E-office 536912/2019-O/o Ped/Sig

No.2019/Sig/13-CDR/9/Norms

Sub: Revision of norms/yardstick for manpower planning
Ref: (i) Board Meeting held on 13.02.19
(ii) Your Note No.E(MPP) 2019/1/4 dt.13.2.19

1.0 Yardsticks for maintenance of Signaling & Telecom equipments were last issued in the year 2010 vide Board's letter No.2007/Sig/Non Gaz/Norms dated 16.8.2010.

2.0 Vide letter referred above, certain material were handed over for revision of the yardsticks /norms as per the Board Meeting held on 13.2.19.

3.0 It is pointed out that in 2014 in 83rd Signal Standard Committee (SSC), the view of the yardsticks for Signal & Telecommunication was discussed. A Committee of CSTEs Southern, Western, Eastern, Northern and Sr. ED (Sig. Cord.)/RDSO was constituted to review the existing yardsticks, considering zero based review and large scale transformation in Signaling & Telecommunication Systems.

4.0 A fresh review of yardsticks for S&T assets has been done by the Committee and have submitted their report in Nov. 2016. It is seen from the report that the Committee has done a comprehensive job in assessing the workload of maintenance of Signaling & Telecommunication assets taking into account the present system of working. For Signaling maintenance at Stations, they have adopted both the size of the Stations in number of routes and also classification of routes (i.e. A,B,C,D, D Spl, E & E Spl.) the Station is situated. For Telecom assets also, comprehensive workload calculations for all the systems existing presently has been done to propose yardsticks.

5.0 A copy of the report is enclosed as a ready reference. Training & Manpower Planning Dte. may consider the report of the Committee for finalisation of S&T yardsticks. Incidentally, Western Railway report submitted vide letter referred at (ii) is in line with the committee's report.

21-03

DA/ As above.

(Arvind Mital)
PED(Sig)
18.3.2019

ED/T&MPP – On leave

JD/MPP

Sh Sharma
19/3/19

No. E(MPPP)2019/1/4 E-OFFICE: 32 81536

Sub-Revision of norms/yardsticks of manpower planning.

Ref –Board Meeting held on 13.02.2019 and 08.04.2019 on the aforesaid subject.

Signalling Department

Background

1. CRB directed Planning Directorate to put up a manpower strategic note. Accordingly, Action Plan to revise the yardsticks of O&M activities of all departments was advised to GMs of All Indian Railways vide Board's letter no. 2018/SP/MPS/1 dated 09.05.2018 **(Annex. I)**.
2. GM Eastern Railway and Western Railway were assigned the task to conduct a zero based review of yardsticks for Signalling **(Annex. I)**.
3. ER and WR's gave presentation on proposed yardsticks before AM/Plg and concerned AMs during Aug-Oct 2018 in the Railway Board.
4. The recommendations of Railways were circulated to concerned Board Members for their views/approval. **(Annex. III)**
5. PED/Signal vide his note dtd. 18.03.2019 has proposed revised yardsticks for signal department **(Annex. II)**.
6. Sanctioned/on roll strength of Signal Department is also enclosed as **Annex. IV** for ready reference please.

Proposal

7. Eastern and Western Railways proposed yardsticks are placed at **Annex. III.** Yardstick proposed by PED/Signal is placed at **Annex. IIA.**

8. As per Board's Minutes held 13.02.2019 Board Member and DGs shall examine GMs report recommending revised yardstick in respect of their areas. We may send the aforesaid note to DG (S&T) requesting recommendation on final yardstick before the same is approved by Board. Board MS may kindly approve.

Jha
10/4/19
JD/MPP

Dir (MPP) Monica 10/4/19.

ED (T&MPP) 10/4/19

MS

10/4

DG/S&T The existing yard stick for Signal ~~Sig~~ cpts issued in 2010 was based on work load calculations based on Signal Units. For this, each cpt had to be given an effd weightage in terms of equated Signal Units. This was very cumbersome and also there was scope of different interpretation leading to different zones

Contd on AS-2

calculating the Signal units differently.

The current ~~report proposes~~ (Annex II) is based on a standard method using number of points as the basic parameter of work load with due weightage given to the route in which the station is located, density of suburban system & frequency of shunting operations. These gives a very realistic idea of the workload of staff. The report also gives a method to calculate the Telecom work load which is also very realistic & is very specific.

Thus it is seen that while the additional staff requirement calculated with the 2010 yard stick comes to more than 3 times the present strength whereas as per the current report, the additional requirement is marginal & appears very realistic.

The report has also given very realistic yard sticks for staff in Divl Control office, Divl HQs office, Zonal HQ office, Zonal functionality control also and can be treated as covering all facets of S&T working.

