Government of India (Bharat Sarkar)
Ministry of Railways (Rail Mantralaya)
(Railway Board)

No. E(MPP)2019/3/26

RBE No. 123 /2019
New Delhi, Dated 31 .07.2019

The General Managers **All Indian Railways/PUs** **Metro Railway/Kolkata** **Railway Electrification/Allahabad** **DG/RDSO/Lucknow** **CAO/DMW/Patiala** **CAO/COFMOW/New Delhi**	**DG/NAIR/Vadodara** **The Directors** **IRIEEN/Nasik** **IRIMEE/Jamalpur** **IRISET/Secunderabad** **ED/CAMTECH/Gwalior**

Sub: Revision of refresher course for SSE/JE (Works).

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To clear backlog of refresher training of SSE/JE(Works), the proposal of IRICEN for imparting refresher training has been approved by Ministry of Railways.

Further, Ministry of Railways has accepted the proposal of revision of training modules of Refresher course for SSE/JE(Works) to 12 days duration which inter-alia include all the contents of Refresher course mentioned in Board's letter no. E(MPP)2017/3/9 dt.23.04.2019 (RBE No.66/2019 and in addition, includes relevant new topics like co-ordination aspects with S&T and Electrical Department, preventive vigilance, ethics and integrity etc. Training Module/detailed course content is enclosed herewith.

DA: As above

AJha
31/7/19

(Ajay Jha)
Joint Director/ MPP
Railway Board.

No. E(MPP)2019/3/26 **New Delhi, Dated 31 .07.2017**

Copy to:

1. The General Secretary, AIRF, 4 State Entry Road, New Delhi for information with 35 spares.
2. The General Secretary, NFIR, 3 Chelmsford Road, New Delhi for information with 35 spares.
3. The Secretary General, FROA, R.No.256-A, Rail Bhavan, New Delhi for information with 5 spares.
4. The Secretary General, IRPOF, R.No.268, Rail Bhavan, New Delhi for information with 5 spares.
5. All Members, Department Council & Secretary Staff side National Council 13-C, Ferozeshah Road, New Delhi with 90 spares.
6. The General Secretary, AIRPF Association, Room No.256-D, Rail Bhavan, New Delhi with 5 spares.
7. General Secretary, All India SC & ST Railway Employees Association, 171/B-3, Basant Lane Railway Colony, New Delhi (15 copies).

For Secretary/Railway Board

Copy to:

i. PS & ED(PG) to MR, MOS(R)

ii. PSO/Sr.PPS to CRB, FC, ML, ME, MM, MS, MT, DG(RHS) & DG(RPF)

iii. Sr.PPS/PPS/PS to AM(Budget), AM(CE), AM(C&IS), AM(Comml.), AM(Elect), AM(Fin), AM(Mech.), AM(Plg.), AM(Project), AM(PU), AM(Sig.), AM(Staff), AM(RS), AM(T&C), AM(Tele), AM(Traffic), AM(Works), Adv.L(RS), Adv(Vig.), Adv.Fin(Exp), Adv(IR), Adv(Safety), LA, OSD(MIS).

iv. ED(Plg.), ED(Accts.), EDF(BC), EDCE(B&S), EDCE(G), EDCE(Plg.), ED(CHG), ED(CC), ED(C&IS), ED(E&R), EDEE(Dev), EDEE(G), EDE, ED(RRB), EDE(N), EDE(Res), EDF, EDF€, EDF(S), EDF(B), EDF(RM), EDF(X)I, EDF(X)II, ED(H), EDLM, ED(MIS), EDE(GC), ED(T&MPP), EDME(Chg.), EDME(Fr.), EDME(Tr.), EDME(TOT), EDME(Dev.), EDME(W), ED(PC)I, ED(PC)II, ED(PP), ED(Project), ED(Project)/DMRC, EDRE, ED(Safety), JS, JS(C), JS€, JS(P), IG./RPF(Hqs), IG/RS, ED(S9g.), ED(Stat&Econ.), EDRS(C), EDRS(G), EDRS(P), EDRS(S), EDRS(W), ED(TD), EDTT(M), EDT(MC), EDT(P), ED(T&C), EDCE(P), ED(PM), ED(PG), EDTC-I, EDTC(FM), EDTT(F), EDTT(FM), EDTT(S), EDV(A), EDV€, EDV(T), ED(W).

v. Chief Commissioner of Railway Safety, Lucknow.

vi. E(Trg.), E(NG)I, E(NG)II, E(G), F(E)I, F(E)II, F(E)III, E(SCT)I, E(SCT)II branches of Railway Board.

