

Efforts should be made to develop suitable modules for manufacturing workshops and cover all workshops apart from POH workshops under WISE.

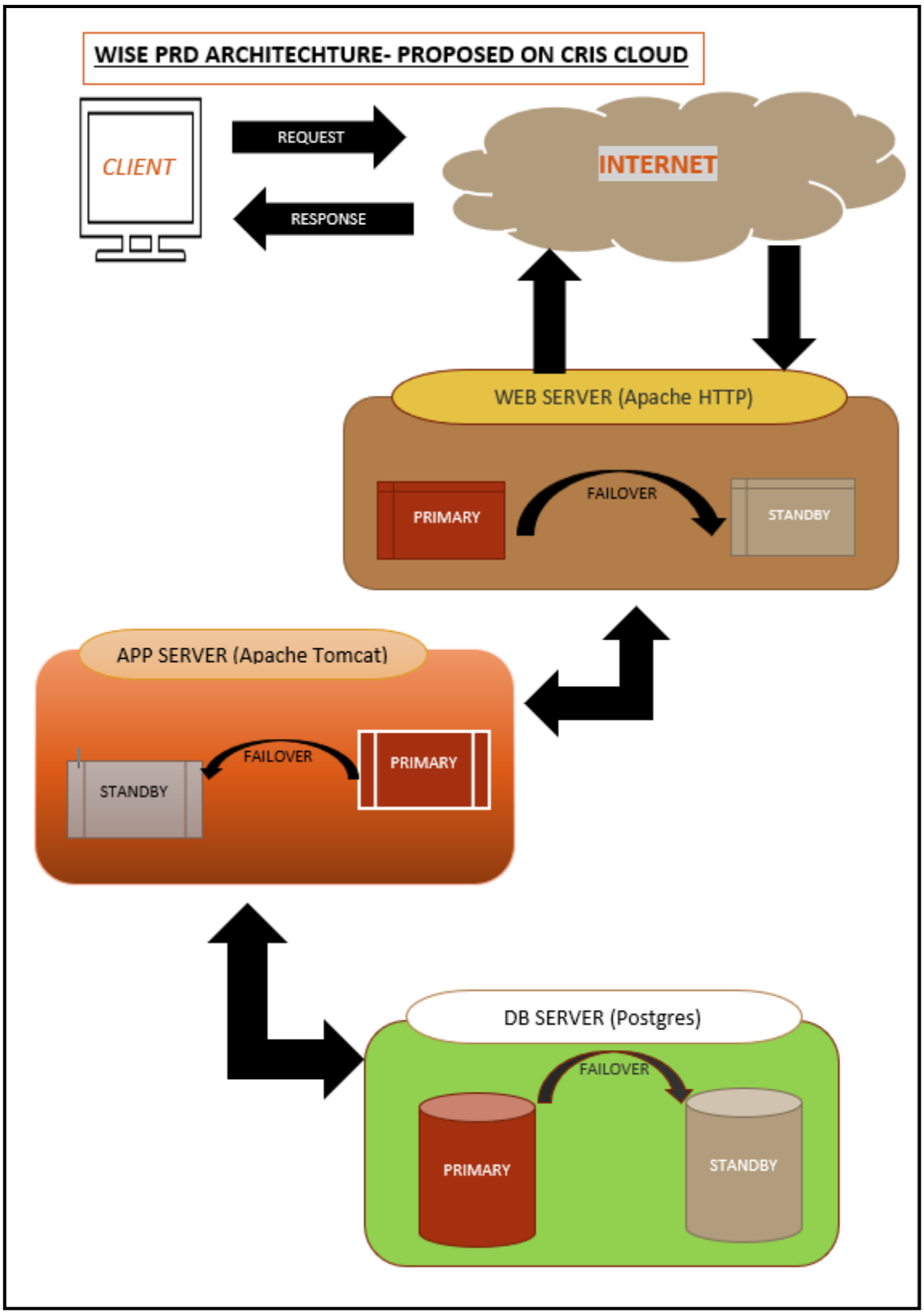
811. Integration with other Applications

SN	Use Cases	Other Application	Method-ology
1	Coach Master: Whenever any addition or update in coach master happens in CMM, it is replicated in WISE.	CMM	ESB
2	Material Item: Railway wise PL No & Description is available in WISE from IMMS. This helps in getting the PL list readily available wherever it is needed like marking the deficiencies, material issue on Rolling Stock.	IMMS	ESB
3	Material Stock : Real time stock position and their rate are readily available in PAN India Store depot.	IMMS	ESB
4	Goods Issue to Workshop : Materials issued by the store depot to the workshop are available.	IMMS	ESB
5	Coach, Wagon Forecasting of Arrival, Shop In and Shop Out a) Coach/Wagon marked by Coaching/ Wagon Depot for POH to workshop is visible in real time in WISE, so that workshop can be aware well in advance. b) When Workshop receives the coach, the details are seamlessly available with Coaching/Wagon Depot. c) After POH, when the workshop turns the coach/wagon out, the details are shared with the depot.	CMM, FMM	Web Service
6	Coach Condemnation: When the Coach gets condemn from any side (CMM or WISE), it is replicated to all other coaching application	CMM	Web Service
7	Wagon Master: Wagon master integration (addition/ updation) from FMM.	FMM	ESB
8	Employee Master	IPAS/HRMS/WAMS	ESB
9	Wagon condemnation	FMM	Web Service
10	Material Consumption on Rolling Stock and Assemblies	UDM	Web Service
11	Outturn details of Workshops	eDristi	Web Service

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Annexure - 8.1

WISE Architecture

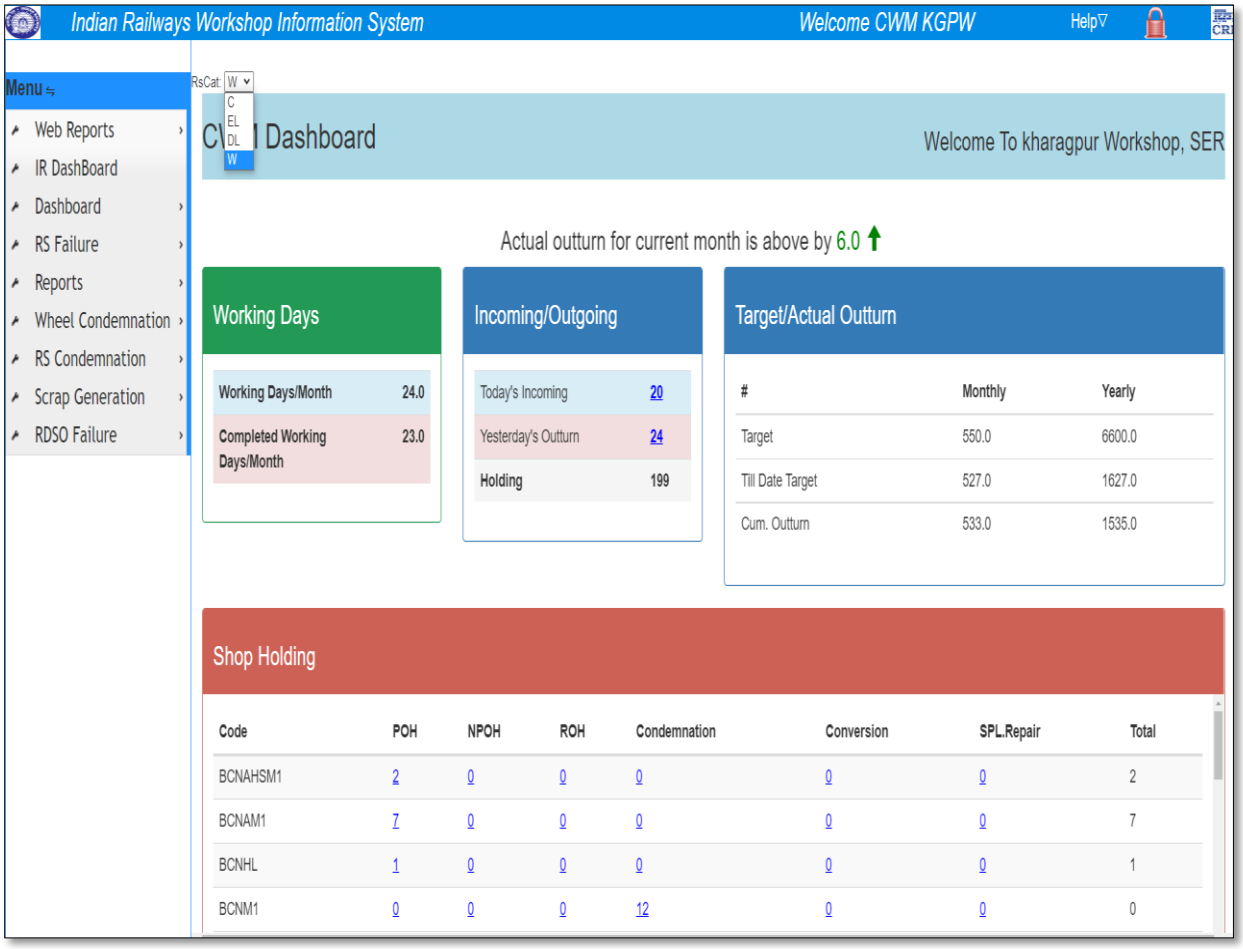


Annexure – 8.2

Management Dashboard and Reporting for Workshops

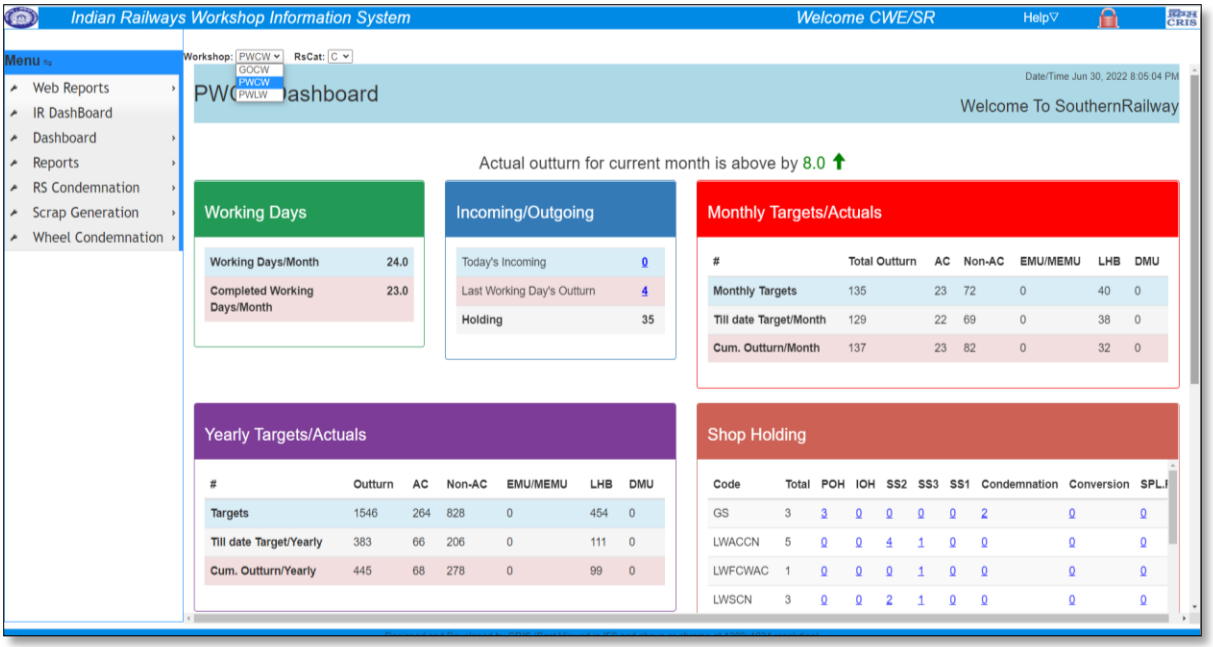
1. CWM Dashboard Features

i) Displays: (Drill-down, online-report)
ii) Workshop working days/ month,
iii) Completed working days/ month,
iv) Monthly target vs actual,
v) Annual target vs actual,
vi) Receipt and dispatch,
vii) Workshop Holding (repair type wise and Rolling Stock type wise),
viii) Last 30 Working days incoming and outturn plotted on chart.



