

SOUTH CENTRAL RAILWAY



Detailed Project Report for

Ballarshah - Kazipet section: Proposed 3rd Line with Electrification Between Ballarshah (201.04 Kms) Excluding Already Sanctioned Length of 33.42Km Between Mandamari and Raghavapuram Stations



Bridge no. 142 (under Construction for 3rd Line)

Bridge no. 298 (Near BPQ over Wardha River)



GODAVARI RIVER

Godavari Exg. Bridge no. 142 At Mancheril



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DETAILED PROJECT REPORT

SOUTH CENTRAL RAILWAY

Secunderabad Division - Ballarshah- Kazipet section: Proposed Third line with Electrification between Ballarshah -Kazipet stations (201.04 Km.) excluding already sanctioned length of 33.42 kms between Mandamarri and Raghavapuram stations.

1.0 INTRODUCTION

1.1 Brief History:

Ballarshah(BPQ) – Kazipet (KZJ) line was first completed in 1929. Electrification was completed in 1988-89. The survey work was first taken up for entire Ballarshah(BPQ) – Kazipet (KZJ) section in 2005-06 vide blue book item no: 16. The survey was done and report submitted to Board in May-2008 at a cost of Rs. 1207.41 Crs with ROR of 20.24%.

Part patch tripling for 24.47 km between Raghavapuram-Ramagundam-Peddampeta (RGPM-RDM-PPZ) and Mancherial and Mandamari (MCI-MMZ) (3–block section) was sanctioned in 2009. Further section between Mancherial and Peddampet (MCI-PPZ) stations for 7.84 Km was sanctioned by GM for Rs. 85.66 Crs vide sanction no. . So a total of 33.20 km length out of 236 km was sanctioned for patch tripling. The patch tripling between Mancherial and Peddampet (MCI-PPZ) includes an important bridge (44X24.4m, PSC Box Girder) on river Godavari. The work for 24.47 km between RGPM-RDM-PPZ and MCI-MMZ (3–block section) nearly completed and after receipt of condonation of Board for yard gradient infringements NI works for commissioning will be taken up. The work between MCI-PPZ (including important bridge (44X24.4m, PSC Box Girder) on river Godavari) is also in progress and is likely to be commissioned by next financial year 2016-17.

The balance length of 202 km has been sanctioned by Board vide item no.39 of PB of 2015-16 at a cost of Rs. 2020 Crs. An amount of Rs.46.19 Crs has been provided under EBR (IF) for financial year 2015-16.

Further as per Boards Ir. no.2013/W-I/Gen/Survey/Budget dated 01/4/2015, FLS estimate was sanctioned by GM/SCR vide Ir. no:W.Con.337/C/195/Vol-III(WC-2) dt.22.04.2015 for a cost of Rs. 1,62,28,720/-

1.2 Project location and Places of Importance:

The proposed construction of 3rd line is sanctioned between Ballarsharh of Chandrapur district (in Maharashtra) and Kazipet of Warangal district of Telangana (in Telangana) for 202 km. The project lies in two states i.e. in Maharashtra state and in Telangana State. The length of 38.58 km is in Maharashtra and 162.54 km is in Telangana State. The full length of the project is double line with electrification and it is on Group 'A' route connecting New Delhi and Chennai, having GMT for year 2013-14 as given below:

SECTION	ROUTE	UP	DN	MPS (In KMPH)
BPQ-BPA	A	48.48	55.90	120
BPA-KZJ	A	51.07	66.45	120

It is in Secunderabad Division of having jurisdiction of Sr.DEN/North/SC section with ADEN/BPA and ADEN/RDM jurisdiction with 6 SSE/P.Way in charge at KZJ, PDPL, MCI, BPA, SKZR and MAGH.

Alignment:

The proposed 3rd line is falling on either UP line side or DN line side, depending on the convenience of yard arrangements. The middle line has been proposed as bi-directional single line similar to orthodox tripling. Because of this there



are cut-n-connections to be provided for change of line.