Annexure :- XI

TRAINING MODULES

FOR (WORKS)

1. SSE/WORKS	-	INDUCTION COURSE (Phase – I & II)
2. JE/WORKS	-	INDUCTION COURSE (Phase – I & II)
3. JE/Works	-	PROMOTIONAL COURSE
4. JE/SSE/Works	-	REFRESHER COURSE

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MODULES FOR SSE/ JE REFRESHER COURSE

CATEGORY: SSE/ JE/ WORKS | DURATION: 12 DAYS (96 PERIODS)

SL	TOPIC	PDS
1	**PLANNING, LAYOUT OF VARIOUS BUILDINGS**	5
1.1	Siting of buildings, Planning, Design and layout of building. Staff colonies. construction of various building, platform etc, Provision of NBC-2016	2
1.2	Construction and maintenance of service buildings , Additions and alterations to quarters	1
1.3	Building registers, Transfer of buildings, Responsibilities of staff occupying quarters, Vacant railway buildings.	1
1.4	Green Building - LEED & GRIHA rating system, repair, maintenance & retrofitting of building	1
2	**INSPECTION AND MAINTENANCE OF BUILDING**	2
2.1	Inspection and repairs, Monitoring of maintenance, Periodical maintenance works.	1
2.2	Standard measurement registers for buildings, Petty repairs book, and Complaint register.	1
3	**INSPECTION OF STEEL STRUCTURE**	2
3.1	Inspection and maintenance of steel structure.	2
4	**SANITARY ARRANGEMENTAND HYGIENIC CONDITION**	4
4.1	Railway sanitation committees, Colony care committee, Area housing committee, Service improvement group, Colony Inspection Group etc.	2
4.2	JPO, Inspection and record of minutes of meetings.	2
5	**PASSENGER AMENITIES**	3
5.1	Model , Adarsh station, World Class stations	1
5.2	Passenger amenity booklets, Facilities for differently abled, latest guidelines.	2
6	**WATER SUPPLY**	6
6.1	Various checks and precaution for drilling, sinking of tube well,Verticality and yield test, Determination of size, Improving yield in open wells, Failure of wells and the remedial measures.	2
6.2	Method and process of water purification, treatment and disinfection of water ,Sampling of water, R.O. Process and Technical Film	2
6.3	Preventive maintenance, Cleaning of tank, Protection against pollution near sewer and drains.	2
7	**LAYING & MAINTENANCE OF SANITARY ARRANGEMENT**	3
7.1	Inspection and maintenance of sewerage, drainage and conservancy at station and colonies.	1
7.2	Periodical cleaning of drainage system, Various sanitary fittings and specification.	2
8	**PLANTATION & HORTICULTURE**	2
8.1	Care of young trees, Maintenance of gardens in offices, Rest houses and colonies, Provision of lawns and hedges in bungalow. Ornamental trees, Seasonal flowers.	1
8.2	Sale of trees by auction or by tender or to state forest corporations etc. , Fixing of reserve price of lots, Auction or tender notices and agreement, Register of sales of natural products. Afforestation on railway land by forest department, Survey of surviving trees, Harvesting of matured trees.	1
9	**MANAGEMENT OF LAND**	5
9.1	Encroachments and its removal ,PPE Act, Religious structure	1
9.2	Maintenance of right of way, Responsibility at various levels and departments. RLDA.	1
9.3	Lease and license, Surplus land, Utilization and development of land, Leasing/ licensing to govt. dept, welfare organizations, private schools, bulk oil installation, Construction of buildings in nearby railway area, NOC etc.	2
9.4	Earning from railway land, Disposal of surplus land.	1

