EAST CENTRAL RAILWAY

Office of the
General Manager (P)
Hajipur

File No. ECR-HQ0PERS(Gaz)/118/2022

Dated: 19.01.2023

Secy. to GM- for kind information of GM,
Dy.Secy. to AGM – for kind information of AGM.
PS-I to PCPO- for kind information of PCPO.
PCE/ECR/HJP, SDGM/ECR/HJP, PFA/ECR/HJP.
CAO/Con/South & North/MHX,
CAO/WPO/Patna, CAO/GLP/Patna.
DRM/ECR-DNR, DDU, DHN, SEE & SPJ.
All Chief Engineer/Con/MHX.
Sr. DENs/DENs/ECR-DNR, DDU, DHN, SEE & SPJ.
Sr.DPOs/ECR- DNR, DDU, DHN, SEE & SPJ.
CWM/PD/ECR/DDU, WS/SPJ & CRW/HRT.
Chairman RRB/Patna & MFP. Chairman/RRC/Patna.
Principal/ZRTI/E.C.Rly/Bhuli & MFP.
SPO/Con/MHX/Patna.
APO(MPP)/ECR/HJP- for uploading on WEBSITE.
All Extra Divisioanl Units.
General Secretary/ECROA, ECRPOA & ECRKU.

Sub :- Selection for the post of Assistant Engineer (Group-'B') in Level-8 of Pay Matrix as per 7th PC against 70% quota.

*****

With approval of General Manager/ECR, it has been decided to hold a selection for formation of the panel of **07** persons for the post of Assistant Engineer (Group-'B') against 70% quota over E.C. Railway, as per details given below: -

Selection	UR	SC	ST	Total	PwBD (*)
AEN (Gr. 'B') 70%	00 (Nil)	03 (Three)	04 (Four)	07 (Seven)	01 (one)

(*) One vacancy for Locomotor Disability (LD)- One Arm (OA)/One Leg (OL), Leprosy Cured, Acid Attack victims as per Rly. Bd's L/No. E(GP)/2022/2/20 dated 18.08.2022 & 14.11.2022.

As decided by Railway Board vide L/No. E(GP)2022/2/4 dated 28.06.2022 & 04.10.2022, that 70% selection for promotion to Group 'B' posts in all Organised departments in the vacancy cycle beginning from 01.01.2023 to 31.12.2024 are to be conducted through the Centralised Computer based Objective type examination by NAIR.

1. VENUE & DATE OF EXAMINATION & VIVA-VOCE:- will be notified in due course.

2. Eligibility (As on 01.01.2023)

The list of eligible Group 'C' employees of Civil Engineering Department (rendered not less than 03 years of non-fortuitous service as on 01.01.2023 in scale Rs. 5000-8000, V-PC/PB-2 Rs. 9300-34800/- with Grade Pay Rs. 4200/- VI-PC/Pay Matrix Level- 6 of VII PC & above), who are eligible to appear in the 70% selection is enclosed herewith as Annexure- "A". After applying the sliding scale the number of SC/ST candidates only to 05 times the number of total vacancies (i.e. 07 X 05 = 35) only 12 candidates from reserved community (SC- 09 & ST- 03) have been found. Hence, stand by list as Annexure- "B" is not feasible. Candidates are advised to be in readiness to appear for written examination to be held soon through Centralised CBT which will be notified in due course. The notification may be brought to the notice of the employees concerned enlisted in Annexure 'A'.

19/1/23

Contd.....

Normally there is no provision for holding absentee/supplementary written examination. However, in exceptional circumstances where sufficient and satisfactory reasons/proof beyond control of candidates are available, (viz. either the candidate under RMC or he was not spared by his controlling officer due to administrative reasons), only such candidates may be allowed to appear in absentee/supplementary written examination with approval of the competent authority. It will be responsibility of the candidate to advice reasons of absence through controlling officer to Dy.CPO(Gaz.)/E.C.Railway/Hajipur within 02 days from the date of CBT/written examination. In case of failure to comply the above instructions by the candidate, he/she will not be allowed to appear in the absentee written examination, if held. Schedule of Supplementary examination will be notified in due course.