2. HQ Dashboard Features

i) Displays: (Drill-down, online-report)
ii) Cumulative outturn financial year wise
iii) Monthly outturn,
iv) Workshop holding,
v) Rolling stock holding more than 30 days in workshop,
vi) Man-hour booked on Rolling Stock- In Holding,
vii) Man-hour booked on Rolling Stock- Turned out,
viii) POH arising for next 12 months, NTXR fit report,
ix) Quarantine Coach List
x) Complete maintenance history for Rolling Stock within workshop
xi) Dashboard, Condemnation Approval & Report,
xii) Graphical representation of Date-wise, Work-shop wise Incoming and Outgoing of Rolling stock.



3. RB Dashboard Features

i) Displays: (Drill-down, online-report)
ii) Cumulative outturn financial year wise,
iii) Monthly outturn,
iv) Workshop holding,
v) Rolling stock holding more than 30 days in workshop,
vi) Man-hour booked on Rolling Stock- In Holding,
vii) Man-hour booked on Rolling Stock- Turned out,
viii) POH arising for next 12 months
ix) NTXR fit report,
x) Quarantine Coach List,
xi) Complete maintenance history for Rolling Stock within workshops, Respective Dashboard



List of Abbreviations used:

CMM	Coaching Maintenance Management
BOM	Bill of Material
ESB	Enterprise Service Bus
FMM	Freight Maintenance Management
FOIS	Freight Operation Information System
HRMS	Human Resource
IMMS	Integrated Material Management Information System
IOH	Intermediate Overhauling
IPAS	Integrated Payroll & Accounting System
MLR	Mid Life Rehablitation
MMIS	Material Management Information System
NMG	New Modified Goods
NPOH	Non Periodic Overhauling
NTXR	Neutral Train Examiner
PL	Price Ledger
POH	Periodic Overhauling
RA	Railway Saloon
RCC	Railway Camping Coach
UDM	User Depot Module
WAMS	Workshop Accounts Management. System

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Quality

Para No.	Title (Ctl + Click on Para no.)
901	Quality - Definition
902	Quality & Process
903	Quality Management Techniques:
904	Quality Standards
905	Origins of Defects
906	Defective design
907	Quality of Inputs
908	Defective Workmanship
909	Process Defects
910	Management Commitment to Quality
911	In process audit
912	Inspection and quality of output
913	Inspection and Measurement of Quality
914	Inspection by 3rd Party
915	Certification of Laboratories
916	Quality enforcement of outsourced work
917	Product Inspection
918	Inspection Vs Process Control
919	Quality enforcement through warranty obligation
920	Accountability for Defects
Ann. 9.1	Quality assurance in shops and maintenance depots

901. Quality - Definition

Quality is one of the main core strategies of a world class organization and an integral element of their structure and culture. Depending upon the context, quality has different connotations and is understood as non-inferiority or superiority of something in business, engineering and manufacturing. It is a perpetual, conditional and subjective attribute.

ISO-9000 defines Quality as a Degree to which a set of inherent - characteristics fulfils the requirement'‖. Definition of quality as given by some management experts is as below:

Philip .B. Crossby	-	—Conformance to requirements‖
Joseph .M. Juran	-	— Fitness for use‖
Genichi Taguchi	-	(a) —uniformity around a Target Value (b) —The loss product imposes on society after it is shipped
Peter F Drucker	-	—Quality in a product or service is not what the Supplier puts in but what the customer gets out and is willing to pay for.

Edward Demming the Quality Guru states- — Cost goes down and productivity goes up as improvement in Quality is accomplished by better management of Design, Engineering, Testing and by improvement of Process. In the manufacturing industry -Quality drives productivity.

902. Quality & Process

Quality of a product is directly linked to process. ISO - 9000 system lays down the general requirement for establishing processes which institutionalise Quality Management and expects an organization to establish, document, implement and maintain a Quality Management System and continually improve its effectiveness.

This is sought to be attained by:

Identification of the processes needed for Quality Management

a. Determine the sequence and interaction of these processes
b. Determine the criteria and methods to control the operation of the processes
c. Ensure availability of information and resources necessary to support
d. Monitor, Measure and Analyze the process
e. Implement Actions necessary

Some of the best plants in the world recognize seven values that should serve as a basis of operations to attain Quality:

a. Quality is the responsibility of every employee and team
b. Quality improvements result from management leadership
c. Quality should be viewed from the customer's perspective
d. The focus of quality improvement must be on each job, at each step in the process
e. No level of defect is acceptable
f. There must be commitment to continuous improvement and the seven -steps process to continuous improvement
g. Quality improvement reduces costs.

903. Quality Management Techniques:

Some of the techniques / strategies that can be made part of process / process control are:

a. Statistical Process Control (SPC) by Periodic measurements of attributes /variables and documentation at different stages of manufacture.
b. Total Quality Management (TQM) - by Integrating all sub-systems with focus on Quality.
c. Quality systems like ISO - 09000 to attain consistency and predictability. Indian Railways uses this system to improve efficiency, Production quality, and to attain 'consistency and predictability'.
d. Total Productive Maintenance (TPM) to ensure reliability of Tools & Equipment used and systems.
e. Six Sigma: A set of tools and techniques for process improvement
f. LEAN Principles: A philosophy emphasising on tapping the creativity of the staff at the shop floor level to eliminate waste, introduce processes and procedures that are mistake proof and a focus in value creation from the customer's perspective.
g. Cost of quality:-The main idea behind the cost of quality is to make the product cheaper and defect free.

CWMs/Divisional In charge for maintenance of Rolling Stocks (Conventional as well as Distributed Power Rolling Stock) shall make a time bound plan and introduce selected few/all of the above practices.

As a part of compliance of statutory provisions relating to protection of environment, the practice of obtaining accreditation for an Integrated Management System (IMS) , which addresses the ISO 09000 for quality, ISO 14000 for environment and ISO 18001 for Occupational Health and Safety (OHSAS) has come into practice particularly for production units, and workshops

904. Quality Standards

For every job/Purchase a specification number /drawing number/BIS Etc standards are prescribed- defining the quality standard to be met for the individual Job. For a process as a whole acceptance level standards/percent defective standards must be fixed by IR. Likewise QAP and overall defects standard shall be laid down for each job, starting initially with 3 Sigma level. This should be part of process charts.

The drawings and Specifications for critical items, besides providing dimensional tolerances, should indicate —LOT Acceptance Levels —based on Total defective percentages. This must be undertaken by the design offices of the manufacturing units.

Quality standards are sets of good management practices, methods, systems, requirements, and specifications established by Departments ISO cell to help manufacturing and maintenance to achieve and demonstrate consistent production and product quality.

905. Origins of Defects

a. Defective Design
b. Quality of inputs
c. Defective workman ship
d. Process Defects.
e. Management's commitment to quality.
f. In process audit
g. Inspection & quality of output

Quality of output gets controlled automatically, once the above factors are controlled and there may not be any need for finished product Inspection - which in

any case is like a post mortem. While analyzing any process with a view to improve the quality of its output, the following aspects need to be considered:

a. What are the key variables that affect the process quality?
b. What is the range of values that these variables can take?
c. Is there a desired range for some of the process variables?
d. What combination of settings for the process variables leads to acceptable performance?
e. List the process variables in the descending order of their impact on process quality
f. Do some of the variables interact with each other? Interaction means when the effect of one variable on the quality depends on the state of a second variable
g. What settings would bring about minimum variation in the process quality?
h. Shop floor supervisors must be familiar with use of statistical techniques to evaluate/compare quality.

906. Defective design

Quality has to be built in at the stage of design of the product. Design can not be a standalone effort - but needs integration with manufacture and even a customer interface (customer can be next stage user) Techniques below are adaptable:

a. Design for manufacture and Assembly (DFMA)
b. Concurrent Engineering
c. Quality Function Deployment (QFD)

Design - Manufacturer - User interface should be in place in all the PUs / Workshops.

907. Quality of Inputs

This is one of the major sources of Defects in a manufactured / assembled product. ISO-09000 system has laid down elaborate procedure for input control. Accordingly, it has been laid down in the vendor approval system under “Rules for entering into supply contract” that:

a. All suppliers should have certified Quality System - the rest should be weeded out.
b. Suppliers who are manufacturers should have an in house QAP system
c. They should maintain and produce on demand Quality documentation to the buyer.

The following additional measures should be taken to improve the quality of material inputs.

a. Traceability of important components to the supplier should be ensured by making suitable provision in drawings to stamp at a location on the component the manufacturers name, batch number and date of manufacture where the marking shall not get obliterated by wear and tear or failure.
b. Vendor approval and enlistment system should be transparent, well documented and standardized by respective vendor approval agencies of Railways
c. For procurement of important items with restriction on vendors, following steps should be adopted.
    - Evolving product specification and Quality Assurance Plan for all important items for which RDSO is the nodal agency.

- In order that there is unitary control between vendor enlistment, PUs as nominated by Railway Board, should be the nodal centers for vendor approval for important coaching, EMU,MEMU,Train set and loco items – based on RDSO formulated Quality Assurance Plan and check lists, restricting the vendor approval by RDSO, only to important wagon Items alone.
- RDSO should bring out inspection protocol and check lists for all important items for use by the inspection agencies. Third party inspections of products can be executed on the basis of RDSO check lists.

d. Continuous vendor evaluation especially with reference to quality has to be evolved.
e. Regular vendor review.
f. For selected PU/RDSO restricted items periodic Quality Audit at Vendors' premises should be mandatory and may be outsourced as indicated in rule for entering to supply control.

908. Defective Workmanship –

a. This can occur due to lack of Skill / Training. Skilled artisans need regular training & evaluation.
b. Certification of worker training and evaluation should be done as a part of training.
c. Enforcement of adherence to work instructions by Supervisors.
d. Periodic calibration of machines/ gauges / toolings to be mandated and documented.
e. Calibration documentation to be updated.
f. Proper system for maintenance of M&Ps must be set including techniques like TPM—to ensure equipment reliability

909. Process Defects

This is the essence of Quality. Even with everything else being proper, process unreliability would ruin Quality. Process control measures – statistical / non-statistical is essential for quality adherence. Processes need a review and recast keeping Quality as focus and process reliability has to be ensured through regular validation. The process should target quality standards like Six Sigma / Zero Defects.

The in-charges of PUS/Workshops/LCDS should enlist support of process evaluation and certifying agencies to revamp the process, train Managers and Supervisors in process control and process reliability.

While procuring Machinery & Plant- the accuracy, tolerance levels and reliability expected has to be factored in the specification formulation instead of merely looking at Quantitative output of machines.

910. Management Commitment to Quality

Quality is a culture, a philosophy, a belief, which is achieved though a structured system commitment, which has to start from Top.

ISO quality systems make it clear that a pre requisite is management commitment. This has to be demonstrated by calling for periodic reports on Quality and demonstrating Zero Tolerance to Qualitative Deficiencies.

Periodic Quality workshops have to be held and the Management should lead the quality drive. CMG,DMG and WMG meetings should do detailed Quality Analysis - shop wise.

911. In process audit

In any Quality System - ultimately the aim is self-inspection. This needs total involvement of the Supervisors in the entire process - starting from the design, to final output. In process audit‘ has to be the function of the Supervisor and should include functions like ensuring proper up-keep of machines and tools, gauges, quality records, attendance of staff at work spot, housekeeping, availability of tooling’s, ensuring usage of proper tooling’s, jigs & fixtures by works and adherence to correct work practice and work instructions.

The supervisor should not allow work to proceed to the next stage without ensuring adherence to Quality at each stage. Record keeping and accountability at each stage of the process is also to be ensured, to trace back any quality issue at a later stage.

912. Inspection & Quality of output

Output quality can be assessed by an inspection plan - while it can be enforced only through an In-process Quality Assurance Plan. Quality of the output is just a validation of the process reliability.

Output inspection has to be generally non -destructive and normally follows a sampling plan. The selected samples need to be subjected to

a. Metallurgical / Chemical checks
b. Physical checks

Usage of properly calibrated testing equipment is essential. The efficiency depends on the skill and commitment of the Inspectors who should act without bias or fear. It is advisable to have a documented inspection chart like the one at Annexure - 10.1

All elements that need to be tested as per specification / drawings / inspection standards should be tested and documented and the results communicated to process and control section to take remedial measures.

913. Inspection and Measurement of Quality

As explained, Quality Documentation is essential for taking remedial measures. Quality control methods are available and are widely followed in the Industry. The test results are to be statistically analyzed to ‗ Zero in‘ on the point of araisal of the defect.