10	**POLICE JURISDICTION AND SECURITY OF RAILWAY MATERIALS:**	**1**
10.1	General, Police jurisdiction, Lodging of complaints, cooperation with government railway police	1
11	**EARTHWORK AND FORMATION**	**4**
11.1	RDSO Earthwork Guidelines GE-1 and GE-14, Aspects of Compaction, Selection of Suitable Soil for Embankment, Blanketing Material etc.	4
12	**ESTIMATES & CONTRACTS---**	**7**
12.1	Completion report and completion statement Estimate of junction arrangements, Estimate of deposit work,	2
12.2	Verification of estimate, Competency of sanction, Currency of sanction, Register of estimates.	1
12.3	Contracts for zone works	1
12.4	Any change in General condition of contract, Special condition of contract, Earnest money, security deposit	3
13	**BUILDING & RENTS**	**2**
13.1	Assessed rent. Recovery of charges, Provision of furniture and other amenities, Rent for temporary huts and tented accommodation, Club, house for office, Occupation of railway rest houses or rest rooms	1
13.2	Rent for premises let out to recognized unions and federations.	1
14	**SCHEDULE OF DIMENSION -**	**3**
14.1	Standard Dimensions pertaining to works, Moving Dimension, Station yard, rolling stock dimensions as per Schedule-I etc.	3
15	**NEW BUILDING MATERIAL**	**3**
15.1	Light weight concrete, Decorative surface and laminates, Vacuum dewatered concrete. Anti corrosive treatments ,	2
15.2	Model Room : PVC Pipes, Bitumastic sheet, Hard and soft board, Particle board, PVC door, window and other fitting, Fly Ash Brick, Concrete interlocking Paver blocks, Galvoaluminium sheets, Auto Clave blocks etc.	1
16	**SURVEYING**	**4**
16.1	Field Visit : Exposure to commonly used instruments/tools that measure angles &distances i.e. Theodolite, Dumpy Levels, Total stations, GPS, **drone survey** etc. curve setting	3
16.2	Custody handling and upkeep of instrument, numbering and allotment of instrument, Hands-On- Adjustment and Repairs of Surveying Instruments.	1
17	**RAIN WATER HARVESTING**	**2**
18	**DRAINAGE IN YARD**	**2**
18.1	Slope on top of formation, side and catch water drains, Longitudinal and cross drain in yards.	2
19	**ACCIDENTS BREACHES--**	**3**
19.1	Classification of accidents, Sounding of hooters, Action during accident, Reporting of accident to station master.	1
19.2	Action at site, Examination of site and preparation of sketch, Preservation of clues, Attendance of police, Restoration of traffic, Accident enquiry.	1
19.3	Material for emergency, Service span and Rail Cluster, Railway affecting works, Breach, Premonsoon precautionary measure, Observance of rule.	1
20	**BRIDGES**	**6**
20.1	Rehabilitation of Bridges, Imposition of Speed Restriction on Bridges, if required ,Numerical Rating System ,Action to be taken after inspection of bridges,	2
20.2	Painting of bridges, Maintenance of foundations, Substructure Protective works, Superstructure, Cement Pressure Grouting, Epoxy grouting, Shotcreting / Guniting, Jacketing.	2

20.3	Precaution while carrying out maintenance work on bridges, oiling and greasing of bearing, special inspection during monsoon, monsoon reserves, flood records after the monsoon & during monsoon	2
21	**TUNNELS**	**2**
21.1	Maintenance of tunnels, schedule of inspection, maintenance of approach of tunnel, ventilation shaft, Weep hole, Drainage system, catch water drain, loose boulders in cutting	2
22	**STORE & ACCOUNTS**	**3**
22.1	Store return, Accountal of material, use & transaction of material, safe custody of material, gate pass, stacking of materials, stock verification, stock sheet, over hauling (increased by 2 pds)	**3**
23	**ESTABLISHMENT-**	**3**
23.1	Conduct Rule, Discipline and Appeal rule.	2
23.2	Office correspondence, Pay sheet, service record, Leave rules, Pass rules, **RTI**	1
24	**CONCRETE TECHNOLOGY**	9
24.1	Ingredient of concrete, Tutorial : Designing of concrete mix **(increased by 2 pds)**	4
24.2	Plain Concrete, RCC, Cement, it's grade, Steel, PSC	1
24.3	Model Room: Equipment for prestressing	1
24.4	Lab: Test on fresh and hardened concrete	1
24.5	Model Room : Various grade of steel	1
24.6	Compaction of concrete, different types of vibrators	1
25	**Technical Films : CONSTRUCTION MACHINARIES**	1
26	**CORRECTION SLIPS - OF ALL CODES AND MANUALS**	1
27	**Miscellaneous**	**4**
28	**NGT - Provisions**	**2**
29	**Safety at worksite**	**2**
	Proposed Total Periods	**96**
	NOTE: 8 Periods are considered of 0.45 Hour Duration each day. (Working days = 12 Days * 8 Periods = 96 hours)	