Important/Major stations:Following are the Important/Major stations.

Ballarshah(BPQ) :

It is located at 19.84°N and 79.348°E at Km 132.40. This is a main junction and interchanging point for train crew and exchange point between South Central Railway and Central railway. This is in Chandrapur district of Maharashtra. It is in Nagpur division of Central Railway.

Ballarpur/Ballarshah is a city and a municipal council in Chandrapur district in the state of Maharashtra, India. Many people call this city as mini India due to a large number of people from all over India. Reason behind this much diversity in people is BILT (Ballarpur Industries Ltd) which is a famous paper industry which created huge employment opportunity for people from all around in its early days. However now they have started to cut down their employee strength. The city is also one of the largest industrial areas of the region making it second largest city in the district.

History

The king of Ballarpur was Balhar Sah. The town was named BALLARSHAH after him. King BALLARSHAH shifted his capital from Sirpur to BALLARSHAH in middle Ages. He built BALLARSHAH fort. Afterwards he shifted his capital to Chandrapur. Even today the ruins of the old BALLARSHAH fort can be seen on the banks of Wardha River.

Demographics

As on India census, BALLARSHAH had a population of 133,722 including villages under Ballarpur tehsil. Males constitute 52% of the population and females 48%. BALLARSHAH has an average literacy rate of 73%, higher than the national average of 59.5%; with 80% of the males and 66.5% of females literate. 11.6% of the population is under 6 years of age. The population is still growing rapidly due to migrants for education.

Nearby Towns:

Rajura

Gadchandur

Nanda Fata

Korpana

Transport:

Ballarshah is the last station in the Central Railway zone of Indian Railways. Hence all the trains entering South Central Railway zone stop here for Crew Change (TTE, Loco Pilots, Guards, RPF) as well as to upload pantry stuff from the base kitchen in Ballarshah.

Ballarshah is also a semi-road transport hub. The state highway that passed through BALLARSHAH considerably cuts the time to travel from Nagpur to Hyderabad. There are many transport companies based in BALLARSHAH. Ballarpur has a good connectivity to Nagpur and Hyderabad due to its proximity.

Economy

BALLARSHAH has 9 coal mines nearby owned by the public sector company WESTERN COALFIELDS LIMITED, A SUBSIDIARY OF COAL INDIA LIMITED, which gives a huge opportunity to fresh graduates for further jobs.

The town came in limelight after the Avantha Group established their flagship paper factory Ballarpur Industries Limited (BILT) which is India's largest manufacturer of writing and printing paper. BILT's subsidiaries include BILT Graphic Paper Products Limited (BGPPL); Sabah Forest Industries (SFI), Malaysia's largest pulp and Paper Company; and BILT Tree Tech Limited (BTTL), which runs BILT's farm forestry programme in several states in India. The Gadchroli and the southern Chhattisgarh region is rich with bamboo plantations. Hence there are a number of paper factories in the Telangana, Chhattisgarh and Vidharbha region.

Manikgarh(MAGH):

It is located at 19⁰ 47'16.09"N and 79⁰23'55.5"E of Rajura Taluk of Maharashtra state. It is a junction station having cement sidings of major cement producers like L&T Cement, MAGH Cement, Maratha Cement and W.C.L. (Sasti) sidings.

Sirpur Kaghaznagar (SKZR):

Sirpur Kaghaznagar (SKZR) are twin towns is located at 19.3333°N 79.4833°E in Adilabad district Of Telangana, having population of 57,583 as per 2011 census. All three seasons are extreme, temperature goes beyond 46°C due to Singareni Collieries nearby. It has an average elevation of 174 meters (574 feet).