This tracing back process is the essence of quality systems and is mandated by ISO systems, which depends on the feedback loop.

Advance systems like Six Sigma have laid down elaborate Documentation and Control Systems. These are normally done by certified Agencies and the Unit in charges should enlist the support of these Agencies, wherever required.

The customer is the final Arbitrator of the quality. The system should provide regular feed back from users and the user should get a feed back on follow up action.

914. Inspection by 3rd Party

This becomes essential when

a. The shops supply to a non railway customer
b. In-house facilities are inadequate

Dispensing with an inspection system requires the organization to have a high level of self-esteem with regard to Quality - which should be the ultimate aim. A Zero defect Quality system with periodic Audit will take an organization

towards this. Until this is achieved, it is necessary to have at least a Quality Audit and Periodic Inspection through 3rd Parties for shop manufactured products.

915. Certification of Laboratories

ISO-9000 does not cover reliability of a Testing Laboratory. Reputed Laboratories go in for Accredition with Agencies like NABL . All testing facilities & laboratories of CMT in PUs/workshops/major LCDs should immediately get this accreditation.

An accreditation–would bring out the inadequacies of the Laboratory and make its Test results acceptable to even outside Agencies. This enhances the Quality and Reliability of the Laboratory results, which is key to ensure even internal Quality.

916. Quality enforcement of outsourced work

Work can be outsourced for execution outside the factory as well as inside the factory - but with contractor‘s Labor and Material. Quality gets impacted on the under mentioned counts:

a. Raw materials used not conforming to Quality
b. Consumables like electrodes, lubricants, chemicals, paints and protective coatings not conforming to Quality
c. Small components used in execution of the work not conforming to Quality
d. Work process deviations resulting in bad quality
e. Lack of QAP
f. Usage of workers not fully Qualified in the Trade
g. Lack of Proper Supervision

All contracts for outsourcing - besides involving a process of vendor pre-qualification should clearly mention in the contract all the above aspects to ensure adherence of the work to set Quality norms.

917. Product Inspection

Inspection should not be at the stage of finished product - as any rejection at this stage is wasteful and adds to costs.

As laid down at para 911 stage/in process inspection is cost effective as a defective component / work does not proceed to the next stage.

All components / works over a threshold value should be subjected to in process inspection and only inexpensive items / work should be confined to only final product inspection.

Inspection can be by the Railway Organization’s Inspectors or by accredited and reputed 3rd Parties. (See para 914)

918. Inspection Vs Process Control

Process control (see Annexure 9.3) is the ultimate solution in Quality enforcement. Once the entire process starting from ordering inputs to work process through to final assembly is controlled through scientific methods, product inspection will become redundant and will be substituted by periodic system Quality and conformance Audit by in - house agencies as well as 3rd Parties.

This will bring up Quality Conformance to the highest level like Six-Sigma or even Zero Defects.

919. Quality enforcement through warranty obligation

In all commercial transactions involving equipment purchase/repair, warranty is specified by the supplier. This is to validate performance reliability of the Task executed during new manufacture or repairs.

920. Accountability for Defects

A system of accountability on the part of production unit/Workshop for the rolling stock (Conventional as well as Distributed Power Rolling Stock) produced/ overhauled/ repaired for a specific period after turning out the rolling stock (Conventional as well as Distributed Power Rolling Stock) should be in place.

Defects noted by Zonal Railways within such warranty periods should be reported to the Workshop / PU - who turned out the stock giving details of:

a. Rolling stock (Conventional as well as Distributed Power Rolling Stock) identification number
b. Date of out-turn from shops, which has to be stenciled on the stock
c. In the case of a major component (non-consumable)- Batch Number, Date of Manufacture, name of manufacture.
d. Type of Defects

To facilitate the above, drawings of all major components will demand specifying:

a. Name of Manufacture.
b. Lot / Batch number
c. Date of Manufacture

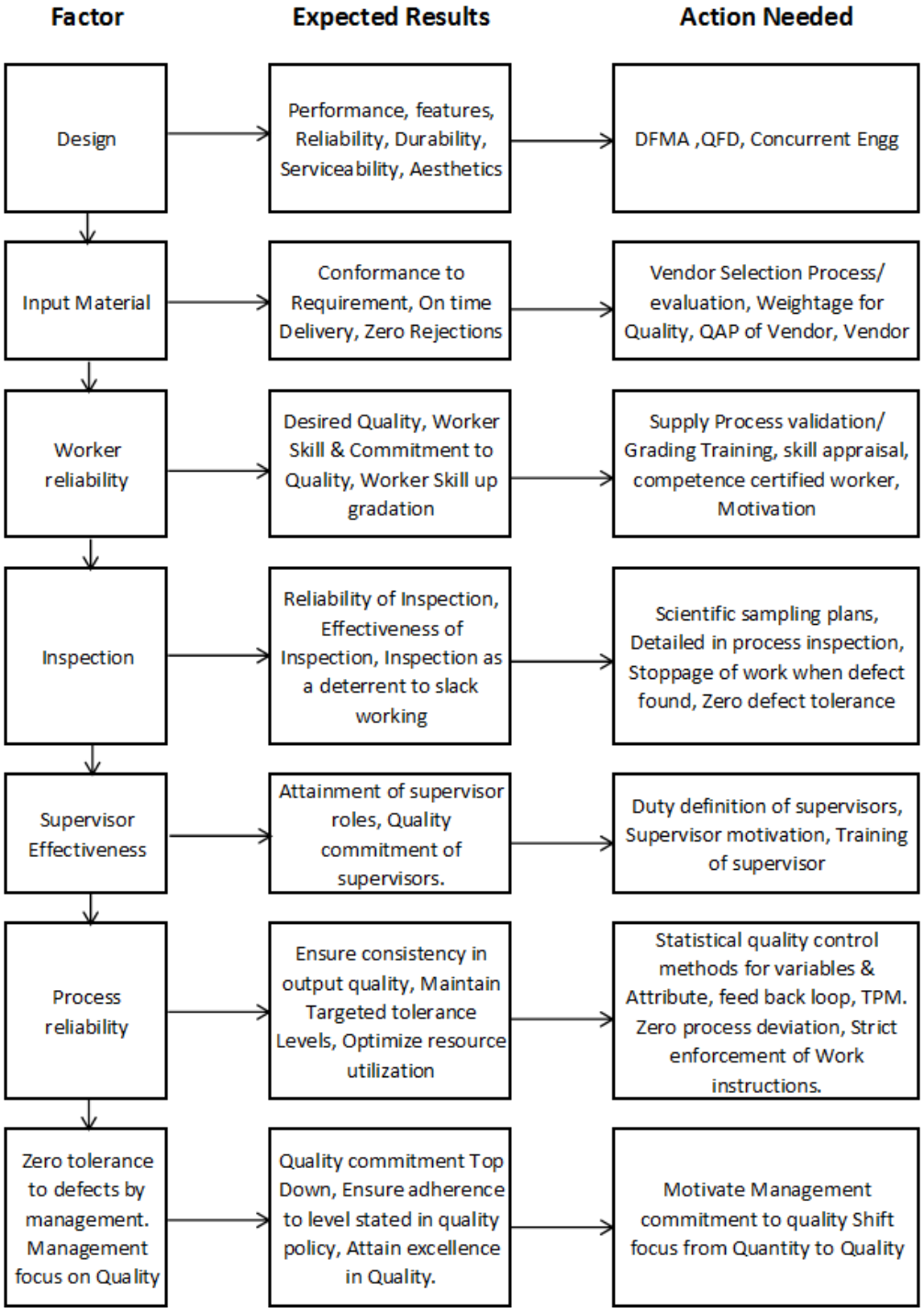
These data should be incorporated in the inspection certificates. The drawings should also specify tests mandated for critical items - including in process inspection schedule.

Production Units/Workshops will take necessary corrective and preventive actions based on the complaints received from the open line.

In case of material failure of items supplied by vendors, the stores department should be advised, in order to raise the warranty claim on the firm through the MMIS.

Failure of rolling stock (Conventional as well as Distributed Power Rolling Stock) within a specified period of manufacture, rebuild and POH shall be closely monitored by Railways & Production Units and shall form part of discussions in all co-ordination/ maintenance group meetings.

Quality assurance in shops and maintenance depots



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CHAPTER 10

Investment Planning

Para No.	Title *(Ctl + Click on Para no.)*
1001	Planning:
1002-04	Goals for investments:
1005-06	Advance Planning for Rolling stock:
1007	Codal Life and Condemnation:
1008	Normal condemnation of Rolling stock:
1009	Underage condemnation:
1010	Overaged stock on line:
1011	Accident Damaged Rolling Stock:
1012-13	Officers authorized to condemn Rolling stock:
1014	Sale of Rolling Stock:
1015	Scope of the Rolling Stock Programme.
1016	Capital/Unit exchange spares
1017	Estimation of requirements- New acquisitions
1018	Itemized Rolling Stock Program (IRSP):
1019	Machinery and Plant (M&P) Program:
1020	Nomenclature of M&P and T&P:
1021	Codal Life of Machines:
1022	Creation of new assets:
1023	Replacement proposals:
1024	Utilization of Workshop Space and Layout considerations:
1025	Plan Head “41”
1026	Works in Progress (WIP) :
1027	Monetary Ceiling for Preliminary M & P Programme:
1028	Format and Presentation of Proposals:
1028 A	M&P Proposals under Umbrella work:
1029	Budgeting for M&P:
1030	Review of M&Ps under procurement
1031	Category of M&Ps & agency for procurement
1032	Cost and time overruns:
1033	End-loaded expenditure booking:
1034	Budgetary Reviews:
1035	Machine maintenance and Annual Maintenance Contracts (AMCs)
1036	Disposal of condemned and surplus machines:

1037	Maintenance of asset Register:
1038-39	Proposals under Plan Head 42
1040	Standards for Maintenance Facilities
1041	Expansion Programs to meet capacity shortfalls:
1042	Checklist for proposals under Plan head 42:
1043	Head of allocation:
1044	Powers for sanction and compilation of Approved Works
1045	Work Register & Reconciliation
1046	Direction and General Charges.
1047	Cost and time overruns
1048	Maintenance of civil infrastructure in sheds and workshops:
Ann. 10.1	Rolling stock Programme- New Acquisitions
Ann. 10.2	Codal life of machines

1001. Planning

As an activity, planning demands a high level of conceptual and visionary thinking. It is envisaged not merely at the time of expansion or modernization of a system, but also at least as a biannual exercise, to take stock of the current status and give course corrections. Such affirmative action enables workshops and sheds to perform efficiently in a world of changing markets and new technologies. Planning involves an integrated approach for creation of infrastructure, Machinery and Plant, and more importantly in human resources and is initiated at three levels:

a. Corporate planning is initiated in the Board. Need for additional capacity in workshops, Production Units, running sheds, or depots or for altogether new units is identified at the corporate level. These decisions are based on Five Year Plan projections including traffic trends, major expansion proposals and modernization needs. Board advises the concerned Railway, the broad objectives for initiating the proposal.
b. Zonal Planning is done at the zonal headquarters, for meeting the requirements of the zone.
c. Plans are also initiated at unit level either to replace the assets, improve quality parameters of their activity, such as reducing cycle time, or for improving reliability/working environments etc.

1002. Goals for investments:

All investments decisions shall be planned in a focused manner with one or more of the following goals in mind.

a. Meeting increased traffic needs
b. Improving customer focus
c. Improving quality and train Safety
d. Agility - to develop capacity to deal with fluctuating production volumes and/or a broad product matrix
e. Employee training, improved working conditions and workplace safety
f. New Technology adoption
g. Environmental responsibility
h. Corporate citizenship

Unless it furthers the cause of any of these goals, even the replacement of an asset shall be made with caution.

1003. Investments for creation, acquisition and replacement of Assets on the Railways are processed under various Plan Heads under Demand No. 16. The Plan heads with a direct bearing on rolling stock production/maintenance and Infrastructure for the same in the workshops and sheds are listed below.

