



दक्षिण पूर्व मध्य रेलवे
South East Central Railway
मुख्यालय, कार्मिक विभाग, प्रथम तल, महाप्रबंधक कार्यालय, बिलासपुर छ.ग.
HEAD QUARTER, PERSONNEL DEPARTMENT, 1st FLOOR,
GM's OFFICE, BILASPUR (C.G.) 495004

No. P-HQ/CON/452/Civil-30%/e-129223/132

Dated:-20/03/2024

AGM, PCE, CAO (CON), SDGM/SECR, Secretary TO GM/SECR,
CBE, CTE, CE(TM)/SECR, CPO (A), DRM/Bilaspur, Raipur, Nagpur
CWM/WRS/Raipur, CWM/MIB/Nagpur, Dy.CE(TM)/BSP, Sr.DPO/BSP, R, NGP,
PCPO/SER/GRC & PCPO/E.Co.Rly/BBS

Sub: - Selection (**Special Drive**) for formation of a panel of AEN (Gr "B") against
30% LDCE of Engineering Department in S.E.C.Railway for the vacancy
cycle of 01/01/2023 to 31/12/2024.

Ref:- 1. Board's letter No. E(GP)2022/2/4, Date:14/12/2023.
2. Board's letter No. E(GP)2022/2/4, Date:14/03/2024

1. In reference to the above, Board has decided that a special Group B' Selection drive shall be carried out to fill up the gazetted vacancies prevailing on the Railways. Accordingly, it has been decided to fill up these vacancies by holding another round of 70% Selection and 30% LDCE through centralized CBT for promotion to Group B' posts by NAIR. Accordingly, examination/ CBT against 30% LDCE to be conducted on **23/06/2024 by NAIR/BRC**. The selection will be held for formation of panel of **AEN** (Group-"B") in scale Rs.9300-34800/-+(GP Rs.4800/-), PB-2 (Pay matrix Level-08) (7th PC) against 30% LDCE for vacancies as mentioned below.

Mode	UR	SC	ST	TOTAL
AEN (30% LDCE)	02	01	00	03

2. Eligibility Criteria: For Group "B" selection (30% LDCE quota), Group "C" employees (Technical) of Civil Engineering department working in grade the minimum of which is Rs. (5000-8000 5th PC)/ PB-2, 9300-34800 + GP Rs. 4200/- (6th PC) / Pay Level-6 of 7thPC and above with five (05) years of non fortuitous service including training period in grade as on **01/01/2023** (including non fortuitous service rendered in the corresponding pre revised grades) are eligible to participate in the above LDCE examination in terms of SECR's Estt. Rule No.359/2019 and (RBE No.216/2019), Estt. Rule No.173/2019. It is made clear that no adhoc service will be counted for computing the eligibility for purpose of above selection.

3. Scheme of Examination/ Selection Procedure: In terms of Railway Board's letter No.E(GP)2022/2/4, Date:28/06/2022, detailed instructions of Centralized Computer Based objective type examination (CBT) have been communicated. Accordingly, 30% LDCEs selection will be conducted by DG/ NAIR. LDCE 30% will be one stage only and will comprise of Single Paper of 150 marks comprising 100% Objective type Multiple Choice Questions with following distribution of marks.

I	Technical (Professional) subject	80 marks
II	General Knowledge including optional Questions of 15 marks on Official language Policy & Rules	40 marks
III	Establishment & Financial Rules	30 marks
IV	Duration	03 Hours
V	Qualifying Marks	90 marks

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VI	Syllabus:-	SECR's Estt. Rule No. 308/2022. (Annexure-C). Enclosed	
VII	Question Paper will have 175 questions out of which 150 questions are to be attempted.		
VIII	One mark will be allotted for every correct answer. There shall be negative marking for incorrect answers. One third of the marks allotted for each question will be deducted for every wrong answer.		
IX	Pre-selection coaching will be conducted in terms of Estt. Rule No.248/2019 (RBE no. 142/2019) in favour of reserved community candidates.		
X	VIVA-VOCE TEST: The selection will comprise of Written/ CBT examination followed by viva-voce test. Only those who qualify in the Witten/ CBT examination and pass the prescribed standard of medical examination, in terms of (para-20.1 & 2) of Master Circular-68, Dated: 08/07/2019 and Board's letters No. E(GP)80/2/8 dated 31/10/91, will be called for the Viva-voce test. Without medical fitness certificate candidates will not be eligible for attending viva- voce test. Candidates will be called for viva-voce in terms of Estt. Rule No. 65/2023.		
XI		Maximum Marks	Qualifying Marks
	Record of Service	25	30 marks (including minimum 15 marks in Record of service)
	Viva-Voce	25	

4. Time line for date of submission of application and consolidated statement: All the eligible and willing employees must submit their application duly forwarded by immediate supervisor/ Officer through proper channel to their respective Personnel Branch Officers concerned to appear in the selection and acknowledgement may be obtained. Applications received after closing date will not be entertained and summarily be rejected.

