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Report of the Comptroller and Auditor General of India

on

Augmentation of Station Line Capacity on selected stations in Indian Railways

For the year ended March 2017

Union Government (Railways)

Report No. 17 of 2018

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Comptroller and Auditor Generalof India

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Laid in Lok Sabha/Rajya Sabha on _____

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Preface

This Report has been prepared for submission to the President of India under Article 151 of Constitution of India.

The Report contains results of audit of the Ministry of Railways of the Union Government, on the matter of 'Augmentation of Station Line Capacity on selected stations in Indian Railways'.

The instances mentioned in this Report are those which came to the notice in the course of test audit for the period April 2014 to March 2017 as well as those which came to the notice in earlier years, but could not be reported in the previous Audit Reports.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Contents

Executive Summary

Indian Railways is one of the world's largest railway networks in the world comprising 121,407 km of track over a route of 67,368 km and 7,349 stations. In 2016-17, Indian Railways carried 22.24 million passengers per day and ran 13,329 passenger trains every day. With a view to handle the growing demand for Passengers and Goods traffic, the existing level of traffic facilities at Stations/Terminals are subject to continued process of up-gradation and augmentation. Adequate investment and timely completion of works relating to augmentation of station line capacity and efficient management of operations would result in timely running of trains, increase in efficiency of operations and containing loss due detention of train/engines. Decongested line at a station is largely dependent on factors like adequate number and length of platforms and tracks, proper interlinking of tracks, adequate lines for stabling and maintenance of passenger trains and obstacle free movement of trains without any permanent speed restrictions. Line congestion not only results in detention of trains and loss of punctuality, but also results in sub-optimal use of rolling stock. Detention of trains ultimately results in poor quality service to the passengers.

The Audit was conducted with an objective to assess whether the available infrastructure at selected stations is adequate for handling the present and expected traffic load, what is the impact of deficiencies in the existing infrastructure on smooth and efficient running of trains and whether adequate and effective steps have been taken for identifying and addressing the bottlenecks in handling traffic load on these stations. Fifteen stations in ten Zonal Railways falling on the routes with heavy passenger traffic were selected as sample for audit. Audit analysed one month data (March 2017) for detailed study of impact of the deficiencies in infrastructure in terms of detention of trains at adjoining stations/*en route*/platforms, on train services.

Audit findings

- Important activities such as providing platform with adequate length for facilitating easy boarding/de-boarding of passengers travelling in trains with longer lengths, providing adequate facilities for stabling and maintenance of trains on stations, adequate yard capacity, etc. significantly contribute in timely arrival and departure of trains on the platforms. Audit observed that these activities are not part of any of the stations development/redevelopment plans. The station development/re-development plans mainly address on facilities for the passengers on the station premises and facade of stations only and not on removing constraints and bottlenecks for ensuring timely arrival and departure of trains to/from the stations, which should be one of the most important parameter of the quality of service being provided to the passengers.

(Para 2.1)

- Over a period of time there has been a significant increase in number of trains handled per day in the 15 selected stations. However, the infrastructure such as platforms, washing pit lines and stabling lines at the stations were not augmented according to increase in number of trains handled on these stations. Audit reviewed the data of number of trains handled, platforms, washing pit lines and stabling lines in respect of these station for March 2007, March 2012 and March 2017 and observed that infrastructure such as platforms, washing pit lines and stabling lines at the stations were not augmented according to increase in number of trains handled on these stations over a period of time.
  - At 11 stations viz. Patna, Mughalsarai, New Delhi, Howrah, Jaipur, Bhopal, Itarsi, Ahmedabad, Vijayawada, Chennai Central, Nagpur, where information related to availability of infrastructure as of March 2012 and March 2017 was available, number of trains originated/ terminated per day increased by 13 *per cent* (94 trains) in March 2017 in comparison to March 2012. However, in these 11 stations, only two pit lines were added during this period and the number of stabling lines remained the same.
  - In the above 11 stations, number of trains handled in March 2017 (originated/ terminated/ passing through) per day increased by 176 trains (11 *per cent*), as compared to March 2012. However, only seven platforms were added during this period (Mughalsarai (two), Itarsi (one), Ahmedabad (three) and Nagpur (one)).
  - In respect of seven stations viz. Patna, Mughalsarai, Howrah, Jaipur, Vijayawada, Chennai Central, Nagpur of audit reviewed the information for March 2007 in addition to March 2012 and March 2017. In these seven stations, number of trains originated/ terminated trains increased from 383 as of March 2007 to 540 as of March 2017 i.e. by 157 trains per day. However, the number of washing pit lines and stabling lines in these seven stations remained constant over the period of ten years i.e. since March 2007.
  - In these seven stations, the number of platforms increased by only seven (10 *per cent*) over the period of ten years (from March 2007 to March 2017) in comparison to the increase of number of total trains handled per day by 272 trains (34 per cent) during the same period.
  - Non-availability of adequate number of washing pit lines and stabling lines was one of the reasons for detention of terminated trains at the platforms awaiting shift to stabling/washing pit lines and late start of originating trains from the stations after maintenance. Absence of adequate number of platforms was one of the important reason for detention of trains at the preceding station/outer signal.
- Of the 2436 trains handled by the selected 15 stations as of March 2017, 638 trains are being run with 24 or more coaches every day. To

accommodate these train rakes of longer length, there should be platform of adequate length and adequate facilities of stabling and washing pit lines.

- On the selected 15 stations, out of 164 platforms, 100 platforms have the capacity to handle trains with 24 or more coaches. Due to absence of adequate capacity of platforms, trains with higher number of coaches had to be handled on platforms of shorter lengths, which led to inconvenience to passengers in boarding and de-boarding trains.
- Out of 79 pit lines and 63 stabling lines, only 35 pit lines and 20 stabling lines have the capacity to handle trains with 24 or more coaches. This increased the time taken for maintenance of trains and impacted punctuality.

(Para 2.2)

- Due to non-availability of path (platform/line), the trains have to wait at outer signal or the adjacent station until the platform is vacated by pre-occupied trains. Audit analysed the data for March 2017, and observed significant detentions to trains at the selected stations.

Table 3 – Average Detention per train on account of various reasons during March 2017 (in minutes)

Station	Number of originating/ terminating trains per day	No. of trains passing through	Detention at adjacent stations/ outer stations for Goods trains	Detention at adjacent stations/ outer stations for coaching trains	*En route* detention of coaching trains from outer signal/adjacent station to the selected station	Detention at platforms (excess stoppage than the prescribed period) of coaching trains	Detention at platform (after termination of train) (beyond 30 minutes) of coaching trains	Detention of coaching trains due to late start of trains from stations
Patna	100	59	29	19	11	14	28	46
Mughalsarai	28	112	21	20	18	10	16	30
New Delhi	166	76	0	25	14	15	0	16
Delhi	186	77	0	24	18	13	0	23
Kanpur Central	25	303	100	19	7	10	60	66
Allahabad	18	172	31	23	6	17	102	60
Mathura	10	180	34	15	13	7	26	74
Howrah	104	3	7	9	7	10	33	20
Jaipur	43	54	91	19	7	8	32	39
Bhopal	26	132	33	0	17	8	0	12
Itarsi	14	146	43	8	11	10	21	46
Ahmedabad	84	58	28	0	6	7	56	10
Vijayawada	72	122	75	24	10	11	21	21
Chennai Central	138	19	0	17	4	0	44	6
Nagpur	20	102	59	22	6	12	60	28

- Passenger trains were detained for more than 15 minutes per train in all the selected stations except Howrah, Bhopal, Itarsi and Ahmedabad. At these stations, the trains were detained between 15 to 25 minutes per train.

- The detention of goods trains were significantly higher and was from 21 to 100 minutes per goods train on all the selected stations except Delhi, New Delhi, Howrah and Chennai Central.
- Passenger trains were also detained *en route* for more than 10 minutes from outer signal/adjacent station, before reaching Patna, Mughalsarai, New Delhi, Delhi, Mathura, Bhopal and Itarsi.
- Passenger trains were also stopped beyond their stoppage time at the selected stations for than 10 minutes at Patna, New Delhi, Delhi, Allahabad, Vijayawada and Nagpur.
- Passenger trains were started late form the selected stations by more than 15 minutes and up to 74 minutes at all the selected stations except, Bhopal, Ahmedabad and Chennai Central.

(Paras3.1 to 3.6)

Station-specific audit findings are given below:

- At Allahabad, while Cheoki station has been developed as a terminal station and some of the trains shifted to that station, other alternative stations (Subedarganj and Naini) were yet to be developed. The available washing pit lines and stabling lines were also not adequate to cater to the maintenance of trains originating/ terminating at Allahabad station.During March 2017, between adjacent stations to the Allahabad station, there was *en route* detention of 48506 minutes in respect of 2261 trains. 367 trains were detained on platforms at Allahabad station for 6259 minutes over and above their scheduled stoppage time prescribed in the time table.

(Para 4.1)

- Kanpur Central station handles around 328 trains per day. Only five out of 10 platforms have the capability to handle trains with more than 24 coaches. Due to inadequacy of platform length, trains having more coach capacity had to be stopped at the platforms with lesser coach capacity.During March 2017, between adjacent stations to the Kanpur Central station, there was *en route* detention of 47121 minutes in respect of 2851 trains. During March 2017, there were excess stoppage of 29813 minutes in respect of 2970 trains on platform at Kanpur Central station.

(Para 4.2)

- Mathura Junction station handles around 190 trains per day. Only five of 10 platforms have the capability to handle trains with more than 24 coaches. There are only two washing pit lines and one stabling line in the Mathura station, which cannot handle trains with 24 coaches or more. There were no proposal to construction of new station/terminal nearby Mathura station to decongest the Mathura station. Between adjacent stations to the Mathura station, there was detention of 12059 minutes in respect of 1660 trains during the month of March 2017. 160 trains which originate at Mathura station, started late after being detained for 161 hours during March 2017.

(Para 4.3)

- Patna station handles around 159 trains per day. Out of two washing pit lines available at this station, only one can handle trains with 24 coaches or more. Though the number of trains being handled at Patna station has decreased over the past three years and a number of trains have been shifted to adjacent stations, congestion still exist. During March 2017, detention of average 19 minutes per train was noticed at the adjacent stations to the Patna station. 637 were detained on platforms at Patna station for 9181 minutes over and above their scheduled stoppage time prescribed in the time table. Platform no. 8 has the capacity for handling 24 coach trains when received up/down directions from/to Patna-Gaya line, but for the main line trains, it has the capacity to handle only 17 coaches. The work for addressing this constraint was yet to be proposed by ECR Administration.

(Para 4.4)

- At Mughalsarai station, only four out of eight platforms have the capacity to handle trains with 24 or more coaches. Due to inadequacy of platform length, trains having more coach capacity had to be stopped at the platforms with lesser coach capacity, which caused inconvenience to passengers in boarding and de-boarding the trains. The work 'All platform 24 coaches at Mughalsarai' was awarded in May 2012, which is yet to be completed. During March 2017, 168 trains started late from Mughalsarai station, after being detained for 84 hours.

(Para 4.5)

- All the platforms (seven) of Itarsi station have the capacity to handle trains with 24 or more coaches. To ease the congestion, no proposal was made to construct new station/terminal nearby the Itarsi station. During March 2017, 1343 trains were detained on platforms at Itarsi station for 12877 minutes over and above their scheduled stoppage time prescribed in the time table.76 trains which originate from Itarsi station, started late from the station, after being detained for 59 hours.

(Para 4.6)

- Through Bhopal station, a significant number of trains i.e. on an average 132 trains passing per day, there are only six platforms on this station. During March 2017, between adjacent stations to the Bhopal station, there was *en route* detention of 12771 minutes in respect of 752 trains. Excess stoppage of 6593 minutes in respect of 823 trains was noticed on platforms. 104 trains which originated at Bhopal station, started late after being detained for 20 hours. There are no stabling lines at Bhopal station due to which five Mail/Express trains which terminate at Bhopal station are returned without primary maintenance.

(Para 4.7)

- Ahmedabad station handles around 142 trains per day and there are 13 platforms to handle these trains. There are 11 washing pit line and 11 stabling lines at this station. No detention was noticed of passenger trains at adjacent stations/outer signals of Ahmedabad station. However, 512

trains were detained on platforms at Ahmedabad station for 3375 minutes over and above their scheduled stoppage time prescribed in the time tablein March 2017. 497 trains which originate at Ahmedabad station, started late from Ahmedabad station, after being detained for 83 hours. To decongest Ahmedabad station, in 2013-14, Railways planned development of second coaching terminal at Sabarmati (6 kms away), which was yet to be completed.

(Para 4.8)

- Chennai Central (MAS), a terminal station, on an average handles around 157 trains per day and Suburban terminal (MASS) on an average handles around 215 to and fro trains per day. Although MAS and MASS handles train services from different corridors, exclusive tracks were not available for each direction of traffic from Chennai Central, as all these lines physically converge at Basin Bridge Junction located 2.2 kms away from Chennai Central, forming a bottleneck. There was *en route* detention of 988 minutes in respect of 256 trains between adjacent stations to the Chennai Central station during the month of March 2017. 3605 trains which originate from Chennai Central station, started late from the station, after being detained for 370 hours.

(Para 4.9)

- At Howrah station, out of the total 22 platforms, only 10 platforms have the capacity to handle trains with 24 or more coaches. Trains with higher coach capacity had to be stopped at platforms with lesser coach capacity which resulted in inconvenience to passengers. During March 2017, 54 trains were detained on platforms at Howrah station for 524 minutes over and above their scheduled stoppage time prescribed in the time table. 118 trains which originate at Howrah station, started late from Howrah station, after being detained for 39 hours. A work, 'New Platform no. 24 at Howrah' was sanctioned in the year 2015-16, but detailed estimate was yet to be finalized.

(Para 4.10)

- Jaipur station handle 97 trains, but has only six platforms, which caused detention of inward trains. Between adjacent stations to the Jaipur station, there was *en route* detention of 2161 minutes in respect of 304 trains. During the month of March 2017, there were excess stoppage of 10349 minutes in respect of 1270 trains on platforms at Jaipur station. 335 trains which originate at Jaipur station, started late from Jaipur station, after being detained for 219 hours. In order to eliminate congestion at Jaipur, a proposal was made in October 2015 to construct a large passenger terminal with modern facilities at Khatipura, an adjacent station to Jaipur, for which detailed estimates were yet to be prepared.

(Para 4.11)

- Nagpur station handles around 122 trains per day with eight platforms. During the last three years one platform has been added to this station. During March 2017, there was *en route* detention of 3634 minutes in

respect of 569 trains between adjacent stations to the Nagpur. 522 trains were detained on platforms at Nagpur station for 6275 minutes over and above their scheduled stoppage time prescribed. To decongest the Nagpur station, development of Ajni station, was sanctioned during the year 2016-17, but detailed estimate was yet to be sanctioned (November 2017). The work of extension of platforms No. 4, 5 and 7 for 24 coaches was proposed by Divisional authority of Nagpur Division in the year 2013-14, the same was not included in the Final Works Programme.

(Para 4.12)

- New Delhi stations handles around 242 trains and Delhi station handles 263 trains per day. During the last three years, the number of trains handled has increased by 14 on each of these two stations. At Delhi station, out of 16 platforms, only five can handle trains with 24 or more coaches. To ease the congestion of New Delhi and Delhi stations, Anand Vihar Terminal was developed (Phase I – three platforms in 2009 and Phase II – four platforms in 2015). During the month of March 2017, 289 and 474 trains were detained on platforms at New Delhi and Delhi stations respectively for 4301 minutes and 6110 minutes respectively over and above their scheduled stoppage time. 154 trains, which originate at New Delhi station, started late from New Delhi station, after being detained for 46 hours. At Delhi station, 707 trains originated with late, after being detained for 269 hours.

(Para 4.13)

- Vijayawada station handles around 194 trains per day. Around 72 trains originated/terminated at this station daily. However, this station have only five washing pit lines, of which only three can handle trains with 24 coaches or more. This station has no stabling line. There was no proposal for construction of new terminal station to decongest station at Vijayawada station during 2014-17. During March 2017, between adjacent stations to the Vijayawada station, there was *en route* detention of 11575 minutes in respect of 1162 trains. 518 trains which originate at Vijayawada station, started late from the station, after being detained for 178 hours. The work of extension of these two platforms (no.2 and 3) to handle 24 coaches was taken up in September 2015 and scheduled for completion in December 2016, which is still in progress as of March 2017.

(Para 4.14)

Recommendations

1. ***All Zonal Railways need to prepare comprehensive Master Plans for stations with heavy passenger traffic, identify constraints of station line capacity and devise measures to be taken to address these constraints on priority. They may develop a suitable methodology for assessing the requirements of infrastructure on various stations such as number of platforms, length of platforms, availability of pit lines, stabling lines and yard etc. with reference to the pattern of the traffic being handled at***

these stations. The milestones for execution of the works identified to address these constraints may be clearly laid down and followed. The infrastructure should be augmented keeping pace with the increase in traffic.

2. *Before taking up modernization/redevelopment of stations and constructing new buildings, the possibility of further expansion of the stations by adding more platforms need to be considered. The modernization/ redevelopment of stations should also address infrastructural constraints and works such as construction of additional platforms, stabling and washing pit lines, remodelling of yards etc., should be included in the scope of modernization/redevelopment of stations.*

3. *It may be desirable to increase the length of all the platforms at major stations so as to accommodate trains of 24 or more coaches.*

4. *Railways need to create additional platforms/ pit lines of adequate length where the number of platforms is not adequate for handling the trains originating/ terminating/ passing by the station. Where creation of additional platforms/pit lines is not possible due to space constraints, Railways need to explore alternatives places to develop new stations/terminals to decongest the existing stations and/or increasing length of platforms so as to accommodate two trains simultaneously at a platform.*

5. *The works already planned/ ongoing to augment the station line capacity (platform/lines, yard remodeling, RRI etc.) need to be expedited to achieve the stated objectives of the works.*

6. *To avoid the detention of trains at outer signals/adjacent stations/en route besides augmenting station line capacity, Railway need to address the other constraints causing detentions such as route relay interlocking, yard remodelling, etc. Traffic facility works for removal of these constraints need to be taken up and completed on priority basis.*

7. *Time norms for removal of empty rakes of the terminated trains from the platforms may be prescribed for optimum utilization of platforms.*

Chapter 1
Introduction

Indian Railways is one of the world's largest railway networks comprising 121,407 km of track over a route of 67,368 km and 7,349 stations. In 2016-17, Indian Railways carried 22.24 million passengers per day and ran 13329 passenger trains every day. Many of the Railway stations have been built over 100 years ago, and have a limited and aging infrastructure which is required to handle an ever increasing passenger traffic. With a view to handle the growing demand for Passengers and Goods traffic, the existing level of traffic facilities at Stations/Terminals are subject to continued process of up-gradation and augmentation. Adequate handling capacity of stations, terminals, lines and yards, interlocking (RRI) of the track *en route*, are some of the key ingredients for timely and efficient train operations over Indian Railways. Adequate investment and timely completion of works relating to augmentation of station line capacity and efficient management of operations would result in timely running of trains, increase in efficiency of operations and containing loss due detention of train/engines.

Decongested station line at a station is largely dependent on factors like adequate number and length of platforms and tracks, proper interlinking of tracks, adequate lines for stabling and maintenance of passenger trains and obstacle free movement of trains without any permanent speed restrictions. By ensuring congestion free station lines for smooth operation of trains, railways can provide efficient and punctual services to its passengers. The first step towards decongestion is to conduct proper survey to flag the constraints attributable to unusual/unnecessary detention of trains followed by formulation of plan to remove the bottlenecks in a time bound manner.

Line congestion results not only delay in train operations and loss of punctuality, but also results in detention of trains and sub-optimal use of rolling stock. Detention of trains ultimately results in poor quality service to the passengers, by starting from the originating stations/ reaching the destination stations later than the time fixed in the Time Tables. Laid down provisions[1] state that 'As stations and their surroundings are the first point of contact between Railways and their passengers, special importance is required to be given to the facilities provided to passengers in regard to their adequacy, quality and maintenance. While planning for provision/augmentation of stations, due consideration needs to be given to the importance of the station from point of view of passenger traffic.'

1.1 Infrastructure at stations

a. Platforms

Adequacy in number of ***platforms/lines*** with respect to frequency/movement of the train at any station is key to timely operation of traffic. Adequate numbers of tracks and platforms

[1] Para 401 of Indian Railway Works Manual

and availability of platform with sufficient length to accommodate trains with higher number of coaches etc. are essential components for smooth handling of traffic.

For the period 2012-17, keeping in view the projected originating passengers more than 11,700 million in 2016-17, railways envisaged to make strategies for decongesting major passenger terminals through development of alternative terminals in suburban areas of major cities. Indian Railways' Vision 2020 also envisaged augmenting terminal capacity to match the demand of increasing passenger services. Accordingly, adjoining/ nearby stations are identified to develop as new terminals/stations to decongest the existing terminals/stations.

b. Washing pit lines and stabling lines

Adequate facilities for train maintenance are required at the originating and destination stations such as washing pit lines and stabling lines, which also form an important part of the infrastructure requirement at stations.

Fig 1.1: Washing pit line

Pit Lines are washing lines with open dumping pit at base, throughout the track. It is used for all type of cleaning and maintenance to make the compartment, for next journey. These pit lines are utilized to drain out sewage water (Washroom & Coach Interior Cleaning) and Thorough Checking & Repairing Coach Base parts. Every train is required to be cleaned prior to start its next journey. Availability of Pit lines at/nearby the stations would minimize the empty haulage of trains which occurs due to non-availability of these line at stations and the rakes have to be dispatched to yard for maintenance.

Stabling Lines are running lines, where empty trains are stabled on arrival awaiting their turn to be shunted away to the 'washing lines' and from there to the 'carriage and wagon examination pit lines. A ***stabling yard*** is one where rakes are stored (usually without any maintenance) away from the home yard, before they are assigned to the next train service. The purpose is to free the main line for operation of trains.

c. Signalling system - Interlocking of tracks (Panel Interlocking/Route Relay Interlocking)

Route Relay Interlocking (RRI) is the system used in large and busy stations that handle large number of trains. In this system, an entire route through the station can be selected and all the associated points and signals along the route can be set at once

Fig 1.2: Signalling system

by a switch for receiving, holding, blocking, or dispatching trains. It is designed to ensure safety. The system is so designed that the signal will be turned on only after the route including the points set for the train is established and closure of LC Gate etc., are properly completed. Besides, it ensures obstacle free movement of trains. Automatic signalling system is one of the most effective measures to minimise congestion and to ensure smooth movement of trains.

d. Railway Yards

A ***railway yard*** is a complex series of rail track for storing, sorting or loading/ unloading of trains. Rail yards have many tracks in parallel for keeping rolling stock stored off the mainline, so that they do not obstruct the flow of traffic. Yard remodelling work may include the works of interlocking of tracks with latest technology, capacity enhancement etc. This place can also be used for washing, repairs and maintenance of coaches.