In view of this it is felt that the yard sticks for S&T staff as given in the report attached to Annex-II is recommended for approval of the Board.

12/4
DG/S&T

Pl. look into.

M/S

ISTy

ED/IT & MPP

VD/MPP

NON GAZ

F. 24213/2016/AM/Sig

19/12/16

SOUTHERN RAILWAY

Headquarters Office,
S.& T Branch,
Chennai – 3

No. CST/Meeting/22

Dt. 13..12..16

Additional Member/Signals,
Room No. 119,
Railway Board,
New Delhi – 110 001.

Sub : Review of yardstick for Signalling and Telecomm. Equipments.

Ref: 1. Railway Board's Lr. No. 2014/Sig/WG /Yardstick Dt. 09.02.2016.
2. CSTE/ER's Lr. No. SG. 203/3/SSC/ 83rd/Yardstick Dt. 23.02.2016.

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In connection with the above, joint findings in line with terms of reference for review of yardstick for both Signalling and Telecommunication equipments are sent herewith for your perusal and necessary process for approval please.

Encl: As above.

13/12/16

(S. Selvadurai)
Chief Signal & Telecomm. Engineer/
Planning

Exe/Sig
To be put to AM/Sig

16/12/16

Pls R.D. in case file.

Director/Sig

20/12/16

1. The terms of reference for the review of the yardstick are as follows:

(a) To examine different guidelines circulated to Railways for calculating S&T workload (DISTU, ZISTU) and suggest changes.
   i. To make the formula simple.
   ii. To remove disparity in the existing method of calculation.

(b) To examine the possibility of defining equated signaling units for verifiable items like number of routes, track circuits, points, crank handles etc.

(c) to recommend equated signal units for modern signaling and Telecom equipments for which no equated units are defined.

(d) To suggest methodology to ensure that equated units are assigned to new S&T equipments expeditiously.

(e) To look into the requirement of manpower for maintaining modern signaling equipments keeping in view the IR's objective of optimizing manpower and make recommendations.

2. In present day practice, a list of equated signal and telecom units, approved by the Board, is applied on individual assets of its station and then aggregated for a Divisional / zonal Railway for calculating the DESUSs/DETUs/DISTUs. This process is very cumbersome and has the following limitations:

(a) There are a lot of anomalies in calculation of S&T workload leading to wide variation in staff per thousand DESUs in different Railways which further process benchmarking figures to be highly skewed.

(b) Any addition / deletion of new assets change the whole calculation of DESU / DETU.

(c) Every time new equipment is introduced, the equated lever unit for the same needs to assessed. Sometimes, it approximated to existing lever units, thus leading to variation in calculations.

(d) Hence, the methodology, suggested here, is to relate the no. of routes of the stations, thus avoiding the above limitations.

3. The signaling system of Indian Railway is passing through a transition where mechanical / electromechanical interlocking system is being converted into electrical/electronic interlocking in a big way.

4. For Electronic interlocking/relay interlocking, the numbers of routes at the station primarily decides the complexity and level of equipment to be provided at the station. It is noted that there is direct relationship between the concentration of signalling assets and number of routes available the station. It is also pertinent to note that stations/yards having excessive shunting requirement at major passenger terminals, major good yards put extra burden of maintenance on the signalling staff on account of very low availability of time windows for maintenance.

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5. Due to continuous increase in traffic movement, the level of maintenance required for assets to keep them in good fettle and to keep MTTR (Mean time to repair) at minimum level, maintenance efforts required are much more at A, B and C routes. In this regard specifically in 'C' route, even a minor incidence can lead to excessive disruption to highly sensitive commuter traffic which can even cause law and order problem. In current scenario, signal maintenance staff is working practically like excluded category and are on call even after duty hours without any planned rest.

6. With the increase in number of sections being provided with automatic signalling, IBS/IBH, Second Distant signal to augment extra traffic carrying capacity on high diversity routes has resulted in additional pressure and extra burden of maintenance of signalling assets in the midsection which was not there earlier.

7. In order to improve the safety of train operations on level crossing gates, the yardstick for interlocking of level crossing gates based on TVUs has been regularly relaxed requiring all level crossing gates above 20,000 TVUs to be interlocked outside station and also Level Crossing having any history of accidents even having less than 20000 TVU to be interlocked. Most of these gates are in the mid section requiring S&T maintenance staff to walk long distances in mid-section along the track. Thus, S&T assets which were hither concentrated at stations are spread to block section with proliferation of interlocked gates, IBH, automatic signalling.