S.No.	Subject	Closing date
I	Application to be submitted in the prescribed proforma in (ANNEXURE-A) by the eligible candidates through their controlling officer to the concerned Establishment officers/ Personnel Branch for verification /scrutinizing of service particulars/ eligibility etc.	05/04/2024
II	Concerned Personnel officers <u>should forward only the applications of eligible candidates</u> in proforma (Annexure-"B") to GAZ(CONF.) Section, PCPO Office, HQ.	15/04/2024

5. Scrutiny of the applications: The concerned Personnel Department of the HQ/Division/Workshop/Units should scrutinize the application and verify the eligibility along with the Service Record maintained by them and certify their eligibility for each such candidate. After scrutinizing the applications, concerned Personnel officers should forward such applications in the prescribed proforma as in **Annexure-"B" to GAZ(CONF.) Section, PCPO Office, HQ Office.** While forwarding the names Controlling officers/ respective Personnel officers should ensure that particulars mentioned are verified and certified as correct. **The concerned Personnel officer must ensure that all the columns (ELIGIBILITY) of the enclosed (Annexure-B) are properly filled in before forwarding the applications/ consolidated statement to this office.**

In case any candidate is found ineligible at any stage of the above selection, his candidature will be summarily rejected. Applications of staff who do not fulfill the eligibility criteria as mentioned above need not be forwarded to this office. It may also be noted that incomplete statements furnished by the Divisions/ Units will not be entertained. After closing date any application should not be entertained / accepted. It may be ensured that the applications of candidates working under Construction Organization should be submitted through Dy.CPO/Con/Bilaspur.

6. The following may be kept in mind while forwarding the applications by the Division/Unit/HQ in-charge:-

a)	Certification of all the particulars by the Personnel Officers/Officer in-charge
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	concerned.
b)	Certification of non-fortuitous service excluding ad-hoc service.
c)	Lien of applicant in Department concerned especially for those on deputation.
d)	Wide publicity is to be given to this and all the subsequent notification on this selection by placing copies on notice Board, Training Centers and all other important places.
e)	Concerned Personnel Officers-in-charge of the Divisions/Units/HQ may co-ordinate and ensure that the notification and all subsequent notification of this selection are circulated in all small units located in their territorial jurisdictions including staff on deputation, training, long sick (PMC/RMC), leave, working in other offices such as RE, Railway Board, RITES, RDSO, KRCL, CRIS, COFMOW, IRCTC etc. In case any candidate is on leave or on deputation to other Railways/Units or on sick list, the controlling officer concerned should send necessary advice to the authority under whom he is working or the medical authority as the case may be acknowledgement obtained. This may be ensured to avoid any representation later on this issue.
f)	No Supplementary examination will be held.
g)	The Controlling Officers; Dy. CPOs/Sr. DPOs/DPOs/APOs may please ensure that the APARs for the last five (05) years completed in all respects and also the updated Service Records of the candidates who volunteer for the above selection, are available with them in advance to ensure prompt supply thereof to Dy CPO (Gaz) at short notice.

7. If any employee of HQ/Divisions/Workshops/Units is on deputation/outside cadre or working against ex-cadre posts whose lien is maintained by this Railway should be informed about the selection provided they fulfill the conditions through their respective officers without fail.

Dy CPOs, Sr.DPOs, DPOs, SPOs & APOs of all concerned may personally ensure displaying of the notification in the prominent notice board of the respective officers of HQ/Divisions/Unit.

The notification is also available on this Railway's web site <http://www.secr.indianrailway.gov.in>.

Recruitment/News/Press Release → Recruitment → HQ → GAZ Section

All the Divisions/ Units & applicants are advised to daily visit the above website for any updates regarding the selections. This notification is being issued as per existing provisions Instructions of selection of Group-B post of AEN. In case any changes in the existing procedure /instructions are issued by Railway the same will be communicated to all concerned and will be uploaded in the Railway's website in due course,

Encl :- As above

(Signature)
20/03/2024
(Pradeep Mishra)