Fig 1.3: Railway Yard

1.2 Organizational Structure

Operating department is responsible for movement of trains and locos and monitor all the line capacity augmentation works.; Engineering Department is responsible for all open line civil engineering works, development of infrastructure and maintenance of tracks; Electrical department is responsible for generation, purchase and distribution of power, maintenance of electric equipment and electric rolling stock and Signal and Telecom department of Railway provides signal and telecommunication facilities required for movement of trains.

1.3 Audit Objectives

The study was undertaken with an audit objective to assess whether the available infrastructures at selected stations is adequate for handling the present and expected traffic load, what is the impact of deficiencies in the available infrastructure on smooth and efficient running of trains and whether adequate and effective steps have been taken for identifying and addressing the bottlenecks in handling traffic load on these stations.

1.4 Audit criteria

The sources of Audit criteria included rules/provisions/instructions laid down in

- Indian Railway Code for Engineering Department
- Operating Manual for Indian Railways
- Indian Railway Finance code Vol. I
- Guidelines/ instructions issued by Railway Board/Zonal Railways regarding augmentation of station line capacity/ traffic facilities at stations/ development of world class stations.

1.5 Audit methodology, scope and sample

The Audit methodology included examination of records at Zonal Headquarters Office, in Divisional Offices and at the stations selected for detailed audit. The review covered issues relating to identification of deficiencies/constraints in handling traffic on stations, impact of these deficiencies/constraints obetweenn smooth running of trains and steps taken to address these deficiencies/constraints.

A total of 15 stations under 12 divisions of 10 Zonal Railways falling on the routes with heavy passenger traffic were selected in the sample for audit. Information, record and data pertaining a period of three years from 2014-15 to 2016-17 was studied in respect of these selected stations, which handle a significant quantum of passenger traffic. A large number of trains originate/terminate as well as pass thorough these stations. Audit analyzed one month data (March 2017) for detailed study of impact of deficiencies on train services. The details of the sample are given below:

Table 1.1 – Details of sample selected

S. no.	Zonal Railway	Division	Station	Number of trains originating/ terminating per day	Number of trains passing through per day	Adjoining / preceding stations
1	East Central	Danapur	Patna	100	59	Danapur, Phulwari Sharif, Sachiwalay Halt, Parsa Bazar, Rajendranagar Terminal
2		Mughalsarai	Mughalsarai	28	112	Kuchman, East Outer Cabin Mughalsarai, Ganjkhawaja, Chandauli Majhwar
3	Northern	Delhi	New Delhi	166	76	Tilak Bridge, Delhi, Delhi Sarai Rohilla
4			Delhi	186	77	Subzi Mandi, Delhi Kishan Ganj, Delhi Sarai Rohilla, Delhi Shahadara Junction
5	North Central	Allahabad	Kanpur	25	303	Panki, Kanpur Anwarganj, Kanpur Bridge, Chandari
6			Allahabad	18	172	Naini, Dubrfsthsnj, Subedarganj, Allahabad City
7		Agra	Mathura	10	180	Bhainsa, Bhuteshwar, Mathura Cantt., Murheshi Rampur, Baad
8	Eastern	Howrah	Howrah	104	03	Sorting Yard Cabin, Liluah, Belur
9	North Western	Jaipur	Jaipur	43	54	Outer signal Jaipur, Durgapura, Ghandhinagar, Kanakpura
10	West Central	Bhopal	Bhopal	26	132	Habibganj, Vidisha, Nishatpura, Bairagarh
11			Itarsi	14	146	Pipariya, Hoshangabad, Dulariya, Ghoradongri
12	Western	Ahmedabad	Ahmedabad	84	58	Vatva, Sabarmati, Kankariya South Cabin, Sabarmati A Cabin
13	South Central	Vijayawada	Vijayawada	72	122	Rayanapadu, Krishna Canal Jn., Ramavarappadu, Gunadala
14	Southern	Chennai	Chennai Central	138	19	Basin Bridge Junction
15	Central	Nagpur	Nagpur	20	102	Ajni, Godhani, Itwari, Kalumna
				1034	**1615**	

Entry and Exit Conferences were held at Zonal level and station specific audit findings were discussed with Zonal Railway administrations. The audit findings and recommendations were also discussed at Railway Board on 23 March 2018. Their replies have been suitably incorporated in the Report.

Audit findings in the report are based on observations of selected 15 stations over ten Zonal Railways. The basic purpose of this audit was to identify the infrastructure constraints on the selected stations, which leads to congestion in lines and impacts efficiency of train operations. Similar deficiencies and constraints may be prevalent in other stations over various Zonal Railways as well. These are required to be addressed by Indian Railways, giving due priority to stations where the extent of problem is severe.

1.6 Acknowledgement

Audit acknowledges the co-operation extended by the Railway Board and the Zonal Railway Administrations during the conduct of field audit.

Chapter 2
Infrastructure and Planning

Audit examined the adequacy of the existing facilities /infrastructures at selected 15 stations over ten Zonal Railways, studied their utilization and impact of deficiencies in these facilities /infrastructures on the train services. Audit also analysed constraints which are leading to line congestions and action taken by Railways to ease the line congestion. Audit analysis of issues and inter-station comparison of infrastructure/facilities, detentions and execution of works are discussed in the Chapter 2 and 3. Station specific issues have been discussed in Chapter 4.

2.1 Planning for infrastructure on stations for smooth movement of trains

Indian Railways have conceptualized framework for development of stations in order to provide better facilities to passengers on railway stations. Towards this, Railway Board have issued instructions from time to time for development of World Class Stations through Public Private Partnership (PPP). Key objective of the project of World Class Stations is to provide superior services to railway passengers at the stations by converting them into urban icon and standard bearers of the cities. A special purpose company viz., Indian Railway Stations Development Corporation Limited[2] (IRSDC) has also been incorporated (April 2012) specifically for the purpose of development/redevelopment of stations. The scope of redevelopment of station by IRSDC includes upgradation of level of passenger amenities by new construction/ renovation including redevelopment of station buildings, platform surfaces, circulating areas etc. to better standard so as to serve the need of the passengers. This also include development of real estate of railway land and its commercial utilisation.

Audit observed that the activities for development/ redevelopment of stations include all facilities to be provided to the passengers on the stations including station buildings, station facilities e.g. ticket counters and vending machines, cloak rooms, waiting room, Public Address and information system, lifts, stairs and escalators, sign system, facilities for parking and transportation, shops etc. However, the scope of such projects completely excludes the requirement of various works relating to track, S&T, electrical and railway operations at stations, which has a bearing on quality of services being provided to the passengers in terms of timely arrival and departure of trains and smooth journey to/from stations without any unreasonable and unnecessary delays. As such, important activities such as providing platform with adequate length for facilitating easy boarding/de-boarding of passengers travelling in trains with longer lengths, providing adequate facilities for stabling and maintenance of trains on stations, adequate yard capacity, etc. which significantly contribute in timely arrival and departure of trains on the platforms are not part of any of the stations development/redevelopment plans. These plans mainly address on facilities on and facade of stations only and not on removing constraints and bottlenecks

[2] A Joint Venture of IRCON International Ltd. and Rail Land Development Authority

for ensuring timely arrival and departure of trains to/from the stations, which should be one of the most important parameter of the quality of service being provided to the passengers.

Audit reviewed records in respect of 15 selected stations and found that none of the stations have prepared a Master Plan for providing infrastructure on stations to address the bottlenecks/ constraints, which hamper timely arrival and departure of trains to/from the stations.

During Exit Conference (March 2018), Railway Board agreed that having a specific Master Plan for identifying constraints and addressing them on priority would be helpful in effective execution and monitoring of traffic facility works. They further stated that passenger amenities works and traffic facility works are executed through different Plan Head so that they can be prioritised and executed.

Audit is of the view that the main concern of the passenger is to commence and complete her journey on time and if punctuality is ensured, the passenger would like to spend minimum time in the station area. Thus, there is a need to prepare comprehensive Master Plans for all important stations including number and length of platforms, number of washing pit/stabling lines, yards and other facilities, in order to address the reasons which leads to delay and arrival and departure of trains to/from stations. It is also felt that before taking up modernisation/redevelopment of stations and constructing new buildings, the option of further expansion of the stations by adding more platforms need to be explored.

2.2 Availability and augmentation of infrastructure at stations to handle the passenger trains

Audit reviewed the availability and augmentation of infrastructure at the selected stations as of March 2007, March 2012 and March 2017. While data in respect of 2012 was not available for four stations, data for 2007 was available for seven stations only[3]. Review of available information showed that

- At 11 stations[4], where information related to availability of infrastructure as of March 2012 and March 2017 was available, number of trains originated/ terminated per day increased by 13 *per cent* (94 trains) in March 2017 in comparison to March 2012. However, in these 11 stations, only two pit lines were added during this period taking the number of washing pit lines from 59 to 61 and the number of stabling lines remained the same. This caused increase in waiting time for stabling and maintenance of trains in washing pit lines and subsequently resulted in detention of trains at platforms after termination. Absence of adequate washing pit lines/ stabling lines is also one of the reasons for late start of trains originating from the station.

[3] Records of infrastructure at stations as of March 2012 were not available at Delhi, Kanpur, Allahabad, Mathura stations. Similarly, records of infrastructure at stations as of March 2007 as well as March 2012 were not available at New Delhi, Delhi, Kanpur, Allahabad, Mathura, Bhopal, Itarsi and Ahmedabad stations.

[4] Patna, Mughalsarai, New Delhi, Howrah, Jaipur, Bhopal, Itarsi, Ahmedabad, Vijayawada, Chennai Central, Nagpur

- In the above 11 stations, number of trains handled in March 2017 (originated/ terminated/ passing through) per day also increased by 176 trains (11 *per cent*), as compared to March 2012. However, only seven[5] platforms were added during this period (Mughalsarai (two), Itarsi (one), Ahmedabad (three) and Nagpur (one)). Absence of adequate number of platforms was one of the reasons for detention of trains at the preceding station/outer signal.
- Audit also reviewed availability of infrastructure of seven[6] stations of the above 11 stations, where related information was available for March 2007 as well. In these seven stations, number of trains originated/ terminated trains increased from 383 as of March 2007 to 540 as of March 2017 i.e. by 157 trains per day during the ten years' period. However, the number of washing pit lines and stabling lines in these seven stations remained constant over the period of ten years i.e. since March 2007. Non-availability of adequate number of washing pit lines and stabling lines was one of the reasons for detention of terminated trains at the platforms awaiting shift to stabling/washing pit lines and late start of originated trains from the stations after maintenance.
- In the above seven stations, the number of platforms increased by only seven (10 *per cent*) over the period of ten years (from March 2007 to March 2017) in comparison to the increase of number of total trains handled per day by 272 trains[7] (34 *per cent*) during the same period.

Adequate number of platforms is necessary to ensure that trains do not wait outside stations for want of platform. Also, adequate number of washing pit lines is necessary for undertaking primary/secondary maintenance of trains originating/terminating on the stations. The time taken for primary maintenance of a train is six hours per train and for secondary maintenance, a time of two hours is required. With increase in number of trains originating/terminating on a station, the number of washing pit lines should increase accordingly. Likewise, adequate number of stabling lines is necessary so as to vacate the platform to free the main line for operation of trains. However, Audit observed that infrastructure such as platforms, washing pit lines and stabling lines at the stations were not augmented according to increase in number of trains handled on these stations over a period of time.

During the analysis of availability of infrastructure of the 15 selected stations, as on 31 March 2017, it was observed that 638 trains were handled on these 15 stations, which had 24 coaches or more. To accommodate these train rakes of longer length, there should be platform of adequate length and adequate facilities of stabling and washing pit lines. One of the effective means to handle more passenger traffic with the existing infrastructure facilities and minimum infrastructure addition, is to run trains with longer lengths and higher coach composition. The details of available infrastructure on these selected stations are given below:

[5] 117 as of March 2017 as against 110 platforms as of March 2012
[6] Patna, Mughalsarai, Howrah, Jaipur, Vijayawada, Chennai Central, Nagpur
[7] from 804 trains in March 2007 to 1076 trains in March 2017

Table 2.1- Infrastructure available at the selected stations

Station	Average number of originating/ terminating trains per day	Average number of trains passing through	Total number of platforms	No. of platforms with capacity to handle 24 or more coaches	Total no. of pit lines	No. of pit lines with capacity to handle 24 or more coach trains	Total no. of stabling lines	No. of stabling lines with capacity to handle 24 or more coach trains
Patna	100	59	10	7	2	1	3	2
Mughalsarai	28	112	8	4	0	0	0	0
New Delhi	166	76	16	13	14	9	22	12
Delhi	186	77	16	5	8	1	10	0
Kanpur	25	303	10	5	7	2	0	0
Allahabad	18	172	10	6	2	1	1	1
Mathura	10	180	10	5	2	0	1	0
Howrah	104	3	22	10	0	0	0	0
Jaipur	43	54	5	5	3	3	4	0
Bhopal	26	132	6	4	2	1	0	0
Itarsi	14	146	7	7	2	0	0	0
Ahmedabad	84	58	13	9	11	5	11	4
Vijayawada	72	122	10	8	5	3	0	0
Chennai Central	138	19	12	8	19	7	9	0
Nagpur	20	102	8	5	2	2	1	0
Total	**1034**	**1615**	**163**	**101**	**79**	**35**	**62**	**19**

Audit observed that

- New terminals/stations were developed to decongest the existing stations for example, Anand Vihar Terminal for decongestion of New Delhi/ Delhi station, Rajendranagar Terminal and Patliputra station for decongestion of Patna Junction, Prayag and Cheoki stations for decongestion of Allahabad station. To further decongest Allahabad and Delhi stations, works of development of Subedarganj and Sakurbasti stations respectively were taken up, which are in progress. Similar works taken up to decongest Jaipur, Ahmedabad and Nagpur stations, to develop Khatipura, Sabarmati and Ajni stations respectively were in initial stages.
- Out of total 163 platforms in the selected 15 stations, 101 platforms have the capacity to handle trains with 24 or more coaches. Only Itarsi Junction has all its platform lines capacity to handle 24 and more coach trains. At Delhi Jn., out of total 16 platforms, only five have the handling capacity of 24 or more coach trains. Audit noticed a number of instances during joint inspection conducted, wherein due to absence of adequate capacity of platforms, trains with higher number of coaches had to be handled in less capacity platforms leading to inconvenience to passengers in boarding and de-boarding trains.
- Out of the available 79 pit lines and 62 stabling lines in the selected 15 stations, 35 pit lines and 20 stabling lines respectively could handle trains with 24 or more coaches. Due to inadequate facility of washing pits and non-availability of slots in existing washing pit

lines, the terminated trains have to be shifted for maintenance/washing to the washing pit attached to other stations.

- Audit reviewed the works undertaken by the selected 10 Zonal Railways, relating to extension of platforms, construction of new platforms, construction of washing/stabling lines and other traffic facilities works such as route relay interlocking, yard remodelling etc., which were taken up to ease the congestion at stations. Audit observed that works taken up to address the constraints faced by the Railways in decongestion of the stations were not completed on time thereby not achieving the objective of decongestion. In a number of places, works were not taken up to address the constraints.
- Works related to Panel Interlocking (PI) and Route Relay Interlocking (RRI) in Danapur station (preceding station of Patna Junction) of East Central Railway were sanctioned five to 17 years back, but yet to be completed. This impacted the smooth movement of inward trains coming to Patna Junction. Yard remodelling works in Mughalsarai, Mathura Junction, Jaipur and Bhopal stations were going on and yet to be completed after one to ten years of sanction.

During Exit Conference (March 2018), Railway Board agreed with the audit observations and stated that there is need to expeditiously execute the already sanctioned worked at the stations. As regards, recording of reasons for exclusion of works from the Plan, they stated that the same could be due to fixing of priorities among the works by Railway Board. They added that while there constraints of funds in earlier years, the same are not a constraint any more.

These deficiencies in the available infrastructure on the selected stations were the main reason for detention of trains at or before stations. Due to absence of adequate capacity of platforms, trains with higher number of coaches had to be handled at less capacity platforms, leading to inconvenience to passengers in boarding and de-boarding trains. Works taken up were not completed timely so as to derive the intended benefits from the same. These deficiencies in infrastructure and delays in completion of works had a cascading impact on the running and punctuality of the inbound and outbound trains on these stations, as the trains were detained at adjacent stations, outer signals, enroute or on stations due to want of further path as discussed in the following chapter.

Thus, there is a need to prepare comprehensive Master Plans by all Zonal Railways for stations with heavy passenger traffic, identify constraints of station line capacity and devise measures to be taken to address these constraints on priority. There is also a need to develop a suitable methodology for assessing the requirements of infrastructure on various stations such as number of platforms, length of platforms, availability of pit lines, stabling lines and yard etc. with reference to the pattern of the traffic being handled at these stations. The milestones for execution of the works identified to address these constraints are required to be clearly laid down and followed and the infrastructure augmented keeping pace with the increase in traffic.

Chapter 3

Detentions of trains due to existing deficiencies/constraints at stations

Availability of clear platform at the station is primary requirement for inward trains. Due to non-availability of path (platform/line), the trains have to wait at outer signal or the adjacent station until the platform is vacated by pre-occupied trains. The platform could be occupied by trains due to their stoppage at the stations, non-availability of adequate stabling/pit lines, non-availability of clear path further, late start of trains from the platforms due to reasons such as non-availability of locos, crew etc. Audit examined the divisional records of control data and Train Signal Register (TSR) maintained at station and Empty Coaching Rake Movement (ECRM) register maintained at station for the month of March 2017 at all the selected stations. Audit analysed the quantum of detention and reasons for the same at outer signal/adjacent stations, enroute from outer signal/adjacent station to the selected stations and at the selected stations. Audit also analysed the causes of detention of trains on account of unusual running time allotted in time table between two stations, late start of trains from originating stations etc., due to lack of proper coordination amongst various departments of Railways. Detentions per trains in respect of the selected station on account of various reasons are given below:

Table 3.1 (a) – Detention per train during March 2017 for through trains

Station	No. of coaching trains passing through	Average number of originating/ terminating trains per day	Average detention at adjacent stations/ outer stations for coaching trains (in minutes)	Average enroute detention of coaching trains from outer signal/ adjacent station to the selected stations (in minutes)	Range of enroute detention of coaching trains from outer signal/ adjacent station to the selected stations (in minutes)	Average detention at platforms (excess stoppage than the prescribed period) of coaching trains (in minutes)	Average detention at adjacent stations/outer stations for Goods trains (in minutes)
Patna	59	100	19	11	1 to 85	14	29
Mughalsarai	112	28	20	18	1 to 49	10	21
New Delhi	76	166	25	14	0 to 92	15	0
Delhi	77	186	24	18	1 to 162	13	0
Kanpur Central	303	25	19	7	1 to 124	10	100
Allahabad	172	18	23	6	0 to 23	17	31
Mathura	180	10	15	13	0 to 178	7	34
Howrah	3	104	9	7	1 to 54	10	7
Jaipur	54	43	19	7	1 to 87	8	91
Bhopal	132	26	0	17	1 to 153	8	33
Itarsi	146	14	8	11	1 to 209	10	43
Ahmedabad	58	84	0	6	0 to 23	7	28
Vijayawada	122	72	24	10	0 to 23	11	75
Chennai Central	19	138	17	**4**	1 to 25	0	0
Nagpur	102	20	22	6	0 to 99	12	59
Total	**1615**	**1034**					

Table 3.1 (b) –Detention per train during March 2017 for originating and terminating trains						
Station	**Average number of originating trains per day**	**Average number of terminated trains per day**	**Average detention at platform (after termination of train) (beyond 30 minutes) of coaching trains (in minutes)**	**Average detention of coaching trains due to late start of trains from station (in minutes)**	**Range of detention of coaching trains due to late start from station (in minutes)**	**Average detention of platform return coaching trains beyond 75 minutes of termination in a week (in minutes)**
Patna	50	50	28	46	1 to 460	133
Mughalsarai	14	14	16	30	2 to 140	125
New Delhi	83	83	0	16	2 to 205	0
Delhi	93	93	0	23	2 to 490	0
Kanpur Central	12	13	60	66	5 to 350	0
Allahabad	9	9	102	60	5 to 463	0
Mathura	5	5	26	74	1 to 315	0
Howrah	52	52	33	20	6 to 64	240
Jaipur	21	22	32	39	2 to 350	0
Bhopal	13	13	0	12	3 to 50	243
Itarsi	7	7	21	46	5 to 250	193
Ahmedabad	42	42	56	10	1 to 165	104
Vijayawada	36	36	21	21	5 to 105	83
Chennai Central	69	69	44	6	1 to 45	1517
Nagpur	10	10	60	28	5 to 135	20
Total	**516**	**518**				

As can be seen from the tables above,

- Through passenger trains were detained on an average for 15 to 25 minutes per train in all the selected stations except Howrah, Bhopal, Itarsi and Ahmedabad.
- The detention of goods trains were significantly higher and ranged on an average from 21 to 100 minutes per goods train at all the selected stations except Delhi, New Delhi, Howrah and Chennai Central.
- Passenger trains were also detained enroute on an average for 10 to 18 minutes at outer signal/ adjacent station, before reaching Patna, Mughalsarai, New Delhi, Delhi, Mathura, Bhopal, Itarsi and Vijayawada. The maximum detention was more than 100 minutes in a single case for Delhi, Kanpur Central, Mathura, Bhopal and Itarsi.
- Passenger trains were stopped beyond their stoppage time at the selected stations for 10 to 17 minutes at Patna, Mughalsarai, New Delhi, Delhi, Kanpur Central, Allahabad, Howrah, Bhopal, Vijayawada and Nagpur.
- Passenger trains were started late by 15 to 74 minutes from their scheduled time from all the selected stations except, Bhopal, Ahmedabad and Chennai Central. The maximum detention ranged from 100 to 165 minutes in a single case for all the selected stations except Howrah, Bhopal and Chennai Central.
- Platform return trains were detained beyond the prescribed time of 75 minutes at the terminating stations for more than 100 minutes on an average at Patna, Mughalsarai, Howarh, Bhopal, Itarsi, Ahmedabad and Chennai Central.