Relevant Plan Heads (Under Demand No. 16)

Plan Head	Description
21	Rolling Stock
41	Machinery & Plant
42	Workshops including Production Units

A***s*** a nodal agency, Mechanical Department processes the requirements of Rolling Stock, Machinery and Plant and Works Program for PUs, Workshops, Store Depots and Sheds under Plan Heads 21, 41 and 42 respectively, based on the

proposals received from all the concerned departments. However, as a natural corollary of the investments under any other plan head other than the above three, requirements do come up for rolling stock and facilities for breakdown attention as well as rolling stock maintenance facilities warranting investments in Workshops and sheds, which need to be provided as a part of the main work itself instead of carrying a part of the investment into PH 21/41/42. For example, the need for a sick line/ pit line for a “proposed new line” /”Gauge conversion” section is a case in point. It is incumbent on the CME/Planning and other officers dealing with framing of proposals for works and apprising the same, to closely monitor the proposals under various plan heads, to avoid omission of breakdown rolling stock like ART/ARME/SPART & rolling stock maintenance infrastructure requirements, arising as corollary of the main work.

Rolling Stock Program (RSP): Plan Head 21:

1004. Annual requirement of rolling stock is derived as a follow up of the Five Year Plans. The planning process for the Five Year Plans as given in Chapter VIII of the Indian Railway Administration and Finance "Operational and Financial Planning" is spelt out below:

a. Appointment of Steering Groups consisting of representatives of various economic Ministries well in advance of the commencement of Five Year Plan for covering various facets of the plan.
b. Setting up of Working Groups by each Ministry. The Ministry of Railways is generally the convener of the Working Groups on-
    i. Freight traffic projections:
    ii. Passenger traffic projections; and
    iii. Formulation of Railway Development Programs.
c. The Working Groups after taking into consideration the total freight and passenger traffic likely to be carried in plan period on the basis of sectoral analysis fix the traffic targets and then examine it to determine the requirement of the rolling stock in respect of wagons, carriages and locomotives.
d. The draft plan thus prepared is taken up for detailed discussion and adjustment made depending upon the financial resources available. The final plan thus emerged is subject to periodical reviews based on the growth of expected traffic. This review is conducted jointly between the economic Ministries and shortfalls and fluctuations are analyzed and necessary alterations made in the plan.
e. The Five Year Plan is implemented through an action oriented annual plan prepared in consultation with Finance ministry.

1005. Advance Planning for Rolling stock:

Based on the requirement of rolling stock, the PUs and wagon manufacturing units should be given their next 3 year production plan by December of the preceding year. However, in order to facilitate production planning in PUs and workshops in an uninterrupted manner, unless advised to the contrary by Railway Board, these units are permitted to plan 80% of their production for the next year on the same lines as the preceding production year. These units can thus make advance preparation of their material, tooling and machining requirement for 80% of their next year requirement without waiting for a specific production programme from Board. It is expected that with enhancement of manufacturing capabilities, Production units and wagon manufacturers should strive constantly towards better agility and should be prepared to face changes in volumes and/or product mix.

1006. Course corrections based on Budget proposals and other unanticipated changes shall be advised in the beginning of every year, but the variations should not be too large and not more than ± 30% of the original planning.

1007. Codal Life and Condemnation:

Codal Life of a particular type of stock denotes an average economic life, assumed for the specific purpose of making long term planning to assess future requirements. Codal Life for different kinds of rolling-stock is given in the Accounts code and as advised by Railway Board time to time.

The codal life indicated therein is only for general guidance to make broad assessments for planning replacements; rolling stock should however be condemned and withdrawn from service only on the basis of condition and intensity of utilization.

1008. Normal condemnation of Rolling stock:

When any rolling stock touches a shop for Periodical Overhaul (POH) at the fag end of its life *[i.e. last* POH *before attaining codal life]*, the Chief Workshop manager should access the suitability of the rolling stock to work beyond the codal life stipulated and certify the same. However, later the same can be allowed on line after the codal life actually expires, for a stipulated or downgraded/alternative service, only after a reassessment by the divisional officer in charge of its maintenance, duly advising the concerned HoD.

If however the condition of such overaged stock warrants condemnation on physical or economic considerations, it can be withdrawn from service and condemned. This is a process of normal condemnation and not underage condemnation and can be done with the approval of the Chief Workshop Manager/concerned HoD in HQrs.

1009. Underage condemnation:

Condemnation of stock earlier than the last POH ahead of codal life is considered as “under-aged” condemnation and should be done with necessary finance concurrence. Once it is ascertained that the condition of the stock is very bad and cannot be made fit for traffic use, the workshop/division shall initiate condemnation process. The process for condemnation shall be as follows:

a. Preparation of M268 form.
b. Preparation of condition report on the basis of the inspection by Dy CME/workshops or Sr.DME/ Sr. DEE as the case may be and his recommendation.
c. Financial justification by DCF method which will be made comparing two alternatives viz.,(i) induction of new coach/wagon after condemnation of old stock (ii) reconditioning of old stock in such a way codal life is restored.
d. While preparing the DCF chart to analyze the financial justification for rehabilitation/condemnation of under aged wagons, the scrap value of excluded fittings should not be taken into account.

The proposal for condemnation shall be approved by concerned HoD in HQs in the case of proposals from divisions or by CWE in case of proposals from workshops. Thereafter the proposals shall be forwarded to Associate finance for concurrence, who will check if conditions a to d above were fulfilled. Thereafter condemnation will be sanctioned by the competent authority as in para 1012.

1010. Overaged stock on line:

Rolling stock continued on line beyond codal life for any type of service with the required authority is considered as “overaged stock”.

1011. Accident Damaged Rolling Stock:

Rolling stock involved in accidents must be surveyed and if found irreparable or uneconomical to repair may be condemned at the site and auctioned on “as is where is” basis. Onus for this lies with the Railway where the accident took place, who should advise the Zonal Railway who owns the stock with a copy to the Railway Board, so that the stock is taken off the books and the replacement planned. Since mutilated stock lying on the side of the track presents a gory sight to the passengers from trains passing through the site, it should be cleared expeditiously from the site by taking action for Surveying and auctioning expeditiously, duly taking into account the condition of the stock, accessibility of the site and the equipment required for removal.

The stock must be cleared away from the site of moving trains/passengers as soon as possible. If problems are encountered in auction sale the stock should be pulled away from the track with suitable machines. If auctioned, auction/tender conditions should specify stiff penalties for not clearing in time and incentives for clearing ahead of time.

1012. Officers authorized to condemn Rolling stock:

Authority for condemnation of Rolling stock				
		Inspection by	Finance vetting	Approval
Normal *Condemnation either during last POH before the expiry of codal life or thereafter*	Diesel/ Electric Locos/ Motor coaches of EMUs or DMUs	CWMs	Yes	CME/ CEE
	Mainline Coaches and trailer coaches	CWMs	No	CME/ CEE
	Wagons	CWMs	No	CRSE/ CWE
Under- aged *Condemnation before the last POH is due during codal life – inside shop or on open line on (a) condition basis or (b) accident damaged*				
	Diesel/ Electric Locos/ Motor coaches of EMUs or DMUs	Joint inspection by 3 HODs (Technical, traffic and Finance)	Yes	Railway Board
	Mainline Coaches and trailer coaches	(a)CWM (on condition basis) or (b) Sr DME/ Sr DEE (For accident damaged)	Yes	CME/ CEE
	Wagons	(a)CWM (on condition basis) or (b) Sr DME (For accident damaged)	Yes	CRSE/ CWE

In the case of accident damaged rolling stock the proposal should be accompanied by

a. Action taken against delinquent staff including punishment imposed.
b. Copy of the police report wherever required.

c. In cases of locos involved in accidents over another Railway, action should be taken as laid down in Para 1009. The credit for released materials would accrue to the owning railway.
d. Expeditious condemnation would help in the capital-at-charge being written off and avoidance of payment of dividend thereon.

1013. Once the condemnation proposal is approved by the competent authority as per the above chart, deletion advice will be issued by the Rolling Stock section of CME's office. After receipt of the deletion advice, the division/workshop shall prepare DS-8 and arrange to dispose of the stock through Stores Department Excluded components shall be collected and accounted for in the depot. The list of excluded components for the concerned stock shall be approved by CME in case such approved list from Railway Board is not available.

For close monitoring and effective control on underage condemnation of wagons, all Zonal railways should furnish a monthly report to Railway Board. Transfer of credit to the owning railway shall be made by the railway condemning and disposing of the Rolling Stock within the same financial year.

1014. Sale of Rolling Stock:

The transfer of Rolling Stock and assets other than the Rolling Stock from one zonal railway to another shall be dealt with in terms of Para 781 and 782 of Indian Railway Finance Code Vol. 1. The procedure for condemnation of heritage/vintage rolling stock has been discussed in Chapter-8.

But for exceptional circumstances, phased out stock may be sold on "as is where is" basis without holding back excluded items by Railways as in the case of rolling sock in active use, in order to realize full scrap value, as per the rules laid down in Para 782 of the Indian Railway Finance Code Vol. 1.

1015. Scope of the Rolling Stock Programme

The Rolling Stock Programme is primarily meant to cater for acquiring new rolling stock such as locos, coaches, wagons, cranes tower wagons, track machines, Break Down Cranes etc., and to midlife rehabilitation/modernization of rolling stock. It is necessary that the Railways include in the RSP only such items coming within the scope of RSP and not any piecemeal modernization/conversion of the stock normally chargeable to revenue. Conversions that do not affect the category of the rolling stock or class should also be excluded from the purview of RSP

This programme also caters to major modifications to be carried out on rolling stock which primarily changes their class, i.e. conversion of coaches into Accident Relief Trains, conversion of electric Loco excitrons to silicon rectifiers etc. and those modifications which are of improvement nature, chargeable to Development Railway Fund.

It is necessary that the Railways ensure that only such items coming within the scope of RSP which are correctly chargeable to RSP as mentioned above, are proposed for inclusion in the Rolling Stock Programme. Items which are of normal repair nature and do not involve any modernization/conversion of the stock and normally chargeable to Revenue and those which do not affect the category of the rolling stock or class should not be proposed under RSP.

RSP may include significant upgrades of rolling stock on a programmed basis including items of mid-life rehabilitation. Some activities like re-cabling of locos, change of wheels for locos, re-harnessing, provision of equipment like new couplers, re-winding of armatures, not falling within the ambit of capital spares, should normally be carried out by the Railway under a special Revenue Estimate as and when necessary. The overall guide as to whether an RSP spare item should be chargeable to capital or revenue is also available in Finance code vol 1 chapter 7.

1016. Capital / Unit exchange spares.

Certain items of spares for diesel locos, diesel rail cars, electric locos, Break Down Cranes and EMU/MEMU stock which are not in the nature of consumable stores but intended to accelerate repairs are identified as capital/unit exchange spares chargeable to Capital directly. In view of the increase in the cost of locomotives in the past few years, obsolescence in the current list of items of capital/unit exchange spares, improvement in the degree of reliability of major components/assembly kept as spares, utility of each component by itself or as a part of a major assembly, lead time for the procurement & nature of the item and whether kept as stock items or not, the monetary limit for capitalization of spares which are procured through IRSP is fixed at a certain level by Railway Board, which shall be revised periodically according to an appropriate formula, taking inflation into account. Low-cost unit exchange Spares with unit cost below such monetory limit is not included in the proposal for IRSP, but procured through Stock/Non-stock indents allocating the expenditure to Revenue.

Lists of capital/unit exchange spares along with their percentage on the holding as well as the provision/ share between workshops and sheds to be maintained, shall be advised by Railway Board periodically. The list should be for restricted number of items only, which are very critical rolling stock sub-assemblies, having longer lead for procurement and the repair practice in workshops is cumbersome/ time consuming, affecting the cycle time of repair of rolling stock in the workshops.

Note: While Items with unit cost below the threshold monetory limit stipulated by Railway Board may not be generally included as capital spare in the RSP, same does not imply that the items costing above the threshold monetory limit are to be treated only as Capital Spares same can be allowed to be purchased under revenue, subject to exigencies and emergent situations.

1017. Estimation of requirements- New acquisitions.

Annual requirements shall be worked out for each type of rolling stock deriving the same as shown below:

a. No available on line during previous year = A
b. Additional requirements due to increase in traffic = B
c. Reductions due to change in traffic pattern = C
d. Total traffic requirements of each type of stock = A+B-C
e. No condemned or likely to be phased out in the previous year = E
f. Accident damaged beyond rehabilitation = F
g. Likely population on line at the beginning of the year = A-E-F
h. Provisions required in the RSP = B-C+E+F

Apart from the budgeting year, requirements shall also be worked out (with a 30% error margin) for next two consecutive years for each type of Locomotive, Coach and Wagon and included in the Rolling Stock Program.