Dy. Chief Personnel Officer (Gaz.)
for Principal Chief Personnel Officer

Copy forwarded for information and necessary action to: -

1. Secretary to GM/SECR: for kind information of GM/SECR.
2. PS to AGM/SECR : for kind information please.
3. DGM(G)/SECR, Chairman/RRB/BSP, Chairman/RRC/BSP
4. Sr. DEN (Co-ord) / Bilaspur, Raipur and Nagpur
5. Principal/MDTC/BSP, Dy.CPO (Con), APO/WRS/R,
6. APO (WS)/MIB/NGP, APO/GSD/R, All Personnel Officers/SECR HQ
7. GS/SECRMC, GS/SECRPOA, GS/AISC/ST Association/BSP,
8. ZP/SECROBCEA/BSP, Notice Board

(Signature) 20/3/2024
for Principal Chief Personnel Officer

Paste a
photograph

PROFORMA for 30% LDCE (Group-B)

1	Applied for the post:	
2	Name :	
3	Father's Name:	
4	Correct IPASS NO. (Eleven (11) Digit)	
5	HRMS ID (must be filled correctly)	
6	Present Designation & Scale /GP/ Level	
7	Present place of Posting/ Division/ WS /Station/ Unit	
8	Mobile No.: (Only one no. be provided, which is in use)	
9	Latest Email-ID address (must be correct)	
10	Controlling Officer	
11	Date of Birth (DD/ MM/ YYYY)	
12	Community (UR/ SC/ ST)	
13	PwBD category or not (Yes or No)	YES or NO _____
14	If PwBD, indicate category	Category: _____
15	If PwBD candidate, indicate for requiring SCRIBE (only those PwBD staff /employee who are entitled for facility of scribe).	YES or NO _____ If yes enclose necessary medical PwBD certificate (Appendix-I) issued by authorized Govt. Medical /Health Officer, in terms of Estt. Rule No.343/2022 (RBE No.162/2022) and (Appendix-I)
16	Lien holding in Railway, Division (Should be maintained in SECR)	
17	Date of appointment	
18	Designation in which initially appointed and scale/GP/Level	
19	Date of Regular Promotion or appointment in GP Rs. 4200/- (6 th PC) / Pay Level 6 of (7 th PC)	
20	Date of Regular Promotion or appointment in GP Rs. 4600/- (6 th PC)/ Pay Level 7 of (7 th PC).	
21	Length of non-fortuitous service in scale Rs. 5000-8000 (5 th PC), PB-2 Rs. 9300-34800, with GP Rs. 4200/- (6 th PC)/ Pay Level 6 of (7 th PC) as on 01/01/2023.	Year.....Month.....Days.....
22	Length of non-fortuitous service in scale Rs.6500-10500/- (5 th PC), PB-2 Rs.9300-34800 + GP Rs. 4600/- (6 th PC)/ Pay Level-7 of (7 th PC) as on 01/01/2023	Year.....Month.....Days.....

Signature of the candidates

Signature of the immediate supervisor forwarding application Office seal & Date:

Forwarded to controlling officer

Signature of Controlling Officer with seal

Forwarded to Headquarter

Forwarded to Dy.CPO(GAZ)/SECR. The particulars given by the employee against **column No.1 to 22** have been scrutinized/ verified & found correct as per the service record and the above named employee is eligible / not eligible, please (✓) to appear in the selection **against 30% LDCE** quota. It is certified that no Adhoc or fortuitous service has been taken in to account for computing the eligibility as on **01/01/2023**.

Signature and name with official stamp of
Personnel Officer of concerned Divn./ Unit

ANNEXURE "B"

PROFORMA for 30% LDCE (Group-B), For the post of :

(To be verified & attested from available records)

1	2	3	4	6	7	8	9	10	11	12
Sr. No	Name	Correct I-Pass No. (11 Digit)	Correct HRMS-ID	Present Designation/ Unit	Only one Mobile No. Which is in use	Email id	Place of Posting	Divn. /WS/ Unit	Controlling Officer	DOB (DD/MM /YYYY)

13	14	15	16	17	18	19	20
Community (UR /SC/ ST)	PwBD or Not (Yes/ No.)	If yes PwBD category	If a PwBD, whether scribe is required (Yes/ No) Enclosed valid PwBD certificate	Present Grade/ Scale GP Rs.4200/-, or GP Rs.4600/-	Date of Regular promotion in scale GP Rs.4200/-	Date of Regular promotion/ appointment in scale Rs. 6500-10500/- (5 th PC) (pre-revised)/ GP-4600/- (6 th PC) / Level-7 (7 th PC)	Remarks Eligible/ Not eligible

NOTE: The above information (Format) to be provided to GAZ/CONF/Section, HQ/SECR/BSP in soft copy in Pen drive also.

Signature of Concerned
Personnel Officer

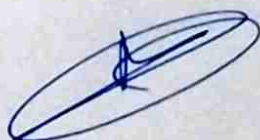
Common Syllabus for promotion to Group- B posts - 70% selection and 30% LDCE.