8. In addition, there is frequent breakage of LC gates on a division, requiring prompt and frequent repairs to ensure safe and smooth train operations.

9. With the increase in the track maintenance being done by machines, there is extra requirement of S&T staff to be deputed along with the track machines working for disconnection and re-connection of signalling gears connected to the track. In this regard extract of Para 279 IRPWM is given below:

Para 279. Provision and maintenance of signaling fixtures in track:

(1) Provision of - signalling fixtures in track:

(a) No signal fixtures / installation which interfere with maintenance of track should be provided on track unless the approval for same is available from Track Directorate of RDSO or Railway Board.

S & T Department shall provide adequate number of personnel for opening of signal rod gears etc to facilitate mechanized track maintenance.

With practically 100% track on Broad gauge which is provided with concrete sleepers being brought under mechanized maintenance, substantial additional workload has accrued on S&T.

10. With provision of complete track circuiting of station yard, Multi Aspect Colour light signaling; the burden of ensuring safety in train operation has shifted from operation staff to the Signalling equipment. Hence proper upkeep and maintenance becomes more vital to ensure that signalling equipment is in good fettle to ensure safety in train operations.

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11. With more and more electronic equipment with software embedded systems being inducted for Signalling applications, skill requirement for maintenance staff has gone up many fold; thus requiring higher level of attention.

12. Thus, in order to have a uniform basis of workload assessment it is proposed to link requirement of maintenance staff with number of Routes at a station.

13. At major yards which have extensive shunting operations more than 100 in 24 hours cause extra burden as any incidence involving shunting leads to serious disruption to train operations. Hence additional multiplication factor to calculate effective number of routes at stations above 100 shunting movements have been proposed as under:

Sl. No.	Station type	Multiplication factor
1.	Stations having shunting movements in 24 Hrs below 100	1
2.	Stations having shunting movements in 24 Hrs above 100 but below 500	1.25
3.	Stations having shunting movements in 24 Hrs above 500 to 1000	1.5
4.	Stations having shunting movements in 24 Hrs above 1000	1.75

14. In order to assess the work load of maintenance of Automatic signalling Sections and Outside limit interlocked LC gates/ Intermediate Block signal where there is concentration of Signalling gears in Block section the same have been equated to stations in as under:

(a) Automatic Signalling 20-25 Track Km to be treated as equivalent to one Station below 100 routes

(b) 6 OSL Interlocked Gates/IBS to be treated as equivalent to one Station below 100 routes

15. Thus taking into consideration above factors scale of maintenance staff is proposed for different slabs based on

(a) Number of stations on different Routes (A, B, C, D Spl, D, E Spl & E)

(b) Effective number of routes at a Station

16. C Routes are specifically declared suburban sections. However traffic on the same may not be uniform in different Railways. In some of the Railways C routes have dense suburban services like Western and Central which call for intensive maintenance. Hence workload for C Routes is proposed as under:

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Sl.No	Traffic	Staff requirement Equivalent Route
1.	No of Trains up to 40 on each line	E Route
2.	No of trains on each line between 40 to 80	Dspl/D/E Spl
3.	No of trains on each line between 80 to 120	A/B
4.	No of trains on each line above 120	C

17. Train protection systems are likely to be provided on all broad gauge routes in foreseeable future as an essential means to enhance level of safety in train operations. Hence to cater to this work load centralized maintenance and repair gang is proposed for S&T equipment

18. The proposed yard stick is for calculation of basic workload and base requirement of staff. Requirement of staff for Rest Giver, Leave Reserve is to be worked out as per HOER.

19. To have an effective mechanism for controlling, monitoring and guiding Signal maintenance all signal fault control organizations in divisions shall be manned round the clock in 8 Hour Shift by 1 SSE and 1 JE and 1 Helper. Networked Dataloggers have become an essential and integral part of Signaling Maintenance and safety function. It plays important role for predictive maintenance and post analysis of accidents. Hence continuous monitoring of the same is of paramount importance. They will also monitor Datalogger network and associated alarms.

20. Similarly effective Fault control organization at Headquarter is required to monitor and control. Datalogger network has also been extended to Zonal headquarter. Thus Fault control organization at Headquarter shall be manned round the clock in 8 Hour shift by 1 SSE.

21. To provide Technical assistance to Sr. DSTEs in matters pertaining to Signalling Plans, Design, Updating of Policy, Safety instructions, CRS observations and other technical matters 1 SSE shall be provided in divisions up to 400RKM. Divisions having Route Km more than 400 shall have 2 SSEs. In addition one SSE shall be provided to deal with works, stores & tenders.