1018. Itemized Rolling Stock Program (IRSP):

The itemized Rolling Stock Programme should be prepared by the zonal Railways and PUs in two Formats:

- for Works already sanctioned by the Board (Programmed Deliveries) with any changes in numbers or unit rates and

- for New Works (New Acquisitions) proposed on the premise that the proposals are not global in nature and pertain to the specific local requirement of the particular zone.

IRSP is submitted on a similar pattern as the Works Programme, separately for Programmed Deliveries and new Acquisitions. The itemized programme should reach the Railway Board by 15 September of the year, which precedes the year to which the programme relates. The IRSP proposals in the above format are consolidated and examined by various directorates, moderated or modified. These are then sent for finance concurrence and approval of the C.A. The approved proposals are returned to PU Directorate for compilation and data entry for the Pink Book.

1019. Machinery and Plant (M&P) Program:

Machinery and Plants are expensive assets both to acquire and maintain. Hence, it is important that investments in M&P shall be made thoughtfully. Railways and Production Units (PUs) must submit their consolidated Preliminary M&P Programme for items costing more than Rs. 50 lakhs each & above each for Zonal Railways and Rs. 50 lakhs & above each for Production Units and all Road vehicles (4 wheeler) irrespective of their cost through the M&P Portal maintained by the Railway Board.

For items costing up to Rs. 50 lakhs each (excluding Road vehicles 4 wheeler irrespective of their cost) can be sanctioned by Zonal Railway under GM's Powers. The monetary limits for submission of proposals to RB are revised from time to time as per the latest delegation of powers.

1020. Nomenclature of M&P and T&P:

For the purpose of this code, a machine that remains stationary and immovable (Job comes to machine and not vice versa) is a Machinery and Plant (M & P) item. In addition, vehicles such as Staff cars, Lorries, Diesel Utility Vehicles, Trucks, Buses, Ambulances, Prisoner Vans, Road Mobile Cranes, Front End Loader/JCB Cranes fork lift trucks etc. are also termed as M&P items. As against this, the following are termed as T&P items:

- All movable machines (except those mentioned above) like pneumatic drills, power saws, tools and plants(such as jigs and fixtures)
- Small tools and equipments required for the maintenance of machines
- All measuring instruments / Gauges (irrespective of their unit cost) and
- For the upkeep of the office such as furniture, computers, printers etc.

Item costing up to Rs. 10 lakh referred as T&P and chargeable to revenue.

1021. Codal Life of Machines:

Codal life of machines is given in annexure 10.2, which is subject to modification from time to time, as amended in Accounts code. The Codal life however is merely an average economic life, assumed for the specific purpose of making long term planning for replacements. Normally condemnation should be on age and condition basis, the latter being a derivative of hours of usage (double or single shift), load factor, maintenance standards etc. Proposing one-to-one replacements should be avoided, unless:

a. The requirements of the proposer have remained unchanged since the original equipment was acquired and

b. Machines of higher productivity and reliability cannot be economically justified.
c. Proposing one-to-one replacements of their categories under DF/DRF, should be avoided. M&P, machine tools etc should be procured in accordance to the requirement of the unit keeping in view the change of pattern of maintenance due to technological upgradation of rolling stock.

1022. Creation of new assets:

M&P Proposals can be initiated under DRF, CAPITAL and DF allocations. Proposals on CAPITAL (additional) account should be supported with financial justification and Rate of Return (in accordance with Para 201 and 202 of Chapter II Indian Railway Financial Code Volume-I) duly vetted by Associate Finance. Except for machines required on safety considerations, *Rate of Return* must be clearly indicated duly quantifying benefits such as reduction in cycle time, improved quality and reliability, reduction in monotony etc and indicated in the proposal.

M&P Proposals chargeable to DF should be to a minimum level, restricted to items like medical/safety equipment required for ART/ARME

Items proposed under GM's Out of turn sanctions should not be included in the regular M&P Programme for Board's sanction.

1023. Replacement proposals:

The following details must be clearly spelt out in the proposal for inclusion of a machine in M&P Programme on replacement (DRF) account:

a. Codal life of the machine and actual years worked along with the number of shifts per day in which the machine is working in order to compare the same with the life stated in code for double shift working.
b. Intensity of usage and load factor. (Since replacement of a machine is planned after it has served a number of years, it is sometimes difficult to comment on the intensity of usage in the bygone years; All future machines should, as far as possible, therefore be procured with *clock embedded chips* and the life of machines expressed in hours of usage; see footnote to Annexure 10.2)
c. Jobs undertaken and the workload for the machine.
d. If reconditioning of the existing machine or outsourcing was considered and the outcome.
e. Total number of similar machines in the load-centre and shortfall in capacity.
f. Economics of acquiring one or two machines to replace a larger set.
g. Replacement proposed should be substantially for same function and differences, if any, should be clearly brought out with reasons.
h. The cost of replacement may be compared with original equipment and reason for any abnormal increase explained.
i. Procurement should be completed within two/three Years. As such indenting specification should invariably accompany the proposals.
j. Proposals for Road vehicles should accompany survey committee report comprising the condition of the vehicle, expenditure incurred, mileage and recommendation.

Reconditioning of M&P:- There are situations where partial/ full reconditioning of machine is financially more viable in comparison to its condemnation and replacement. This aspect should be examined to decide between replacement and reconditioning.

1024. Utilization of Workshop Space and Layout considerations:

The utilization of an M&P is defined as $\frac{Actual\ Production\ rate}{Available\ capacity}$ or $\frac{Time\ used\ for\ production}{Available\ time}$. For M&P where the arrival rate of load is not deterministic, utilization rate over 70% may lead to extended waiting times. This aspect should be kept in mind while planning of new M&P on either additional or replacement account. While planning for M&P, simultaneous planning for space for storages should also be taken into consideration. The overall Equipment Effectiveness (OEE) which is a measure of the percentage of manufacturing time that is truly effective, must be specified for evaluating the performance characteristics of a machine. New M&P may be procured to conform to Industry 4.0 standards. Training on new M&P should include exposure to Industry 4.0 so that the features available under Industry 4.0 are suitably exploited.

Over aged machines still being retained in the workshops and repair sheds need to be critically examined for their continued retention, so that floor space is effectively utilized, especially under cranes. M&Ps more than 20 years old should be retained only after a clear certification from the concerned CWM or Senior DME in-charge of shed that sufficient load exists for the machine.

There should be a master plan for every workshop and repair shed pinpointing locations of the machine to be procured, in additional/replacement account in future. As and when new machines are acquired, these should straight away get installed according to this master plan.

For inclusion of M&P items required for Carriage Maintenance Depots, the classification of depots into Minor, Medium and Major depots should be kept in view as stated in the Maintenance Manual for BG Coaches classification of depots

1025. Plan Head "41"

Plan head "41" under Demand No: 16 covers M&P items sanctioned under Machinery & Plant Programme or under GM's powers. The CME is the Nodal officer in-charge for Budget allotments and utilization of funds under this Plan Head.

1026. Works in Progress (WIP) :

All the M & P Sanctioned and for which vetted indents have been submitted to the various procurement organizations but the work has not yet been completed or closed should be included in the Works In Progress (WIP) statement giving clear identification about the status of procurement. In the absence of any clear indication of procurement status, no funds should be allotted for the work.

A summary should also be placed on top of the statement giving totals in three groups, the first for machines costing above Rs.2.50 crores, the second for machines costing below Rs.2.50 crores and the third for machines sanctioned under General Manager's powers of every financial year.

Total funds projection under Plan Head 41 should be advised to Railway Board in the *"Works in Progress"* statement. The list of items sanctioned by GM, however, need not be sent to Board. The WIP statement should be sent to Board by 15th December every year. The funds projection should be entered through M&P portal.

Status of procurement vis-a-vis the details of incurred expenditure for all sanctioned M&P items for which procurement is under progress should be updated by Zonal Railways/PUs on the M&P Portal regularly or at least once in a month.

1027. Monetary Ceiling for Preliminary M & P Programme:

The amount indicated as the ceiling for submission of M & P Proposals shall be distributed among various departments by the CME as the Nodal Officer. This distribution should be based on the average distribution made and the spending rate of each department in previous three years and corresponding sanction obtained from the Railway Board. The overall ceiling should, however, be followed strictly.

1028. Format and Presentation of Proposals:

Estimated costs of the machines indicated in the proposals should be present day realistic costs and should include cost of essential accessories. The present day cost should be adopted from the latest compendium issued by COFMOW and also available in M&P Portal mentioned in para 1021 above. Costs for other machines may be obtained through market surveys.

The description of the machine generated by portal (from COFMOW compendium) should be referred and corrected immediately during creation of the proposal. The description should be suitable for use in Pink Book. For non-compendium items the specification and supporting budgetary quotations must be furnished by the Railways. All other costs such as Freight, Insurance, Installation and Commissioning, D & G Charges and Customs Duty wherever applicable, must be furnished in the proposal. Allocation (Chargeable Head) should be carefully examined and included on each Proposal.

Preliminary M & P Programme by the Railways should be submitted every year generally by October and after which the portal would disallow any subsequent submissions. PCMEs may arrange that proposals for their Railways are submitted online only through M&P Portal, duly prioritized. Preliminary M&P Programme for all departments will be discussed with the Railways in December/January of every year. The actual dates for the meeting will be advised to the Railways by Railway Board.

1028A. M&P Proposals under Umbrella work:

Umbrella work under PH-41 (Machinery & Plant) was introduced in 2018-19 for keeping a provision for M&P of urgent nature required by Zonal Railways/PUs. M&P items required for use of emergent nature can be sanctioned under an Umbrella. Policy guidelines for the execution of Umbrella Works under PH-41 are given in Railway Board letter No. 2018/M(M&P)/1063/UW dated 20/08/2018. General Managers of Zonal Railways/PUs can sanction M&P proposals under Umbrella Work costing below Rs. 50 lakh individually. Proposals costing above Rs. 50 lakh individually may be sent to Board's office for approval of Board. The total sanctions under Umbrella Work should be kept within the limit as communicated to individual Railway.

1029. Budgeting for M&P:

In case of machines sanctioned through Machinery & Plant Programme, sanctions are normally valid for five years and for those machines sanctioned under GM's Out of Turn only three years. If in any case, a machine is still under the process of procurement and funds need to be projected in the consecutive budgets, re-validation of sanction is required. Based on the Railway's projection in the Works-In-Progress, Budget Grant is allotted in the Pink Book of that year. This Budget Grant (Pink Book) is released in the Railway Budget and needs parliament approval. In the Pink Book, Budget Grant of not only Programmed deliveries but also for New Acquisition being sanctioned by Railway Board for that financial year is indicated. The machine-wise allotment will be made for items costing more than Rs. 2.5 crores each with a respective Pink Book Number. For items costing less

than Rs. 2.5 crores each and those sanctioned under GM's Out of Turn powers, the grants are indicated under a single Pink Book number with allocation-wise breakup separately for Programmed deliveries and New Acquisitions.

On receipt of the above Pink Book, individual item-wise re-distribution of the allotment made under works costing less than Rs. 2.5 crores each for both Programmed deliveries and New Acquisition will be made by the nodal officer, based on the requirement of all departments projected while framing the Works-In-Progress statement. This will again get itemized in the List of Approved Works with a unique number for individual items (viz.) LAW number. The allocation-wise allotment of Budget Grant will be advised to all the departments stating that the allotment made should be utilized fully as planned and in case any additional grants required will be taken care of in Budgetary Reviews.

1030. Review of M&Ps under procurement

Keeping in view the arrears of throw-forward of old sanctions, Railways should critically review all items of M & P sanctioned in previous M & P Programs, which have not been procured so far. The results of the review should be forwarded to the Board. In this review, Railways should not only indicate their recommendation as to whether the sanction to be continued or not duly furnishing detailed current status of procurement.

Separate account should be maintained for M & P items procured under GM's Powers. If an item sanctioned by GM is not procured within three years, the same should be reviewed and processed for revalidation of sanction.