Syllabus for Establishment Rules:

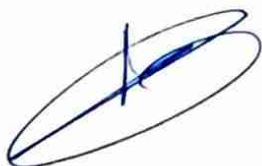
1. Organization of the Personnel Department in Railways objectives functions and policies of Personnel Department.
2. Recruitment and Training, Classification of Services, Recruitment in Different services, Railway Recruitment Boards & Railway Recruitment Cells Compassionate Ground Appointments, Initial & In Service Training, Refresher Courses, Central Training Institutes, Training Centers in Zones, Divisions & Workshops, Training Modules for different posts, Training under Apprentices Act, Online Training, APARs.
3. General conditions of service in Railways, Seniority, Lien, Inter Railway & Inter Division transfers, Deputation, Promotion Policy & methods. Selection, Suitability, Trade Tests, Leave Rules, Pass Rules, Joining Time Reservation policy, HOER, Overtime, Payment of wages, current CPC Pay Rules, Advances in Railways.
4. Manpower planning, Rightsizing & Benchmarking, creation, extension and surrender of posts, creation of posts against new assets, different types of posts including workcharged posts.
5. The Railway Servants (Discipline & Appeal) Rules, 1968 and related instructions.
6. The Railway Services (Conduct) Rules, 1966 and related instructions.
7. Retirement benefits, qualifying service, pension, family pension, commutation gratuity, new pension scheme.
8. Staff welfare, SBF, Railway institutes, Railway schools, Ex-gratia payment, Incentive Bouns Scheme, Staff Grievances Redressal Mechanisms.
9. Industrial relations in Railways, recognized trade unions, industrial disputes. The Industrial Disputes Act, 1947. The Industrial Relations Code, 2020. The Trade Unions Act, 1926, PNM, PREM, JCM, Various Associations & Informal Meetings.
10. The Factories Act, 1948. The workmen's Compensation Act, 1923. Functions of Labour Enforcement Officers, Right to Information Act.
11. The scope of Information Technology in Railway e – office. HRMS, IPAS , LIMBS, ARPAN, CPGRAMS, ANUBHAV etc.

Syllabus for Financial Rules:

1. Parliamentary Control over Railway Finance, Public Accountability, Cannons of Financial Propriety.
2. Railway Budget - Budgetary terms, Types of Budgets, Budget cycle, Demand of Grants, Budgetary and Financial Reviews.
3. Rules of Allocation - Classification of expenditure - Control of expenditure - Responsibility Accounting - Performance Budgeting - Exchequer Control - Financial Results of Working lines.



4. Works Programme - Financial justification of Works - Surveys - Preparation of Estimates - Capital Budget - Control over Capital Expenditure - Reappropriation of Funds.
5. Financial control over Stores Expenditure - Purchase and Stores Keeping Procedure - Inventory Control and ABC Analysis.
6. Financial & Cost Control in Railway Workshops/Sheds/Units.
7. Rules and procedure relating to Tenders and contracts for execution of works and Procurement of Stores, M&P Programme and RSP.
8. Procedure for Possessing and finalizing Audit Objections and Draft Paras.
9. Delegation of Powers.
10. Losses, Frauds and Embezzlements.
11. General Financial Rules
12. Government e-Market (GeM)
13. Classification of Railway Revenue (Earnings)
14. Information Technology in general with specific reference to Railway's IT Applications
15. Taxation matters with special focus on GST & Income Tax
16. Organization of CGA and C&AG
17. Any other topic felt necessary from time to time



SYLLABUS FOR 30% LDCE FOR PROMOTION TO GR.B POST OF AEN IN CIVIL ENGINEERING DEPARTMENT

(A) Civil Engineering (General)

1. Surveying

a. Types

i. Surveying basics

Basic principles; base lines; check lines; perpendicular and oblique offsets; conventional signs; plotting of survey; true and magnetic bearings; open and closed traverses; recording plotting of traverse, closing errors.

ii. Surveying equipment

Auto level, Total station, DGPS, LIDAR.

iii. Leveling –

Level Lines - datum, bench marks, simple leveling, fly leveling; recording the levels in field book; method of reducing levels; arithmetical check; longitudinal and cross section contouring.

iv. Theodolite Survey –

Types of theodolites; measurement of horizontal angles, vertical angles, magnetic bearings and deflection angles; prolonging a straight line; traversing by method of included angles; balancing the survey - closing errors; calculations of latitude and departure.

b. Curves-

Elements of simple circular curves, setting out simple circular curves.

c. Set out works -

Setting out buildings, culverts, Central line of Railway alignment. Usage of GPS technology in setting out Centre line of Railway alignments.