Reservation in promotion to the persons with Benchmark Disability (PwBD)- Promotion from Group 'C' to Group 'B' post applicable as per the Railway Board letter no. E(GP)2022/2/20 dated 18.08.2022 & 14.11.2022.

(3) The above selection will be based on candidate's performance both in CBT/Written examination, viva-voce and Record of Service. The candidates who qualify in the CBT/Written examination followed by medical test and found fit in the requisite medical category will only be eligible for viva-voce test. The placement of the candidates in the panel will be based on their performance in the CBT/Written examination, Viva-voce & Record of service as per extant instruction of Railway Board. The candidature of the candidates is accepted provisionally. In case, any candidate is subsequently found ineligible for the above selection at any stage, his/her candidature will be rejected without any further notice.

(4) The cut-off date of eligibility for candidates both for 70% selection and corresponding 30% LDCE (to be notified later) is **01.01.2023.**

The main list of candidates of Civil Engineering Department who are eligible to appear in the selection to the post of AEN(Gr.'B') against 70% quota are enclosed and marked as Annexure-'A' in order of seniority. Representation, if any, against the seniority position, omission/commission of any name may be sent to Dy.CPO (HQ)/ECR/HJP through proper channel with a copy to Dy.CPO(Gaz.)/ECR/HJP within 02 days from the date of issue of notification. No representation will be entertained after stipulated period in any circumstances.

The controlling officers should give wide publication to this notification amongst the eligible staff under their control and ensure submission of willingness/unwillingness & required details in prescribed proforma (Annexure-"C") of all the eligible candidates enlisted.

The willingness/unwillingness with required details/information of all the eligible candidates enlisted in Annexure-"A" may be sent to their controlling officer within the stipulated time. The last date for submission of willingness/unwillingness by the eligible candidates duly countersigned by their controlling officer to Dy.CPO/Gaz/ECR/HJP is **20.01.2023.**

(5) Sr. DPOs/Personnel Officers of the Divisions/Units are requested to ensure that the Staff Welfare Inspector/Sectional Staff Welfare Inspector are deputed to obtain willingness/unwillingness with required details/information on the prescribed proforma (Annexure- "C") from the candidates (including staff on deputation/leave/sick) of Annexure- 'A' and got verified from the concerned 'P' Branch. If any candidate refuses to provide willingness/unwillingness, the deputed Staff Welfare Inspector should submit a written report regarding non-submission of option by the candidate. Such candidates will be treated as unwilling for the above selection.

Above exercise should be completed within the target date and all the relevant papers should reach to Dy.CPO(Gaz.)/ECR/HJP by **20.01.2023** positively, so that a final list of eligible willing candidates may be published.

The controlling officers are also requested to co-ordinate with the Personnel Officers and staff to complete the above exercise within time frame.

19/1/23

Contd.....

(6) CBT/Written Examination:- The examination will be conducted as per guidelines/instructions contained in Railway Board's letter No. E(GP)2018/2/31 dated 19.03.2019 (RBE No. 53/2019) & E(GP)2022/2/4 dated 07.10.2022. The CBT/Written examination shall comprise of one paper which shall have 100% objective type multiple choice question only. The paper will be of 100 marks and the distribution will be as under:-

a) Professional Subject including optional questions of 10 marks on Official language policy & Rules:- 70 marks
b) Establishment and Financial rules:- 30 marks
c) Total:- 100 marks
d) Qualifying marks:- 60 marks.
e) Duration of examination:- 02 Hours.

All Objective type questions will carry equal marks. There shall be negative marking for incorrect answers. One-third of the marks allotted for each question will be deducted for every wrong answer.

Since AEN is safety post, relaxation is not admissible to SC/ST candidates as per extant rules.