Historically Kaghaznagar was the part of Gond Kingdom with its capital based out at Sirpur town. Also known as Kothapet, The new

town of Kaghaznagar was founded by the Seventh Nizam Mir Osman Ali Khan Bahadur. Kaghaznagar was named after Paper Mills ("kaghaz" means paper in Persian), initially it was called Kothapeta (new village). The Sirpur Paper Mills Limited (SPM) an integrated pulp and paper mill is one of the earliest mills in the country situated at Sirpur-Kaghaznagar in the district of Adilabad, Telangana; it began production in 1942. There was another Company called Sirsilk which had been closed down long ago. The area was initially a sub district called Sirpur-Tandur carved out in 1872 and comprised Edlabad (Adilabad), Rajura (now in Maharashtra) and Sirpur taluks. The district, named after Ali Adil Shah, ruler of Bijapur, was conferred its present status in 1905 with Adilabad town as its headquarters. Sirpur Kaghaznagar is the perfect boundary for Telangana State while going towards Delhi. This town is conglomerate of different religions. People from different regions and languages have come and settled here since long time.

The town is well connected with all major towns in the State of Telangana and Maharashtra

- Hyderabad 304 km to the south.
- Nagpur 257 km to the north.
- Adilabad 146 km to the west.
- Karimnagar 144 km to the south.

Kaghaznagar is famous for products like Paper, Cotton also the products from surrounding cottage industries. Fine Bamboo, which is main raw material for Paper that is manufactured here, is grown in large area for Paper Mill requirement. Kaghaznagar is famous for paper products. Small cottage industries have come up around this town in the recent years.

Places of Interest:

- Sirpur Forest Reserve
- Trishul Pahad offers a scenic view of the town
- Rose Gardens near Easgoan village
- Gangapur Caves, Rebenna
- Gollet picnic spot, Rebenna
- Penganga picnic spot, Tokini
- Vattivagu Irrigation project, Asifabad
- Komaram Bheem Reservoir, Asifabad
- Kerameri Ghat Roads, Asifabad

Kazipet (KZJ):

Kazipet is a suburban area of Warangal city, in the state of Telangana, India. Kazipet is well known for its professional and convent educational institutions. These schools are well recognized throughout the state. Kazipet also has schools run by South Central Railway. These are South Central Railway Boys High School (Telugu Medium), South Central Railway Girls High School (Telugu Medium) and South Central Railway Mixed High School (English Medium).

Kazipet has two government-run schools. The Government Boys School popularly known as Pedda badi is one of the oldest schools in Kazipet, and the Government Girls School is located near the highway to Hyderabad, just a few hundred meters from the Kazipet Junction.

One of India's premier Engineering institutes, the **National Institute of Technology, Warangal (previously called Regional Engineering College)**, is located in Kazipet. The Kakatiya University is located 9 kilometers from Kazipet railway station. The Kakatiya Medical College is attached to the MGM Government Hospital. It is the second largest medical college in the state of Telangana. St. Ann's hospital was started in 1954 for medical services and cancer treatment also.

Goddess Mahankali Temple is located in Vishnupuri and is famous for Mahankalli Jatara once in a year in Vishnupuri 1 km from railway station. In Jatara (carnival) people will dress up in different costumes called as Pothuraju (Guardian of villages).

Sri Someswara Lakshmi Narasimha Swamy temple, Palakurthi: It is 50 km from Warangal on a hillock in the outskirts of Palakurthy Mandal headquarters. It is also the birthplace of famous poet Palakurthy Somanadha Kavi of 12th century. His Samadhi (holy grave) can be seen here. This historic temple is dedicated to Lord Siva and Lord Vishnu who incarnated in two adjacent caves at a height of 120 meters on the hillock. The 'Pradakshina Path' encircling the two caves is natural. There is a dilapidated 'Surya' Temple and Koneru (Holy pond) can also be witnessed at this place. This place once flourished which the adherents of Veera Saiva sect of Hinduism has lost prominence in course of time presently it is a famous pilgrimage center in Warangal district. Mainly the Veera Saivas will certainly make a visit once in a year to have the blessings of presiding deities and Somanadhakan.