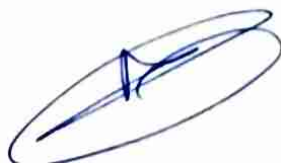
2. Strength of Materials, Structural Designs & Drawings

a) Strength of Materials:

Stress, strain, Hooke's law, working stress, factor of safety; bending moment and shear force in simply supported beams and cantilevers; simple theory of bending. Moving loads on simply supported beams; influence lines for bending moment and shear force in statically determinate beams; short columns, long columns - empirical formulae.

b) Structural Design & Drawing Drawings

Different sizes of paper, folding and storage of drawing, plan, elevation, sections, isometric view.



c) RCC Structures

RCC, methods of design, Working Stress Method and Limit State Method. Design of singly and doubly reinforced rectangular beams including T and L beams. Design of slabs, design of column, IRS Code of Practice for RCC (Concrete Bridge Code).

d) Steel Structures

Rivets and welds. Sketch and detailing of connections different types of joints and strength determination. Design of tension member and compression member. Plate Girders, IRS Steel Bridge Code.

3. Construction material:

Description, specification, properties and uses of building materials - stones, sand, timber, bricks, cement, lime, building hardware, paints varnishes, glasses, and tiles. Concrete mix design, placing, compaction and durability.

4. Foundation & Construction Engineering

a) Soil Mechanics

Different type of Soils, Three phase diagram and their relationships, IS classification of soil, index and engineering properties of soil, compaction, consolidation, shear strength, earth pressure theories, slope stability. Specification and construction of earthwork in embankment and cuttings.

b) Foundation Engineering

Functions of foundation, different type of foundations - open foundations; well foundations and pile foundations, determination of safe bearing capacity, stress and settlement analysis, method of reducing differential settlements.

5. Hydrology and Hydraulics:

a) Hydraulics

Elements of hydraulics - Open Channel flow; flow in pipes, frictional loss, empirical formulae.

b) Hydrology

Rainfall and run-off; rainfall statistics; rain gauges, run-off calculations by empirical methods, flood discharge estimation; measurement of flood discharge-current meter.

c) Hydraulic structures

Design of bridges - alignment, number of spans; economic spans; waterway calculations; scour depth, afflux; clearance; depth of foundations; BOX and Pipe Culverts, estimation of design discharge based on para 4.3.4 of sub structure code namely using RDSO report RBF-16 for catchment size less than 25 sqkm and using flood estimation report (Synthetic unit hydrograph concept) for catchment size .25 sqkm, to 2500 sqkm.

B) Civil Engineering (Railways)

1. Railway Surveys & Construction



Provisions in Engineering Code regarding - Classification of Surveys, Terms of Reference, Principles governing Railway alignment, Ruling gradients, Grade compensation for curves, Horizontal and vertical curves, Hill Surveys, Catch sidings, Tunnels, preparation of various maps and drawings, preparation of Survey reports for RECT, PECT and FLS, Project estimates.

2. Railway Track.

(a) Track Structure and Components.

Classification of Lines, Track Structure, Rail and Rail fastenings, Sleepers & Fastenings, Ballast- Specifications, Ballast Profile/Section/Depth of Cushion, Formation- Classification of Formation Requiring Treatment and Remedial Measures Suggested, Insulated joints & Switch expansion joints, Track structure on Bridges.

(b) Duties.

Duties of ADEN, Duties of SSE/P.Way (In-charge), Duties of JE/ SSE/ P.Way (sectional), Duties of JE/ SSE/ P.Way (Other than sectional), Duties of Gang mates, Keymen, Patrolmen, Gateman and Track maintainer.

(c) Maintenance of Permanent way.

Regular track maintenance, Handling and maintenance of rails, sleepers, fastenings & other misc. Items, Works incidental to regular track maintenance, Record keeping, Maintenance of track in track circuited areas, Maintenance of track in electrified areas

(d) Special Maintenance Works.

Alumino Thermit welding of rails, Flash-Butt welding of rails, Short welded Rails, Long welded Rails. USFD.

(e) Curves and Turnout.

Curves, Realignment of curves, Points and Crossing.

(f) Track tolerances and Track Monitoring.

(g) Schedule of dimensions.

Schedule-I Standard dimensions, Station Yards and extra clearance on curve.

(h) CRS sanction for works affecting passenger running lines.

(i) Training and Competency of Permanent Way Staff.

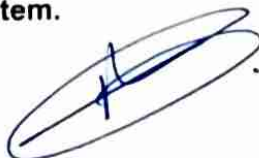
(j) Permanent Way renewals.

(k) Engineering Restrictions and Indicators.

(l) Level Crossings and Gateman.

(m) Working of Trollies, Lorries and Material trains etc.

(n) Track Management System.