22. To provide Technical assistance in Headquarter office 2 SSE/Technical, 1 SSE/Stores, 1 SSE/Planning shall be provided to deal with technical, stores & planning matters.

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23. Each SSE/Signal In-charge shall be provided with Hired Pickup Van/Multi Utility Vehicle so as to cut down time for transportation of men and material to site for maintenance, repairs, overhauling and emergency restorations.

24. The scale of Signalling staff proposed as above is in Annexure-I

25. There are many adhoc activities which do not constitute day to day maintenance activities but none the less are vital for functioning of signaling systems. The above yardstick is subject to outsourcing of such works & maintenance activities in Non-Safety Critical areas. Recently concept of Sectional signal Maintenance contract system is in practice in some Zones similar to concept of Zonal contract prevalent in civil Engineering. Following activities (Illustrative) can be given in Zonal signal maintenance contracts (ZSMC). Geographical area of Zone can be decided by Railways. Proposed ZSMC will be carried out under close supervision of SSE and sectional officers.

i. **Trenching and cable laying.**
This includes activity of manual or machine digging for cable trench in yards, laying of protection material like GI/DWC/RCC pipes, laying of cables and termination of cables in location boxes including provisions of suitable approved type terminals and wiring materials. Also work related to foundations for signals, location boxes and other concreting works for repairs and protection of cables and related gears. This also includes jointing of cables for temporary or permanent restoration of cables.

ii. **Casual replacement of signalling gears.**
Signaling works in connection with track renewal, points and crossing renewals, facilitating track machine works, etc. This includes track circuit works like bonding, provision of TLIB, track leads, removal/refitting of axle counter DP sensors and other track circuit equipments, their installation and wirings. Scope will also include removing /refitting of ground connections of point or point machines. Replacement of booms of LC gates, belts of gates motors, switches etc and Repairs and replacements of fire alarms and fire extinguishers sensors or consumables.

iii. **Painting of Signalling gears.**

All type of painting of signalling gears including epoxy and temperature and humidity controlled painting for location boxes and signals. Oiling and greasing of points, machines, LC gate gears etc.

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iv. **Other Miscellaneous Activities**

a. Material handling of stores at site as well as nominated stores on seasonal basis.

b. Loading, unloading, handling and transportation of material.

c. Maintenance of solar panels, batteries, and other such trivial jobs.

A.V.Shivaprasad	G S Tuteja	L P Sinha	A.Vijayvargiya	Deepak Bansal
CSTE/SR & Convenor	CSTE/WR	CSTE/ER	CSTE/NR	ED(Co)/Sig RDSO

ANNEXURE - I

	Proposed Yardsticks for S&T staff creation based on No. of routes and				
S.No	No of Routes	A & B Route and C Route with no of trains between 80 to 120 on each line	C Route above 120 trains on each line	D Special, D & Espl C Route with no of trains between 40 to 80 on each line	E and C Route with no of trains up to 40 on each line
1	Routes<100 (Per Station)	1 set + ⅓ JE/SSE	1 set round the clock in 8 Hour Shift + ⅓ JE/SSE round the clock in 8 Hour Shift	½ Set + ¼ JE/SSE	⅓ Set + ⅙ JE/SSE
2	100< Effevtive Routes<200(Per Station)	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift
3	200< eff. Routes<400 per Station	(1 JE/SSE+1 kh +1 Set) round the clock in 8 Hour Shift + 1 JE/SSE +1 kh+1Set In General Shift for Outdoor	(1 JE/SSE+1 kh +1 Set) round the clock in 8 Hour Shift + 1 JE/SSE +1 kh+1Set In General Shift for Outdoor	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift	(1 JE/SSE+ 1KH+1 Set) round the clock in 8 Hour Shift
4	For every additional up to 200 effevtive routes	Additional 1 JE/SSE+1 kh + 1 set	Additional 1 JE/SSE+1 kh + 1 set	Additional 1 JE/SSE+1 kh + 1 set	Additional 1 JE/SSE+1 kh + 1 set
Note:	shunting movements < 100 in 24Hrs , SMF for effective routes as - < 100 movements - 1 100 -500 moves- 1.25 500 - 1000 moves - 1.5 >1000 - 1.75	Eff routes = No. of routes x SMF (shunting Multiply factor)	Eff routes = No. of routes x SMF (shunting Multiply factor)	Eff routes = No. of routes x SMF (shunting Multiply factor)	Eff routes = No. of routes x SMF (shunting Multiply factor)