Sri Ramachandra Swamy temple, Jeedikalu: It is located at distance of 10 km from Jangoan. The temple is an ancient one and believed that, Lord Sri Rama visited this temple on his way to 'Lanka' (Sri Lanka) after separation from Sita Devi. People also believe that, Rama has killed the 'Maricha' who was in the guise of 'Maya Ledi' or the Magis deer. A boulder namely 'Ledi Banda' can be seen here. "Jeedigundam" and "Palagundam" are the two Pushkarinis for the holy dip of the pilgrims.

Sri Mettu Ramalingesvara Swamy temple, Kazipet: It is located at distance of 5 km from Kazipet railway station. The temple is 100 years old situated on top of hill called Mettugutta. This historic temple is dedicated to Lord Shiva.

Kazipet railway station is one of the important railway stations of Indian Railways that connects North and South India, and locomotive (largely diesel) maintenance division in Andhra Pradesh.

Warangal(WL):

Warangal is the most important historic city in the Telangana region. It was the capital of the Kakatiya rulers who practiced Veera Shaivism which led to the construction of some magnificent Shiva temples in the area. Warangal district is located in the northern region of the state of Telangana, India. The administrative seat is Warangal. The district is at a distance of approx. 80 km. from the state capital Hyderabad. Warangal District has an area of 12,846 km², and a population of 3,246,004 of which 19.20% was urban as of 2011. The district is bounded by Karimnagar District to the North, Khammam District to the East and Southeast, Nalgonda District to the Southwest, and Medak District to the West. Warangal is well known for its granite quarries (notably the black and brown varieties) and as a market for rice, chili peppers, cotton, and tobacco.

History:

Warangal, then known as Oragullu, was the capital of the Kakatiya dynasty from 1195 until that ruling family was defeated by the Delhi Sultanate in 1323. The city was then renamed as Sultanpur.

The Kakatiyas rulers left many monuments, including an impressive fortress, four massive stone gateways, the Swayambhu temple dedicated to Shiva, and the Ramappa temple situated near Ramappa Lake. The cultural and administrative distinction of the Kakatiyas was mentioned by Marco Polo. After the defeat of Prataparudra II, the Musunuri Nayaks united 72 Nayak chieftains

and captured Warangal from Delhi Sultanate and ruled for fifty years. After the demise of the Nayaks, Warangal was part of the Bahmani Sultanate and then the Sultanate of Golconda.

The Mughal emperor Aurangzeb conquered Golconda in 1687, and it remained part of the Mughal empire until the southern provinces of the empire split away to become the state of Hyderabad in 1724, which included the Telangana region and some parts of Maharashtra and Karnataka. Hyderabad was annexed to India in 1948, and became an Indian state. In 1956 Hyderabad was partitioned as part of the States Reorganization Act, and Telangana, the Telugu-speaking region of Hyderabad state, which includes Warangal, became part of Andhra Pradesh.

Geography and climate:

Warangal is located at 18.0°N 79.58°E. It has an average elevation of 302 metres (990 feet). It is settled in the eastern part of Deccan Plateau made up of granite rocks and hill formations which left the region barren making the cultivation depend on seasonal rainfalls. There are no river flows nearby Warangal, which makes it to rely on Kakatiya Canal which originates from Sriram Sagar Project to meet the drinking water requirements. Located in the semi-arid region of Telangana, Warangal has a predominantly hot and dry climate. Summer starts in March, and peak in May with average high temperatures in the 42 °C (108 °F) range. The monsoon arrives in June and lasts until September with about 550 mm (22 in) of precipitation. A dry, mild winter starts in October and lasts until early February, when there is little humidity and average temperatures in the 22–23 °C (72–73 °F) range. Many hill rocks and lakes are settled around Warangal. Padmakshi hill and Govinda Rajula Gutta are two famous hills with temples. Bhadrakali and Waddepally are the two famous lakes which adds scenic beauty and also are the major sources of drinking water.

Economy:

According to the 2011 census of India, Warangal is one of the Indian cities that has seen rapid growth of urbanisation. This category is led by cities such as Gandhinagar (35% to 43%), Warangal (19% to 28%), Kozhikode (38% to 67%) and Krishna (32% to 41%).