1031. Category of M&Ps

There are four categories of machines procured under the M&P Program.

a. Category A: These are sophisticated and unique machines requiring extensive market survey and with specialized knowledge of the world of machine tools. They will be procured by COFMOW. CNC machines, other critical machine/ machine tools, T&P, SPM with hybrid electronic circuits and technologies should be procured only for mass production of the items/jobs in batches . For other purpose N.C/Digital display type is sufficient & easy to maintain and repair.

b. Category B: Machines like EOT cranes, welding machines, compressors, Road Mobile Cranes, Diesel Gensets etc., that figure frequently in the M&P Programs of the railways should be carefully procured, duly eliminating unreliable vendors from a highly competitive market. In this case, when procurement is bulked, the volumes involved afford a scale economy. As the nodal procurement agency, COFMOW should consider following options, apart from the normal procurement option:

- Entering into Running/Rate Contracts for 2 to 3 years with necessary Price Variation Clause and place orders against the requirements of Zonal Railways / PUs.
- In case of machines where it is becoming difficult to establish reliable suppliers, COFMOW may also examine the ILM option (Install, maintain and lease), which can be availed by the consignee Railways or PUs, in the same manner as construction companies hire cranes, front end loaders and other machines on long term basis.

c. Category C: Special machines of unique and sophisticated nature for which the domain knowledge may not exist with COFMOW and where the requirements cannot be bulked, come under this category. These can be bought by the user railways, after seeking dispensation from COFMOW. Such dispensation should be sought from COFMOW well in time, so that procurement is not delayed.

d. Category D: Other machines of smaller value below a certain limit barring certain excluded items, as stipulated by RB, as well as medical equipment whose procurement is best left to the user Railway, unless it is felt that such decentralization will compromise on quality or decelerate procurement.

When a machine is proposed in the M&P Program, the user should indicate the category against each machine proposed along with his preference regarding the mode of procurement. In all the categories of M&Ps, except category D, dispensation from COFMOW is essential for Zonal Railways to arrange procurement by themselves.

S.No	Codal life of machines Railway Board's letter No. 2022/ACII/2/1, Dated 06.06.2022 Class of assets	Average Life in Yrs
1.	Machine Tools like Lathes, Planners, Drilling, Boring and Milling machines etc.	20
2.	High Precision and special purpose machine like wheel lathes etc.	20
3.	Tool Room and Testing Laboratory equipment	15
4.	Foundry and Forge Equipment	20
5.	Heat Treatment Equipment	20
6.	Cranes – E.O.T	36
7.	General purpose light machinery e.g. band saws, floor grinder etc.	15
8.	Air compressor	20
9.	Track Maintenance equipment	20
a	Tamping, Ballast cleaning & handling, DST and relaying machines	20
b	Material handling machines	25
c	Rail Grinding Machines	15
10.	Station machinery e.g. weighing machines etc.	15
11.	Miscellaneous machinery and equipment for hospital, offices etc.	10
12.	Electronic-In-Motion Weigh Bridges	12
13.	Wheel Impact Load detector (WILD)	12
14.	Diesel Pumps	15
15.	Welding equipment including diesel welding sets	10
16.		
17.	Material handling equipment like FLT, Lister trucks etc.,	10
18.	Traversers	25
19.	Fuel station dispensation equipment	10
20.	Bulldozers	20
21.	Motor Boats	15
22.	Hydraulic re-railing equipment	16
23.	Staff cars including Jeeps	07
24.	Light Motor vehicles	10 years for Diesel and 15 years for petrol as per norms
25.	Heavy Motor vehicles	
26.	Tractors	

1032. Cost and Time overruns:

Cost overruns occur mostly due to delays in decision making and procurement. The following steps should be taken to reduce the lead time and accelerate spending under this plan head.

a. CMEs should generate a 10 year Master Plan for replacement on age-cum-condition basis – indicating machines to be replaced on chronological basis for all departments.
b. Proposals to be carefully thought out and fine tuned. Once a machine is sanctioned, there should be no road blocks like essentiality certificate etc.
c. While advising Budget sanctions for new M&Ps, both in Plan Head 41 and 42, the category of the item (Para above refers) as decided is clearly indicated, so that procurement action by the concerned agency is organized in time
d. Once the Budget is approved, procurement action for Category A items should be instantly initiated by COFMOW, without any need for long waits in processing of indents by the users. Minor clarifications from the Zonal Railways for site details or other technical requirements can be obtained by COFMOW, in case they are necessary, through the respective nodal officers of the user Railways.
e. Debits must be passed on to the Railways or PUs, after the machines are commissioned. For this purpose COFMOW should be ------ sanctioned a suspense fund as the “Capital at charge”.
f. Category D items and category C items wherein dispensation is received from COFMOW should be directly procured by the concerned user Railway or PU.
g. All M&P indents should be accompanied by a site drawing, keeping it clear at the time of indenting -- except in rare and extraordinary circumstances.
h. Excess over estimates: COFMOW should make a compendium of rates for all categories of machines, duly including taxes and duties. This information shall be available in COFMOW’s interactive portal (www.irmnp.com), to enable the users to indicate realistic estimates at the time of initiating the proposals, duly avoiding delays in getting sanctions for Excess over Estimates. Irrespective of the value, excess over estimates for category A items should be sanctioned by Board and for other items by the General Manager. SOP should be modified accordingly.
i. The Tender (AT) documents should
    1. Have clearly phrased the warranty clause, plugging loopholes.
    2. Spell out conditions for the terms “Commissioning Certificate” and “Proving test certificate” unambiguously, binding not only the consignor but also the consignee.

In order to minimize the delays caused by mismatching creation of various items of an Industrial facility, either through plan head 41 or through other related plan heads, the following execution methodology must be considered.

a. Greenfield projects should preferably be executed through turn-key route. Components of a project can be grouped into 2 or more sub-projects so that each group in itself is a complete facility.
b. Likewise facilities of setting up an assembly line must also be preferably executed through turn-key route.
c. All individual M&P items requiring associated facilities such as extensive foundations, sheds, track linking, substantial power supply

etc. must be executed through turn-key route, as spelt out in para 318 & para 426 stores code and in “Rules for entering into supply contract”.

d. In Brownfield projects also where the area has to be vacated for installing new facilities and M&P may also be executed on turn-key basis.

1033. End-loaded expenditure booking:

In most other type of projects, there is steady outflow of cash as the project advances, and the trend of expenditure is uniform. In case of M&P procurements the booking starts only after a machine is dispatched and hence the expenditure is end- loaded. With an average lead time of 3 years, the value of W.I.P items is often therefore more than 3 times the budget sanctions. Delays in commissioning and issue of PTC can sometimes choke expenditure-booking even more than procurement.

1034. Budgetary Reviews:

All the Budgetary reviews will be forwarded by the departments to CME, who in turn will critically review these projections as well as the requirement of his own department and submit to Zonal Accounts duly giving reasons for allocation-wise Variations with Budget Grant. The Zonal Accounts will forward the same to Railway Board. The various budgetary reviews, which are covered in detail in the Engineering Code, are as follows:

a. **August Review (AR):** In this statement, funds required for the financial year will be projected item-wise in comparison with Budget grant. This statement due by in August gives a trend on requirement of funds.

b. **Revised Estimate (RE):** Revised Estimates should be prepared carefully and machine-wise requirement should be realistically projected, taking into account the likely supply date. In other words, projections can be made only for those items which are expected to be received / commissioned before 31st of March. RE is consolidated in the month of November, and gives a half-yearly trend on utilization of the allotted Budget Grant. Based on the Railway’s projection, in case of any excess / surrender, the Revised Grants are allotted by Board, which will be the target for utilization for that financial year.

c. **Final Modification (FM):** The Final Modification statement will be consolidated in the month of January every year and this will give a still more realistic utilization of the funds allotted and based on this statement “Final Grant” will be allotted to the Railways. FM is projected in such a way that it will almost correspond to the *actuals* booked for that Year with little or no variation.

d. **Appropriation accounts:** There are two statements to be submitted indicating

Column I – Variation between Budget Grant and Final Grant.
Column IV – Variation between Final Grant and Actuals.

1035. Machine maintenance and Annual Maintenance Contracts (AMCs)

All machines should be procured with manufacturer’s recommendations of the maintenance schedules along with spares to cover the requirement of initial years of operation. Maintenance of machines should be carried out strictly in line with these recommendations. In case of sophisticated and critical machines, where in the opinion of the concerned PHOD, in house maintenance will be detrimental, AMCs may be entered into. Even at the procurement stage, bidders may be asked to indicate the AMC charges so that it forms part of the tender evaluation. Guidelines for typical AMC charges for various types of M&Ps may be issued by

COFMOW so that there are no delays in finalizing the tender at the field levels. Powers for machine repairs and AMC should be decentralized to the field level with necessary checklists for evaluation.

1036. Disposal of condemned and surplus machines:

The following categories of machines should be disposed off under DS8 and credit obtained expeditiously duly advising the nodal officer.

a. Machines condemned and replaced: When a machine is replaced and the new asset acquired, the old machine must be withdrawn from service within six months of commissioning of the new machine. This overlap is provided for the new machine to run in and stabilize. No replaced machine should be kept in service. If sufficient justification for retention is available Railway Board's approval has to be obtained for the same. But it is seen that only in rare cases and for a temporary period such approvals are accorded.
b. Machines condemned and replacements not required.
c. Surplus machines: A machine becomes surplus due to closure / change in activity or reduction in workload. Surplus machines are identified at regular intervals and offered to other Railways/ Production units. Such machines are transferred to them if demand exists. Similarly the list of surplus machines offered by other Railways / Production Units are scrutinized and if found suitable to our requirement, action is taken to transfer such machines to where needed.

Disposal of these machines can be on 'AS IS WHERE IS' condition or by dispatch to stores depot as 'SCRAP', depending on the value it will fetch. Efforts must be made to give the machine with all its parts in working condition so as to fetch a better offer in the auction.

1037. Maintenance of asset Register:

On Successful commissioning of a new machine, it is included in the Asset Register of M&P by allotting an Unified 9-digit Code Number (at Zonal level by the user department).

a. The first two digits identify the units – LW/PER, MAS DIV etc.
b. The next two digits indicate Sub Location – CR (shop) AJJ (Division) etc.
c. The next two digits indicate the Machine group – Like Wheel Lathe, AJTB Lathe, Crane etc.
d. The next three digits give the individual machine number.

No machine shall be kept in service without Unified Code Number, prominently painted on it for easy identification. Likewise, when a machine is disposed off or transferred to other Railway, it must be removed from the Asset register of the parent Railway.

Works Programme – Plan Head 42: Workshops & Sheds

1038. Proposals under Plan Head 42

As said in Para 1103, investments for projects on manufacture and maintenance of moving assets of the railways are created under "*Demand16 - Plan Head 42–Workshops and Sheds",* processing these proposals through Works Programs. CME is the nodal officer for all proposals under Plan Head 42 from various departments. The CME will advise Chief Engineer of the Railway for further processing as laid down in the Indian Railway Code of Engineering Department. The progress of works under Plan Head 42 of all departments should also be

advised to CME as the responsibility on Budget control and utilization of funds rests with CME.

1039. Proposals under Plan Head 42 should include requirements of Production Units, workshops, Loco sheds, carriage and wagon depots and store depots encompassing activities of all departments in them. (Modernisation of a stores depot inside a shop or shed is a case in point). There are many workshops and depots with structures and layouts dating back to 150 years and conditions of working there are not exactly conducive to efficiency. Existing facilities need to be replaced due to aging of the infrastructure and wear and tear of assets. In some cases, additional facilities are created to cope with the increase in traffic, technology-driven demands or to maintain new trains etc., In deference to any of the goals enumerated in Para 1002, proposals may be conceived at the corporate level or initiated by the Divisions or the zones to meet their shortfalls, as said in Para 1001.

1040. Standards for Maintenance Facilities

In order to cut short the elaborate planning process and to have uniformity, master plans and list of facilities have been drawn up by CAMTECH/RDSO for the following:

a. Type plans of diesel sheds for homing 20, 50, 100, 200 diesel locomotives.
b. Type plans for electric loco sheds for homing 50, 100, 150, 200 & 250 electric locomotives.
c. CAMTECH Standards for the maintenance infrastructure for coaching pit-lines.
d. CAMTECH type plans for wagon ROH depots.
e. CAMTECH booklet on Standardization of facilities for Platforms & Yards for turn-round examination of Coaching Trains.
f. Standards for Premium rake examination facilities for wagons in the yard.

These may be borne in mind as broad guidelines while initiating proposals.