ANNEXURE - I

S.No	No of Routes	A & B Route and C Route with no of trains between 80 to 120 on each line	C Route above 120 trains on each line	D Special, D & Espl C Route with no of trains between 40 to 80 on each line	E and C Route with no of trains up to 40 on each line
5	Automatic Signalling 20-25 Track Km to be treated as equivalent to one Station below 100 routes				
6	6 OSLGates/IBH to be treated as equivalent to one Station below 100 routes				
7	Train Protection Systems - Infrastructure components: Track Magnets, LIUs, Balises etc	1 Set of Train Protection System Repair Gang for 400 Route Km and two for more than 400 Route Km.			
8	SSE/Incharge	Max 6 Stns	Max 6 Stns	Max 8 Stns	Max 12 Stns
9	Night Failure Gang for Stations not provided with round the clock in 8 Hour Shift staff	1 set for 3 Stations not provided with round the clock in 8 Hour Shift staff		1 set for 4 Stations not provided with round the clock in 8 Hour Shift staff	1 set for 6 Stations not provided with round the clock in 8 Hour Shift staff
10	HR Gang	1 with every SSE/Incharge			
11	SSE/Incahrge for Stores 1 for 400 Route Km and 2 For More than 400 Route Km				
12	Fault Monitoring and Control organization in Divisional Office	1 SSE + 1 JE + 1 Helper round the clock in 8 Hour Shift			

ANNEXURE - I

S.No	No of Routes	A & B Route and C Route with no of trains between 80 to 120 on each line	C Route above 120 trains on each line	D Special, D & Espl C Route with no of trains between 40 to 80 on each line	E and C Route with no of trains up to 40 on each line
13	Fault Monitoring and Control organization in Headquarter Office	1 SSE + 1 Helper round the clock in 8 Hour Shift			
14	Technical Organization in Divisional Office	1 SSE /Technical, 1 SSE/Stores for Divisions upto 400 Route KM For Divisons >400 Route Km 2 SSE/Technical + 1 SSE/Stores			
15	Technical Organization in Headquarter Office	2 SSE/Technical + 1 SSE/Planning + 1 SSE/Stores			
Note: Yardstick proposed caters to Base workload. LR/RG is to be catered as per HOER					

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ANNEXURE - I

1 Set	2 Signal Tecnician + 1 Helper
HR Gang	1 JE/SSE
	2 Signal Technicians
	1 Blacksmith
	6 Helpers
SSE Store	
	1 Sig Technician
	1 Stores Clerk
	8 Helpers
Train Protection System Maintenance Gang	1 SSE Incharge
	2 JE/SSE
	6 Signal Technicians
	8 Helpers

28/11/2016

1Set_Details

Guidelines for determination of Maintenance workload of Railway Telecommunication Assets (Proposed by CSTE/NR)

Railways by very nature of their operations require dedicated and specialized communication networks. Railway's communication requirements can broadly be classified as under:

- Administrative
- Operational
- Emergency

Administrative requirements are akin to Public switched Telephone networks. They constitute mostly Exchanges and associate infrastructure. Operational communication requirements are of highly specialized nature and have to meet with stringent requirement of reliability and availability. They not only constitute control circuit but Passenger and goods services enabler such as PRS/UTS, PIS, FOIS, ISS etc. These services play critical role in revenue generation as well as customer satisfaction. It is important to keep these telecom enabled services up and running 24x7.

The requirement of staff to keep these assets healthy therefore needs careful consideration especially when the technology has leapfrogged in the past two decades.

Guidelines have been issued by Railway Board from time to time to assess the maintenance work load of Telecommunication assets.

In this connection first guideline was issued by Railway Board vide letter No.67/W3/SG/M/9 dated 10/09/1968 through which IRCA unit for Telecom gears had been advised. During that period Telecom installations were very few and most of the trunk circuits were ranted from BSNL.

Further after development of Telegraph & Teleprinter Circuits, Portable Control/ Emergency Telephone/circuits, the IRCA units for Telecommunication equipment were revised by Railway Board vide letter No.94/ER/1700/9 dated 13/06/1994.

Considering the rapid growth in Telecommunication in the last decade of 20th Century viz Quad Cable, OFC based communication system, Electronic exchanges, LED based display units, the IRCA units for Telecommunication gazettes had been revised vide Railway Board letter No.94/E&R/1700/9(Pt.) dated 04/10/2001 and letter No.2001/Tele/Plg./3/MPP dated 29-30/08/2001.

Since then a lot of additional Data Communication Circuits has been introduced in Railway viz UTS, FOIS, Railnet, Internet etc. for which IRCA units are yet not decided for the associated equipments e.g. Modems, Switches, Routers, LAN Extender, Railnet points etc.

The purpose of this report is to standardise the IRCA units of all the Telecom assets including left over data Circuit gazettes and staffing patterns for maintenance of the existing telecom gears.