SUMMARY		
A.	Class room	79
B.	Hands-on	1
C.	Technical Films	2
D.	Model Room	4
E.	Tutorials	2
F.	Laboratory	1
G.	Field Visits	3
H.	Miscellaneous	4
	GRAND TOTAL	96

BRC108	**Erection of Bridge Super structure**	**7**		
1	Chose of a suitable method of girder erection, Preliminary arrangement before girder erection, precautions and safety measures in erection, Machinery/Equipment for erection .			
2	Crane working - working rules - safety measures - testing of tackles, chains ropes etc. (to see actual testing at JMP workshop) - capacity of- cranes in proposed and unproposed conditions at different radii. Erection by use of cranes, derricks.			
3	End launching method, side sluing method, launching of triangulated girders on the trestle, launching of girder by using service span, end launching of open web girders with help of launching nose, erection by cantilever methods, enveloping methods.			
4	Erection of PSC box girder, segmental construction, Segmental erection, I girder erection.			
BRC109	**Construction of Misc. structures**	**2**		
	FOB - steel & RCC, Platform shelter, High roof structures for workshops.			
BRC110	**Temporary arrangement for bridge works**	**3**		
1	Latest technique in temporary arrangements. Material for temporary arrangements, Precaution in Erection of temporary arrangements.			
BRC111	**Inspection of bridges and Misc. Structures**	**7**		
1	Schedule of inspection, Certification of inspection, Numerical Rating System,			
2	Details of bridge inspection- Flooring & foundation, Masonry in substructure, Protective works & waterways, Girder alignment & seating, Structural condition of girder, Condition of steel work, Track on bridge approaches- General condition of track, sleeper, hook bolt, creep & joint gap, Guard rail, Gauge and level of track, track on approach, rail joints, trolly and safety refuges, foot path, painting, marking of HFL and danger level, direction of flow, plaque, name boards, FSL, Bridge number tablet, flood gauge, flood records at important bridges, precaution against damage by fire, equipment of watchman, Bearings.			
3	Special inspection during monsoon			
4	Registers for inspection- Steel work in bridges, rivet testing register, Weld test register, PSC bridge/Composite girder bridge inspection register, Annual inspection register.			
5	Equipment for inspection of bridges.			
6	Inspection of PSC Girder Bridges, Steel girders- welded/Riveted, Composite girder, Inspection of RUB/ROB, Concrete bridges,			
7	Inspection of Misc. Structures- FOB, Platform shelters, Water tank, Flood light tower, Workshop structures, Gantry girder for EOT cranes, Micro wave towers.			