(o) General:

Reference to G & SR; types of signals and their significance; rules for working of trains; block working rules - types, Introduction of temporary single line working.

(p) Accidents:

Action during accidents including breaches, Restoration of through running, Pre-monsoon precautionary measures.

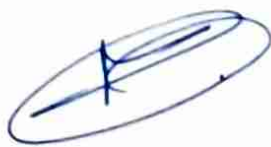
3. Maintenance of Bridges

a) Maintenance of bridges: Responsibility of the Engineering officials, action to be taken after inspection of bridges; maintenance of substructure - abutments, piers, wing walls and return walls, maintenance of arches, dismantling of arches. Details of common repair techniques - cement pressure grouting, epoxy grouting, shotcreting/Guniting. Maintenance of RCC & PSC super structures - periodical maintenance, common defects and repair / strengthening techniques; maintenance of super structure (steel) girders - loss of camber in steel girders, cracks in steel works, strengthening of weak girders, replacement of loose rivets; maintenance of HSFG bolts, corrosion and its prevention, protective coatings by painting - periodicity and precautions, patch painting, ordinary paints - for severe and no severe corrosion, metallising & epoxy based paints, Maintenance of welded girders; maintenance of composite girders. Various defects in bed blocks and their remedies; maintenance of bearings; Precautions while carrying out maintenance works on bridges.

b) Inspection of bridges: Classification of bridges - major, minor, important; Inspection of Bridges by Permanent Way and Works Inspectors, by Bridge Inspectors (SSE/JE- P. Way, Works, Bridges) - Periodicity/ schedule and details of inspection, record of bridge inspection, registers to be maintained by the Bridge Inspectors, Certificate of inspection. Inspection by Assistant Divisional Engineers - Bridge Inspection Register, Numerical Rating System (NRS), Unique Rating Number, Condition Rating Number, Overall Rating Number, Certificate by the Assistant Engineer. Details of Inspection of Bridge - foundations, Flooring, masonry in substructure, under-water substructure inspection, arch bridges, protection works and water ways, girder alignment and seating, structural condition of girders, track on the bridge and its approaches, trolley and safety refuges, foot paths, painting, marking HFL and danger level, providing foundation particulars and bridge name boards, flood records at important bridges, road over/under bridges, concrete bridges, special Inspection during Monsoon, equipment required for inspection of bridges. painting of steelworks, laying of bridge sleepers; replacing cracked bed blocks.

4. Rehabilitation of Bridges

Reasons for Rehabilitation, special Strengthening, Imposition of speed restriction, Priority for rehabilitation of bridges, Special Inspection, Site Data, Execution of rehabilitation works, Precautions when working on bridges; rebuilding or alterations to bridges - design and execution of bridge works; temporary arrangements; false work for erection of girders; assembly and erection of girders; cranes for erection of girders; testing of girders; proposal for strengthening existing girder spans; methods



of regirdering major bridges, Strengthening of foundations, Strengthening/rebuilding of substructure, shaken/displaced/ cracked bed blocks, distressed arch bridges, replacement of nonstandard girders, replacement of pipe culverts, distress in parapets, replacement of small opening, distress in superstructure.

5. Rivers & Floods

Behavior of rivers; past history of bridges, danger level at bridges, watchman at important bridges, duties and equipment of bridge watchmen; special inspection during monsoon, action to be taken in the case of weather warning, pitching stone, boulder and monsoon reserve; vigilance during floods; flood records during and after the monsoon; survey of the course of river. Rivers and flood register, Flood Reports, rainfall data, provision of anemometer on bridges. River training works, Guide Bunds, Spurs (Groynes), Marginal Bunds, Closure Bunds, Assisted Cut-Offs, Boulder crates, Protection of approach banks, drop wall & curtain wall i.e. protection measures for minor bridges.

6. Inspection and Maintenance of Tunnels and Deep Cuttings:

a) Tunnels - Inspection by Engineering officials, items to be covered in the Inspection, record of inspection, mobile staging for inspection, details of tunnel inspection, ventilation of tunnels, leakage in tunnels and methods of correction, works connected with the maintenance of tunnels.

b) Deep Cuttings - General, inspection register of vulnerable cuttings, points to be noted during Inspection of cuttings, action to be taken in the case of boulder drops, action to be taken after inspection of cutting, guarding of vulnerable cuttings.

7. Inspection and Maintenance of Building and Structures (Other than Bridges)

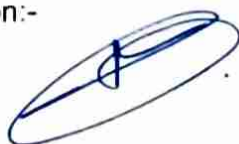
- a) Inspection & Maintenance of buildings & structures (including steel structures).
- b) Building Registers
- c) Periodical maintenance of Works including repairs to leaky roof/water proofing of roofs.
- d) Standard Measurement Registers for Buildings.
- e) Dismantling of buildings/structures.
- f) Retro-fitting / structural repairs of existing weak buildings/structures.