Traditionally, IRCA units have been applied on individual assets and aggregated for a Division / Zonal Railway. However, this is a very cumbersome process especially in telecom scenario where asset addition and deletion is more a local activity rather than centrally controlled/ monitored. The methodology being suggested assumes some approximation but essentially, is not likely to make any change in the staff requirement as, by definition, they cover a broad spectrum of units.

It is proposed that physical/ technical cluster of assets are created and each cluster is given a weight age based on the assets it contains. The number of assets in a cluster shall be based on normally installed assets. The proposed clusters are as under:

1. Station area
    a. Passenger information System : This shall include
        i. Public Announcement System
        ii. Indicators
        iii. PF Clocks
        iv. Coach Guidance System
        v. ISS
    b. Communication System for Train Operation
        i. All Control Phones
        ii. MTNL/BSNL Phone
        iii. Railway Phone
        iv. VHF System : fixed and handheld
        v. STM-1/4, PDMX , Power Plant
    c. Data Communication Equipment
        i. For UTS / PRS
    d. Surveillance System
2. Cable (OFC/Quad) network
    a. Emergency sockets
    b. Mid-Section LC gate phones
    c. Mid-section Control points for SP/SSP
3. Other locations
    a. Telephone Exchanges
    b. Control Office
    c. NOCC
    d. Central Command & Control Centre for CCTV base surveillance system
    e. ART Equipment
    f. Railnet
    g. FOIS
    h. PRS (Stand alone)

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The availability of the equipment at a given location is dependent on Class of station, whether loading or not etc. These would be sub-classified when the actual weightages are assigned and calculated.

The clusters would now be discussed in detail including assumptions, validation, weightages and staffing pattern

(A) Station area :

1. On IR, stations are categorised by earning of the station and have been divided into A1, A, B, C, D and E category. As the footfall is an indicator of the size of the station; passenger information systems have been defined accordingly. However, category A-1 may consist of very large stations such as New Delhi, Howrah , Chhatrapati Shivaji Terminus Mumbai etc with more than 10 platforms but also 4-8 platform stations such as Mumbai Central, Hazarat Nizamuddin etc. Understandably, the telecom assets for passenger information would be larger in number and capacity on bigger stations. It is therefore proposed that for sake of this exercise, A1 category stations are sub-divided into two parts :

   (i) Up to 12 Platforms
   (ii) With more than 12 Platforms.

2. Secondly category A & B stations have been clubbed as one.

3. Category 'C' stations are Suburban and have been classified as such with 4 Platforms. Similarly, category D & E stations have been clubbed and assumed to have only one Platform as is normally the status throughout on Indian Railways.

Passenger Information System (PIS)

Hence it is proposed to have a staffing norm based on commercial classification and number of stations

In addition to PIS station has following additional communication facilities:

COMMUNICATION SYSTEM FOR TRAIN OPERATION

We have assumed that being bigger stations, A1 category stations have similar importance from traffic point of view also. Dy Control phone have been catered for these stations. TPC have been considered for A1, A and B stations. Other equipment included in this sub category is listed in the calculation sheet.

DATA COMMUNICATION SYSTEM

26/11/2016

Data communication system at a station comprised DTE – Routers, Switches, LAN Extenders/Modems and associated cabling/wiring for UTS/PRS/FOIS/Railnet for wayside stations have been included in this category up to 10 Nodes.

RAILWAY TELEPHONE EXCHANGE

Telephone exchange up to 50 subscriber lines catering field units & other subscribers. Including Railnet connections provide using DSLAMS

Staffing –

Accordingly Norms for staffing are proposed as under:

	A1 Large >12 Platforms	*A1 Med < 12 platforms*	*A&B*	*C*	*D,E*	*F*
Sectional Supervisor(SSE/JE)	1 *	1(only in 1 shift)	1/12	1/6	1/24	
Technician	2*	1*	1/4	1/3	1/6	1/6
Helper	2*	1*	1/4	1/6	1/12	
	*In 8 hour Shift	*In 8 hour Shift				

Note: For every 6 sectional SSE/JE there shall be 1 SSE In-charge along with on 1 JE/SSE, 2 Technicians & 2 helpers to manage replacements, modifications & minor works.

(B) CABLE (OFC/ QUAD) Network/ 100 KM

This category deals with assets lying beyond the station area and spread along the alignment. Understandably, it includes Quad/ OF Cable, Emergency sockets, Telecom assets on Manned gates and SP/ SSPs. For ease of calculations, units, say, Field Telecom Units (FTU) assets per 150 Rkm have been considered. The number of gates has taken as 30 / 150km which is based on 1243 gates available on 6438 Rkm on Western Railway which brings this figure of 29 gates per 100 km which has been rounded off to 30.