- On the selected 15 stations, average 516 trains are terminated per day, which again originate from the station after maintenance or stabling (where no maintenance required) as per their schedule time. There are provision for pit lines and stabling line at the stations for such maintenance/stabling purpose. For these 516 terminated trains, only 79 pit lines and 62 stabling lines are available at these selected stations. At Patna station, there are 2 pit lines and 3 stabling lines for handling of average 50 terminated trains per day. Similarly, at Mathura, Jaipur, Vijayawada and Nagpur stations, availability of pit/ stabling line was not commensurate with the number of trains terminating at the these stations.
- Lack of adequate facility of pit lines and stabling at the stations results in engagement of platforms for a considerable period by the train waiting for maintenance in the pit lines or for stabling. Alternatively, in absence of availability of pit lines, trains are also shifted to the other pit lines located at adjoining stations subject to availability. This also results in engagement of track connected to the adjoining station for that purpose and engagement of engine and empty haulage of rakes.

Detailed audit observations related to detention of trains are discussed below:

3.1 Total detention at stations as per Control Data maintained by Divisions

The complete operation of passenger and goods trains on a division, in every aspect, is controlled by the Control unit of the Operating department. This involves systematic timing, working and loading of all trains, both goods and passenger, and to keep close touch with the operation of continuous sections and divisions so as to avoid congestion. Further, on the basis of the experience gained, the Control unit of the Operating department suggests improvements to eliminate constraints that lead to congestion. Audit noticed that the trains originating/terminating/passing through the divisions of selected stations were detained for about 24412 hours during March 2017, as can be seen from the table below:

Table 3.2 - Detention of trains in divisions of selected stations (as per control data of Operating department of Division)

Zonal Railway	Division	Total Detention during March 2017 (in hours)
ECR	Danapur	2640
	Mughalsarai	557
NR	Delhi	4166
NCR	Allahabad	10108
	Agra	2425
ER	Howrah	525
NWR	Jaipur	433
WCR	Bhopal	822
WR	Ahmedabad	213
SCR	Vijayawada	1667
SR	Chennai	491
CR	Nagpur	365
Total		**24412**

From the above, it can be seen that detention were significantly high in respect of Patna, New Delhi, Delhi, Kanpur Central, Allahabad, Mathura and Vijayawada stations during March 2017. The main reasons for detention were non-availability of path, level crossing, rescheduling, loco failure, Alarm Chain pulling, Engineering etc. Non-availability of clear line/path was one of the main reasons for detention of trains at outer signal/adjacent station/ *en-route* before the last station. In overall 32 *per cent* cases, reasons for detention were non-availability of clear path/traffic. The percentage was more than 40 *per cent* in respect of Danapur, Allahabad, Chennai and Nagpur divisions. Audit also noticed that in Bhopal division, the reasons for detention were not recorded in the Control data and in Allahabad, Agra and Vijayawada division, the records for the same were partially maintained.

Annexure I

3.2 Total detention at stations as per Train Signal Registers (TSR) of the selected stations and adjoining/preceding stations

Train Signal Registers (TSR) is maintained at stations to record mainly the actual movement of trains at the station where it is being maintained. In case of any detention, the reason for such detention should be recorded in the Register. Audit analysed manual data (TSR, Station Working Rule etc.) pertaining to the month of March 2017, in respect of operation of trains at selected stations and their adjoining stations. Audit noticed that for want of line/platforms at selected stations, inward trains have to be detained at adjacent stations for more than their scheduled prescribed stoppage time. Cases were also noticed when the inward trains were detained at outer signal of the selected stations for want of line/platform. During the month of March 2017, at 54 adjacent stations to the 15 selected stations, 4248 passenger trains were detained for 77,989 minutes (beyond the time of five minutes). In addition, 5902 goods trains were detained for 2,72,242 minutes at the outer signal/ adjacent stations. It was seen that coaching trains were detained for an average 18 minutes at the outer signals/adjacent stations. The goods trains were detained for much longer period and the detention was almost 46 minutes per train. Audit observed that specific reasons for detention outside the station were not recorded in TSR in a number of cases.

Annexure 2

Audit observed that trains originated from the stations were delayed due to late start form the originating station itself. Audit analysed the causes of detention of trains on account of late start of trains from originating stations. On review of Train Signal Registers (TSR) maintained at the selected 15 stations for the month of March 2017, Audit observed that 7310 trains were detained for 2409 hours at originating stations. Out of these 7310 trains, 6317 trains were detained for up to 30 minutes, 496 trains detained for half an hour to one hour and 497 trains detained for more than an hour. The main reason (38 *per* cent) for delay in originating trains i.e. late start of train from originating stations was ‘want of path’. Other reasons were link rake, absence of loco, crew, etc.

During Exit Conference (March 2018), Railway Board stated maximum detention at preceding station was for terminating trains. They stated that reasons for detention were invariably recorded by the station authorities and that strict monitoring was being done at Zonal Railway and Railway Board level for analysing reasons for detention through the data available in Coaching Operations Information System (COIS). Audit, however, found that in some of the selected/ preceding stations, no reasons were recorded in the TSR. Non-filling of prescribed registers may have serious implications in terms of control of movement on the tracks, inability to analyse causes of delays or mishaps etc. and is also indicative of loose supervisory control. Railways need to see how widespread this problem is and ensure that critical traffic records are fully maintained and non-essential registers/returns discontinued.

3.3 Detention of non-stop passenger trains at adjoining stations

Audit reviewed the detention of those trains in the month of March 2017 which had no scheduled stoppages on these preceding stations, but where the trains were stopped and detained for a considerable period. Total 7853 trains were detained at 38 adjacent stations for want of line/ platforms at 11 selected stations. Of which, 4907 trains (60.86 *per* cent) did not have the stoppage as per the time table at these adjacent stations. The total detention of these 4907 trains was about 38443 minutes at the adjacent stations, i.e. almost eight minutes per train.

Annexure 3

3.4 *En route* detention of trains

The *en route* movement of trains from adjoining stations to the 15 selected stations during March 2017 were examined to analyse the actual time taken beyond allowed time between these stations (adjoining and the selected stations). From 41 adjoining station, 12992 trains took more time than allotted to reach the selected station leading to unavoidable *en route* detention of 99973 minutes (1666 hrs) during the month of March 2017. Out of these 12992 trains, 5596 trains took more than five minutes than the allowed time to reach the selected station from the adjoining/preceding.

Audit further analysed the detention of trains *en route* in excess of 30 minutes more than the time allowed between the adjacent stations and selected stations. It was further noticed that 421 trains took 30 minutes or more over and above the allowed time to reach the selected stations from its adjacent stations causing total detention of 24559 minutes during March 2017. 309 trains on way to New Delhi (Delhi sadar), Delhi (Delhi Shahadara,) Kanpur Central (Kanpur Bridge), Allahabad (Prayag) and Bhopal stations (Vidisha) took 30 minutes or more time than the allowed time from their adjacent stations and detained for 16701 minutes i.e. on an average 54 minutes per train. Extra time taken to the cover the short distances between the adjacent stations and selected stations caused loss of punctuality.

Annexure 4

3.5 Detention of trains at station due to excess stoppage than the scheduled stoppage time

Trains are detained at stations beyond their scheduled stoppage time due to operational reasons such as non-availability of path, as some other train is already in the section. This results in occupation of platform line of the station for more time and creates congestion at station and further impacts the timing of incoming trains. The reason for such detentions is required[8] to be recorded in the record maintained at the station for that purposes and remedial measures should be taken to resolve such issues by proper planning and execution.

Audit noticed that the reason for such detention was not recorded in most of the cases in the TSR maintained at selected stations. Out of 15 selected stations, in 14 stations, 12230 trains were detained (i.e. stopped more than the scheduled stoppage time) on the platforms. The total detention assessed by Audit during the month of March 2017 for these 11902 trains as 120363 minutes. Significantly higher number of trains were detained at Mughalsarai (1033 trains), Kanpur Central (2970 trains), Jaipur (1270 trains) and Itarsi (1343 trains) stations. The detention at almost all the adjacent stations was more than 10 minutes, for ten stations reviewed in Audit. The stoppage of trains for more than the scheduled stoppage time resulted in line congestion and caused not only delays of these trains, but the incoming trains to that station were also delayed.

Annexure 5

3.6 Occupation of line/platform by Platform Return Trains

Platform return trains are those trains which have been scheduled to be returned from the platform itself with new number after cleaning, watering etc. These trains are allowed[9] one hour and 15 minutes time for cleaning, watering etc. and are not sent to washing pits/yards etc. for maintenance. Out of the 15 selected stations, on nine stations[10], 65 platform return trains were being operated. Audit reviewed that running of these platform return trains and noticed that 40 platform return trains, engaged the platforms significantly more time than the allowed time of 75 minutes leading to engagement of platforms for 37230 minutes in a week's[11] time.

3.7 Occupation of running lines by empty rakes of terminated trains

There should be a fixed time for removal of the empty rake of a terminated train from the running line. Detentions of such rake at station for more than the prescribed time results in detention of other trains at outer signal and adjacent stations for want of availability of platform at the destination station. Empty Coaching Rake Movement (ECRM) Register is

[8] Para II (iv) of Chapter 1 of Duty of Deputy Station Master Outdoor
[9] Railway Board vide letter No. 2003/M(C)/141/19 dated 02.03.2006
[10] Patna, Mathura, Howrah, Bhopal, Itarsi, Ahmedabad, Vijaywada, Chennai Central, Nagpur
[11] Engagement of platform was assessed for a week of month of March 2017. Normally trains were run on weekly basis, i.e. weekly, bi-weekly, tri-weekly, daily. Considering this detention was assessed for one week.

prescribed for monitoring the movement of terminated coaching rakes after termination at station.

The norms of time for stay of terminated trains at station have not been prescribed by railways. Assuming that a time of thirty (30) minutes is considered sufficient for the terminated trains at Platform to complete necessary formalities before proceeding to washing pit/stabling line, Audit reviewed the time taken by various trains to proceed to washing pit/stabling lines at terminating stations.

Audit observed that non-maintenance of ECRM register by stations concealed the abnormal stay of terminated trains at platforms in three stations viz. New Delhi, Delhi and Bhopal stations. In the absence of such information, it is difficult for the railways to monitor and take corrective action to optimally use the platforms. Audit reviewed the ECRM register of the remaining 12 stations and noticed that 3500 terminated trains were detained at platforms beyond 30 minutes with a total detention of 151488 minutes during March 2017. 382 trains were detained more than one to three hours and 55 trains were detained by more than three hours beyond 30 minutes after termination.

Annexure 6

3.8 Abnormal time allowed to some trains in comparison to the other trains of same category between a pair of stations

Audit analysed the Working Time Table of 12 selected divisions of ten Zonal Railways. Audit noticed that out of 409 trains, run directly from the preceding stations to the selected stations[12], 169 trains had been allotted unusually more time in comparison to the same category[13] of trains run between these pair of stations. Audit assessed total 42734 hours loss of the coach/engine hour for the period under review, on the basis of extra time allotted over and above the time allotted for other train(s) of similar category. Due to allowing extra/slack time to such trains, the rake (coaches and engine) of these trains had to be detained on the stations till its scheduled departure, in case it reaches to that station on normal time.

Annexure 7

To further substantiate the above observation, Audit compared the data of actual time taken by the trains that were allotted unusually more time from the station record (TSR) of these stations. Audit test checked data of 88 trains in March 2017, which were allotted unusually more time and noticed that the actual time taken was much less than their allotted time. Out of these 88 trains, 40 trains took 50 *per cent* less time; 51 trains took 50 *per cent* to 75 *per cent* less time and 27 trains took more than 75 *per cent* less time of the time allowed in working time table.

Annexure 8

[12] Patna, Mughalsarai, New Delhi, Delhi, Kanpur, Allahabad, Mathura, Jaipur, Bhopal, Itarsi, Vijayawada and Nagpur
[13] Mail/Express was compared to Mail/Express, Passenger was compared to Passenger, MEMU was compared to MEMU, etc.

During Exit conference (March 2018), with regard to different time being allowed to different trains between the same pair of stations, Railway Board stated that between the terminating station and the station preceding it, a recovery time is kept in the time table so as absorb delays due to operational constraints.

Thus, due to inadequate station line and platform capacity, trains were detained before reaching the stations at outer signals and adjacent preceeding stations. Trains were also detained enroute as clear path was not available to proceed further. Platform return trains and terminated trains were also detained at platforms due to constraints in moving them further. Infrastructure such as platforms and facilities for stabling and/or maintenance, were not adequate, which led to delay in arrival of inbound trains, delay in departure of outbound trains and trains were also detained on way to depots for maintenance. Due to these constraints, there were large differences in the timings allowed for various trains to cover a similar distance between a station and its adjacent station. There is a need to provide adequate lines, platforms and maintenance facilities so as to minimise the detention of trains and sub-optimal utilisation of coaching stock. Critical traffic registers and records need to be maintained properly, so as to strengthen supervisory control.

Chapter 4
Adequacy and availability of infrastructure at selected stations

Audit examined in detail the records of 15 stations under 12 divisions of 10 Zonal Railways falling on the routes with heavy passenger traffic. These stations handle a significant quantum of passenger traffic. A large number of trains originate/terminate as well as pass through these stations. For examination of the availability of adequate infrastructure at these stations, record and data of three years (2014-15 to 2016-17) was examined. Audit also analysed one month data (March 2017) for detailed study of impact of deficiencies on train services which include detention of trains at station/enroute/preceding stations. Detailed findings of these 15 stations are discussed below:

4.1 Allahabad Junction

Name of the station	Allahabad Junction			
Zonal Railway	North Central			
Division	Allahabad			
Adjoining stations	Naini, Subedarganj, Allahabad City, Prayag			
Number of coaching trains handled per day	Originating/terminating	18		
	Passing through	172		
	> =24 coach trains	25		
	Number of trains handled during the day - 190			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	47	36	49	58
Total number of platforms	10			
Total number of platforms which can handle 24 or more coach trains	6			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	1			
Total number of stabling lines	1			
Total number of stabling lines which can handle 24 or more coach trains	1			

4.1.1 Infrastructure at Allahabad station

Allahabad station handles around 190 trains per day. The number of trains handled has increased by 26 during the past three years.

- Though 25 trains go through Allahabad stations, which have 24 or more coaches, only six out of 10 platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is exceptionally heavy during the night time between 2400 hrs and 0600 hrs, of which four are Rajdhani trains passing through Allahabad every day.

- Audit observed that during March 2017, six trains[14] having coach capacity of 23 to 25 coaches were stopped at platform no.3/9/10 having a capacity of only 22 coaches.
- There are only two washing pit lines, of which only one can handle trains with 24 coaches or more. There is only one stabling line for stabling of trains after arrival awaiting their turn to be shunted away to the washing pit lines.

4.1.2 Detentions at Allahabad station

During the one-month detailed check of detentions at Allahabad station for March 2017, the following was observed:

- During March 2017, on examination of TSR of Allahabad and its stations, it was noticed that 535 passenger trains were detained at adjacent stations/outer signals of Allahabad station for want of line/platform beyond the time of five minutes. The total detention was 12067 minutes, i.e. on an average 23 minutes per train. 242 trains were detained at adjoining stations Naini (8 kms), Subedarganj (3 kms) and Allahabad City (2 kms), with an average detention of 12, 12 and 26 minutes per train respectively though there was no stoppage of these trains at these adjacent stations. For goods trains, the average detention was 31 minutes per train for 541 goods trains passing through Allahabad station.
- There was *enroute* detention of 48506 minutes in respect of 2261 trains, which took more time than the allowed time in the time table, from adjacent station to Allahabad station, with an approximate detention of 21 minutes per train. Of these 889 trains were detained for more than five minutes and the total detention was 13135 minutes.
- During March 2017, 367 trains were detained on platforms at Allahabad station for 6259 minutes over and above their scheduled stoppage time prescribed in the time table.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that at Allahabad station, 257 trains were detained at platform after terminating at Allahabad station beyond the period of 30 minutes[15]. 26 trains were stabled at platforms after the period of one hour of termination. Two trains were stabled for more than three hours after termination.
- Train no. 19422 Patna Ahmedabad Express has been allotted 13 minutes to cover the distance between Allahabad City and Allahabad station (3.2 kms). However two trains Train no. 15117 Manduadih Jabalpur Express and Train no. 15004 Chaurichaura Express of same category have been allotted unusually longer time of 24 minutes and 18 minutes respectively to cover the same distance.

[14] Train no.14005/14006 Lichchvi Express, Train no. 15160 Sarnath Express, Train no. 12670 Ganga Kaveri Express-, Train no. 12505 Northeast Express and 12987 Sealdah Ajmer Express

[15] There is no prescribed time for removal of trains after termination of train at a station. Audit assumed a considerable period of 30 minutes for de-boarding trains.

- During March 2017, 293 trains which originate at Allahabad station, started late from Allahabad station, after being detained for 359 hours. 127 of these trains were detained for up to 30 minutes, 62 trains detained for half an hour to one hour and 104 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (94 trains), want of locos (72 trains).

4.1.3 Constraints in station line capacity at Allahabad station

Allahabad Jn. Station deals with passenger traffic coming from Mughalsarai, Varanasi, Satna, Jhansi, Lucknow and Kanpur. Large number of crossing movement of trains is involved. This station has a space constraint for expansion- restricted by city side (Leader Road) and Civil lines side (Nawab Yusuf Road). After every 12 years Mahakumbh mela and after every 6 years Ardh Kumbh Mela are held at Allahabad where large number of pilgrims arrives in Allahabad. To cater to large number of pilgrims at Allahabad station during Mela period, decongestion of Allahabad station is essential.

- A work was proposed to develop Subedarganj station for decongesting Allahabad station. Subedarganj station is an 'E' category station located 3 kms away from Allahabad station and has a small station building with two Rail level platforms. It was proposed to develop Subedarganj station by providing (i) proper station building with circulating area (ii) high level platform (no. 1,2,3) (iii) construction of washable apron (iv) provision of water hydrant pipe line (v) provision of 6.1m wide FOB (vi) two washing pit lines (vii) PF sheds (viii) booking office, waiting hall, computer arrangement and pump house etc. The abstract cost of all these works was ₹ 26.69 crore. The work of development of Subedarganj station near Allahabad junction was sanctioned (2015-16) as new terminal, which is scheduled for completion by April 2018. The work is under progress with physical progress 38 *per cent* and financial progress of 33.38 p*er cent* only as of April 2018.
- Cheoki station was developed (December 2011) as terminal station of Allahabad at a distance of 10 kms from Allahabad junction on Howrah-New Delhi line in order to decongest Allahabad junction and provide a separate route for trains to Southern Indian from Eastern India. This was done so as to allow trains on New Delhi-Howrah route to run on time and avoiding the delay of more than 30 minutes for engine change at Allahabad for trains from Mughalsarai side to Jabalpur side. Diversion of 20 Mail/Express via Cheoki (avoiding Allahabad Junction) was also carried out.
- At Allahabad station, the work of construction of platform no.11 was sanctioned in 2008-09 at the cost of ₹ 4.74 crore. However, detailed estimated was prepared in November 2011 with cost of ₹ 9.04 crore. As such a time overrun of more than three years and cost overrun of ₹ 4.30 crore was noticed due to delay in preparation of detailed estimate after sanction of the work. Though the work was to be completed by September 2017, as of April 2018, the physical progress was 70 *per cent* and financial progress was 58.56 *per cent.*

- Despite 18 trains per day originate/terminate at Allahabad station, it has only 2 washing pit lines for purpose of washing maintenance of these trains. To decongest Allahabad Station (NCR), the work of provision of two full length washing pit lines at Subedarganj station was also proposed in August 2015. However, the work was excluded from the works programme without recording any justification.
- Naini Station on Mughalsarai-Allahabad Section of Allahabad Division is an important junction station which handle passenger traffic of Jabalpur side. Naini Station is key station during Kumbh Mela / Ardh Kumbh Mela which are held every 12 / 06 years and Magh Mela every year to handle pilgrims, as the station is near to mela area at Sangam. At present, there is no loop line available towards Jabalpur side at Naini station and trains received on main line as regular stoppage. Due to this no train movement can be done on main line. During Kumbh/Ardh Kumbh Mela additional passenger trains are operated to cater Mela traffic resulting heavy stagnation of trains due to non-availability of loop lines Therefore, it is essential to provide two additional loops and platforms at Naini to handle heavy traffic. For this work, a proposal was made in October 2014, but it was yet to be sanctioned. No reasons for the same were found on record.

4.1.4 Conclusion

Allahabad station deals with heavy passenger traffic. Measures have been taken to decongest Allahabad station by developing alternative stations nearby. While Cheoki station has been developed as a terminal station and some of the trains shifted to that station, other alternative stations (Subedarganj and Naini) were yet to be developed. The available washing pit lines and stabling lines were also not adequate to cater to the maintenance of trains originating/ terminating at Allahabad station. During Exit Conference, NCR Administration stated (November 2017) that a Master Plan for infrastructure development is being prepared for Allahabad station and all identified constraints of infrastructure would be taken up.

4.1.5 Recommendations

1. A comprehensive Master Plan for Allahabad station may be prepared identifying all the constraints and measure for addressing these constraints, clearly laying down the milestones for execution of the works identified.

2. To decongest Allahabad station, the work of developing Subedarganj station as an alternate station, needs to be completed on priority.

3. The work of extension of Platform no.11 may be completed on priority.

4. For smooth movement of trains via Allahabad station, railway administration may consider shifting of trains originating and terminating at Allahabad station to the newly developed terminals/stations.

4.2 Kanpur Central

Name of the station	Kanpur Central			
Zonal Railway	North Central			
Division	Agra			
Adjoining stations	Panki, Kanpur Anwarganj, Kanpur Bridge, Chandari			
Number of coaching trains handled per day	Originating/terminating	25		
	Passing through	303		
	> =24 coach trains	38		
	Number of trains handled during the day - 328			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	73	86	77	92
Total number of platforms	10			
Total number of platforms which can handle 24 or more coach trains	5			
Total number of pit lines/washing lines	7			
Total number of pit lines/washing lines which can handle 24 or more coach trains	2			
Total number of stabling lines	0			
Total number of stabling lines which can handle 24 or more coach trains	Not applicable			

4.2.1 Infrastructure at Kanpur Central station

Kanpur Central station handles around 328 trains per day. The number of trains handled has increased by 26 during the past three years.