1041: Expansion Programs to meet capacity shortfalls:

Whenever a demand for a particular product or service (like new coaches or wagon POH) keeps soaring year after year, it may appear logical to expand and build capacity ahead of the demand. But in this transient world what goes up always comes down sometimes far sooner and it is necessary to guard against “Capacity overkill”. And unlike assets created under plan heads 21 and 41, buildings and structures that come up under Plan head 42 are *immovable* assets and should be created with abundant caution. The following litmus tests should be applied before proposing any expansion program:

a. Whether the ascending requirement is transient?
b. Is the demand likely to get nullified by technology advances?
c. Velocity of process reduces scale at which permanent assets are needed. If the need for expansion is inevitable, can it be done without adding permanent structures or permanent additions to staff apart from attritions? Whether the processes can be expedited so as to improve the velocity of manufacture or POH of the rolling stock or its sub assemblies, thereby requiring less space for the increased outturn?
d. If additional structures are indeed inevitable, and if trends in demand is not clearly predictable, can a beginning be made with temporary structures or outsourcing part of the activity to outside units or other workshops and using up the released space for the core activities?

1042. Checklist for proposals under Plan head 42:

a. Ideal location for the facility is identified in a neat site Plan.
b. The old buildings and structures that should be demolished on completion of the works are identified and the "floor space index" (i.e. ratio of built up area to total space) is kept as low as possible.
c. Is optimum use of vertical space has been made (particularly in high roof sheds), instead of cluttering the working area?
d. The proposal includes landscaping, recycling, additional trees etc. and that environmental safeguards are built in.
e. Where Open Line Yard is involved, the proposed facility forms part of the Master Plan for the Yard.
f. Extras like Excise duty, Cess, packing and forwarding, VAT, Freight, D&G charges etc. are added to the basic rates. Excise duty and VAT are major cost- boosters, non- inclusion of which may lead to revision of estimate and delays in procurement/execution.
g. Machine accessories, Tooling, additional attachments etc. are provided for.
h. Power requirements properly assessed to plan adequate power supply arrangements.
i. Cost of civil, electrical and S&T portion of works obtained from the concerned branches.
j. For Mechanical portion of work (mainly M&P), obtain latest Budgetary offers from reputed firms/OEMs. As said in Para 1131, desirable categorization of the M&P must be indicated in the proposal.
k. Clearance obtained from all concerned departments (for open line works, for example from traffic.
l. The proposal is vetted by Associate Finance and approved by CA.
m. Individual proposals received from different streams i.e. Carriage and Wagon, Workshop and Loco sheds, Distributed Power Rolling Stock Shed(DPRS Shed) and other departments are prioritized and sent to CPDE with cost estimates for compilation and discussion in the Preliminary meeting conducted by GM. Ceiling limits are for guidance only and not a limiting factor in exceptional cases for an absolutely essential proposal.

1043. Head of allocation:

Chapter 6 of the Engineering code elaborates on the various stages of investment planning, Works Program and Budgeting. Broadly, expenditure for works for mechanical department is booked under different heads as shown below:

A. Allocation: Capital

Works that yield a financial return (RoR) of 14% and above are charged under CAP. Since funds are borrowed from open market through IRFC, utmost care has to be taken to ensure the financial yield (a minimum of 14%) is obtained. Chapter II of the IRFC gives detailed instructions regarding financial appraisal of Projects, for typical requirements as listed below.

a. Increase in POH of AC/Non AC coaches/ Wagons in workshops.
b. Increase in ROH outturn of wagon depots.
c. Increase of homing capacity in loco sheds.
d. A new C&W depot/Loco Shed or Production Unit.

B. Allocation: DRF

Works initiated for replacing old assets after their codal life are charged against DRF. Para F202 of the IRFC indicates cases where no financial justification is needed. Typical requirements are

a. Repair / Replacement of Covered shed.
b. Replacement of Floors/Roofing.
c. Renewal of Old Pit line.

C. Allocation: Development fund (DF)

Works which are for developing/ augmenting of some existing facilities are proposed under DF. There are four sub heads under DF. Mechanical Department's proposals mainly fall under DF3. Since a passenger spends most of the journey time inside a coach, creation of amenities for passengers in coach interiors under Passenger amenity works under Plan Head-53 is also an option that is selectively exercised where necessary. Some of the typical works processed under other Plan Heads are as below

For Passenger Amenity Works	Extension of platform Train Examination and Coach watering arrangement, OHT, GLR etc.(under Plan Head-53).
For Staff Amenity Works	Staff toilets, Staff Canteen, Staff rest room, Holiday homes etc. (under Plan Head-52).
For Operational Improvement Works	Development works for Train examination arising out of Traffic yard Remodeling/operational changes (under Plan Head 16).
For Train Safety Related Works	Testing facilities in CMT labs (under Safety Plan heads)

Allocation: DF3 is typically used for augmentation/Modification of Maintenance facilities to suit new type of Rolling stock, if not justifiable under capital

1044. Powers for sanction and compilation of Approved Works

Powers for sanction of works are given below. These limits are periodically revised by Board.

Works Costing	Sanctioning Authority	Remarks
Rs.5 cr & above	Rly Board	Board's prior approval necessary
Rs.1 cr& above but upto Rs.5 cr	Rly Board	
Upto Rs.1 cr	GM	
uptoRs 30 lakhs for Pass amenity works and Rs 10 lacks in other Plan Heads	DRM #	

Sanctioned works are compiled as below:

Works Costing	Compiled in
Rs 2.5 cr & above	PINK BOOK
Rs 10 lakhs** & above, but upto Rs. 2.5 cr	LAW BOOK

** **Different for different plan heads.**

CWMs (in SAG) of Workshop are given Financial as well as Administrative power at par with DRMs in Open line so far as areas within the Jurisdiction of CWM are concerned

1045. Work Register & Reconciliation

Soon after the closure of the month's account, expenditure booked under various works need to be reconciled with the registers maintained in the respective Accounts office (Construction Accounts, Workshops& stores Accounts, Accounts offices of Divisions etc). Proper reconciliation is essential to ensure accountal of all expenditure pertaining to that work. Final reconciliation is a pre-requisite for drawal of part completion / general completion reports.

1046. Direction and General Charges.

Expenditure for Temporary Establishments/other than Temporary Establishment incurred for works under Demand 16 is borne as D&G charges, yardsticks for which are laid out in various policy circulars issued from time to time by the Efficiency and Research/ Mechanical Directorates of the Railway Board.

In case of works under Plan Heads 21, 41 and 42, the general formula of providing D&G charges as a proportion of the year's outlay gets modified due to the following reasons:

a. In order to provide for proper application of mind at the crucial Project planning/formulation stage, the temporary establishment has to be created in the User Department as a proportion of the total cost of the work and based on the worth of charge.
b. In case of Machinery and Plant proposed under PH41 or PH42, the expenditure is *entirely end-loaded*, while the ground work has to be done in the initial year or the early phases, when there will be zero expenditure. Conversely often expenditure is booked only after the machine is manufactured and tested when the role of the Planning engineer is minimal.

It is therefore necessary that appropriate D&G charges for user Department is stipulated as a proportion of the total cost of the M&P/work under PH21/41/42, with the liberty given to the CME to operate the Temporary Establishment correlating it to the workload of user department instead of the outlay provided for work execution expected during the year.

1047. Cost and time overruns

One single factor that invariably inflicts heavy "time and cost over runs" undeniably, is inadequate application of mind at the proposal stage. Quite often, a lump sum cost based on past experience is assumed for inclusion in the Pink Book. Detailed estimates are tailored to stay around this ad-hoc figure. More than a year or two lapses before the various formalities are gone through. The problem gets compounded if cost escalations manifest in complete revision of estimates.

It is therefore necessary to order a feasibility survey and obtain a Detailed Project report (DPR), particularly in green field projects, such as a new workshop or diesel shed costing Rs 50 Cr and above. The DPR should bring out:

a. Various options to meet the demand
b. Investigations for pre-investment decision by examining these options, including optimization of existing facilities to decide the best alternative from financial and operating point of view to make an ideal investment decision.
c. Fairly detailed plans of the best option so chosen
d. Approx cost in current prices
e. Expected benefits

f. Project evaluation which may involve economic analysis, (cf. Para 235-F) or Social Profitability Analysis, in addition to financial appraisal;
g. Assessment of deliverables

Sanctioning of mega projects must therefore not precede a detailed survey, but must be its natural corollary. After a Survey is included in the sanctioned Budget, the General Managers can sanction Survey Estimates costing up to Rs. 5 lakhs.

1048. Maintenance of civil and electrical infrastructure in workshops:

Timely inputs of Maintenance can avoid major investments for the fixed infrastructure of Workshops through Works Programme. Also as per provisions of factory act, the occupier is expected to ensure that the plant and systems are maintained so that these are safe and cause no health hazards.

a. To enable the occupier to discharge the duties without compromising on health and safety, it is necessary that separate funds are earmarked for repair and maintenance of civil and electrical infrastructure of workshops. For maintenance of civil engineering infrastructure separate provision of funds in Detailed Heads 431 (Workshops) and 433 (Stores) under Revenue Demand 4-430 should be given. Similar exclusive provision of funds for maintenance of infrastructure for electrical services should be done. Funds should be communicated by zonal Railway headquarters to the workshops under the relevant revenue heads, to be spent with the specific approval/ sanction of the workshop in-charge.
b. In respect of funds for maintenance of civil and electrical infrastructure for workshops, all budgetary reviews/ estimates i.e. August Review, R.E., F.M. and B.E. should be done by workshops depending on the need to maintain workshop infrastructure by CWM.
c. The workshop Finance shall act as the Associate Finance for all infrastructure maintenance contract matters related to the workshop.
d. The process of estimation and tendering for works should be done/ coordinated by workshop Civil / Electrical Engineer.

Annexure 10.1

Rolling stock Programme- New Acquisitions

		Requirements for current year –Y1			Forecast for Y2		Forecast for Y3	
	Description	Nos.	Total Cost	Total cost Rs.Cr	Nos.	Total Cost	Nos.	Total Cost
1.	CLW - Type A							
2.	CLW - Type B							
3.	CLW - Type C etc							
4.	Total CLW			∑ 1+2+3				
5.	DLW Type D							
6.	DLW Type E							
7.	DLW Type F etc							
8.	Total DLW			∑5+6+7..				
9.	TOTAL LOCOS			∑4+8..				
10.	ICF- type G							
11.	ICF- type H							
12.	ICF- type J etc							
13.	Total ICF			∑10+11+ 12..				
14.	RCF- Type K							
15.	RCF- Type L							
16.	RCF- Type M etc							
17.	Total RCF			∑14+15+ 16..				
18.	Coach Source 1 (Like BEML)							
19.	Type NI							
20.	Type O etc							
21.	Coach Source 2 (Like Jessops)							
22.	Type P							
23.	Type Q etc							
24.	Coach Source 3							
25.	Type R							
26.	Type Setc							
27.	Coaches from other sources			∑19+20+ 22+ 23+25+2 6..				
28.	TOTAL COACHES			∑15 +13+17+ 27..				
29.	Wagons conventional							
30.	Wagons/Hopper +BVZ etc							
31.	Total Wagons			∑ 29+30..				
32.	DMW-modernization of Locos							

33.	Track M/Cs							
34.	Misc. Items of Board's RSP							
35.	GRAND TOTAL			∑9+28+31+ 32+33+34				

Annexure10.2

S.No	Codal life of machines Railway Board's letter No. 2002/AC-II/I/10, Dated 24.05.2006 Class of assets	Average Life in Yrs
1.	Machine Tools like Lathes, Planners, Drilling, Boring and Milling machines etc.	15
2.	High Precision and special purpose machine like wheel lathes etc.	15
3.	Tool Room and Testing Laboratory equipment	15
4.	Foundry and Forge Equipment	15
5.	Heat Treatment Equipment	15
6.	Cranes – E.O.T	25
7.	Power Generation Machinery & Switches	15
8.	General purpose light machinery e.g. band saws, floor grinder etc.	10
9.	Air compressor	15
10.	Miscellaneous machines e.g. light cleaning machines, test equipment in diesel sheds, workshops, depots and sick lines	15
11.	Construction Machinery	15
12.	Track Maintenance equipment	20
13.	Station machinery e.g. weighing machines etc.	15
14.	Miscellaneous machinery and equipment for hospital, offices etc.	10
15.	Mechanical Weigh Bridges	15
16.	Electronic-In-Motion Weigh Bridges	08
17.	Diesel Pumps	10
18.	Welding equipment including diesel welding sets	10
19.	Diesel refrigeration equipment	15
20.	Material handling equipment like FLT, Lister trucks etc.,	10
21.	Traversers	25
22.	Fuel station dispensation equipment	10
23.	Bulldozers and other earth moving equipment	15
24.	Motor Boats	10
25.	Hydraulic re-railing equipment	15
26.	Staff cars including Jeeps	07
27.	Light Motor vehicles	10
28.	Heavy Motor vehicles	10
29.	Tractors	10

P.S *Since the utilisation of a machine is a function of the hours it had worked, rather than years of its physical existence, future machines should be bought with built-in clock embedded chips so that replacements are planned on the hours clocked in service. This is particularly necessary for the CNC machines with today's control technologies with very low* "half life".