Staffing –

The staffing pattern shall generally follow the norms issued as per Board's letter RB Tele 15/2004 dated 6/09/2004; however this is proposed to be modified as the Board's letter considers maintenance of electronic and communication equipment at way stations for control working also in manpower recommendation which has been included as station asset in this recommendation. It is recommended that 150 RKm is taken as 1 FTU with slight modification.

Staffing pattern is recommended as under for 2 FTUs

	Category	Nos	
		Without AMC	With AMC
General Supervision	SSE/JE	1	1
	TECHNICIAN	2	1
	Helper	2	1
Cable Gang	JE	2	1
	Cable Jointer	1	1
	Helper	3	1

(C) Other Major Activity Centres

Annexure C contains the list of other locations and their suggested Units.

Staffing pattern is recommended as under:

1. Telephone Exchanges: These comprise major nodes of country wide Railway Switched Telephone Network (RSTN). Assets include Digital Electronic Exchanges, associated Line plant, & Power Plant. These have to be maintained to operate on 24x7 basis. Further Network is being upgraded to facilitate Video Conferencing between Railway Board & Zonal Headquarters and Zonal Headquarters & Divisional HQ.

No. of lines	Staff
Upto 1024 ports and at Zonal/ Divn HQ and other Stations and vital residential area at each exchange location. Exchanges up to 128 ports located within 2.5 Km, number of ports shall be added with nearest main exchange, incuding Railnet connections using DSLAMS	2 Technician 2 Helper
1024 – 4096 Ports at Zonal/ Divn HQ and and other Stations vital residential area at each exchange location. Exchanges up to 128 ports located within 2.5 Km, number of ports shall be added with nearest main exchange, incuding Railnet connections using DSLAMS	1 Supervisor + 2 Technicians +2 Helpers
More than 4096 Ports at Zonal/ Divn HQ and and other Stations vital residential area at each exchange location. Exchanges up to 128 ports located within 2.5 Km, number of ports shall be added with nearest main exchange, incuding Railnet connections using DSLAMS	2 Supervisor + (2Technician & 2 Helper for every 1000 lines)

Note: For every 4 sectional SSE/JE there shall be 1 SSE in-charge along with on 1 JE/SSE, 2 Technicians & 2 helpers to manage replacements, modifications & minor works.

2. Control Office and Network Operation and Control Centre:
   This would be nerve centre of the operational circuits as well as Data Circuits for various applications concerning passenger and freight customer interface.

This centre will have NMS for each type of network and will be entrusted with analysis of failures, alerting concerned field staff and arranging rectification.
NOC will also be repository of all data pertaining to its jurisdiction egi. Values of cable meggering, G.821 parameters etc

NOC also compiles information in different formats and is nodal point for fault logging with outside agencies like RCIL, BSNL etc.

Two kind of NOCs are envisaged

Major NOC: Every divisional HQ NOC is a major NOC.
An outside div HQ NOC will be a major NOC only if controlling more than 30-35 stations

Minor NOC: Any NOC, situated outside the div HQ and controlling less than 35 stations will be classified a Minor NOC

It is crucial to keep NOC running all the time. It is in this perspective that the Committee recommends that

Major NOC to be manned round the clock by one set of 2 Supervisors, 2 Technicians and 2 Helpers.

Minor NOC to be manned round the clock by one set of 1Supervisor, 1Technician and 1 Helper.

Central Command & Control Centre for CCTV base surveillance system:
In the present security environment, CCTV system to monitor stations, Reservation centres etc have become extremely crucial. It is in this perspective that the Committee recommends that it is manned round the clock by one set each of SSE/JE(Tele), Technician and Helper.

3. Railnet:
With more and more intranet based information systems and applications such as MIS, E-Dak, FTP etc in use to exchange information quickly for faster decision making , the importance of upkeep of Railnet has increased exponentially in last 5 year and expected to grow exponentially in the years to come. Committee recommends staffing a sunder:

200 – 750 Nodes	1 Supervisor +2 Technician
750 – 1500 Nodes	1 Supervisor + 3 Technicians
1500 – 2500 Nodes	1 Supervisor+ 4 Technician
➢ 2500 Nodes	2 Supervisors + 6 Technicians

4. PRS/UTS (Major Stations):
This is not only a revenue generating activity but plays important part in customer satisfaction. Any outage in PRS/ UTS becomes a seriously tarnishes our image besides putting customers into inconvenience. Committee recommends the following:

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No. of Windows	Staff
10 to 20 Nodes	1 Technician
20 to 40 Nodes	1 Supervisor +1 Technician + 1 Helper
40 to 60 Nodes	1 supervisor + 2 Technician + 1 Helper

5. ART Equipment & Off-site FOIS

No separate staff is recommended.