Fig.4.1 Train no. 12948 (Azimabad Express) having 23 coaches stopped at Platform no.3 (handling capacity of 15 coaches) at Kanpur Central Junction on 26.10.2017

- Though 38 trains, having capacity of 24 coaches or more, pass through Kanpur Central station, only five out of 10 platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is exceptionally heavy during the night time between 2400 hrs and 0600 hrs. During this period 92 trains pass through this station, of which five are Rajdhani trains.
- Due to inadequacy of platform length, trains having more coach capacity had to be stopped at the platforms with lesser coach capacity. During test check (1 September to 7 September 2017), Audit observed that 53 trains having coach capacity of 18 to 25 coaches were stopped at platforms (no. 2, 3 and 4) having coach capacity of 15 to 22 coaches.

- There are seven washing pit lines, of which two can handle trains with 24 coaches or more. There is no stabling line at this station.

4.2.2 Detentions at Kanpur Central station

During the one month (March 2017) detailed check of detentions at Kanpur Central station, the following was observed:

- During March 2017, on examination of TSR of Kanpur Central and its adjacent stations, it was noticed that 628 passenger trains were detained at adjacent stations/outer signals of Kanpur Central station for want of line/platform beyond the time of five minutes. The total such detention was 11951 minutes, i.e. on an average 19 minutes per train. 1496 trains were detained at adjoining stations Kanpur Anwarganj (3 kms) and Kanpur Bridge (3 kms), with an average detention of 25 and 10 minutes per train respectively, though there was no stoppage of these trains at these adjacent stations. For goods trains, the average detention was 100 minutes per train for 393 goods trains passing through Kanpur Central station.
- There was *enroute* detention of 47121 minutes in respect of 2851 trains, which took more than the time allowed as per the time table. Of these, 2016 trains were detained for more than five minutes and the total detention was 44758 minutes. Further, 93 trains (87 at Kanpur Bridge and 6 at Kanpur Anwarganj) were detained for more than 30 minutes each during March 2017.
- During March 2017, 2970 trains were detained on platforms at Kanpur Central station for 29813 minutes over and above their scheduled stoppage time prescribed in the time table.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that 122 trains were detained at platform after terminating at Kanpur Central station beyond the period of 30 minutes. 40 trains were stabled at platforms after the period of one hour of considerable period of 30 minutes of termination. Four trains were stabled for more than three hours after the period of 30 minutes of termination.
- Train no. 14222 Kanpur Anwarganj - Faizabad Inter City Express Express and Train no. 19709 Jaipur-Kamakhya Kavi Guru Express have been allotted 10 minutes to cover the distance between Kanpur Anwarganj and Kanpur Central station (2.36 kms). However, two trains (Train no. 18192 Utsarg Express and Train no. 15038 Kasganj Kanpur Express) of same category have been allotted unusually longer scheduled time of 20 minutes and 35 minutes respectively to cover the same distance. Similarly, Train no. 14164 Sangam Express has been allotted 30 minutes to cover the distance between Panki and Kanpur Central station (9.85 kms). However, two trains (Train no. 18102 Jammu Tawi - Tatanagar (Muri) Express and Train no. 15484 Mahananda Express of the same category have been allotted unusually longer scheduled time of 38 minutes and 40 minutes respectively to cover the same distance.

- Audit checked 11 trains, running between adjoining stations (Govindpuri, Kanpur Anwarganj and Panki) and Kanpur Central station, which were allowed unusually extra time. It was noticed that all the 11 trains took more than 75 *per cent* time than that of allowed in the time table.
- During March 2017, 227 trains which originated at Kanpur station, started late from the station, after being detained for 250 hours. 88 of these trains were detained for up to 30 minutes, 60 trains detained for half an hour to one hour and 79 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (76 trains), late arrival of link rake (80 trains). In 53 trains, reasons for late start of trains were not recorded.

4.2.3 Constraints in station line capacity at Kanpur Central station

Kanpur Central station handles a very large number of through trains. As such, the importance of ensuring seamless movement of through trains cannot be overemphasized.

- There was no proposal for construction of new terminal station and for enhancing capacity of Platform to handle 24/26 coach trains to decongest Kanpur Central Junction.
- A work of 'Kanpur Central-Modification in yard lay out to ensure proper berthing of trains on platform no. 1, 2 & 3' (NCR) was proposed in August 2014 with a justification that 'Over 300 Mail/Express trains including several Rajdhani/Shatabadi and other prestigious train passed daily through Kanpur Central. The present yard layout is such that if a train occupying a platform (say platform 3), then train cannot be receive on platform no. 1 and 2, due to track circuiting and redundant cross over as in spite of having adequate platform length on platform no. 1, 2 and 3, the trains are only partially received on platform area and remaining train is berthed over cross over which is not desirable. The proposed modification would solve this problem.' Audit observed that the work was excluded from the list without recording any justification for the same.
- Clear Standing Room (CSR) available at Govindpuri can hardly accommodate 9-10 coach length trains whereas, all stopping train are running with 12 to 22 coach. To ensure smooth running of trains in Kanpur areas, Civil Engineering work of Govindpuri additional loops was awarded and to be completed by April 2009, which was completed (October 2013) with a delay of four and half years. However, the work of linking was still incomplete[16]. Main reasons for delays were non-providing the clear site, drawing, non-shifting of railway materials, etc. As such, after a lapse of more than 10 years, the work could not be completed despite an expenditure of ₹ 20.53 crore.

4.2.4 Conclusion

Kanpur Central station deals with very heavy passenger traffic handling around 303 passing trains and 25 originating/terminating trains every day. There are only ten platforms to handle such a large number of trains. The average detention per train was as high as 25

[16] Electrical work was completed with a delay of 7 years but the S&T work was delayed by 3 years 9 months and still incomplete

minutes per train in March 2017 at Kanpur Anwarganj, an adjacent station 3 kms away from Kanpur Central. Though a work of yard remodelling at Kanpur Central station was proposed in August 2014 to augment the capacity of platform, the work was excluded from the Works Programme without recording any reason.

4.2.5 Recommendations

1. Railways may explore development of alternate station/terminal to decongest the Kanpur Central station.

2. The scope of yard remodelling work at Kanpur Central may be assessed to help augment the station line capacity.

4.3 Mathura Junction

Name of the station	Mathura Junction			
Zonal Railway	North Central			
Division	Agra			
Adjoining stations	Bhainsa, Bhuteshwar, Mathura Cantt., Murheshi Rampur, Baad			
Number of coaching trains handled per day	Originating/terminating	10		
	Passing through	180		
	> =24 coach trains	33		
	Number of trains handled during the day - 190			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	57	43	40	50
Total number of platforms	10			
Total number of platforms which can handle 24 or more coach trains	5			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	0			
Total number of stabling lines	1			
Total number of stabling lines which can handle 24 or more coach trains	0			

4.3.1 Infrastructure at Mathura station

Mathura Junction station handles around 190 trains per day. The number of trains handled has increased by three during the past three years.

- Though 33 trains go through Mathura Junction, which have 24 or more coaches, only five of 10 platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is exceptionally heavy during the morning time between 0600 hours and 1200 hours.

- Audit observed that during March 2017, at Mathura station, Train no. 19062 (Ramnagar-Bandra Terminus) having coach capacity of 21 coaches was stopped at platform no.9 having a capacity of only 18 coaches on four days.
- There are only two washing pit lines and one stabling line in the Mathura station and none of these could handle trains with 24 coaches or more. Though five trains terminate per day, average detention of 102 minutes was noticed beyond the considerable period of 30 minutes of termination. The maximum detention was 710 minutes. At this station, there are two pit lines, but these could handle trains with up to 12 coaches only. As a result, trains have to be sent to Agra Cantt. for maintenance, which is 53 kms away resulting in detention of trains after termination. Audit observed that Train no. 12177/12178 (Chambal Express) having 20 coaches is sent weekly to Agra Cantt. for primary maintenance. Further, Train no. 11901/11902, Mathura Kurukshetra Express, having coach capacity of 12, is being sent weekly to Agra Cantt. for primary maintenance despite availability of washing pit at Mathura station with the capacity of 12 coaches. Due to non-availability of adequate washing pit at Mathura station, these trains are being detained at Mathura station after termination and subsequent hauled to Agra Cantt. for primary maintenance. In reply, NCR Administration stated that there is no facility for maintenance of AC coaches available at Mathura station so that these trains are being sent to Agra Cantt. for maintenance. Work of enhancement of the length of pit line for 24 coach maintenance facility has been initiated in Mathura Yard Remodeling Work.

4.3.2 Detentions at Mathura station

During the one-month detailed check of detentions at Mathura station for March 2017, the following was observed:

- During March 2017, on examination of TSR of Mathura and its adjoining stations, Audit noticed that 296 passenger trains were detained at adjacent stations/outer signals of Matura Junction for want of line/platform beyond the time of five minutes. The total detention was 4299 minutes, i.e. on an average 15 minutes per train. 175 trains were detained at adjoining stations Bhuteshwar (2 kms), Murhesi Rampur (8 kms), Mathura Cantt. (2 kms) and Bhainsa (10 kms), with an average detention of 4, 16, 13 and 6 minutes per train respectively though these trains had no stoppage at these adjacent stations. For goods trains, the average detention was 34 minutes per train for 997 goods trains passing through Mathura station.
- There was *enroute* detention of 12059 minutes in respect of 1660 trains, which took more time than allowed as per the time table. Of these 731 trains were detained for more than five minutes and the total detention was 9535 minutes. Further, 27 trains were detained for more than 30 minutes that the scheduled time.
- During March 2017, 710 trains were detained on platforms at Mathura station for 4857 minutes over and above their scheduled stoppage time prescribed in the time table.

- In Mathura station, all the three platform return trains stayed at platform for the more than the prescribed period of 75 minutes before their departure form Mathura station. Total detention on this account was 2625 minutes per week during March 2017.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that at Mathura station, 114 trains were detained at platform after terminating at Mathura station beyond the considerable period of 30 minutes. 53 trains were stabled at platforms after the period of one hour of termination and 15 trains were stabled for more than three hours after termination.
- Train no. 59359 (Bayana Mathura Passenger) has been allotted 26 minutes to cover the distance between Murhesi Rampur and Mathura station (9 kms). However two trains (Sawai Madhopur Mathura passenger - 54793 and Ratlam Mathura Passenger - 59355) of same category (Passenger train) have allotted unusually longer scheduled time of 45 minutes and 59 minutes respectively to cover the same distance.
- During March 2017, 160 trains which originate at Mathura station, started late from Mathura station, after being detained for 161 hours. 92 of these trains were detained for up to 30 minutes, 23 trains detained for half an hour to one hour and 45 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (92 trains), want of locos (51 trains).

4.3.3 Constraints in station line capacity at Mathura station

Mathura station is a very busy junction, through which all trains from New Delhi to Mumbai and also to south pass.

- There were no proposal to construction of new station/terminal nearby Mathura station to decongest the Mathura station.
- The work of Mathura Junction Yard Remodelling with flyover at Bhuteshwar was sanctioned by Railway Board in March 2016. Audit observed that the tender for 'Outdoor and Indoor Signalling work of Mathura yard remodelling', was invited only in February 2017, almost a year after the sanction of estimate by Railway Board. As of April 2018, the physical and financial progress of the work was only 15 *per cent.*
- Audit also observed that the standard of interlocking of Mathura Station was not uniform. During Exit Conference, NCR Administration stated (Nov 2017) that the same is part of yard remodelling work and is being taken up.

4.3.4 Conclusion

Mathura station deals with around 190 trains per day. Due to inadequate length of platforms, trains with higher coach capacity are stopped at platforms with lesser capacity resulting in inconvenience to passengers in boarding and de-boarding trains. The trains started from Mathura station itself started late on account of want of clear path. There was

no proposal for development of new station/termination to ease the congestion of Mathura Junction.

4.3.5 Recommendations

1. Railways may explore development of alternate station/terminal to decongest the Mathura Junction.

2. The work of Mathura Junction yard remodelling need to be expedited to complete on time.

4.4 Patna

Name of the station	Patna Junction			
Zonal Railway	East Central			
Division	Danapur			
Adjoining stations	Danapur, Phulwari Sharif, Sachiwalay Halt, Parsa Bazar, Rajendranagar Terminal			
Number of coaching trains handled per day	Originating/terminating	100		
	Passing through	59		
	> =24 coach trains	16		
	Number of trains handled during the day - 159			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	46	48	41	24
Total number of platforms	10			
Total number of platforms which can handle 24 or more coach trains	7			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	1			
Total number of stabling lines	3			
Total number of stabling lines which can handle 24 or more coach trains	2			

4.4.1 Infrastructure at Patna Junction

Patna station handles around 159 trains per day. The number of trains handled has decreased by 19 during the past three years.

- The number of trains handled by Patna station is as high as 159, of which 16 have 24 or more coaches. Seven out of 10 platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is exceptionally heavy during the day time between 0600 hrs to 1800 hours.
- There are only two washing pit lines, of which only one can handle trains with 24 coaches or more. There are three stabling lines, out of which two can handle trains with 24 coaches or more.

- Review of availability and augmentation of infrastructure at Patna station during the last ten years, showed that the number of total trains handled per day has increased from 146 as of March 2007 to 159 as of March 2017. During this ten year period, one new platform has been added (from 9 platforms in March 2007 to 10 in March 2017). However, the number of stabling and washing pit lines remained constant, though the number trains terminating has increased by 21, in the last ten years. Absence of adequate number of stabling and washing pit lines resulted either in detention of trains at platforms after termination or shifting of coaching depots attached to other stations causing engagement of route by such shifting.

4.4.2 Detentions at Patna Junction

During the one-month detailed check of detentions at Patna Junction for March 2017, the following was observed:

- During March 2017, on examination of TSR of Patna and its adjoining stations, it was noticed that 1055 passenger trains were detained at adjacent stations/outer signals of Patna station for want of line/platform beyond the time of five minutes. The total detention was 20552 minutes, i.e. on an average 19 minutes per train. 530 trains were detained at adjoining stations Danapur (9 kms), Phulwari Sharif (7 kms), Parsa Bazaar (6 kms), Rajendranagar Terminal (3 kms), Sachiwalay Halt (3 kms) with an average detention of 6, 9, 9, 9 and 8 minutes per train respectively though there was no stoppage of these trains at these adjacent stations. For goods trains, the average detention was 29 minutes per train for 411 goods trains passing through Patna station during March 2017.
- There was *enroute* detention of 3629 minutes in respect of 342 trains, which took more time than allowed as per the time table. Of these 223 trains were detained for more than five minutes each and the total detention were 3341 minutes. 23 trains took more than 30 minutes than the allowed time to cover the distance of 3 to 9 kms adjoining stations (Parsa Bazaar, Rajendranagar Teminl and Danapur) and Patna station.
- During March 2017, 637 were detained on platforms at Patna station for 9181 minutes over and above their scheduled stoppage time prescribed in the time table.
- Six out of 11 platform return trains were stabled at platform for more than the prescribed 75 minutes, thereby engaging the platforms for 5590 minutes per week during the month of March 2017. Train no. 12023/12365 (Howrah-Patna Jan Shatabdi Express/ Patna-Ranchi Jan Shatabdi Express) was allowed 465 minutes daily to remain stationed at the platform before departure as another train number against the allowed time of 75 minutes.
- Empty Coaching Rake Movement (ECRM) Register was not maintained at Patna station. On examination of TSR register, it was noticed that 76 trains were detained for 2139 minutes after termination at Patna station. Of these, seven trains were detained for more than one hour beyond 30 minutes.

- Train no. 18184 Danapur Tatanagar Superfast Express has been allotted a time of 15 minutes to cover the distance of 10 kms from Danapur to Patna station. However, other 11 trains[17] of same category (Mail/Express) have been allotted the time of 30 to 60 minutes to cover the same distance of 10 kms. Train no. 12334 Vibhuti Express and Train no. 12356 Archana Superfast Express have been given the time of 23 minutes to cover the distance from Danapur to Patna station (10 kms). However, other six trains[18] of same category (Superfast) have been allotted the time of 36 minutes to 60 minutes to cover the same distance.
- Test check of 31 trains, running between adjoining stations (Parsa Bazaar, Rajendranagar Terminal and Danapur) and Patna stations, which were allowed unusually extra time, showed that 15 trains took 50 *per cent* less time, 15 trains took 50 to 75 *per cent* less time than that allowed in the time table. This clearly indicates that these trains have been allotted unusually high time to maintain the punctuality.
- During March 2017, 329 trains which originate from Patna station, started late from the station, after being detained for 253 hours. 185 of these trains were detained for up to 30 minutes, 64 trains detained for half an hour to one hour and 80 trains detained for more than one hour. The reasons behind not departing these trains on their scheduled departure time were not recorded. By not mentioning the reasons for delayed departure of such train and the official/department in the record and the required action to eliminate the cause of such detention could not be ensured.

4.4.3 Constraints in station line capacity at Patna station

Audit observed that on at Patna station, no assessment of requirement of station facilities was undertaken in the past five years and no new platforms were added. During the period of review at Patna Junction, originating station of some trains (five pairs) were shifted from Patna Junction to other adjoining stations and some through trains (four pairs) were shifted via Patliputra – Hajipur section (connected through Rail-cum-road Bridge over Ganga). However, congestion still existed in Patna Junction.

- Out of 10 platforms, seven platforms can handle trains with 24 or more coaches. Platform no. 8 has the capacity for handling 24 coach trains when received up/down directions from/to Patna-Gaya line, but for the main line trains it has the capacity to handle only 17 coaches. The work for addressing this constraint was yet to be proposed by ECR

Fig.4.2 Platform 8 at Patna Junction

[17] Train nos. 13202, 13050, 13134, 13238, 13484, 13006, 15484, 13250, 13414, 15645, 15647
[18] Train nos. 12304, 12578, 12402, 12336, 12332, 12947

Administration.

- Shunting neck is a short length of track laid parallel to the main line for the purpose of allowing a train to shunt back into a rail yard without occupying the main running line. At Danapur station, the detailed estimate of the work of 'extension of shunting neck' was sanctioned in September 2005. The tender notice was yet to be invited after lapse of more than 11 years from the sanction of detailed estimate. Later, the work was clubbed/included with the work of Route Relay Interlocking at Danapur, which is to be scheduled for completion in March 2018, but the same was not completed as on 30 April 2018. The extension of shunting neck was to be created to facilitate the operation of washing pit at Danapur.
- Washing pit line no. 01 of Patna Junction having capacity of 24 coaches is connected with Platform no. 01 only. Hence, trains terminate at any other platform have to come first on Platform no. 1 then to washing pit line no.01. This results in engaging of at least two lines/platforms simultaneously for shifting the rake to washing pit line no.01.
- There are three stabling lines (excluding one for MEMU/DEMU) at Patna station, which can accommodate 10 or more coach rakes. Out of 9 Mail/Express trains which terminate at Patna station and have to be returned without primary maintenance, eight trains have rake formation of more than 10 coaches. These rakes remained at Patna station for the times ranging from 2 hours 35 minutes to 22 hours 55 minutes as checked during March 2017. This results in engagement of platform line for more time due to less number of stabling lines which ultimately results in congestion of trains at Patna station as well as at its adjoining stations.
- At Patna station only two washing pits (one having 15 coach and other having 24 coach capacity) were available, which were not capable of maintenance of all the trains terminating here. Total 31 rakes were shifted to Rajendra Nagar Coaching Complex attached with Rajendra Nagar Terminal during March 2017. Audit noticed that though the distance between Patna and Rajendra Nagar terminal is only three kms, the rakes take on an average 4.5 hours to reach from Patna Junction to Rajendra Nagar Coaching Complex.

4.4.4 Conclusion

Though the number of trains being handled at Patna station has been decreased over the past three years and a number of trains have been shifted to adjacent stations, congestion still existing. There were constraints such as platform no.08 not being able to handle 24 coaches trains coming from Delhi side, the only existing washing pit line not directly connected to all platforms except platform no.01, inadequate number of stabling lines which was required to be addressed.

4.4.5 Recommendations

1. Railways may explore means to link the washing pit line no.01 to all platforms in such a manner so that the train can be directly shifted to pit line.

2. Railways may take action to reduce the travel time of empty rakes between Patna station and depot at Rajendranagar Terminal.

4.5 Mughalsarai

Name of the station	Mughalsarai station			
Zonal Railway	East Central			
Division	Mughalsarai			
Adjoining stations	Kuchman, East Outer Cabin Mughalsarai, Ganjkhawaja, Chandauli Majhwar			
Number of coaching trains handled per day	Originating/terminating	28		
	Passing through	112		
	> =24 coach trains	30		
	Number of trains handled during the day - 140			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	33	30	32	45
Total number of platforms	8			
Total number of platforms which can handle 24 or more coach trains	4			
Total number of pit lines/washing lines	0			
Total number of stabling lines	0			

4.5.1 Infrastructure at Mughalsarai station

Mughalsarai station handles around 140 trains per day. Only one train was added during the past three years. Audit observed that

- The number of trains handled by this station is 140 of which 30 have 24 or more coaches. However, only four out of eight platforms have the capability to handle trains with more than 24 coaches. During the last three years, two platforms were added.
- During March 2017, four trains[19] having coach capacity of 20 to 24 coaches were stopped at platform no.6 having a capacity of only 17 coaches, which caused inconvenience to passengers in boarding and de-boarding the trains.
- The rush of trains is exceptionally heavy during the night time between 2400 hrs and 0600 hours.

Fig.4.3 Platform no.6 (Mughalsarai Jn.), 5 coaches of Seemanchal Express (12487) standing outside the platform

[19] 12487 (Seemanchal Express), 14055 (Brahmputra Mail), 13005 (Howrah- Amritsar Mail), 12175 (Chambal Express)

- Though 28 trains are originate/terminate from this station, there are no washing pit lines or stabling lines at this station.

