

Investment Planning

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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

As 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 $\pm 30\%$ 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 <i>Condemnation either during last POH before the expiry of codal life or thereafter</i>	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-cabbling 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 monetary 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 monetary 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 monetary 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:

- a. for Works already sanctioned by the Board (Programmed Deliveries) with any changes in numbers or unit rates and
- b. 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. 10 lakhs each & above each for Zonal Railways and Rs. 30 lakhs & above each for Production Units and all Road vehicles irrespective of their cost through the M&P Portal maintained by the Railway Board.

For items costing up to Rs. 10 lakhs each and Electronic in-motion weigh bridges costing up to Rs.20 lakhs each (excluding Road vehicles irrespective of their cost) can be sanctioned by Zonal Railway under GM's Powers. In case of Production Units, items costing up to Rs. 30 lakhs each (excluding Road vehicles irrespective of their cost) can be sanctioned 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, Road Mobile Cranes, Front End Loader/JCB Cranes and fork lift trucks 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.

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.

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:

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.

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. CMEs may arrange that proposals for their Railways are submitted online, duly prioritized. Preliminary 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.

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.
- 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.

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 "*Demand 16 - 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 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	
upto Rs 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.

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 account 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

	Description	Requirements for current year -Y1			Forecast for Y2		Forecast for Y3	
		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			$\Sigma 1+2+3$				
5.	DLW Type D							
6.	DLW Type E							
7.	DLW Type F etc							
8.	Total DLW			$\Sigma 5+6+7..$				
9.	TOTAL LOCOS			$\Sigma 4+8..$				
10.	ICF- type G							
11.	ICF- type H							
12.	ICF- type J etc							
13.	Total ICF			$\Sigma 10+11+12..$				
14.	RCF- Type K							
15.	RCF- Type L							
16.	RCF- Type M etc							
17.	Total RCF			$\Sigma 14+15+16..$				
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			$\Sigma 19+20+21+22+23+25+26..$				
28.	TOTAL COACHES			$\Sigma 15+13+17+27..$				
29.	Wagons conventional							
30.	Wagons/Hopper +BVZ etc							
31.	Total Wagons			$\Sigma 29+30..$				
32.	DMW-modernization of Locos							

33.	Track M/Cs							
34.	Misc. Items of Board's RSP							
35.	GRAND TOTAL			$\Sigma 9+28+31$ $+$ $32+33+34$ \dots				

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".