(6-a) Viva-voce & Record of service:-

	Maximum Marks	Qualifying Marks
Viva-voce	25	30 (including at least 15 marks in the Record of Service)
Record of service	25	

(7) Syllabus:- In terms of Rly. Bd's Letter No. E(GP)2022/2/4 dated 07.11.2022, copy of syllabus for above selection is attached as Annexure-'D'.

(8) TRAINING OF SC/ST CANDIDATES:

It may be noted that in terms of Railway Board's letter No. E(GP)2022/2/4 dated 18.10.2022, before conducting written examination, mandatory Pre-selection coaching classes of 60 hours/15 working days to all **SC/ST eligible candidates** will be arranged by the department concerned. PCE will nominate the in-charge(s) of pre-selection coaching. The in-charge(s) will also intimate the date and venue of the pre-selection coaching in due course.

If any SC/ST candidate refuses to undergo pre-selection coaching, a written undertaking should be obtained from him. The controlling officers should ensure that the SC/ST candidates under their control are spared without fail on time to participate in the coaching. The SC/ST candidates are also advised to insist their controlling officers, in their own interest, to spare them for the said coaching.

(8.1) Duty of the in-charge of Pre-selection Coaching (To be nominated by PCMM):

(i) To inform in writing through special messenger to the eligible SC/ST employee regarding date, time & venue of coaching.
(ii) To obtain in writing unwillingness to attend the coaching, if any, from the eligible SC/ST employees.
(iii) To co-ordinate and arrange sparing of the eligible candidates.
(iv) To chalk out coaching schedule.

(8.2) Duty of Controlling Officer:-

To spare the candidates under their control without fail in time with the direction to participate in the pre-selection coaching as well as to appear in the written examination also.

19/11/23

Contd.....

(8.3) Duty of concerned SC/ST applicant:-

(i) To arrange their sparing from duty by insisting their controlling officers in their own interest.

(ii) If any problem occurs in sparing, the candidate should report in writing to concerned in-charge of Pre-Selection coaching on the same date. No representation will be entertained in case of failure to report to the concerned in-charge of pre-selection coaching and it will deemed to be refusal for the same.

(iii) Failure of concerned SC/ST employees to avail pre-selection coaching on any account including leave etc. will be considered on their part and no supplementary coaching will be organized in any circumstances.

(iv) No appeal will be entertained by GM(P)/ECR/HJP office after completion of pre-selection coaching.

After completion of pre-selection coaching, the in-charge of the pre-selection coaching will give a written report along with all supporting papers including attendance sheet of SC/ST participants to Dy.CPO/Gaz/HJP latest by **10.02.2023** for records and further action.

(09) Concerned Personnel Branch officer & controlling officers should ensure submission of up-dated service records and APARs of last 05 years and DAR/Vig. Clearance in respect of staff declared qualified for the viva-voce in due course/immediately after publication of the result of examination through special messenger to SPO/Gaz/ECR/HJP.

(10) The above selection will be held as per procedure laid down in Master Circular- 68, governing promotion from Gr. 'C' to Gr. 'B' issued by Railway Board and the instructions issued from time to time. The said master circular is available on website www.indianrailways.gov.in....>ministry of railway...>railway board .....> Directorate... >Establishment...>E(GP) Master Circular. The department/division/unit should ensure the compliance of instructions of item No.-15 of Master Circular- 68.

Please acknowledge receipt.

DA : Annexure- 'A', 'C' & 'D'

19/1/23

(Alok Srivastava)
SPO/Gaz
For General Manager(P)/ECR/HJP

ANNEXURE- 'A'

List of eligible candidates for appearing in the selection to the post of AEN (Gr. "B") against 70% quota