4.5.2 Detentions at Mughalsarai station

During the one-month detailed check of detentions at Mughalsarai station for March 2017, the following was observed:

- During March 2017, on examination of TSR of Mughalsarai and its adjoining stations, it was noticed that 221 passenger trains were detained at adjacent stations/outer signals of Mughalsarai station for want of line/platform beyond the time of five minutes. The total detention was 4338 minutes, i.e. on an average 20 minutes per train. 260 trains were detained at adjoining stations Chandauli Majhwar (17 kms), East Outer cabin (4 kms), Ganj Khwaja (7 kms) and Kuchman (12 kms) with an average detention of 3, 5, 8 and 13 minutes per train respectively though these trains did not have a stoppage on these adjacent stations. For goods trains, the average detention was 21 minutes per train in respect of 705 goods trains passing through this station.
- There was *enroute* detention of 442 minutes in respect of 25 trains, which took more time than allowed as per the time table. Of these 21 trains were detained for more than five minutes and the total detention were 431 minutes. Further, 4 trains took more than 30 minutes than the allowed time to cover the distance between adjoining stations (Chandauli Majhwar) and Mughalsarai station.
- During March 2017, 1033 trains were detained on platforms at Mughalsarai station for 10347 minutes over and above their scheduled stoppage time prescribed in the time table.
- During the month of March 2017, Audit noticed that at Mughalsarai station, nine trains were detained at platform after terminating at this station beyond the considerable period of 30 minutes.
- Audit noticed that out of 17 trains running between Bhabua and Mughalsarai stations, 13 trains were allotted unusually more time in the time table that the minimum time allotted to other same category of trains. Train no. 12321, Howrah Mumbai Mail has given the time of 44 minutes to cover the distance from Bhabua to Mughalsarai station. However, other 11 trains[20] of same category (Superfast) have allotted the time of 63 minutes to 131 minutes to cover the same distance.
- Audit checked three trains, running between adjoining stations (Kuchman and Chandauli Majhwar) and Mughalsarai station, which were allowed unusually extra time. It was noticed that two trains took only less than 50 *per cent* of the time allowed in the time table and one train took between 50 and 75 *per cent* of allowed time. It clearly indicates that these trains have been allotted unusually high time to maintain the punctuality.

[20] Train nos. 12942, 12175, 12177, 22912, 12311, 12875, 12389, 12987, 12307, 12397, 12817

- During March 2017, 168 trains started late from Mughalsarai station, after being detained for 84 hours. 103 of these trains were detained for up to 30 minutes, 43 trains detained for half an hour to one hour and 22 trains detained for more than an hour.

4.5.3 Constraints in station line capacity at Mughalsarai station

Mughalsarai station handles around 140 trains per day of which 30 trains have 24 or more coaches. However, only four out of eight platforms have the capacity to handle trains with 24 or more coaches. There are no washing pit lines/ stabling lines at Mughalsarai station. All the originating/terminating trains (except one) are passenger trains and their maintenance take place at some other station as per their laid down schedule.

- At Mughalsarai station (ECR), the work 'All platform 24 coaches at Mughalsarai' was awarded in May 2012 by Electrical department for electric works and in July 2012 by Signal and Telecommunication department. Though the work was commenced in December 2012 only electrical work was completed by November 2013 and other works were yet to be completed. The reasons for the delay were non-approval of variation in quantity, non-availability of site, non-finalization of Signallaing Interlocking Plan etc. Five years from the date of sanction and after incurring an expenditure of ₹ 5.17 crore (November 2017), the work is yet to be completed (April 2018).

- All platforms of Mugalsarai Junctions are interlocked with Std III (R) signalling feature. RRI type of signalling system had been commissioned in October 1995 at this station. The work for replacement of worn out point machine and its ground connection of RRI is in progress. To avoid detention of train movement, the work for replacement of worn out point machine and its ground connection of RRI was sanctioned in 2012-13 with a purpose to avoid detention of train movement due to tendency of failure of signals on account of worn out points. Estimated cost of the work was ₹ 2.5 crore. Signal & Telecom Department issued (April 2013) LOA at the cost of ₹ 45.73 lakh to be completed by October 2013. Though extensions were given up to August 2016, the work could not be completed till date. The reasons for delay were not providing clear site and non-supply of point & machine. The contractor was paid an amount of ₹ 34.35 lakh for supply of material which remained idle for more than four years without intended benefit from the work. Thus, due to use of over-aged and worn out lever frames and non-completion of the work, Railway could not achieve the objective of reducing detention of trains moving through Mughalsarai Jn.

- For the work of Mughalsarai Yard, detailed estimate was sanctioned in September 2007. For signalling related work, the tender was invited in April 2011, which was discharged at tender stage (January 2012) and work was finally awarded July 2012. As such, the work was awarded after 4 years 10 months from the date of sanction of detailed estimate. For electrical works, tender was invited in February 2008 and Letter of Acceptance issued in July 2009 i.e. after one year 9 months from the month of sanction. It was noticed that the work is yet to be completed as signaling related work is still

incomplete (June 2017). Financial progress of signalling work was only 42 *per cent* and physical progress was not found on record.

4.5.4 Conclusion

Mughalsarai station handles around 140 trains per day of which 30 trains have 24 or more coaches. There are no washing pit lines/ stabling lines and only four out of eight platforms have the capacity to handle trains with 24 or more coaches. As seen during audit, due to inadequate length of platform, a number of trains are stopped at platform with less capacity causing inconvenience to passengers in boarding and de-boarding the trains. Works taken up for making all platforms capable of handling 24 coaches or more, interlocking related works and Mughalsarai yard which was taken up five ten years back, were yet to be completed.

4.5.5 Recommendations

1. The work making all platforms capable of handling 24 or more coach trains may be expedited and completed on priority.

2. The work of Mughalsarai Yard may be expeditiously completed.

4.6 Itarsi

Name of the station	**Itarsi station**			
Zonal Railway	West Central			
Division	Bhopal			
Adjoining stations	Pipariya, Hoshangabad, Dulariya, Ghoradongri			
Number of coaching trains handled per day	Originating/terminating	14		
	Passing through	146		
	>= 24 coach trains	0		
	Number of trains handled during the day - 160			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	38	34	39	49
Total number of platforms	7			
Total number of platforms which can handle 24 or more coach trains	7			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	0			
Total number of stabling lines	0			
Total number of stabling lines which can handle 24 or more coach trains	-			

4.6.1 Infrastructure at Itarsi station

Itarsi station handles around 160 trains per day. The number of trains handled has decreased by seven during the past three years.

- Through Itarsi station, a significant number of trains i.e. on an average 160 trains passing per day, there are only seven platforms in this station. It was observed that all the seven platforms have the capability to handle trains with 24 coaches or more. During the last five to ten years, two platforms were constructed at this station to take care of increasing traffic over this station.
- To ease the congestion, no proposal was made to construct new station/terminal nearby the Itarsi station.
- The rush of trains is exceptionally heavy during nigh time (2400 hours to 0600 hours).
- There are only two washing pit lines, of which none can handle trains with 24 coaches or more. There are no stabling lines at Itarsi station. Inadequate number of washing pit lines/ stabling lines caused detention of terminated trains at the platforms at Itarsi station.
- The trains passing through Itarsi station has been increased from 122 trains per day in March 2012 to 146 trains per day in March 2017. However, only one platform has been added at Itarsi during the past five years. Inadequate number of platforms is one of the reasons for detention of trains coming to the Itarsi station at preceding station/ outer signal/enroute.
- There was no proposal for construction of new terminal was made to ease out the congestion of existing Itarsi station.

4.6.2 Detentions at Itarsi station

During the one-month detailed check of detentions at Itarsi station for March 2017, the following was observed:

- During March 2017, on examination of TSR of Itarsi and its adjoining stations, Audit noticed that 424 passenger trains were detained at adjacent stations/outer signals of Itarsi station for want of line/platform beyond the time of five minutes. The total detention was 3200 minutes, i.e. on an average eight minutes per train. 497 trains were detained at adjoining stations Gurra (10 kms), Jujharpura (6 kms), Powarkheda (68 kms) and Dularia (12 kms) with an average detention of 8, 6, 6 and 8 minutes per train respectively though there was no stoppage of these trains at these adjacent stations. For goods trains, the average detention was 43 minutes per train for 441 goods trains passing through Itarsi station during March 2017.
- There was *enroute* detention of 2877 minutes in respect of 271 trains, which took more time than allowed as per the time table. Of these 209 trains were detained for more than five minutes each and the total detention were 2712 minutes.
- During March 2017, 1343 trains were detained on platforms at Itarsi station for 12877 minutes over and above their scheduled stoppage time prescribed in the time table.
- At Itarsi station, out of five platform return trains, three platform return trains were stabled at platform for more than the prescribed 75 minutes, thereby engaging the platforms for 4060 minutes per week during the month of March 2017. A daily Train

(Train no. 51157/51189 - Bhusaval Itarsi/Itarsi Allahabad Passanger) was allowed to remain stationed for 335 minutes at the platform during the month of March 2017.

- On examination of Empty Coaching Rake Movement (ECRM) Register maintained at Itarsi station, it was noticed that 14 trains were detained at platform beyond 30 minutes after termination. Out of these 14 trains, 12 train were detained up to 30 minutes, one train from half hour to one hour and one train by more than one hour beyond the considerable period of 30 minutes of termination of trains at platforms.

- Train no. 22136, Reewa Express has been allotted a time of 70 minutes to cover the distance of 67 kms from Pipariya to Itarsi station. However, six trains[21] of same category (Superfast train) have been allotted a running time of 81 minutes to 98 minutes to cover the same distance of 67 kms. It was further observed that a the Train no. 16230, Varanasi Mysore Express have been given the time of 56 minutes (less than that of Superfast express) to cover the same distance from Pipariya to Itarsi station, but other eight trains[22] of same category (Mail/Express) have been allotted the time of 88 minutes to 108 minutes to cover this distance. Similarly, the Train no. 12191, Jabalpur Nizamuddin Express have been allotted less time of 27 minutes to cover the distance of 18 kms from Hoshangabad to Itarsi station than that of other three trains (12116, 12722 and 12154) of similar category (superfast express).

- Total 31 trains, running between adjoining stations (Pipariya, Hoshangabad and Ghoradongri) and Itarsi stations, were allowed unusually extra time. It was noticed that three trains took 50 *per cent less* time; 21 trains took 50 to 75 *per cent* less time; and seven trains took more than 75 *per cent* less time than allowed in the time table. This clearly indicates that these trains have been allotted unusually high time to maintain the punctuality.

- During March 2017, 76 trains which originate from Itarsi station, started late from the station, after being detained for 59 hours. 38 of these trains were detained for up to 30 minutes; 18 trains detained for half an hour to one hour and 20 trains were detained for more than one hour before start from this station. Out of the 76 trains started late during March 2017, 49 trains were started late due to want of clear path.

4.6.3 Constraints in station line capacity at Itarsi station

The following works have been undertaken for augmenting the station line capacity of Itarsi station:

- A work 'Itarsi North south grade separator/flyover with yard remodelling' for augmentation of station line capacity of Itarsi station was sanctioned in 2008-09 at estimated cost of ₹ 99.70 crore. The purpose was that grade separator will shift surface crossing from one place (Itarsi station) to two places (Powarkheda and Jujharpura) to ease out complications in train operation due to gradient and surface. The work was to

[21] Train nos. 12335, 12194, 12296, 12577, 22132, 12192
[22] Train nos. 15646, 15648, 19046, 19048, 11068/21068, 19064, 11062, 11034

be completed by July 2016. It was, however, observed that physical progress and financial progress of the work was only 40 *per cent* and 48 *per cent* respectively as of April 2018.

- Another work in Itarsi-Khandwa section, viz., 'Provision of six intermediate block section for splitting lengthy block' was proposed in 2013-14 with a justification that increase line capacity of the section which is required to accommodate expected increasing pass of goods traffic. Though the work was sanction in 2016-17 after a lapse of more than two years of proposal, the physical and financial progress of the work was 40 *per cent* and 10 *per cent* as of April 2018.

4.6.4 Conclusion

All trains handled at Itarsi stations have more than 24 coaches and all seven platforms have the capacity to handle trains with 24 or more coaches.

4.6.5 Recommendations

1. All pending works for augmentation of station line capacity of Itarsi may be expeditiously completed.

4.7 Bhopal

Name of the station	**Bhopal**			
Zonal Railway	West Central			
Division	Bhopal			
Adjoining stations	Habibganj, Vidisha, Nishatpura, Bairagarh			
Number of coaching trains handled per day	Originating/terminating	26		
	Passing through	132		
	>= 24 coach trains	0		
	Number of trains handled during the day - 158			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	48	24	47	39
Total number of platforms	6			
Total number of platforms which can handle 24 or more coach trains	4			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	1			
Total number of stabling lines	0			
Total number of stabling lines which can handle 24 or more coach trains	-			

4.7.1 Infrastructure at Bhopal station

Bhopal station handles around 158 trains per day. The number of trains handled has increased by six during the past three years.

- Through Bhopal station, a significant number of trains i.e. on an average 132 trains passing per day, there are only six platforms in this station. Of which, only four platforms have the capability to handle trains with 24 coaches or more. During the last five to ten years, only one platform was constructed at this station.
- To ease the congestion at Bhopal station, no proposal has been made to construct new station/terminal nearby the Bhopal station.
- The rush of trains is exceptionally heavy during morning time (0600 hours to 1200 hours) and during evening hours (1800 hours to 2400 hours).
- There are only two washing pit lines, of which only one can handle trains with 24 coaches or more.
- The trains passing through Bhopal station has increased by 20, i.e. from 112 trains per day in March 2012 to 132 trains per day in March 2017. However, the number platforms remained constant during this five year period.

4.7.2 Detentions at Bhopal station

During the one-month detailed check of detentions at Bhopal station for March 2017, the following was observed:

- Audit analysed the record of TSR maintained at Bhopal station. No detention of passenger trains was noticed at adjacent stations/ outer signal. It was, however seen that average detention of goods trains was 33 minutes per train for 497 goods trains passing through Bhopal station.
- There was *enroute* detention of 12771 minutes in respect of 752 trains, which took more time than scheduled in the time table. Of these 583 trains were detained for more than five minutes and the total detention was 12338 minutes. 121 trains took more than 30 minutes than the allowed time to cover the distance of 6 to 11 kms between adjoining stations (Habibganj, Vidisha and Bairagarh) and Bhopal station.
- During March 2017, 823 trains were detained on platforms at Bhopal station for 6593 minutes over and above their scheduled stoppage time prescribed in the time table.
- At Bhopal station, three platform return trains were handled. Audit noticed that these three trains stayed at platforms beyond the prescribed period of 75 minutes and trains were detained at the platforms for 5110 minutes per week during the months of March 2017. At Bhopal, three daily Trains (19711/19712 Jaipur Bhopal Express 12853/ 12854 Amarkantak Express and 54812/54811 Bhopal Jodhpur Passenger were allowed to remain stationed for 325 minutes, 310 minutes and 320 minutes respectively on the concerned platforms for departure as another train number.
- At Bhopal station, Empty Coaching Rake Movement (ECRM) Register was not being maintained at all. As such, detention of trains terminated at Bhopal station for a long time after termination and thereby engaging the platform, could not be assessed.

- Train no. 12161, Lashkar Express has been allotted 11 minutes to cover the distance between Habibganj and Bhopal station (6 kms). However seven trains[23] of same category (Superfast Express) have been allotted unusually longer scheduled time of 20 minutes to 24 minutes to cover the same distance of 6 kms. Similarly, the Train no. 59319, Ujjain Bhopal Passenger has been allotted 23 minutes to cover the distance of 11 kms between Bairagarh and Bhopal station. However, the other two passenger trains, 59393 Dahod Habibganj Passenger and 59385 Indore Chhindwara Passenger have been allotted unusually more time of 36 and 59 minutes respectively to cover the same distance.
- Audit examined 13 trains running from Habibganj/Bairagarh to Bhopal station, which have been allotted unusually more time in the time table. It was noticed that six trains took 50 *per cent* to 75 *per cent less* time than allowed in the time table. Also, six trains took more than 75 *per cent* less time that allowed in the time table. This clearly indicates that these trains have allotted unusual time just to maintain the punctuality.
- During March 2017, 104 trains which originated at Bhopal station, started late after being detained for 20 hours. 102 of these trains were detained for up to 30 minutes and 2 trains detained for half an hour to one hour. The late start of train was attributed mostly due to want of clear path (102 trains).

4.7.3 Constraints in station line capacity at Bhopal station

Bhopal station handles a large number of passing through trains.

- For the work relating to 'Development of second entry (west side) including yard remodelling & extension of shunting neck up to Nishatpura -D cabin' near Bhopal, two contracts were awarded in January 2013. The work related to development of second entry (west side) was completed with the delay of 160 days. However, yard remodelling and extension of shunting neck up to Nishatpura-D cabin could not be completed, which were to be completed within 18 months from the date of issue of LOA. The completion period was extended up to December 2017 on administrative grounds such as revision of Engineering Scale Plan for phase working. Later, it was decided that yard remodelling work will be done along with Nishatpura-Bhopal 3rd line work. The construction of Bina-Bhopal 3rd line has been completed to the extent of 95 *per cent*. The section between Nishatpura and Bhopal is yet to be completed.
- Another work in Bhopal relating to 'Upgradation of chord line between Nishatpura-D cabin and Nishatpura yard' was sanctioned in 2012-13 with an objective of smooth running of trains from Bairagarh to Bina via Nishatpura chord line. The LOA was issued in January 2013 and the work was completed (April 2015) after a delay of 295 days. The reason for the delay was non-providing planning of yard remodelling work timely to the contractor.
- There are no stabling lines at Bhopal station due to which five Mail/Express trains which terminate at Bhopal station and have to be returned without primary maintenance. Out

[23] Train no. 12137, 12721, 12969, 12975, 12967, 22129, 12615

of the five trains, three trains[24] remained at platform for an average five hours daily as checked during March 2017.

4.7.4 Conclusion

There were no detention at adjacent station/ outer signals to the Bhopal station, though there are detention *en route* and on the station. As ECRM Register was not being maintained, detention of trains terminated at Bhopal station after termination could not be assessed.

4.7.5 Recommendations

1. Yard remodeling work between Nishatpura and Bhopal may be expeditiously completed.

2. Railways may explore means to provide primary maintenance facilities for five Mail/Express trains originating/terminating at Bhopal station.

4.8 Ahmedabad

Name of the station	Ahmedabad station			
Zonal Railway	Western			
Division	Ahmedabad			
Adjoining stations	Vatva, Sabarmati, Kankariya South Cabin, Sabarmati A Cabin			
Number of coaching trains handled per day	Originating/terminating	84		
	Passing through	58		
	>=24 coachtrains	14		
	Number of trains handled during the day - 142			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	38	33	40	31
Total number of platforms	13			
Total number of platforms which can handle 24 or more coach trains	9			
Total number of pit lines/washing lines	11			
Total number of pit lines/washing lines which can handle 24 or more coach trains	5			
Total number of stabling lines	11			
Total number of stabling lines which can handle 24 or more coach trains	4			

4.8.1 Infrastructure at Ahmedabad station

Ahmedabad station handles around 142 trains per day. The number of trains handled has increased by nine during the past three years.

[24] 12853/12854 (Amarkantak Exp), 19711/19712 (Jaipur-Bhopal Express), 54812/54811(Jodhpur-Bhopal Passenger train)

- At Ahmedabad station, there are 13 platforms, out of which nine can handle trains with coach capacity of 24 or more. Two BG platforms were added at Ahmedabad station by Gauge conversion of existing MG line in February 2013.
- The rush of trains is evenly distributed in different period of time over the day.
- At Ahmedabad station, there are 11 washing pit line and 11 stabling lines. Out of which five and four respectively can handle trains with 24 coaches or more.
- During the analysis of augmentation of infrastructure at Ahmedabad station over the period of last five years, Audit noticed that number of platforms and washing pit lines were augmented according to increase in number of trains handled per day by the station during the last five years. No detention of coaching trains at adjacent stations/outer signal were noticed.

4.8.2 Detentions at Ahmedabad station

During the one-month detailed check of detentions at Ahmedabad station for March 2017, the following was observed:

- During March 2017, on examination of TSR of Ahmedabad and its adjacent stations, no detention was noticed of passenger trains at adjacent stations/outer signals of Ahmedabad station. However, in respect of goods trains, the average detention was 28 minutes per train was noticed for 302 goods trains passing through Ahmedabad station.
- There was *enroute* detention of 10130 minutes in respect of 1795 trains, which took more time than allowed as per the time table. Of these 780 trains were detained for more than five minutes and the total detention was 7840 minutes.
- During March 2017, 512 trains were detained on platforms at Ahmedabad station for 3375 minutes over and above their scheduled stoppage time prescribed in the time table.
- Out of 19 platform return trains operated through Ahmedabad station, 13 trains were stabled at platforms beyond the prescribed period of 75 minutes. Total detention on this account was 9430 minutes per week during the month of March 2017. However, cases of detention of other trains due to engagement of platforms by such platform return trains were not noticed.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that at Ahmedabad station, 562 trains were detained at platform after terminating at Ahmedabad station beyond the period of 30 minutes. 366 trains were stabled at platforms after the period of one hour of termination. 35 trains were stabled for more than three hours after termination.
- During March 2017, 497 trains which originate at Ahmedabad station, started late from Ahmedabad station, after being detained for 83 hours. 475 of these trains were detained for up to 30 minutes, 13 trains detained for half an hour to one hour and 9 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (114 trains).

4.8.3 Constraints in station line capacity at Ahmedabad station

At Ahmedabad station, two of the 13 platforms are of Meter Gauge lines (platform no.11 and 12), the traffic on which have been closed with effected from 15 September 2017 with the result MG Pit line have become idle.

- A work in connection with "conversion of platform no. 9 and 10 from Meter Gauge to Broad Gauge with reception and dispatch facilities at platform no. 8" was sanctioned in June 2009 which was to be completed by March 2014. The work could be completed after a delay of four years in March 2018 with over cost overrun of about 157 *per cent* as compared to the estimated cost. The delay in completion of work resulted in non-achievement of intended objective of reducing detention of trains and availability of platforms during the said period.
- A work of 'Gauge conversion of two pit lines having 26 coaches length at New complex yard' at Ahmedabad Jn. was proposed in 2014-15 with the justification that there was increase in number of trains having coach composition of 22-24 to meet the increased demand and keep the flow of trains in the yard smooth. But the work was not taken up by Western Railway. The existing pit line had been used for MG trains but at present lying idle after closure of the platforms (no.11 and 12) of MG section with effect from 15 September 2017.
- To decongest Ahmedabad station, Railways planned (2013-14) to develop second coaching terminal at Sabarmati (6 kms from Ahmedabad Jn). The project was sanctioned in the year 2014-15 at an estimated cost of ₹ 28.34 crore with scheduled date of completed as December 2016. However, as of March 2017, the physical progress and financial progress of the work was 68 *per cent* 58 *per cent* (i.e. ₹ 16.31 crore) respectively. The reason for the delay was attributed as delay in dismantling existing MG lines and non-availability of traffic blocks.
- In Ahmedabad station, pit lines for regular maintenance of passenger coaches are located at two places viz., Old complex yard at Sabarmati end and New complex yard at Maninagar end. The capacity of the four Pit lines in Old complex yard is less than 19 coaches. However, rake composition of 24 out of 44 Mail/Express trains, which originate from/ terminate at Ahmedabad daily is more than 18 coaches. Examination of these rakes in Old complex yard is not possible at one go. These are required to be examined in new complex yard involving cross movement of rakes during placement/ removal. To avoid such cross movement of trains, seven works costing ₹ 323.46 crore sanctioned during 2009-10 to 2016-17 were in progress. Only three works costing ₹ 141.25 crore could be completed till April 2018. Completion of 57 *per cent* works costing ₹ 182.21 crore is still awaited due to lack of funds, non-sanctioned of detailed estimate and non-availability of clear site to work etc.