(D) Field Establishment & Stores

Besides the asset based staff requirement, administrative activity encompassing Stores management including initiating procurement action, inventory control and staff matters such as making salary bills, TA/DA, Pass etc requires a set of staff. Each store is recommended to have a set of 1 Senior Section engineer, 3 Technician, 1 Stores Clerk and 5 Helpers. It is proposed to have One Set for divisions up to 400 Route Km and Not more than two sets for divisions having more than 400 Route Km. Divisions must be encouraged to centralise the stores.

(E) Administrative Requirement :

Requirement in Divisional HQ:-

3 SSE (T)/ JE (T) and 3 Technicians for all Telecom related activities – comprising Technical assistance for, Planning ,–Power Telecom Coordination, Coordination with BSNL and other Telecom service providers; Stores procurement; Planning etc.

1 SSE (T)/ JE (T) and 3 Technicians for all Telecom related activities like conference hall, indication light, video conferencing etc.

1 SSE (T)/ JE (T) and 3 Technicians for all Telecom related activities related to provision of PAE & display system etc. During VIP functions

Requirement at Zonal HQ Level :-

The HQ Telecom control shall be manned by one SSE(T)/ JE(T and one Technician round the clock in three shifts.

Four SSE(T) / JE(T)/is required at each Zonal HQ for planning, estimation, bill payment, CUG, Stores, WPC and PTCC activities, liaison with Railtel and other service providers etc.

1 SSE (T)/ JE (T) and 3 Technicians for all Telecom related activities like conference hall, indication light, video conferencing etc.

(F) Other Areas:-

1) **Maintenance of Passenger Amenity items of trains like Rajdhani /Duronto / Shatabdi :-** For static maintenance of each rake two Technicians and one Helper is recommended and for over all supervision, one JE(T)/SSE(T), two Maintainer and two Helper is recommended. For running duty one Maintainer is recommended in each round trip.

2) **Loading, unloading of PCP/VHF sets** This activity, where ever being done departmentally, should be outsourced.

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3) **MTRC :-** Each BSC/MSC shall be manned by one JE(T)/ SSE(T), two Technicians and one Helper round the clock in three shifts. As administrator one SSE (T) and one Technician will be required in general duty. IF BSC & MSC are co-located in the same room, no extra staff will be required.

Requirement of maintenance of BTS:- It is proposed that for each 10 BTS one SSE (T)/ JE (T) One Technician and one Helper may be considered.

4) **Repairing centre at Zonal level:-** Staffing should be done as per requirement and workload. Staffing should be done as per requirement and workload. To have effective reach and reduced Mean time to repair (MTTR) it is essential to provide adequate mobility for manpower and material to site for maintenance, repairs, overhauling and emergency restorations. Hence it is proposed that Each SSE/ In-charges of section and Cable Maintenance and SSE/In-charge of Stores shall be provided with Hired Pickup Van/Multi Utility Vehicle

(G) Annual Maintenance Contracts to be provided for following:

a. Passenger Information Systems (Train indicators, Coach Guidance systems, PC based announcement Systems): In order to ensure life time support for Hardware and software maintenance and since PIS equipment are required to be maintained in god fettle on 24 x 7 basis as these are essential passenger amenities and non-working of the same invites public complaints ; AMC is considered essential.

b. Datacom equipment viz. Routers/Switches/Modem/LAN Extenders/Servers etc to ensure 24x7 availability as these are essential for ticketing, monitoring of operations and other critical IT applications. AMC is essential to ensure life time support for Hardware and software maintenance.

c. Video Surveillance Systems have gained extreme importance in view of security concerns and for maintenance of Law & Order. Video surveillance is also being deployed for monitoring of cleanliness, Anti Touting activities and has become a mission critical application. Hence in order to have effective maintenance and high uptime these need to be covered under AMC

d. AMC for Cable systems shall be essential wherever requisite staff is not catered for.

Note: The scale of staff proposed for above activities is taking into consideration above AMCs. The staff shall be responsible for first line maintenance and AMC management

The scale of staff proposed do not include RG/LR which shall be catered as per Duty Roster applicable under HOER.

A.V.Shivaprasad	G S Tuteja	L P Sinha	A.Vijayvargiya	Deepak Bansal
CSTE/SR & Convenor	CSTE/WR	CSTE/ER	CSTE/NR	ED(Co)/Sig RDSO