Sl. No.	Name (S/Shri)	Designation with Station	Community	DOB	DOA
1	R.G. Prasad	SSE/Works/DDU	SC	27.01.63	19.11.89
2	Amrendra Kumar	SSE/P. Way/SEE	ST	05.01.63	12.06.85
3	Ram Jeevan Prasad	SSE/P. Way/Con/SPJ	SC	15.01.67	19.06.92
4	Rajendra Kumar	SSE/TMC/PD/DDU	SC	25.03.63	21.08.89
5	P.M.K. Tigga	SSE/Works/TORI	ST	20.05.63	01.09.87
6	Vinod Kumar	SSE/Works/SPP	SC	20.10.63	01.02.89
7	Roshan Barwa	SSE/Bridge/DHN	ST	29.09.65	01.02.91
8	U.S. Prasad	SSE/P.Way/DDU	SC	15.07.64	07.10.96
9	Sanjay Narayan	SSE/P.Way/DDU	SC	20.09.68	07.10.96
10	Jagdish Saran	SSE/P.Way/Con/RGD	SC	01.07.66	20.12.90
11	Upendra Kumar	SSE/Works/JHD	SC	29.02.72	12.02.01
12	Madan Kumar	SSE/Drg./SEE	SC	08.08.69	13.12.91

19/11/23

(Alok Srivastava)
SPO/Gaz
For GM(P)/ECR/HJP

ANNEXURE –'C'

To,

The General Manager (P),
East Central Railway,
Hajipur

Sub: Selection to the post of AEN (Gr.'B') against 70% quota.

Sir,

1. I.....Designation.....Station.....
.....hereby acknowledge the receipt of the above notification.
2. I am .....(willing/unwilling) to participate in the above selection.
3. Other details/information for Gr.'B' Selection are given below;-

Sl. No.	Particular	Filled by candidate
01	Name of applicant	
02	IPASS Number	
03	HRMS ID	
04	Designation	
05	Mobile No.	
06	Email. ID	
07	Place of posting	
08	Division/Workshop/Unit	
09	Controlling officer	
10	DOB (DD/MM/YYYY)	
11	Community (UR/SC/ST)	
12	Whether belong to PwBD (more than 40%), if yes, chose the correct sub category i.e. LD-OA/OL, Leprosy cured, Acid Attack Victims with a copy of certificate.	
13	Whether a PwBD requiring scribe (Yes/No)	

Your's faithfully

Dated:

Signature of the candidate

Forwarded by

Signature of the controlling officer
Designation:
Stamp:

Signature of concerned (P) Branch officer
Designation:
Stamp:

19/11/23

1652216/2022/O/o Dy.CPO/Gaz/HQ/ECR

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No. E(GP)2022/2/4 **New Delhi, dt:07/11/2022**

The General Managers,
All Indian Railways/PUs.

(Kind Attn.:All PCPOs/PFAs/Dy.CPO(G) & Dy.CAO(G)

Sub.: Promotions to Group 'B' posts on Indian Railways - Introduction of Centralized Computer Based Multiple Choice Objective type examination (CBT) in all departments having Organised Services

Board has prescribed syllabus for written examinations held as part of 30% LDCEs for promotion to Group 'B' posts in all Organised Services. Besides this, syllabus for 70% Selection for promotion to Group 'B' post of APO has also been prescribed by Board. Now, in the context of introduction of Centralised CBT for 70% Selections and 30% LDCEs for promotion to Group 'B' posts, Board has prescribed syllabus of 70% Selections and have also modified the syllabus for 30% LDCEs for all Group 'B' posts in Organised Departments. Similarly, syllabus for Establishment & Financial Rules has also been prescribed.

2. A copy each of the Syllabus for professional subjects prescribed by Board for 70% Selections and 30% LDCEs for promotion to Group 'B' posts in all Departments having Organised services along with the syllabus for Establishment & Financial Rules is enclosed for information. These syllabi are applicable for Selections & LDCEs to be conducted w.e.f.1.1.2023.

DA:As above

M Saluja 07/11/22

(Meenakshi Saluja)
Dy. Director, Estt.(GP)-III
Railway Board
Ph. No. 233047250
E.mail ID- meena.1964@gov.in

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 *Wo*rkshops/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 70% SELECTION 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.

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. 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. 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.

(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) <u>Water Supply</u>

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.