4.8.4 Conclusion

Though the number of platforms available at Ahmedabad station is adequate, two platforms were not in use as these were yet to be converted to Broad Gauge from Meter Gauge. As running of MG trains has been completely stopped from 15 September 2017, these two platforms and also the MG pit lines are lying idle till the gauge conversion work is completed. Due to non-availability of OHE facility at platform no.9 and 10, trains with electric locomotives cannot be placed at these platforms.

4.8.5 Recommendations

1. The work of development of Sabarmati station as a terminal may be expeditiously completed to ease the congestion at Ahmedabad station.

2. Gauge conversion of two platforms and pit lines at Ahmedabad station may be completed on priority so that these can be optimally utilized.

4.9 Chennai Central

Name of the station	Chennai Central station			
Zonal Railway	Southern			
Division	Chennai			
Adjoining stations	Basin Bridge Junction			
Number of coaching trains handled per day	Originating/terminating	138		
	Passing through	19		
	>= 24 coach trains	32		
	Number of trains handled during the day – 157			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	48	47	47	15
Total number of platforms	12			
Total number of platforms which can handle 24 or more coach trains	8			
Total number of pit lines/washing lines	19			
Total number of pit lines/washing lines which can handle 24 or more coach trains	7			
Total number of stabling lines	9			
Total number of stabling lines which can handle 24 or more coach trains	0			

4.9.1 Infrastructure at Chennai Central station

Chennai Central (MAS), a terminal station, on an average handles around 157 trains per day and Suburban terminal (MASS) on an average handles around 215 to and fro trains per day. One peculiar feature of this station is that there are certain through trains arriving from North/North East/ Eastern sides for destinations on the South West like major cities in

Kerala and Bangalore requiring change of direction and around 19 such trains are handled at Chennai Central.

Chennai Central handles traffic from Gummudipundi (GPD) end and from Thiruvallur (TRL) end including Mail/Express trains as well as suburban trains. The cross over for mail/express/ passenger trains and suburban trains handled at MAS and MASS is dealt with between MAS and Basin Bridge Junction (BBQ,) an adjacent station. As a result of lines from different corridors converging at BBQ, considerable number of cross movements takes place short of Chennai Central resulting in detention to services. Audit observed that

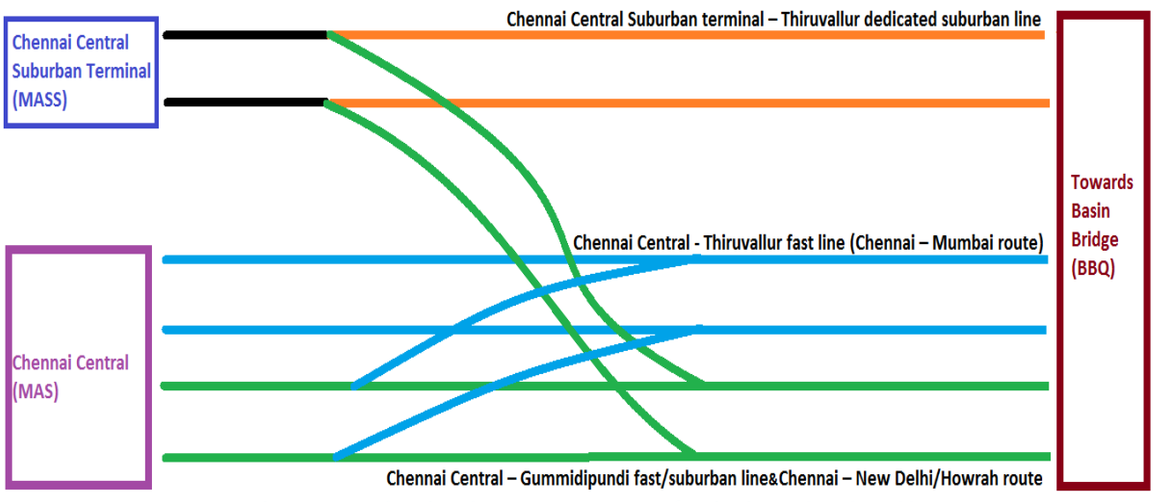


Fig. 4.4 Map showing the cross movement of trains in MAS and MASS

- Although MAS and MASS handles train services from different corridors, exclusive tracks were not available for each direction of traffic from Chennai Central, as all these lines physically converge at BBQ located 2.2 kms away from Chennai Central, forming a bottleneck. Two platform lines were augmented (September 2016) in MASS to handle suburban trains from Tiruvallur. However, the constraints of crossover remain in respect of suburban trains operated between MASS and Gummudipundi.
- There were twelve platforms in Chennai Central and five platforms in Suburban terminal. Out of 12 platform lines in MAS, four[25] platform lines were having less than 24 coach capacity. Due to space constraint, there is no scope to augment the capacity of these four platform lines. Out of five platforms which are operational in MASS, two platforms[26]were commissioned with effect from 19 September 2016.

[25] PF 1- 21 coaches, PF 2 - 20 coaches, PF 2A - 16 coaches, PF 7 - 22 coaches
[26]Platform 15 and 16

Fig.4.5 Platform No.7 and 8 at MAS

Fig.4.6 Platform No.1 and 2 at MAS

- The number of terminated trains per day have increased to 69 as of March 2017 from 50 trains as of March 2007 i.e. an increase by 38 *per cent*. However, the number of stabling/ washing pit lines remained same over the period of ten years.

- The maintenance yard for Chennai Central is located near Basin Bridge which has 19 pit lines and nine stabling lines. Of the nine stabling lines, three were of 15 coach capacity and six could handle only 11 to 15 coach trains. In March 2017, around 25 trains were stabled in adjacent stations due to want of stabling line.

- On an average 26 trains undergo primary maintenance at Basin Bridge yard. Most of the trains maintained at Basin Bridge yard remained in the pit line even after the stipulated maintenance schedule due to the non-availability of matching stabling lines.

- The number of total trains handled per day at Chennai Central was 127 trains as of March 2007, which increased to 140 trains per day as of March 2012 and further increased to 157 trains per day as of March 2017. As such, the number of trains handled per day increased at Chennai Central by 30 trains during the past ten years. However, the number of platforms remained same over the period of 10 years. Inadequate number of platforms is one of the reasons for detention of train at preceding stations/ outer signals.

- As there was demand for augmenting more trains with 24 coaches, platform lines and pit lines needs to be augmented adequately for hassle free receipt and dispatch of trains and to maintain punctuality. However, as Basin Bridge yard is land locked on all the sides, there was no scope for further expansion due to space constraints. Due to inadequacy of pitline and stabling line, coaches were detached from rakes to accommodate in pit/stabling lines with less capacity.

- To increase the line capacity on Chennai Central- Basin Bridge section from the present 4 lines to 6 lines, a work for provision of 5th and 6th lines as an exclusive double line connectivity from Basin Bridge to handle suburban traffic was sanctioned in July 2014. The work was completed and commissioned in September 2016 with two new platforms at MASS.

4.9.2 Detentions at Chennai Central station

During the one-month detailed check of detentions at Chennai Central station for March 2017, the following was observed:

- On examination of TSR of Chennai Central and its adjoining station, it was noticed that 169 passenger trains were detained at adjacent stations/ outer signals of Chennai Central station for want of line/platform beyond the time of five minutes. The total detention was 2914 minutes, i.e. on an average 17 minutes per train.
- There was *enroute* detention of 988 minutes in respect of 256 trains, which took more time than allowed as per the time table. Of these 69 trains were detained for five or more than five minutes each and the total detention were 617 minutes.
- All the three platform return trains were stabled at platform for more than the prescribed 75 minutes, thereby engaging the platforms for 4550 minutes per week during March 2017.
- Three daily Trains (12674/12656 - Coimbatore-Chennai Central Cheran Express 12655/ 12673-Navajeevan Express and 22638/12601- West Coast Express/ Mangalore Mail) were allowed to remain stationed for 170 minutes, 365 minutes and 340 minutes respectively at the platform. The empty rakes were detained in platform lines due to insufficient stabling lines at Basin Bridge yard.
- On examination of the Empty Coaching Rake Movement (ECRM) Register maintained at Chennai Central, it was noticed that 718 trains were detained beyond the considerable period of 30 minutes after termination at Chennai Central station. On this account the total detention was 31271 minutes during March 2017. Out of these trains 159 trains were detained above one hour and six trains were detained over three hours of the considerable period of 30 minutes of the termination of train.
- 3605 trains which originate from Chennai Central station, started late from the station, after being detained for 370 hours. 3591 of these trains were detained for up to 30 minutes and 14 trains detained for half an hour to one hour. It was also noticed that all the trains were delayed due to want of clear path.

4.9.3 Constraints in station line capacity at Chennai Central station

Chennai Central station is a terminal station, which handles a mix sub-urban and non-suburban trains.

- At Chennai Central, the work to extend Platform number 11 at Chennai Central end (dead-end of the station i.e. near the exit point) by two coach's length to handle 26 coaches was sanctioned in November 2014. After a period of about two years, the letter of acceptance was

Fig.4.7 Platform No.11 at Chennai Central

issued (October 2016) to complete the job as of April 2017. The work was terminated in December 2016 as the contractor failed to submit requisite performance guarantee. No further action was taken by SR Administration to initiate the work.

- Based on the Hon'ble MR's budget speech for 2012-13, Railway Board in July, 2012 communicated approval to SR to take up a survey for undertaking a pre-feasibility study for development of Royapuram station (6 kms from Chennai Central) as a Coaching Terminal. A feasibility study was done by RITES and it was suggested that development of Royapuram Station as a Coaching Terminal was not feasible. The work of development of Royapuram station as new terminal involve a large scale relocation of Railway offices/ building, railway quarters, modification of ROBs near the station, land acquisition (in thickly populated are with high rise buildings and religious structures like temple, church and mosque). Considering this, RITES concluded the development of new terminal at this station was not feasible. No further attempts for exploring the feasibility of an alternate location for the purpose was made till the date of audit.
- During MR's budget speech for 2013-14, a new line between Sriperumbudur and Guduvanchery was announced. This would help significantly decongest train traffic at Chennai Central, as south bound trains could be diverted from Avadi to Sriperumbudur. For the work, the detailed estimate was yet to be prepared.
- The capacity of Pit line no.2 at Basin Bridge coaching depot was 22 coaches and it was to be increased by coach length extend at Chennai Central and Basin Bridge ends duly realigning the points at both ends for accommodating 24 coaches. The work included provision of examination pit in Sick line 5 and 6 to one coach length. The work was sanctioned (August 2015) and tender was awarded (February 2016) for ₹ 0.81 crore. The work was to be completed by October 2016. Though, the work for provision of examination pit in Sick line 5 and 6 was completed, the completion period for the work pertaining to extension of Pit line 2 was extended up to August 2017 due to non-availability of line block and funds. The physical progress of the work was 38 *per cent* and the financial progress was 29 *per cent* as of March 2017.

Fig.4.8 Two new platforms (No.15 and 16) at MASS

4.9.4 Conclusion

Chennai Central (MAS), a terminal station, on an average handles around 88 trains per day and Suburban terminal (MASS) on an average handles around 215 to and fro trains per day. The cross over for mail/express/ passenger trains and suburban trains handled at MAS and MASS is dealt with between MAS and Basin Bridge Junction (BBQ,) an adjacent station. As a

result of lines from different corridors converging at BBQ, considerable number of cross movements takes place short of Chennai Central resulting in detention to services. Due to inadequate length of stabling lines, trains were to be detained at adjacent station for want of stabling lines. Works taken up for easing congestion at the cross over points were not completed on time so as to derive the intended benefits.

4.9.5 Recommendations

1. Railways may explore development of alternate station/terminal to ease the congestion at Chennai Central.

2. The works taken up for reducing the detention at Chennai Central Basin Bridge cross over, new line between Sriperumbudur and Guduvanchery, extension of platform no. 11 and augmenting the capacity of pit lines may be expeditiously completed.

4.10 Howrah station

Name of the station	Howrah station			
Zonal Railway	Eastern			
Division	Howrah			
Adjoining stations	Sorting Yard Cabin, Liluah, Belur			
Number of coaching trains handled per day	Originating/terminating	104		
	Passing through	3		
	>= 24 coach trains	9		
	Number of trains handled during the day – 107			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	32	33	25	14
Total number of platforms	22			
Total number of platforms which can handle 24 or more coach trains	10			
Total number of pit lines/washing lines	0			
Total number of pit lines/washing lines which can handle 24 or more coach trains	-			
Total number of stabling lines	0			
Total number of stabling lines which can handle 24 or more coach trains	-			

4.10.1 Infrastructure at Howrah station

Howrah station handles around 107 trains per day. No trains were added during the last three years at this station.

- At Howrah station 45 trains were terminating per day during March 2012, which increased to 52 trains per day in March 2017. However, there are no washing pit lines and stabling line near Howrah station. For primary maintenance, trains are sent to

maintenance depot at Tikiapara, Sorting Yard and Coaching Yard Howrah (Jheel siding), thereby engaging the routes by the empty trains on way to maintenance depots.

- The rush of trains is evenly distributed over the day.
- Out of the total 22 platforms, only 10 platforms have the capacity to handle trains with 24 or more coaches. Audit observed that during March 2017, 18 trains with higher coach capacity had to be stopped at platforms with lesser coach capacity due to inadequate length of platforms. This resulted in inconvenience to passengers in boarding and de-boarding trains.

4.10.2 Detentions at Howrah station

During the one-month detailed check of detentions at Howrah station for March 2017, the following was observed:

- On examination of TSR of Howrah and its stations, it was noticed that 129 passenger trains were detained at adjacent stations/outer signals of Howrah station for want of line/platform beyond the time of five minutes. The total detention was 1099 minutes, i.e. on an average nine minutes per train. For goods trains, the average detention was seven minutes per train for 24 goods trains passing through Howrah station.
- There was *enroute* detention of 1917 minutes in respect of 283 trains, which took more time than scheduled in the time table. Of these 125 trains were detained for more than five minutes and the total detention were 1548 minutes. Further, four trains were detained for more than 30 minutes.
- 54 trains were detained on platforms at Howrah station for 524 minutes over and above their scheduled stoppage time prescribed in the time table.
- Train no. 13012/53047 (Malda Town-Howrah Intercity Express/ Viswabharari Fast Passenger) was allowed 315 minutes daily to remain stationed at the platform before departure as another train number. No reasons was found on record for such long stationing this train at Howrah station in Trains Signal Register (TSR) maintained at RRI/Howrah cabin. In reply, ER could not furnish any specific reasons and simply stated that the system of keeping the empty rakes of 13012 DN at platform and utilize the same as 53047 UP was as per rake link.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that at Howrah station, 1032 trains were detained at platform after terminating at Howrah station beyond the period of 30 minutes[27]. 119 trains were stabled at platforms after the period of one hour and 10 trains were stable at platform after the period of three hours beyond 30 minutes of termination.

[27]There is no prescribed time for removal of trains after termination of train at a station. Audit assumed a considerable period of 30 minutes for de-boarding trains.

- 118 trains which originate at Howrah station, started late from Howrah station, after being detained for 39 hours. 103 of these trains were detained for up to 30 minutes, 13 trains detained for half an hour to one hour and two trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (27 trains). The other reasons were late coming from maintenance depots, later arrival of link train etc.

4.10.3 Constraints in station line capacity at Howrah station

Howrah station is a terminal station in ER, where trains coming from north, south, west and north east terminate.

- A work, 'New Platform no. 24 at Howrah' was sanctioned in the year 2015-16 with a view to accommodate new trains for carrying more passengers. Two years from the date of sanction, the detailed estimate for the work was yet to be finalised (March 2018). It was stated that the work is not feasible in the present RRI system and has been dropped from the Works Programme 2018-19.
- Howrah station (ER) handled on an average nine trains per day with 24 or more coaches. 10 out of 23 platforms (one platform no.16 only dealt with parcel trains i.e. 22 platforms for passenger trains) were capable of handling 24 coach trains. It was observed that ER Administration proposed work for extension of four platforms for accommodating longer length trains during the year 2013-14. The work was awarded in August 2016 with completion date as February 2018 though the detailed estimate of the work was sanctioned in August 2014. However, as of March 2018, the physical progress was only 10 *per cent*.

4.10.4 Conclusion

Howrah station handles around 55 trains per day with 22 platforms of which 10 have the capacity to handle trains with 24 or more coaches. The work of new platform and extension of platforms, though sanctioned two to four years back, yet to be completed. 52 trains originated/terminated at this station. However, this station has no any pit lines/ stabling lines. Trains terminated here are to be sent to Tikiapara, Sorting Yard and Coaching Yard Howrah (Jheel siding) coaching depots for maintenance purpose resulted in empty rake movement and blocking up of lines.

4.10.5 Recommendations

1. The works of creation of new platform and extension of platform may be expeditiously completed.

4.11 Jaipur station

Name of the station	Jaipur			
Zonal Railway	North Western			
Division	Jaipur			
Adjoining stations	Outer signal Jaipur, Durgapura, Gandhinagar, Kanakpura			
Number of coaching trains handled per day	Originating/terminating	43		
	Passing through	54		
	>= 24 coach trains	18		
	Number of trains handled during the day – 97			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	20	28	26	23
Total number of platforms	6			
Total number of platforms which can handle 24 or more coach trains	5			
Total number of pit lines/washing lines	3			
Total number of pit lines/washing lines which can handle 24 or more coach trains	3			
Total number of stabling lines	4			
Total number of stabling lines which can handle 24 or more coach trains	0			

4.11.1 Infrastructure at Jaipur station

Jaipur station handles around 97 trains per day. The number of trains handled has increased by seven during the past three years.

- Though Jaipur station handle 97 trains, with 18 daily trains with composition of 24 coaches or more, this station has only six platforms, out of which four have the capacity to handle the trains with 24 coaches or more. During the last three years, only one platform has been added in this station, which is capable to handle trains with nine coaches only.
- The rush of trains is highest during the day time between 1200 hours and 1800 hours.
- There are three washing pit lines at the Jaipur station and all the three have the capacity to handle trains with 24 coaches or more. However, none of the five stabling lines can handle trains with 24 coaches or more.

4.11.2 Detentions at Jaipur station

During the one-month detailed check of detentions at Jaipur station for March 2017, the following was observed:

- Audit analysed the record of TSRs maintained at Jaipur station and noticed average detention of 19 minutes to 156 passenger trains, and 91 minutes to 305 pass through goods trains, at adjacent stations/outer signals.

- There was *enroute* detention of 2161 minutes in respect of 304 trains, which took more time than scheduled in the time table. Of these 157 trains were detained for more than five minutes and the total detention was 1821 minutes. Four trains took more than 30 minutes than the allowed time to cover the distance of 7 to 9 kms between adjoining stations (Durgapur and Kanakpura) and Jaipur station.
- During March 2017, 1270 trains were detained on platforms at Jaipur station for 10349 minutes over and above their scheduled stoppage time allowed as per the time table.
- At Jaipur station, Audit examined the Empty Coaching Rake Movement (ECRM) Register maintained during the March 2017. Audit noticed that at Jaipur station, 244 trains were detained at platform after terminating beyond 30 minutes. 26 trains were stabled at platforms for more than one to three hours, beyond 30 minutes after termination.
- Train no. 19402 Lucknow Ahmedabad Express has been allotted 13 minutes to cover the distance between Gandhinagar Jaipur to Jaipur station (5.35 kms). However 11 trains[28] of same category (Mail/ Express) have allotted unusually longer scheduled time of 17 minutes to 36 minutes to cover the same distance. Similarly, Train no. 12195 Agra Fort Ajmer Intercity Express has been allotted 12 minutes to cover the distance of 5.35 kms between Gandhinagar Jaipur and Jaipur stations. However, the other six trains[29] of the same category train (Superfast Express) have been allotted unusually more time of 15 and 27 minutes to cover the same distance.
- Out of the 18 trains allotted unusually allotted more time to cover the distance between Gandhinagar Jaipur and Jaipur station, 10 trains have actually taken significantly less time that the allowed time. Seven trains took 50 *per cent* less time and three trains took 50 to 75 *per cent* less time that the allowed time. This clearly indicates that these trains have been allotted unusual time just to maintain the punctuality.
- 335 trains which originate at Jaipur station, started late from Jaipur station, after being detained for 219 hours. 239 of these trains were detained for up to 30 minutes, 42 trains detained for half an hour to one hour and 54 trains were detained for more than one hour. The late start of train was attributed mainly due to want of clear path (99 trains).

4.11.3 Constraints in station line capacity at Jaipur station

Jaipur station is an important station of NWR, where number of trains handled has increased over the years.

- In order to eliminate congestion at Jaipur Jn. station, it was proposed in October 2015 to construct a large passenger terminal with modern facilities at Khatipura, an adjacent station to Jaipur. However, detailed estimates were yet to be prepared for construction of the new terminal as of April 2018.

[28] Train no. 19716, 19032 , 19610, 14853, 14863, 14865, 15014, 14808, 19270, 19580, 14659
[29] Train no. 12414, 12403, 12916, 12986, 12987, 12958

- The tender for the work of Jaipur Yard Remodelling, sanctioned in February 2009, was issued in February 2016, i.e. after lapse of seven years. In view of high rates, the tender was discharged in June 2016, and tender was again published in June 2016, and contract was awarded in September 2016. As against the completion period by September 2017, physical progress and financial progress were only 35 and 55 *per cent* respectively as on April 2018. Delay in inviting tender was due to non-finalization of plan whereas the reason for delay in inviting tender was not found on record. As such, Railway could not implement the plan of Jaipur Yard Remodelling after eight years of sanction of detailed estimate.