CHAPTER 11

Capacity Optimization and Product Development

Para No.	Title *(Ctl + Click on Para no.)*
1101	Background.
1102	Multi skilling/tasking and Inter-shop transfers
1103	Outsourcing – need to outsource
1104	Outsourcing to units outside the workshops.
1105-06	Outsourcing or contracting for works within the Railway Premises.
1107	ERP based production Management
1108	RDSO' s role in vendor approval and product inspections/development
1109	Innovation
110	Strategies for innovation
1111	Utilization of surplus shop capacity
1112	Process of procuring outside orders.
1113	Profitability:
1114	Annual Maintenance Contracts for M&P
1115	General

1101. Background.

In this dynamic world, new products emerge and old ones disappear, demand shifts form one product to another, innovation alters methods of production and so on. Systems should therefore be in place for speedy and unhindered development of new products and technologies for meeting challenges such as:

a. Product matrix and quantum of outturn varying widely in Production units year after year, depending upon the growth projection and budget availability.
b. And this change is notified only during the year in question without sufficient time for advance planning.
c. Similar phenomenon witnessed in the Repair workshops, and maintenance sheds though to a lesser extent, due to change in the type/technology of rolling stock (conventional as well as DPRS).
d. Workshops and maintenance depots handling rolling stock (conventional as well as DPRS) which were equipped with systems and technologies spanning three to four decades.

Therefore it is necessary to consciously create flexible structures with complete freedom to adopt strategies like outsourcing, flexibility with regard to deployment of manpower amongst different shops within the same unit to match capacity with demand etc. The following initiatives shall be adopted depending on the requirement.

a. Staff multi-tasking and multi-skilling
b. Inter-shops staff transferability
c. Outsourcing (outside the shops)
d. Outsourcing (within shops)

1102. Multi skilling/ tasking and Inter-shop transfers

In a Production Unit (PU)/workshop, final assembly and production of certain critical sub-assemblies and components has to be done in-house. To match changing product mix and volume, manpower may have to be re-deployed amongst shops – within the PU/workshop. Establishment rules should provide for-

a. Multi skilling
b. Multi Tasking
c. Inter-shops transfer – with seniority protection
d. Re-training and re-development

Above will enable outsourcing of non-critical jobs and the staff that may be rendered excess in these shops to be re-deployed in assembly and critical items of work. This strategy will provide flexibility in labour availability to meet fluctuations in outturn.

1103. Outsourcing – need to outsource

While it may be ideal to do most of the jobs in-house to ensure strict control over quality of inputs and processes, outsourcing the work to other agencies may become inescapable, under circumstances such as:

a. There is no possibility of getting it done in other Railway workshops with known capacity and capability for the product.
b. Sudden spurt in the requirement of components/sub-assemblies far beyond the capacity of the shops
c. Need to optimize and augment capacity of core shops (assembly shops) resulting in re-deployment of personnel from non-core to core shops (component to assembly shop) with consequent capacity reduction of component shop
d. Introduction of new material/technology for which skills/capacity/ equipment may not be available within the workshop

e. Standard components that can be procured from outside or the work outsourced, resulting in lowering of cost. This is due to economy in scale of production available with the supplier.
f. Short-term / one time jobs for which permanent capacity cannot be created within the workshop
g. Need for heavy inputs of infrastructure not commensurate with the quantum of required by Railways for its production.

Under these circumstances, the shop in-charge should decide to opt for outsourcing. Outsourcing can be from either a unit outside the workshop premises or an outside agency which will be required to execute the task inside the workshop.

1104. Outsourcing to units outside the workshops.

Components and assemblies can be outsourced to unit a outside the PU through a system of tendering, keeping in view the under mentioned guidelines:

a. Decision on outsourcing shall be taken at the level of the Workshop / Factory In charge, with Finance Concurrence, except for certain critical components as excluded by the PHOD wherein criteria for out sourcing as and when needed will be finalised by HOD of Workshop for Zonal Railways only, in consultation with associate finance.
b. Pricing guidelines shall be established on the basis of in-house manufacturing-cost-excluding overheads and overheads to be added at commercial rates for cost comparison.

1105. Outsourcing or contracting for works within the Railway Premises.

In case of certain sub-assemblies, assemblies and critical items, it becomes necessary that manufacture, assembly and/or testing is carried out inside the Railway premises by the contracting party due to reasons such as:

a. Need to control of quality of raw material
b. Facilitate control of quality of workmanship through stage inspections
c. Specialized large-scale infrastructure needed for the manufacturing process may not be available with vendors.
d. Need for investment in costly specialized equipment, which are otherwise not usable by the vendor for other general products manufactured by the vendor. Since both these aspects will inflate his bid price which will ultimately get loaded on the cost of production. Special tooling required for the job
e. Component/processes forming part of an assembly line in the Production Unit or Workshop.
f. Logistical problems and disproportionate transportation costs.

1106. While outsourcing within the shop facilities, all safeguards in Para 1103 shall be ensured. In addition, to avoid contract disputes, care should be taken to see that following conditions are fulfilled and precautions taken:

a. Work area for the contractor to be separated from that of Railway staff
b. Shared machine and equipment time available to the contractor to be clearly defined to avoid mix up
c. Wherever raw material and consumables are to be supplied by the Railway, stock should kept separately and accounted for.
d. Consumption norms for raw materials and consumables to be evolved for each item issued to the contractor by the Railways
e. Documentation to be signed by both Shop Supervisor and Contractor
f. Electric power, water and utilities including tools provided by the railways to be accounted and documented
g. Control of quality of workmanship by in process inspection

h. Accountal of scrap / left over material to be returned by contractor to be accounted and kept separate
i. Industrial safety standards as prevailing in the shop shall apply to the contract workers.
j. All relevant legal provisions and their compliance to be ensured.

Check list for precautions to be taken before contract is awarded for outsourcing work inside the workshop with outside labour.			
Sl. No.	**Precaution to be taken**	**Yes**	**No**
1	Has separate work area for contractor been earmarked		
2	Has requirement of Railway supplied consumables – like special electrodes, water, electricity etc. been computed and listed		
3	Has material requirement for outsourced job been separately worked out		
4	Has machine hours for use of Railway equipment for the job been computed and listed		
5	whether payment to contract workers is being made through bank, in a transparent manner		
6	Have contractor's workers been issued separate ID		
7	Is an accounting system in place for contractor supplied items, raw materials and consumables		
8	Has workshop supervision been organized to check on the work		
9	Has the contractor complied with all legal provisions required under law, for which the Railway has an onus of responsibility		
Note: The answer to all the items is to be 'yes', Before outsourcing Contract is awarded.			

1107. ERP Based production management

ERP based systems for production Management optimizes resource allocation and utilization ERP has become a powerful tool in cost optimization. ERP based system should be developed specifically to cover various aspects on Material Management, M&P and Assets Management, Progress of work and Quality in all workshops & major LCDs, in order to achieve cost optimization. Details are covered in chapter 9:

1108. RDSO's role in vendor approval and product inspections/ development

RDSO is the technology centre of Indian Railways and has to perform the role of R&D. Industries usually spend 2 to 3% of their turn over on R&D. To concentrate on this core function, RDSO should confine themselves to approval of new types of rolling stock (conventional as well as DPRS) new technologies and new systems. Subjects like new manufacturing systems/related technologies should be left to the Design & Development wing of PUs.

In order that RDSO's role is focused on product / process research and in areas of new technologies and new materials, their involvement in vendor development/inspection should be restricted to important items of wagons only. Further RDSO should play the key role in development of selected new products including prototype approval, as directed and monitored by Railway Board.

RDSO is authorized to form joint venture with institutes in research and development related to Railways or its activities

1109. Innovation

In a competitive environment, the survival of an organization depends on innovation to a significant extent. Innovation helps attainment of

a. Cost optimization
b. Higher productivity
c. Quality enhancement and safety
d. Ease of maintenance

The above objectives are relevant in the context of Railways facing increasing competition from Road and Airways in both freight and passenger segments. The areas of focus for innovation are:

a. Process improvement through advanced technologies
b. Productivity enhancement through process modification / simplification/ reengineering
c. Cost reduction through new material, technology and material substitution
d. Worker motivation through improved environment ergonomics transportation cycle time and effort reduction
e. Reduction of wastages, inter-shop movements and reduction in material usage
f. Reduction in rejections and consequent savings in cost of re-working and/or wastage
g. Reduced maintenance through design enhancement and quality enhancement

1110. Strategies for innovation

a. Employee participation
b. user and the manufacturer
c. Interaction between Design office and the production shop.
d. Suggestion schemes
e. Reward schemes for successful innovative practices
f. Study of new technologies and material science
g. Continuous and focused market watch/research, to observe emergence of new technologies, materials, practices
h. Effective inter-change of information amongst different workshops
i. Focused R&D effort
j. Creation of cross functional teams for innovative suggestions.
k. Encourage patenting by railway employees for all inventions including those used in railways.
l. Railway Workshops to provide reasonable prototyping support to innovative personnel who have registered for patents relating to railways while permitting reasonable rights to the inventor to promote the spirit of invention for perpetuating technological development and growth.
m. Institutionalizing the process of assimilation of new patented technologies developed by inventors amongst railway men by assigning this responsibility to a senior official.

1111. Utilization of surplus shop capacity

Surplus capacity can arise in a Production Unit or Workshops due to downward fluctuation of loads, addition of new equipment or induction of new technology. Many production units in the public sector are augmenting revenue by taking short run orders from private parties to utilize such capacities. Outside jobs can be undertaken by Railway units provided:

a. Full capacity utilization is not achieved by existing Railway jobs on hand
b. Advanced production against Railways' requirement for succeeding years cannot be undertaken now due to budgetary constraints
c. Not taking extra orders would result in idle man-hours and idle machine-hours

1112. Process of procuring outside orders.

Before setting out to exploit the surplus shop capacity, following action must be taken:

a. Classify the types of jobs to be undertaken.
b. Advertisements are issued specifying types of jobs that can be undertaken and production facility available.
c. Decision based on
    i. “Available capacity”
    ii. “Capacity job match”
d. Man-hour rate and machine hour rate excluding overheads should be computed.
e. Cost of support services like power, water, compressed air to be computed in unit consumed basis.
f. Cost of consumable materials like electrodes, lubricants, cleaning items etc. to be computed on unit basis.
g. Records to be maintained for each jobs for all the above on actual utilization basis.
h. Correlation between consumable items and man-hour and machine hour to be worked out as a standard for costing.

1113. Profitability:

Wherever Railway overheads are high, cost of undertaking jobs to outsiders inside the Railway Workshops would be uncompetitive and un-remunerative for potential clients. In such cases, principles laid down at Para 723 for costing of export should be followed to establish the bottom line so that viability is ensured both to the potential client and the PU/workshops.

1114. Annual Maintenance Contracts for M&P

The millwright organization in production units/ workshops and open line takes care of M&P maintenance. Over the years, with increasing sophistication and extended use of electronics based control systems in M&P, the skills of millwright staff have not been upgraded to keep pace with maintenance requirements. The maintenance cover for M&P therefore should be adequately provided by way of annual maintenance contracts with the original equipment manufacturers (OEMs) or their authorized agents, where feasible, to ensure that the assets is productively utilized with adequate uptime. Such annual maintenance contracts can also be concluded at the time of purchase of M&P item by factoring-in the AMC cost along with the purchase price. The objective of AMCs shall be to provide a high up-time for the M&P items by providing a reliable maintenance support. However, efforts shall be made to get the millwright staff trained in maintenance of machines to gradually reduce the expenditure on AMC. Proven sources for AMC/Overhauling/Repair contracts for M&P, Rolling stock assemblies etc. can be considered besides OEMs in case OEMs are not responsive or quoting exorbitant rates/ unacceptable conditions.

1115. General

The contents of this chapter are applicable to all establishments of Rolling Stock Production and Maintenance i.e. Production Units, workshops & LCDs of open line establishments.

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