8. Maintenance of sanitary and hygienic conditions in station and railway Colonies; water supply, drainage and sewerage

a) Water Supply

I. Standards of Quality of drinking water- physical; chemical and bacteriological standards of water, Water-borne diseases, water demand-methods of forecasting, sources of water; Method of treatment of water – aeration; sedimentation; filtration (slow and rapid sand filters); disinfection; hardness methods of removal etc.

II. Conveyance and Distribution:-



Preparation of Schemes for New Water Supply/ Augmentation of Existing Water Supply; Estimating Requirements of Water, water supply from outside sources, Types; Selection & Installation of Pumps; Capacity of Pumping, Conveyance of Water Rising mains; systems of distribution, residual pressure; different types of pipes and fittings; testing of pipes, Pipe laying and Fittings of Valves and Meters, Storage tanks; Capacity, Maintenance and Cleaning of Storage Tanks, Water-Supply Plans, maintenance and operation of water supply installation - responsibilities of Engineering department, Mechanical department and Electrical Department.

III. Rain water harvesting – legislation, necessity; advantage; types; techniques; estimation of capacity of rain water harvesting pits/ salient methods of recharging subsurface aquifer etc.

IV. Water Audit and water Management :

Conservation of Water, water reuse, water recycling, water recycling plant, flow measurement system, identification of losses & leakages.

b) Sewerage:

Preparation of schemes for sewerage, sewage & water collection and carriage; design of sewers; house connection; storm water drains; maintenance of sewerage and drainage, conservancy and sanitary arrangements, disposal of sewage – river pollution and control; sewage treatment; land irrigation, septic tanks, primary clarifier, sludge and scum removal, trickling filters, activated sludge process, sludge digesting, principles of anaerobic digestion, sludge gas, sludge drying and disposal.

c) Sanitation:

Formation of sanitation committee ; Inspection by sanitation committee, sanitary arrangements in stations and colonies, drinking water wells-protection; Cleaning of wells; disinfection; prevention of Infectious diseases; disinfection of quarters.

9. Acquisition, management and disposal of land: General Codes, Manuals, rules:

Ownership of Railway land; sanctioning authority for acquisition and relinquishment; Principles of acquisition and relinquishment; Procedure for acquisition and relinquishment; Land plans and schedule; Documents of Handing over and taking over Railway Land; Land Records- Responsibility and procedure for demarcation, verification of railway boundary , land plan etc. Maintenance of right of way; religious structure. Management of railway Land leasing, licensing of land, way leave facility and easement rights, grow more food. Leasing licensing for merchants and vendors at stations, bulk oil installation. Encroachment and responsibly; rules for permission for construction of building near Railway land; instructions regarding cutting/ trimming and sale of natural product like mature tree, dry trees within and outside railway boundary, near electric or telegraph lines , sale of grass right etc. Provisions of Land Acquisition Act. 1989, Right to fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

10. Preparation of Plans and Estimates:

(a) Preparation of plans:

General procedure; plan for other departments; size of drawings; titles and numbering of drawings; scale of drawings; details on drawings; symbols and colours in drawings; RDSO drawings; CE's plans; Plans of Divisional/ Asst. Engineer's/Inspector's Offices; completion drawings;

(b) Preparations of estimates:

Engineering code provisions, various types of estimates, technical details, rates and quantities; schedule of rates and price - listing of stores; report and justification; rent statement for staff quarters; special features of estimates for remodeling of station yards, track renewal works, deposit works: Urgency Certificate;

11. Contract and Execution of Work:

a) Contract:

Engineering code provisions, schedule of rates; analysis, non-schedules rates, tenders; types; tender documents, drawings and specifications, tender committees, acceptance of tenders, contracts; types, contract documents, General and special condition of contract; measurement and measurement books - code reference; recording measurements; 'on account' and final measurements; standard measurements books; responsibilities of inspectors/JE/SSE) and Asst. Engineers for measurement of works; ballast measurement; computation quantities; preparation of abstract in measurement books; submission of bills; checking of bills; bill registers; Variations; PVC; Basics of Arbitration.

b) Execution of Work:

Engineering code provisions, agencies for executing works; responsibilities of executive officers; deposit works; excess and savings on estimates; attention to public interests; prevention of accidents; planning - activity, milestone, bar charts, critical path networks, PERT; departmental execution of work - record; progress reports, charges for stores and labour, execution of works In Engineering workshops; contracted works; issue of work orders; completion documents; zonal works.