4.11.4 Conclusion

43 trains originate/terminate at Jaipur station. To handle these 43 trains, three washing pit lines and five stabling lines are available at Jaipur station. However, none of stabling line has the capacity to handle trains with 24 or more coaches. The work for development of new terminal at Khatipura station to ease the Jaipur station was yet to be started. The pace of work of yard remodelling at Jaipur station was also very slow.

4.11.5 Recommendations

1. Railways may expedite development of Khatipura station as new terminal to ease the congestion at Jaipur station.

2. The yard remodeling work at Jaipur may be completed expeditiously.

4.12 Nagpur

Name of the station	Nagpur			
Zonal Railway	Central			
Adjoining stations	Ajni, Godhani, Itwari, Kalumna			
Number of coaching trains handled per day	Originating/terminating	20		
	Passing through	102		
	>= 24 coach trains	44		
	Number of trains handled during the day – 122			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	23	38	33	28
Total number of platforms	8			
Total number of platforms which can handle 24 or more coach trains	5			
Total number of pit lines/washing lines	2			
Total number of pit lines/washing lines which can handle 24 or more coach trains	2			
Total number of stabling lines	1			
Total number of stabling lines which can handle 24 or more coach trains	0			

4.12.1 Infrastructure at Nagpur station

Nagpur station handles around 122 trains per day. The number of trains handled has increased by six during the past three years. During the last three years only one platform has been added to this station.

- Though 44 trains, having capacity of 24 coaches or more, passes through Nagpur stations, only five out of eight platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is comparatively higher in day time between 1200 hours and 24 hours.
- There are only two washing pit lines and only one stabling line in this station. All the washing pit lines can handle trains with 24 coaches or more.

4.12.2 Detentions at Nagpur

During the one-month detailed check of detentions at Nagpur station for March 2017, the following was observed:

- Examination of TSR of Nagpur and its adjacent stations, revealed that 284 passenger trains were detained at adjacent stations/outer signals of Nagpur station for want of line/platform beyond five minutes. The total detention was 6254 minutes, i.e. on an average 22 minutes per train. 351 trains were detained at adjoining stations Ajni (2 kms), Godhani (7 kms) and Kalumna (6 kms), with an average detention of 6, 10 and 10 minutes per train respectively though the fact that there was no any stoppage of these trains at these adjacent stations. For goods trains, the average detention was 59 minutes per train for 787 goods trains passing through this station during March 2017.
- There was *enroute* detention of 3634 minutes in respect of 569 trains, which took more time than scheduled in the time table. Of these 273 trains were detained for more than five minutes and the total detention was 2976 minutes. Further, 9 trains (7 at Kalumna and 2 at Itwari) were detained for more than 30 minutes.
- 522 trains were detained on platforms at Nagpur station for 6275 minutes over and above their scheduled stoppage time allowed as per the time table.
- Out of the three platform return trains handle at this station, one platform return train was detained at platform for more than the prescribed period of 75 minutes. On this account the train was detained for 140 minutes per week during the month of March 2017.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at station, during the month of March 2017, Audit noticed that at Nagpur station, 285 trains were detained at platform after terminating at Nagpur station beyond 30 minutes. 75 trains were stabled at platforms after the period of one hour beyond 30 minutes of termination. 14 trains were stabled for more than three hours after the period of 30 minutes of termination.

- Train no. 12721 Hyderabad-Hazrat Nizamuddin Dakshin Express has been allotted 13 minutes to cover the distance between Ajni and Nagpur station (3 kms). However, five[30] trains of same category (Superfast Express) have been allotted unusually longer scheduled time of 21 minutes and 33 minutes respectively to cover the same distance. Similarly, Train no.18030 Shalimar-Kurla Express has been allotted 22 minutes to cover the distance between Itwari and Nagpur station (5 kms). However, Train no.18239 Sivnath Express has been allotted unusually longer scheduled time of 45 minutes to cover the same distance.
- Audit checked 8 trains, running between adjoining stations (Ajni and Itwari) and Nagpur station, which were allowed unusually extra time. It was noticed that all the 6 trains took less than 50 *per cent* time than that of allowed in the time table. It clearly indicates that these trains have been allotted unusually high time to maintain the punctuality.
- During March 2017, 19 trains which originate at Nagpur station, started late from the station, after being detained for 9 hours. 16 of these trains were detained for up to 30 minutes, one train detained for half an hour to one hour and two trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (13 trains).

4.12.3 Constraints in station line capacity at Nagpur station

Nagpur station is an important station of CR, through which most of the trains from north to south cross.

- At Nagpur station, platform No. 8 was opened for traffic on 09 January 2014. Since then, this platform has been utilised for the arrival and departure of only one train i.e. Train no. 12290/12289 Nagpur Chatrapati Shivaji Terminus Duronto Express. As such, the platform was underutilised. In this connection, justification for construction of the platform and reasons for non-utilisation of the platform for other trains were called for from Railway Administration. In reply, Railway Administration stated that in the present scenario, admitting and despatching of Mail/Express trains to platform No. 8 restricted the departure of goods and coaching trains from platforms No. 7, 6, 4, 3 and 2. SECR goods interchange took place at goods yard adjacent to platform No. 8. It was also stated that the full benefits of construction of PF No. 8 dealing higher number of trains could be envisaged only after the completion of Nagpur-Kalumna doubling. The work was being executed by Construction Department of SECR. However, the same was delayed by SECR. This resulted in underutilisation of Platform No. 8.
- Nagpur station is already congested causing operational constraints like room for stabling of empty rakes, delaying in shunting operations, yard congestion etc. Ajni station is located at a distance of 3 kms from Nagpur station. Most of the housing colonies, educational institutions, international airport, bus terminals, hospitals, etc. are

[30] 12687, 12139, 12771, 12105 and 12833

situated in vicinity of Ajni station. For development as Satellite Terminal of Ajni station, the work was proposed and sanctioned during the year 2016-17. The detailed estimate of the work was yet to be sanctioned and the work was yet to start (November 2017).

- The work of extension of platforms No. 4, 5 and 7 for 24 coaches was proposed by Divisional authority of Nagpur Division in the year 2013-14. However, the same was not included in the Final Works Programme due to space constraints as at the end of these platforms the pillars of the ROB are obstructing the extension work.
- Godhani-Kalumna doubling work, a 13.2 kms stretch was sanctioned in 2010-11 at a cost of ₹ 50.38 crore. Initially, the entire work was to be executed by Central Railway. However, in July 2014, it was decided that the work in SECR jurisdiction (7.74 kms) would be executed by SECR and the remaining 5.46 kms would be executed by CR. Work of 5.46 kms to be carried out by CR was completed in December 2015 at a cost of ₹ 50.37 crore, whereas the work in SECR jurisdiction was still to be completed. Thus, due to improper planning for execution of work and delay in completion of the project, the infrastructure created at a cost of ₹ 50.37 crore on CR portion was not put to use fully and therefore, the intended benefits of the project could not be achieved.

4.12.4 Conclusion

Nagpur station handles around 122 trains per day. The number of trains handled has increased by six during the past three years. During the last three years only one platform has been added to this station, which is underutilised. The work of development of Ajni station as a Satellite terminal has just been sanctioned. Due to non-completion of doubling work by SECR, the completed portion of CR cannot be utilised.

4.12.5 Recommendations

1. Railways may ensure timely completion of work of development of Ajni station as an alternative terminal station.

2. Nagpur-Kalumna doubling work may be completed expeditiously for optimal utilisation of newly constructed platform no.8.

4.13 New Delhi and Delhi Stations

Name of the stations	**New Delhi and Delhi**		
Zonal Railway	Northern		
Division	Delhi		
Adjoining stations	New Delhi - Tilak Bridge, Delhi, Delhi Sarai Rohilla Delhi - Subzi Mandi, Delhi Kishan Ganj, Delhi Sarai Rohilla, Delhi Shahadara Junction		
Number of coaching trains handled per day		*New Delhi*	*Delhi*
	Originating/ terminating	166	186
	Passing through	76	77
	> =24 coach trains	48	21

Name of the stations				New Delhi and Delhi			
Number of trains handled during the day							
New Delhi - 242				**Delhi - 263**			
0600 hrs to 1200 hrs	1200 hrs to 1800 hrs	1800 hrs to 2400 hrs	2400 hrs to 0600 hrs	0600 hrs to 1200 hrs	1200 hrs to 1800 hrs	1800 hrs to 2400 hrs	2400 hrs to 0600 hrs
68	86	69	19	71	84	69	39
				New Delhi		***Delhi***	
Total number of platforms				16		16	
Total number of platforms which can handle 24 or more coach trains				13		5	
Total number of pit lines/washing lines				14		8	
Total number of pit lines/washing lines which can handle 24 or more coach trains				9		1	
Total number of stabling lines				22		10	
Total number of stabling lines which can handle 24 or more coach trains				12		0	

4.13.1 Infrastructure at New Delhi and Delhi stations

New Delhi stations handles around 242 trains and Delhi station handles 263 trains per day. During the last three years, the number of trains handled has increased by 14 on each of these two stations.

- Both the stations have 16 platforms. However, only five platforms at Delhi station can handle trains with 24 coaches or more. In New Delhi station, 13 platforms can handle trains with 24 coaches or more. No new platforms were added on these two stations during the last three years.
- The rush of trains is evenly distributed during the day time between 0600 hours and 2400 hours on both the stations. During the night time, 2400 hours to 0600 hours, rush is comparatively low.
- At New Delhi, there are 14 pit lines, of which 9 can handle trains with 24 coaches or more, whereas at Delhi station only one out of eight pit lines can handle trains with 24 coaches or more.
- At New Delhi, there are 22 stabling lines, of which 12 can handle trains with 24 coaches or more, whereas at Delhi station none of the stabling line out of total ten stabling lines can handle trains with 24 coaches or more.
- To ease the congestion of New Delhi and Delhi stations, Anand Vihar Terminal was developed (Phase I – three platforms in 2009 and Phase II – four platforms in 2015). 14 trains were shifted from other stations to this terminal and 24 new trains started from this terminal since opening of the terminal.
- The number of trains handled per day at New Delhi station has increased from 228 trains per day in March 2012 to 242 trains per day in March 2017. However, number of platforms/washing pit lines/stabling lines has not increased during this five years'

period. This caused detention of terminated trains at platforms for significant period and detention of trains coming to New Delhi station at the preceding station/enroute.

4.13.2 Detentions at New Delhi and Delhi stations

During the one-month detailed check of detentions at New Delhi and Delhi stations for March 2017, the following was observed:

- Audit examined the records of TSR maintained at New Delhi and Delhi stations. In respect of New Delhi station, seven trains were detained at adjacent stations/ outer signals of New Delhi station for 172 minutes. In respect of Delhi station, 28 trains were detained at adjacent station/outer signals of Delhi station for 679 minutes. No detention was noticed in respect of Goods trains at both the stations.
- In respect of New Delhi station, there was *enroute* detention of 2976 minutes in respect of 206 trains, which took more time than scheduled in the time table. Of these 147 trains were detained for more than five minutes and the total detention was 2749 minutes. 28 trains were detained *enroute* for more than 30 minutes. Similarly, in respect of Delhi station, the *enroute* detention of 2895 minutes in respect of 163 trains, which took more time than scheduled in the time table. Of these 136 trains were detained for more than five minutes and the total detention was 2812 minutes. Further, 22 trains were detained *enroute* for more than 30 minutes.
- 289 trains were detained on platforms at New Delhi station for 4301 minutes over and above their scheduled stoppage time allowed as per the time table. At Delhi station, 474 trains were detained on platforms for 6110 minutes over and above their scheduled stoppage time.
- The prescribed Register of Empty coaching Rakes Movement should record the time taken in this process but the same was not being maintained at New Delhi and Delhi stations. However, on the basis of the entry made in the Train Signal Register for the month of March 2017, Audit noticed that no instance of detention of empty rake of terminated train at station beyond 30 minutes.
- The distance from New Delhi station to nominated maintenance depots (Delhi Kishanganj, Delhi Sarairohilla, Shakurbasti and Delhi Main) in respect of five[31] trains was ranging between 3 kms and 11 kms. The average time taken by these five trains at New Delhi station before reaching nominated depots was between 17.53 minute and 191 minutes during the month of March 2017. Maximum time being taken by train no.14003, which would also have been noticed by the Railway Administration as the train blocked the platform for an average of 191 minutes per trip.
- Train no. 12303 Poorva Express has been allotted 146 minutes to cover the distance of 138 kms between New Delhi and its preceding station (Aligarh). However, another train (Train no.12397 Mahabodhi Express of similar category has been allotted 186 minutes to cover the same distance. Similarly, the Train no.14545, Farukhnagar Saharanpur Express

[31] 12229, 12957, 12621, 14003, 22403

has been allotted 17 minutes to cover the distance of five kms between Delhi station and its preceding station (Delhi Sarairohilla). However, another similar Train no. 15013 Ranikhet Express has been allotted 47 minutes to cover the same distance.

- 154 trains, which originate at New Delhi station, started late from New Delhi station, after being detained for 46 hours. 133 of these trains were detained for up to 30 minutes, 11 trains detained for more than half an hour to one hour and 10 trains detained for more than an hour. At Delhi station, 707 trains originated with late, after being detained for 269 hours. Of these, 602 were detained for up to 30 minutes, 52 trains detained for more than half an hour to one hour and 53 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (New Delhi-68 trains, Delhi-465 trains).

4.13.3 Constraints in station line capacity at New Delhi and Delhi stations

Though movement of trains has been affected due to saturated position of traffic facilities at both the stations, no work of traffic facilities/augmentation was proposed by Delhi Division for inclusion in FWP in respect of these stations during the review period.

- The development of Shakurbasti station (10 kms from Delhi Jn. and 11 kms from New Delhi Jn.) was sanctioned in 2008-09 at a cost of ₹ 111.30 crore. However, the execution of the works, was started only in January 2011. The work could not be completed even after six years due to non-availability of clear site, delay in up gradation of RRI building and dismantling of MG cement siding etc. The target date of completion is December 2018. However, the progress of the work as on March 2018 was 30 *per cent*.

- One of the alternative measures for augmentation the line capacity of New Delhi and adjacent sections was to provide additional lines in the sections. New Delhi-Tilak Bridge section[32] was one of those sections. Keeping in view, the existing line capacity, utilization and traffic projection on this section, a work for 5th and 6th line between New Delhi-Tilak Bridge was sanctioned in 1998-99 and detailed estimate was sanctioned by Railway Board in September 2000. The work could not be completed even after lapse of more than 16 years; only 65 *per cent* work has been completed so far (March 2018), depriving the intended benefits of augmentation of line capacity of the New Delhi section.

4.13.4 Conclusion

While New Delhi station has 13 platforms out of 16 with the capacity to handle trains of 24 or more coaches, in Delhi station, only five platforms out of 16 could handle trains of 24 or more coaches. The number of pit lines/ stabling lines with the handling capacity of 24 or more coach trains is also less at Delhi station. While no specific new works have been planned in the past three years, two works taken up for development of Shakurbasti station

[32]New Delhi-Tilak Bridge section is a vital part of Railway network connecting New Delhi with all directional (East, West, North & South) traffic from the country. The three most congested trunk routes of Indian Railways viz. Delhi-Kolkata, Delhi – Mumbai and Delhi-Chennai, converge into this very section before reaching New Delhi station.

and augmentation of line capacity of New Delhi and adjacent stations, these were still ongoing after nine to 16 years of sanction.

4.13.5 Recommendations

1. The work of development of Shakurbasti station and augmentation of New Delhi station line capacity may be expeditiously completed.

4.14 Vijayawada

Name of the station	Vijayawada			
Zonal Railway	South Central			
Adjoining stations	Rayanapadu, Krishna Canal Jn., Ramavarappadu, Gunadala			
Number of coaching trains handled per day	Originating/terminating	72		
	Passing through	122		
	>= 24 coach trains	32		
	Number of trains handled during the day – 194			
	0600 hrs to 1200 hrs	*1200 hrs to 1800 hrs*	*1800 hrs to 2400 hrs*	*2400 hrs to 0600 hrs*
	52	46	52	44
Total number of platforms	10			
Total number of platforms which can handle 24 or more coach trains	8			
Total number of pit lines/washing lines	5			
Total number of pit lines/washing lines which can handle 24 or more coach trains	3			
Total number of stabling lines	0			
Total number of stabling lines which can handle 24 or more coach trains	--			

4.14.1 Infrastructure at Vijayawada station

Vijayawada station handles around 194 trains per day. The number of trains handled has increased by 10 during the past three years.

- Through Vijayawada station, 32 trains, having capacity of 24 coaches or more, passes daily. This station have 10 platforms, of which eight platforms have the capability to handle trains with more than 24 coaches.
- The rush of trains is evenly distributed over the different period of time during the day.
- Around 72 trains originated/terminated at this station daily. However, this station have only five washing pit lines, of which only three can handle trains with 24 coaches or more. This station has no stabling line.
- There was no proposal for construction of new terminal station to decongest station at Vijayawada station during 2014-17.

- Audit reviewed the availability and augmentation of infrastructure at Vijayawada station during the last ten years and observed that the number of originated/terminated trains per day was 62 trains in March 2007, which increased to 72 trains per day in March 2017. However, the number of washing pit lines/ stabling lines remained constant over the period of last ten years. Inadequate number of washing pit lines/ stabling caused detention of terminated trains at the platforms for significant period and late start of originated trains from the station.
- The number of trains passing through Vijayawada station per day has also increased from 88 trains per day in March 2007 to 121 trains per day in March 2017 i.e. increased by 37.50 *per cent* over the past ten years. The number of platforms also increased by three (from 7 platforms in March 2007 to 10 platforms in March 2017). Accordingly, no detention was noticed at the preceding stations to the Vijayawada station.

4.14.2 Detentions at Vijayawada station

During the one-month detailed check of detentions at Vijayawada station for March 2017, the following was observed:

- On examination of Train Signal Register (TSR) of Vijayawada and its adjacent stations, no detention was noticed at adjacent stations/outer signals of Vijayawada station for want of line/platform. However, for goods trains, average detention of 75 minutes per train for 499 goods trains passing through this station was noticed.
- There was *enroute* detention of 11575 minutes in respect of 1162 trains, which took more time than scheduled in the time table. Of these 1139 trains were detained for more than five minutes and the total detention was 11554 minutes.
- Audit noticed excess stoppage of 9502 minutes in respect of 898 trains at Vijayawada station than the scheduled stoppage time.
- Out of the 17 platform return trains handle at this station, seven platform return trains were detained at platform for more than the prescribed period of 75 minutes. These trains were detained for 4045 minutes per week during the month of March 2017. One daily Train (no. 12796/12795 Secunderabad-Vijayawada Superfast Express was allowed to remain at platform for a period of 405 minutes.
- On examination of Empty Coaching Rake Movement (ECRM) Register, maintained at this station, during the month of March 2017, Audit noticed that at Vijayawada station, 67 trains were detained at platform after terminating at Vijayawada station beyond the considerable period of 30 minutes. 12 trains were stabled at platforms after the period of one hour of considerable period of 30 minutes of termination. One train was stabled for more than three hours after the period of 30 minutes of termination.

- Train no.57241 Bitragunta Vijayawada Passenger has been allotted 22 minutes to cover a distance of 5 kms between Krishna Canal Jn. and Vijayawada station. However, two[33] trains of same category (Passenger train) have been allotted unusually longer scheduled time of 40 minutes and 36 minutes respectively to cover the same distance. During examination of running of these two trains during March 2017, it was noticed that both the trains actually took 50 *per cent* less time than allowed in the time table. It clearly indicates that these trains have been allotted unusually high time to maintain the punctuality.
- 518 trains which originate at Vijayawada station, started late from the station, after being detained for 178 hours. 421 of these trains were detained for up to 30 minutes, 79 trains detained for half an hour to one hour and 18 trains detained for more than an hour. The late start of train was attributed mainly due to want of clear path (190 trains), non-availability of loco (66 trains). For 261 trains, reasons were not recorded at the station.

4.14.3 Constraints in station line capacity at Vijayawada station

Vijayawada is an important station of SWR, which handles a large number of trains especially with more than 24 coaches.

- The work of 'Vijayawada-Coaching fit for bulb lines between Vijayawada Yard and Bulb Cabins' sanctioned and included in the Works Programme of 2015-16 at a cost of ₹ 3.19 crore. Letter of Acceptance for execution of the work was issued on 21.2.2017 with due date of completion as 20.10.2017. Early completion of this work would facilitate by directly linking the coaching trains between Vishakhapatnam-Kazipet and vice versa without touching Vijayawada station and instead developing the adjacent stations viz., Gunadala and Rayanapadu. At present the coaching trains have to enter Vijayawada Yard and engine to be reversed as at Vijayawada, Bulb lines are not fit for coaching trains. This work would reduce congestion at Vijayawada station.
- The work of extension of these two platforms (no.2 and 3) to handle 24 coaches was taken up (18 September 2015) and scheduled for completion in December 2016. The work is however still in progress as of March 2017. The reasons for slow progress of work were attributed to limited availability of area for execution of work in the station premises and limited availability of block.
- The detailed estimate of work of Modification to yard to enable relinquishment of land required by the Municipal Corporation between Vijayawada & Ramavarappadu gate via Satyanarayanapuram was sanctioned in March 2002 and was to be completed by March 2012. Further additional works were included duly revising the estimate, which was sanctioned by Railway Board in September 2015. The work was completed in April 2017

[33] Train no. 57257.and Train no.57277

with the delay of five months. The reason for the delay was attributed to slow progress of work by the contractor.

- The two works pertain to provision of cross overs and automatic block signalling sanctioned in the year 2013-14. Due to non-availability of the cross overs, UP trains are detained at RRI signal of Vishakhapatnam Lines for dispatch of a coaching train from Vijayawada platforms. If the crossovers are provided, trains can be diverted from Vishakhapatnam lines to Gudivada or vice-versa at Vijayawada yard itself avoiding detention at RRI signals and station platform. Audit observed that these works are at initial stage. The work was to be completed by August 2017.

4.14.4 Conclusion

Vijayawada station handles around 194 trains per day. To handle these trains this station have only ten platforms. Though extension of two platforms were started and to completed by December 2016, these were still to be completed. A large of number of trains (72) originated/terminated at this station. However, this station has only five pit lines. The yard remodelling work could not be completed even after 15 years of sanction.

4.14.5 Recommendations

1. The works of extension of platform, yard remodelling, provision of cross over and automatic block signalling may be expeditiously completed.