BRC112	**Underwater inspection**	2		
1	Under water inspection of substructures of Bridges -equipments.			
2	Under water inspection of substructures of Bridges by Agency.			
BRC113	**Maintenance of Bridges and Misc. Structures**	7		
1	Precaution while carrying out maintenance works on bridges,			
2	Responsibility of Engineering officials, Action to be taken after inspection of bridges, Painting of bridges,			
3	Maintenance of foundation, Protective works and water way.			
4	Maintenance of Abutments, Piers, Wing walls, Return walls, Arches			
5	Details of common repair techniques- Cement pressure grouting, Epoxy grouting, Shot creating/Guniting,			
6	Maintenance of PSC and RCC structures- Periodical maintenance- Oiling and greasing of bearing, Improvements to drainage system, Common defects and repair/strengthening technique, Protective coat for PSC & RCC structures, measurement of camber,			
7	Maintenance of bearing, Bed block, minor items of bridges and tunnels.			
8	Maintenance of composite girders, Tunnels, cuttings.			
9	Maintenance of steel girders- Loss of camber in steel girders, cracks in steel work, strengthening of steel girder, Replacement of loose rivets, correction and its prevention, protective coating by painting, Metalizing and epoxy based paints, Maintenance of weld girders,			
10	Maintenance of Misc. Structures- ROB/RUB, LUS, FOB, Platform shelters, Water tank, Flood light tower, Workshop structures, Gantry girder for EOT cranes, Micro wave towers.			
BRC114	**INSPECTION AND MAINTENANCE OF TUNNELS AND DEEP CUTTINGS**	2		
1	Inspection and maintenance of SSE/JE/Bridges, ADEN, DEN/Sr.DEN,			
2	Items to be covered in the maintenance, Record of Inspection, Mobile Staging for Inspection, Details of tunnel inspection, Leakage in tunnels and methods of correction, Works connected with the maintenance of tunnels,			
3	Inspection Register of Vulnerable Cuttings, Points to be noted during inspection of cuttings, Action to be taken in the case of boulder drops and after inspection of cutting, Guarding of Vulnerable Cuttings			

BRC115	REHABILITATION OF BRIDGES	4		
1	Reasons for Rehabilitation, Special Strengthening, Jacketing, Distressed bridges			
2	Classification of a bridge as "Distressed", Imposition of speed restriction, List of distressed Bridges (LDB), Distressed Bridge Diagram, Priority for rehabilitation of distressed bridges,			
3	Special Inspection, Site Data, Execution of rehabilitation works, Strengthening of foundations, Strengthening/Jacketing, rebuilding of substructures, shaken displaced cracked bed blocks.			
4	Distressed arch bridges, Replacement of non standard girders, Re-Girdering, Pipe culverts, small opening, Distress in superstructure & parapets.			
BRC116	Precautions while executing works in electrified section	1		
BRC117	PLANT AND MACHINERY OF THE ENGINEERING DEPARTMENT	2		
1	Control of plant and Machinery, Engineering plant Reserve, Plant and Machinery for maintenance Plant and machinery procured for works against specific sanction/projects ,Transfer of plant and machinery on completion of work, Plant numbers			
2	Register for Engineering plant reserve, Valuation of plant, Maintenance, storage and repairs to plant ,Requisitions by Divisional Engineer on plant Depot, Use of Engineering reserve plant at site of work, Debits for plant and staff supplied on departmental requisitions, Maintenance of Log book for plant			
3	Log Book of Motor Trollies and Motor Vehicles, Hiring out of engineering plant, Examination of the boilers of the Engineering, Department Boilers not in use for limited period ,Laying of boilers , Transfer of boilers			
4	Use of oxyacetylene gases - safety measures - different types of flames and their uses - Oxyacetylene torches for cutting and welding - gas cutting - pug cutting machines gas welding - electrodes.			
5	Plant and machinery - redial drills - pneumatic drilling machines- air compressors - shear and punching machines - grinding machines - lathes and milling machines - grinding wheels - air pressure required for different pneumatic equipment.			
6	Maintenance of Pulley block guy ropes , wire and manila ropes , use of different types of knots - maxpull arrangement(practical training) case of equipments.			
7	Maintenance of jacks - case and maintenance of Hydraulic, screw jacks (Duff Norton type) -Traverser bases - use of derricks including erection -			
BRC118	Laying channal sleepers on steel girder bridges and replacing of Elastomeric Bearing in PSC girders	2		
1	Laying of Channel sleepers on Steel girder Bridges			
2	Replacing of Elastomeric Bearings in PSC girder Bridges.			
3	Renewal of channel sleepers on Girder Bridges.			