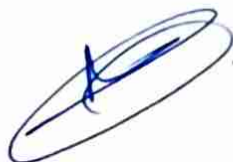
12. Track Machines:

a) Organizational structure, duties and inspection:

Duties of Executive (XEN)/Assistant Executive Engineer (AXEN)/TM/Line, Duties of SSE/TM/SDI, Duties of SSE/JE/TM Working on Machines, Duties of SSE/JE Machine In-Charge Duties of Machine Assistant, Duties of Assistant Divisional Engineer (Open Line) ADEN, Duties of SSE/JE (P.Way) Deployed with the Machine, Inspection Schedule of Track Machine Officials, Inspection Schedule of Open Line Officials

b) Tamping machine and dynamic track stabilizer:

Types of Tamping Machines, Tamping Mechanism, Tamping Parameters, ALC,



Lining System, 4 Point Lining Method, Corrections to be Applied in 4 Point Lining Method, Modes of Tamping using 4-Point Lining Method (Only for curves), 3 Point Lining Method, Corrections to be applied in 3- Point Lining, Determination of Target Versine Values for the 3-Point Lining Method, Mode of Tamping using 3-Point Lining Method, Comparison between 3 Point and 4 Point Lining System, Levelling of Track, Mode of working for levelling, General Lift, Input of the Lifting Values, Survey and working of Tamping Machines in Design Mode, Works required Before, During and After Tamping, Working Principle of Dynamic Track Stabilizer, Modes of working of Dynamic Track Stabilizer, Working of DTS.

c) Ballast cleaning and handling machines:

Ballast Cleaning Machines (BCM), Types of Ballast Cleaning Machines, Working Principle and Capability of Ballast Cleaning Machines, Works Required Before, During and After Deployment of Ballast Cleaning Machines.

d) Track relaying machines:

Track Relaying Machines, Working Mechanism and Capability of Track Laying Equipment, Pre-Relaying Operations, Operation During Block, Post Relaying Operations, Working Mechanism of TRT, Operations Prior to Deployment of TRT, Operations During The Block of TRT, Post Block Operations for TRT, Precautions During TRT Working

e) Rail Grinding Machines:

Rail Grinding Machine (RGM) (Purpose & Advantage), Grinding Strategy, Working Parameters of RGM, Monitoring Equipment for Grind Quality, Quality Inspection of Grinding, Preparatory Works for Introduction of RGM, Pre-Block Activity Before Deploying RGM, Operation During RGM Block, Post Grinding Operation

f) Planning and deployment of Machines:

Pre-requisites for Deployment of Track Machines on Construction Projects/Other Agencies, Minimum Duration of Blocks, Through Tamping and Spot Attention.

g) Rules for movement and block working:

Provision of G&SR, Operation and Working of Track Machine, Competencies of Track Machine Staff, Safety Equipment, Rules for Operation – General, Important Instructions and Precautions (Protection of Work Site, Fouling of Adjacent Lines, Information to Level Crossings etc), Failure and Accidents of Track Machines, Speed Certification for Track Machines, Special Precautions while working in Special Circumstances (Ghat Sections, Night Working).

h) Periodical maintenance and associated infrastructural facility:

Maintenance Schedule for Various Track Machine, Types of Workshops, Functions of Central Periodic Overhauling Workshop (CPOH), Functions of Zonal Machine Depot (ZMD), Functions of Satellite Depot, Functions of Mobile Workshop, Functions of Camping Coach Workshop.

i) Track Machine Manpower

Training (Officers, SSEs/JEs/TM(s), Technical Staff, Machine Assistant), Roster

13. Miscellaneous:

a) Engineering plant:

Control of plant and machinery, engineering plant reserve, plant register; valuation of plant; maintenance; storage and repairs; requisitioning of plants; use of plant at site; maintenance of log books; hiring out of engineering plant; examination of boilers of the engineering department.

b) Explosives:

Issue of Instructions on use of explosives; observance of rules, carriage of explosives, Protection of trains and Railway property, precautions to be observed during blasting, Misfire with electrical method of firing, explosives disposal, destruction of explosives

c) Management of Engineering Stores:

Reference to code and Rules; procurement of stores; requisition; receipt and issue of challans; claims of short receipts; etc.; custody of stores - classification, handling and storage, Account head of stores - operation, records and returns; disposal of released and surplus stores - return to stores Depot, disposal by auction; verification of stock and adjustment for shortage/excesses.

d) Law and Order

Railway Police; lodging complaints; cooperation with railway police; cognizable offences; non cognizable offences; powers of arrest by railway staff; warrant against railway staff; action by railway staff in case of attempted sabotage; answering of court summons; Prevention of trespass disposal of human bodies found run over; disposal of cattle found dead on the line.