Chapter 5
Conclusion and Recommendations

5.1 Conclusion

Adequate infrastructure at stations is necessary for smooth movement of trains through station. Audit observed that in all the fifteen stations reviewed, none of the stations had prepared a Master Plan for providing infrastructure on stations to address the bottlenecks/ constraints, which adversely affects the timely arrival and departure of trains to/from stations. The plans for modernisation/redevelopment mainly focussed on facilities and facade of stations only and not on removing constraints and bottlenecks for ensuring timely arrival and departure of trains to/from the stations, which should be one of the most important parameter of the quality of service being provided to the passengers.

During review of the existing infrastructure at the selected 15 stations, Audit noticed that, the infrastructure such as platforms, washing pit lines and stabling lines at the stations were not augmented according to increase in number of trains handled on all these stations. Non-availability of adequate washing pit lines and stabling lines led to movement of empty trains to other depots for maintenance purpose and caused blockage of line due to such movements. These deficiencies were required to be addressed and necessary infrastructure needed to be provided for smooth handling of trains on these stations. In eight stations viz., Mughalsarai, Kanpur Central, Allahabad, Mathura, Bhopal, Itarsi, Vijayawada and Nagpur, the number of platforms was significantly less, though these stations handle a large number of trains every day. Out of 164 platforms in these stations, 64 platforms were shorter in length and could not handle the trains with 24 coaches or more. As a result, trains with 24 or more coaches were stopped at platforms with shorter lengths causing inconvenience to passengers in boarding and de-boarding. To decongest the existing stations, Railways developed new stations/ terminals at adjacent/nearby to the existing stations at New Delhi and Delhi (Anand Vihar Terminal), Allahabad (Cheoki) and Patna (Rajendranagar Terminal) only. In Allahabad (Subedarganj), Delhi (Shakurbasti), Ahmedabad (Sabarmati), Jaipur (Khatipura) and Nagpur (Ajni) stations, though the development of new stations/terminals were planned, the work was yet to be completed and progressing behind schedule. In respect of other stations, no planning was there to develop new stations/ terminals. These constraints led to detentions at various stages, i.e. at adjacent stations/outer signals, *en route* and on stations.

During examination of related records maintained at stations for movement of trains through the station, Audit noticed detention of trains at outer signals/ adjacent stations just before the destination station, which caused inconvenience to passengers travelling in the trains detained. The track remained occupied for a considerable period and the locos, coaches and wagons were utilised sub-optimally. Trains which did not have a scheduled stoppage at the adjacent stations, were also detained at these adjacent stations due to want of path, for the train to move further. At the selected stations, the trains were detained for excess period than that allowed in the time table. Late start of trains from the stations was

also noticed. The reasons attributed were want of clear path, locos, crew etc. Detention of trains also caused loss of earning capacity to the trains. A number of instances were noticed where specific reasons were not recorded by the station authorities for detention of trains at outer/adjoining stations.

Platforms remained engaged due to stoppage of platform return trains at platforms over and above the prescribed period of 75 minutes allowed for cleaning and watering. Audit also noticed detention of empty rakes of terminated trains at platforms beyond a reasonable period of 30 minutes which further detained the trains coming to the stations, for want of clear line/platform, though no time norms were in place for removal of empty rakes of the terminated trains from the platforms. A better co-ordination in operation of trains was needed for optimal utilisation of platforms and reduce detentions of inbound as well as outbound trains.

Railway Administration fixed different allowed time for the same category of trains between two stations. This resulted not only in detention of trains due to occupation of line/track for more time on account of such excess time allowed to these trains, but also in under-utilization of these rakes. By allotting longer time to the trains in Time-Table, though railways shows better punctuality, the passengers do not reach the destination stations within a reasonable permissible time.

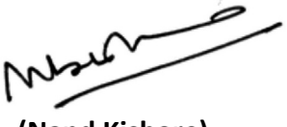
Audit noticed that to decongest the stations, a number of traffic facility works were though proposed by divisional authority, were not sanctioned by the competent authority (Railway Board/ Zonal Headquarters). The works which were sanctioned and under execution were also delayed and thereby the stated objectives of decongestion of stations/lines/ platforms were not fulfilled.

5.2 Recommendations

1. ***All Zonal Railways need to prepare comprehensive Master Plans for stations with heavy passenger traffic, identify constraints of station line capacity and devise measures to be taken to address these constraints on priority. They may develop a suitable methodology for assessing the requirements of infrastructure on various stations such as number of platforms, length of platforms, availability of pit lines, stabling lines and yard etc. with reference to the pattern of the traffic being handled at these stations. The milestones for execution of the works identified to address these constraints may be clearly laid down and followed. The infrastructure should be augmented keeping pace with the increase in traffic.***

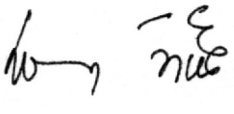
2. ***Before taking up modernization/redevelopment of stations and constructing new buildings, the possibility of further expansion of the stations by adding more platforms need to be considered. The modernization/ redevelopment of stations should also address infrastructural constraints and works such as construction of additional platforms, stabling and washing pit lines, remodelling of yards etc., should be included in the scope of modernization/redevelopment of stations.***

3. *It may be desirable to increase the length of all the platforms at major stations so as to accommodate trains of 24 or more coaches.*
4. *Railways need to create additional platforms/ pit lines of adequate length where the number of platforms is not adequate for handling the trains originating/ terminating/ passing by the station. Where creation of additional platforms/pit lines is not possible due to space constraints, Railways need to explore alternatives places to develop new stations/terminals to decongest the existing stations and/or increasing length of platforms so as to accommodate two trains simultaneously at a platform.*
5. *The works already planned/ ongoing to augment the station line capacity (platform/lines, yard remodelling, RRI etc.) need to be expedited to achieve the stated objectives of the works.*
6. *To avoid the detention of trains at outer signals/adjacent stations/en route besides augmenting station line capacity, Railway need to address the other constraints causing detentions such as route relay interlocking, yard remodelling, etc. Traffic facility works for removal of these constraints need to be taken up and completed on priority basis.*
7. *Time norms for removal of empty rakes of the terminated trains from the platforms may be prescribed for optimum utilisation of platforms.*



New Delhi **(Nand Kishore)**
Dated: 19 June 2018 **Deputy Comptroller and Auditor General**

Countersigned



New Delhi **(Rajiv Mehrishi)**
Dated: 19 June 2018 **Comptroller and Auditor General of India**

Annexure I (Para 3.1) - Reasons for detentions												
Zonal Railways	Division	Total detention (minutes) in March 2017	Specific reason for detentions									
			Path		Level Crossing		Rescheduling		Traffic		Loco failure	
			In minutes	*In percentage*	*In minutes*	*In percentage*	*In minutes*	*In percentage*	*In minutes*	*In percentage*	*In minutes*	*In percentage*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
ECR	Danapur	158400	69466	43.85	3300	2.08	4961	3.13	7527	4.75	2645	1.67
	Mughalsarai	33420	6293	18.83	757	2.27	865	2.59	1806	5.40	1719	5.14
NR	Delhi	249960	28739	11.49	1980	0.79	6914	2.77	18397	7.36	0	0
NCR	Allahabad	606480	35551	58.62	9340	1.54	248	0.04	99523	16.41	Not made available	
	Agra	145500	47161	32.41	772	0.53	35467	24.38	12449	8.56	Not made available	
ER	Howrah	31500	1457	4.63	69	0.22	12339	39.17	274	0.87	671	2.13
NWR	Jaipur	25980	3700	14.24	14	0.05	4829	18.59	1843	7.09	1112	4.28
WR	Ahmedabad	12780	1959	15.33	44	0.34	1919	15.02	405	3.17	240	1.88
SCR	Vijayawada	100049	494	0.49	40	0.04	Not made available		383	0.38	557	0.55
SR	Chennai	29460	12401	42.09	NAV		1134	3.85	3490	11.85	905	3.07
CR	Nagpur	21900	9371	42.79	0	0	1602	7.32	32	0.15	639	2.92
WCR	Bhopal	NAV										

Annexure 2 (Para 3.2) - Detention of coaching/goods trains at adjacent stations/outer signal for want of clear line at selected station for March 2017							
Name of the selected station	**No. of adjacent stations**	**Detention of coaching trains (five minutes and above)**			**Detention of goods trains**		
		No. of trains detained	*Detention in minutes*	*Detention per train (minutes)*	*No of trains detained*	*Detention in minutes*	*Detention per train (minutes)*
Patna	5	1055	20552	**19**	411	12058	**29**
Mughalsarai	4	221	4338	**20**	705	14583	**21**
New Delhi	3	7	172	**24**	0	0	**0**
Delhi	4	28	679	**24**	0	0	**0**
Kanpur Central	4	628	11951	**19**	393	39205	**100**
Allahabad	4	535	12067	**23**	541	16684	**31**
Mathura	5	296	4299	**15**	997	34029	**34**
Howrah	3	129	1099	**9**	24	160	**7**
Jaipur	3	153	2910	**19**	305	27724	**91**
Bhopal	3	0	0	**0**	497	16582	**33**
Itarsi	4	424	3200	**8**	441	18885	**43**
Ahmedabad	3	0	0	**0**	302	8413	**28**
Vijayawada	4	319	7554	**24**	499	37359	**75**
Chennai Central	1	169	2914	**17**	0	0	**0**
Nagpur	4	284	6254	**22**	787	46560	**59**
Total	**54**	**4248**	**77989**	**18**	**5902**	**272242**	**46**

Annexure 3 (Para 3.3) - Detention of non-stop coaching trains at adjoining station						
Name of the adjoining station (distance from selected station)	Name of selected station	Total number of coaching trains detained	Number of non-stop trains detained	Percentage of non-stop trains detained	Detention of non-stop trains (in minutes)	Detention per minute for non-stop trains (in minutes)
Danapur (9 km)	Patna	518	112	21.62	699	6
Phulwari Sharif (7 km)	Patna	351	109	31.05	982	9
Parsa Bazaar(6 km)	Patna	209	77	36.84	669	9
Rajendranagar Terminal (3 km)	Patna	358	59	16.48	506	9
Chandauli Majhwar (17 km)	Mughalsarai	115	26	22.61	69	3
East Outer Cabin (4 km)	Mughalsarai	97	97	100	456	5
GanjKhwaja (7 km)	Mughalsarai	91	38	41.76	305	8
Kuchman (12 km)	Mughalsarai	219	99	45.21	1240	13
Gurra (10 km)	Itarsi	108	108	100	893	8
Jujharpura (3km)	Itarsi	103	103	100	638	6
Powarkheda (68 km)	Itarsi	151	151	100	862	6
Dularia (12 km)	Itarsi	135	135	100	1016	8
Baad (10 km)	Mathura	490	416	84.9	1329	3
Bhuteshwar (2 km)	Mathura	341	113	33.14	442	4
Murhesi Rampur (8 km)	Mathura	48	26	54.17	417	16
Mathura Cantt. (2km)	Mathura	119	17	14.29	214	13
Bhainsa (10 km)	Mathura	200	19	9.5	122	6
Naini (8 km)	Allahabad	357	278	77.87	3366	12
Subedarganj (3 km)	Allahabad	173	145	83.82	1806	12
Allahabad City (2 km)	Allahabad	213	97	45.54	2509	26
Prayag (6m))	Allahabad	118	46	39.00	1997	43
Panki (10 km)	Kanpur Central	120	68	56.67	353	5
Kanpur Anwarganj (3 km)	Kanpur Central	274	44	16.06	1113	25
Kanpur Bridge (3 km)	Kanpur Central	369	250	67.75	2455	10

Annexure 3 (Para 3.3) - Detention of non-stop coaching trains at adjoining station						
Name of the adjoining station (distance from selected station)	**Name of selected station**	**Total number of coaching trains detained**	**Number of non-stop trains detained**	**Percentage of non-stop trains detained**	**Detention of non-stop trains (in minutes)**	**Detention per minute for non-stop trains (in minutes)**
Chandari (3km)	Kanpur Central	1267	1134	89.5	2356	2
Bekyr (7 km)	Howrah	35	35	100	118	3
Liluah (5 km)	Howrah	177	177	100	947	5
Sorting Yard Cabin (4 km)	Howrah	179	179	100	701	4
Gandhinagar jaipur (5 km)	Jaipur	38	7	18.42	83	12
Outer Signal Jaipur (1 km)	Jaipur	92	92	100	1306	14
Krishna Canal (5 km)	Vijaywada	141	59	41.84	1335	23
Gunadala (7 km)	Vijaywada	104	57	54.81	558	10
Rayanapadu (11 km)	Vijaywada	23	14	60.87	264	19
Basin Bridge (2 km)	Chennai Central	169	169	100	2914	17
Ajni (2 km)	Nagpur	33	33	100	188	6
Godhani (7 km)	Nagpur	163	163	100	1593	10
Kalumna (6 km)	Nagpur	155	155	100	1622	10
38 adjoining stations	**11 stations**	**7853**	**4907**		**38443**	

Annexure 4 (Para 3.4) - Statement showing en-route detention of 30 minutes and above in each case							
Name of selected station	**Number of trains which took extra time**	**Extra time taken beyond five minutes (in minutes)**	**Name of preceding station/ outer signal**	**Minimum Time allowed in minutes for covering distance between these stations**	**Maximum Detention (after allowed time) during March 2017**	**No. of trains detained for 30 minutes and above**	**Total Detention (in minutes)**
Patna	223	3341	Parsa bazar	18	41	1	41
			Rajendranagar Terminal	11	85	13	674
			Danapur	42	65	9	375
Mughalsarai	21	431	ChandauliMjhwr	42	49	4	173
New Delhi	206	2749	Shivaji Bridge	12	69	4	822
			DelhKishanGanj	47	75	3	164
			Delhi Sadar	11	50	22	1355
			SubziMandi	29	46	3	444
			Tilak bridge	23	31	1	191
Delhi	163	2812	Delhi Sarai Rohilla	25	62	15	1596
			Delhi Shahdra	25	42	4	932
Allahabad	889	13135	Naini	05	65	3	183
			Subedarganj	05	70	2	135
			Prayag	05	108	72	3525
			Allahabad City	05	53	2	83
Mathura	731	9535	Baad	10	178	11	1030
			Bhainsa	16	51	1	51
			Bhuteshwar	27	66	9	428
			Murhesi Rampur	7	175	7	520
Kanpur Central	2016	44758	Kanpur Bridge	12	118	87	4296
			Kanpur Anwarganj	15	50	6	240
Howrah	125	1548	Lilluah	13	54	4	183
Jaipur	157	1821	Durgapura	26	43	1	43
			Kanakpura	12	87	3	180
Itarsi	209	2712	Gurra	5	36	1	36
			Jujharpur	9	41	1	41
			Dularia	11	38	2	76
Bhopal	583	12338	Habibganj	11	34	1	34

Annexure 4 (Para 3.4) - Statement showing en-route detention of 30 minutes and above in each case							
Name of selected station	**Number of trains which took extra time**	**Extra time taken beyond five minutes (in minutes)**	**Name of preceding station/ outer signal**	**Minimum Time allowed in minutes for covering distance between these stations**	**Maximum Detention (after allowed time) during March 2017**	**No. of trains detained for 30 minutes and above**	**Total Detention (in minutes)**
			Vidisha	44	153	113	5919
			Bairagarh	20	55	7	298
Nagpur	273	2976	Kalumna	12	99	7	425
			Itwari	9	34	2	66
	5596	**98156**	**32**			**421**	**24559**

Annexure 5 (Para 3.5) - Detention of coaching trains at the Station during March 2017 on account of excess stoppage that schedule stoppage		
Station	**Total detention**	
	No. of trains detained	*Total detention in minutes*
Patna	637	9181
Mughalsarai	1033	10347
New Delhi	289	4301
Delhi	474	6110
Kanpur Central	2970	29813
Allahabad	367	6259
Mathura	710	4857
Howrah	54	524
Jaipur	1270	10349
Bhopal	823	6593
Itarsi	1343	12877
Ahmedabad	512	3375
Vijayawada	898	9502
Nagpur	522	6275
Total	**11902**	**120363**

Annexure 6 (Para 3.7) – Detention of terminated trains at Platform beyond considerable time of 30 minutes during March 2017							
Zonal Railway	**Name of the Station**	**Number of trains detained beyond considerable time**	**Total detention in minutes**	**Cases of detention in the range of (after allowing 30 minutes considerable time)**			
				1-30 minutes	*31-60 minutes*	*61-180 minutes*	*> 180 minutes*
ECR	Patna	76	2139	51	18	7	0
	Mughalsarai	9	146	9	0	0	0
NR	New Delhi	0	0	0	0	0	0
	Delhi	0	0	0	0	0	0
NCR	Kanpur Central	122	7290	60	18	40	4
	Mathura	114	11657	21	25	53	15
	Allahabad	257	6639	200	29	26	2
ER	Howrah	1032	33997	643	260	119	10
NWR	Jaipur	244	7880	158	60	25	1
WCR	Bhopal	Records not being maintained					
	Itarsi	14	300	12	1	1	0
WR	Ahmedabad	562	31642	196	185	146	35
SCR	Vijayawada	67	1385	54	12	1	0
SR	Chennai Central	718	31271	379	174	159	6
CR	Nagpur	285	17142	105	91	75	14
	Total	**3500**	**151488**	**746**	**463**	**382**	**55**

Annexure 7 (Para 3.8)– Detention on account of allotment of unusual more time to some trains in comparison to time allotted to other same category of trains								
Zonal Railway	**Name of selected station**	**Name of preceding station for the trains**	**Distance**	**Number of direct trains run between the stations**	**Number of trains allotted unusual (much more) running time**	**Range of unusual time allotted to these trains (minutes)**	**Minimum time allotted to other trains of same category (minutes)**	**Loss of coach/engine minutes in 3 years in comparison to minimum time allotted to other trains of similar category**
ECR	Patna	Danapur	10	30	17	30 to 60	15 to 23	315900
ECR	Patna	Taregna	30	4	2	67 to 76	54	38220
ECR	Patna	Parsa Bazar	6	11	9	29 to 55	18	411216
ECR	Patna	Rajendra Nagar Terminal	3	41	18	15 to 55	7 to 9	224952
ECR	Mughalsarai	Bhabua	54	17	13	63 to 131	44 to 61	236028
ECR	Mughalsarai	Kuchman	12	7	2	34 to 48	25	34944
ECR	Mughalsarai	ChandauliMjhwr	17	4	1	78	70	8736
NR	New Delhi	Aligarh	138	3	1	186	146	43680
NR	Delhi	Delhi Sarai Rohilla	5	4	1	47	17	32760
NCR	Kanpur	Govindpuri	2.45	11	5	19 to 36	8 to 16	89544
NCR	Kanpur	Kanpur Anwarganj	2.36	20	3	20 to 35	10	36036
NCR	Kanpur	Panki	9.85	6	3	38 to48	23 to 30	46956
NCR	Allahabad	Allahabd City	3.2	11	2	18 to 24	13	7176
NCR	Mathura	Baad	10	3	1	20	12	7488
NCR	Mathura	Bhuteshwar	2	8	1	34	29	5460
NCR	Mathura	Murhesi Rampur	9	3	2	45 to 59	26	56784
NWR	Jaipur	Durgapura	7.24	29	9	26 to 33	16 to 21	43992
NWR	Jaipur	Gandhi nagar	5.35	30	20	17 to 36	13 to 15	138840
NWR	Jaipur	Kanakpura	8.94	7	4	25 to 33	12 to 21	42588
WCR	Bhopal	Habibganj	6	41	11	20 to 39	11 to 18	91104
WCR	Bhopal	Bairagarh	11	17	3	33 to 45	23 to 25	53508
WCR	Itarsi	Pipariya	67.33	31	13	81 to 108	56 to 70	202956
WCR	Itarsi	Hoshangabad	17.73	23	6	36 to 44	27	73476
WCR	Itarsi	Ghoradongri	70.25	18	12	76 to 145	57 to 72	179556
SCR	Vijayawada	Krishna Canal	5.05	17	2	36 to 40	22	34944
CR	Nagpur	Ajni	2.92	9	6	22 to 45	13 to 30	73320
CR	Nagpur	Itwari	5	4	2	30 to 45	22	33852
TOTAL				**409**	**169**			**2564016**
Loss in hours								**42733.60**

Annexure 8 (Para 3.8) - Statement showing unusual more time allotted and actual time taken during March 2017								
Zonal Railway	**Name of selected station**	**Name of preceding station for the trains**	**Number of direct trains run between the stations**	**Number of trains allotted unusual (much more) running time**	**Number of trains test checked for average running time taken in March 2017**	**Number of test checked trains taken average time less than 50 % of the allotted time**	**Number of test checked trains taken average time in between 50% and 75% of the allotted time**	**Number of test checked trains taken average time above 75% of the allotted time**
ECR	Patna	Danapur	30	17	11	1	9	1
ECR	Patna	Parsa Bazar	11	9	9	7	2	0
ECR	Patna	Rajendranagar Terminal	41	18	11	7	4	0
ECR	Mughalsarai	Kuchman	7	2	2	1	1	0
ECR	Mughalsarai	ChandauliMjhwr	4	1	1	1	0	0
NCR	Kanpur	Govindpuri	11	5	5	0	0	5
NCR	Kanpur	Kanpur Anwargaj	20	3	3	0	0	3
NCR	Kanpur	Panki	6	3	3	0	0	3
NCR	Allahabad	Allahabad City	11	2	1	1	0	0
NCR	Mathura	Baad	3	1	0	0	0	1
NCR	Mathura	Bhuteshwar	8	1	1	0	0	1
NCR	Mathura	Murhesi Rampur	3	2	2	1	1	0
NWR	Jaipur	Durgapura	29	6	6	2	4	0
NWR	Jaipur	Gandhinagar JPR	30	18	10	7	3	0
NWR	Jaipur	Kanakpura	7	4	2	1	1	0
WCR	Bhopal	Habibganj	41	11	11	1	4	6
WCR	Bhopal	Bairagarh	17	2	2	0	2	0
WCR	Itarsi	Pipariya	31	13	0	0	11	2
WCR	Itarsi	Hoshangabad	23	6	0	0	6	0
WCR	Itarsi	Ghoradongri	18	12	0	3	4	5
SCR	Vijayawada	Krishna Canal	17	2	2	2	0	0
CR	Nagpur	Ajni	9	6	4	4	0	0
CR	Nagpur	Itwari	4	2	2	1	1	0
		Total	**381**	**146**	**88**	**40**	**51**	**27**

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