BRC119	Track on bridges, track protection during bridge maintenance	1		
1	Track on Bridges, Trolley Refuges			
2	Track Protection during Rehabilitation/ Bridge maintenance works.			
BRC120	QUALITY CONTROL AND SAFETY	3		
1	Quality control measures at site, various registers to be Maintained for progress, quality, safety of contractor's persons, safety measures at work site, Accountal of new and released material, issue and receipt from contractors, Important points from Vigilance angle. Dos and don'ts for different works			
BRC121	Bridge rules and specifications, Bridge code of practice, bridge management system and updating bridge data,	4		
1	Safety Rules for protection of Bridges and safety of travelling public			
2	Bridge Rules and specification of steel			
3	Bridge management system - Updating Bridge data			
4	Bridge code of practice			
5	Complete bridge management by contract system.			
6	Correction slip			
BRC122	Action during Accidents and breaches	3		
1	Accidents and breaches Duties of SE/Bridges, Sounding of hooters, & classification of accidents, Action to be taken on reaching site, First aid, preservation of clues, Assessment of men and materials for restoration, expeditious restoration, breaches & its types,			
2	Action during breach, washout of bridges, temporary restoration, restoration of bridges, enquiries.			
3	Action during breach -Provisions of ARS - Water ways, scour, flood discharges, protection works, soundings - flood register.			
BRC123	Schedule of dimensions and CRS santion	2		
1	Schedule of dimensions - B.G & MG - Procedure for condonation - ODC -			
2	CRS sanction - Works requiring CRS sanction - safety certificate			
BRC124	Method of Inspection, Accompany Inspection and action taken for the inspection.	1		
BRC125	Contract management & Finance and Budget	4		
1	Contract management Definition of Agreement/contracts, Types & forms of contract, tenders, tender Committee			
2	Contract management -Awarding of contract, Earnest money, Security deposit, GCC & SCC, USSOR, SOP			
3	Allocation and Heads of expenditure, CF, DF, CAP, DRF, OLWR, SF, SRSF,			

BRC126	**Official language Rajbhasha**	2		
1	Official language Rajbhasha - Directives in use of Raj bhasha in day to day working -			
2	Directives for implementation of Raj bhasha –			
BRC127	**Establishment rules**	4		
1	Establishment -Muster - Pay sheet,pay scales, Allowances, Pass and leave rules of unskilled, skilled and artisan staff - Witnessing of payments –			
2	Railway servants' conduct rules -			
3	Discipline and appeal rules.- DAR enquiry			
4	Discipline and appeal rules.- finalization of DAR cases-			
5	Labour laws -Hours of employment regulations, Display of hours of duty -payment of wages act - permissible deductions - registers to be maintained,			
6	workmen's compensation act - Action in case of injury on duty - Minimum' wages act -Indian railways act - factory act			
7	Leave Rules			
8	Pass Rules			
BRC128	**Stores**	2		
1	DBR, DBI, DMTR- Ledger, requisition (stock & non stock items), local purchase - T.P. item, charged off accounts - M.S., B.M, etc.,			
2	disposal of scrap - stock sheet etc-Return of stores –			
3	stock verification - verification of stores & accounts by AEN,DEN, Stock holder -ABC analysis			
4	DS-8 -maintenance of stores of BRI's.- -			
5	Security of railway Materials			
BRC129	**Introduction to computers**	2	3	
1	Basic about computer, Introduction to MS Office- Word, Excel, Power Point, Access			
2	Leap Office, Auto CAD			
3	Preparation of progress report use of Railnet, Web Mail, Inter Net, etc.			

BRC130	**Library and Vedio**			
1	Library	2	4	
2	Rehabilitation of Bridges wioth Temp Griders			
3	Video - Regidering with Gantry girder			
4	Video -Gauge conversion of Panban Bridge.			
5	Video - Under water Bridges.			
6	Video - Instrumentation of Bridges for CC+8+2 routes.			
7	Video - Strengthening of Sub-structure			
BRC131	**General**			
1	Mangerial skill	2		
2	Leadership			
3	Personal Development and Soft Skill			
4	Personal Management			
BRC132	Test and Examination			
		6		
	Working Hours	101	7	0
	Total Working Hours	108		
	Working Days	18		
	Sunday and other Holidays (2 Sundays)	2		
	Total Days	20		
	Weeks	2.86		
	Say	3 Weeks		

Training duration for Refresher Course for JE/SSE/Bridges 3 Weeks