Agriculture is the main economic activity with irrigation depending mainly on monsoon and seasonal rainfalls. Major crops

are paddy, cotton, mango and wheat. Warangal benefits from the Godavari lift irrigation scheme which is designed to lift water from the Godavari river to irrigate drought prone areas in the Telangana region.

The city hosts Asia's second-biggest grain market, located in Enumamula. It is also attracting investors in information technology. The incubation tower at Madikonda is likely to play a significant role in this development.

Bathukamma:

Bathukamma is a floral festival celebrated by women of Warangal, worshipping the goddess with different flowers for nine days. Though the festival is celebrated all over the state, it is famously known as major festival of Warangal. After arranging different flowers in attractive manner which are available in the season, women carry their "**Bathukamma**" to nearest temple in their locality, after crowd gatherings they clap, sing and dance rhythmically around the Bathukamma. Along with Bonalu, "**Bathukamma**" is declared as state festival on 15 June 2014.

Among the educational institutions in the city are:

- Kakatiya University is a university of Warangal and has 471 affiliated colleges.
- NIT Warangal, formerly known as Regional Engineering College.
- Kakatiya Medical College, renamed as Kaloji Health University in 2014, is a government medical college founded in 1959.

GEOLOGY: The project lies between Ballarshah and Kazipet. The alignment passes through reserve forest of Rajura between Ballarshah and Manikgarh and Kannala Forest between Raghavapuram and Ramagundam stations and passes through four major rivers i.e. Wardha, Bibra, Godawari and Maner. The major length is in bank.



Clockwise from top left: City View, NIT warangal, Railway station, Central bus station, Thousand pillar temple and Kakatiya toranam.

2.0 PROJECT DESCRIPTION :

2.1 Physical Features:

This study is carried out from Ballarshah (Longitude: 79°19'E, Latitude:19°52'N) to Kazipet (Longitude: 79°30'E, Latitude:17°54'N) at Km.234.460. The proposed route travels through Deccan Plateau to East Coast Plains. The terrain between Ballarshah with RL 179.800 and Kazipet with RL 266.425 is generally steep falling grade and the difference in altitude is 86.625 m in 234.46 km.

2.2 Alignment:

The third line is proposed to take off from Ballarshah end of existing Kazipet Jn. Station. In between part patch tripling for a length of 34 Km is in progress. Maximum efforts are made in choosing the proposed alignment, cut and connections are proposed in order to avoid expensive land (built up area), dismantling of existing structures to be minimized and make utilization of available land and existing station facilities.

2.3 Track standards:

The standards adopted for this project are as follows:

1	Gauge	Broad Gauge (1676 mm.)
2	Category of Line	Group 'A'
3	Maximum Speed	160 KMPH
4	Ruling Gradient	1 in 150
5	Maximum degree of curvature	3 Degree
6	Permanent Way	As per correction slip No. 117 to IRPWM
i)	Main Line:	
	a) Rails	60 Kg. 90 UTS Class I
	b) Sleepers	60 Kg. PSC sleepers @ 1660 / Km.
	c) Ballast cushion	350 mm
ii)	Loop Line:	
	a) Rails	60 Kg. Class II
	b) Sleepers	60 Kg. P.S.C. sleepers @ 1540 / Km
	c) Ballast cushion	250 mm
7	Blanketing	Maximum-600/1000 mm thick over embankment and as required
8	Structural clearances	As per standard B.G. Schedule of dimensions (Revised 2004)

2.4 . FORMATION STANDARDS:

Formation width for standard Third Line embankment with side slope of 2:1 and cutting with side slope of 1:1 have been adopted for ordinary soils. No provision has been made for earth from borrow pits. Mechanical compaction is proposed for earth work in embankment. Maximum of 600/1000 mm thick blanketing is proposed as required in ordinary soils. The details of formation are as follows:

a). Embankment	
i) Bank top width & side slopes	7.85mtr with 2:1 side slops.
ii) Maximum height of bank	11.08mtr.
iii) Contractors own earth	24.00 Lakh Cum.
iv) Useful cut spoil led into bank	2.00 Lakh Cum.
v) Blanketing	22.00 Lakh Cum
Total Qty.	48.00 Lakh Cum
b) Cutting	
i). Width including side drains & side slopes	10.85 mtr , Side slope 1:1
ii) Maximum depth of cutting	15.66mtr.
iii) Cutting in all types of soils	2.55 Lakh Cum.
iv) Cutting in Rock Not requiring blasting	1.70 Lakh Cum
v) Cutting in Rock requiring blasting	2.25 Lakh Cum.
vi) Cutting in Rock requiring chiseling	2.00 Lakh Cum.
Total Qty.	8.50 Lakh Cum

Apart from side drains, catch water drains and yard drains were also proposed in the Detailed Estimate.

2.5. BRIDGE STANDARDS:

All the Bridges are proposed for 25 tones axle loading with ballasted deck as per the instructions of Railway Board. There are total of 270 Bridges (excluding ROBs / RUBs) are involved in the section. There are 3 are Important bridges on river Wardha, Bibra and Maner. Also there are 20 Nos are Major Bridges and 247 Nos. of Minor Bridges in the proposed section. All the major bridges has been proposed at 25.0m track centre distance.

Details of Bridges are as follows:

SI.No	Type	Work involved
1	Important Bridges	<ul style="list-style-type: none"> 3 Important Bridges to be constructed on permanent diversion at 30.00 meter track centers for Third Line.
2	Major Bridges	<ul style="list-style-type: none"> 20 Major Bridges to be constructed on permanent diversion at 25.00 meter track centers for Third Line.
3	Minor Bridges	<ul style="list-style-type: none"> 247 Nos. of Minor Bridges are proposed for extension for Third Line.

2.6 STATIONS:

There are 29 stations exists between Ballarshah- Kazipet section excluding Ballarshah station which falls under Central Railway. Out of 29 stations, 5 Stations were already covered under Patch tripling in progress and 1 station is partly covered, the balance 23 stations are included in the estimate. Facilities provided in each station are detailed below:

2.6.1 Ballarshah (Km.132.40) : This station is located at 19°50'35"N and 79°20'55"E. This is an important existing Junction station. No additional facilities are proposed except crossovers and sand hump.

- 2.6.2. Manikgarh (Km.141.91)** : This station is located at 19°47'16"N and 79°23'56"E. This is an existing crossing station. Low-level platform of 484x6.50m, loop line of CSR 750m with Sand hump is proposed. FOB extension and new Station Building are proposed.
- 2.6.3 Wihirgaon (Km.150.55)** : This station is located at 19°43'32"N and 79°26'28"E. This is an existing crossing station. Low Level Passenger platform of 320 x 5.40m, Loop line of CSR 750m with sand hump is proposed. FOB and Station Building are proposed.
- 2.6.4 Wirur (Km.159.84)** : This station is located at 19°38'31"N and 79°25'52"E. This is an existing crossing station. Existing Ballast siding to be converted as Up loop with sand humps and one new ballast siding is proposed.
- 2.6.5 Makudi (Km.172.73)** : This station is located at 19°35'35"N and 79°26'55"E. This is an existing crossing station. Longer Loop line of CSR 1500m with sand humps are proposed. FOB is proposed.
- 2.6.6 Sirpur Town (Km.184.09)** : This station is located at 19°28'45"N and 79°33'38"E. This is an existing crossing station. Loop line of CSR 715m with sand humps are proposed. FOB and Station Building are proposed.
- 2.6.7 Vempalli (Km. 194.08)** : This station is located at 19°23'54"N and 79°31'30"E. This is an existing halt station. Two Low Level Passenger platforms of 285 x 5.50m are proposed. FOB and Station Building are proposed.
- 2.6.8 Sirpur Kaghaznagar (Km. 202.18)** : This station is located at 19°20'47"N and 79°28'23"E. This is an existing crossing station. Existing Loop lines are extended to make CSR 715m and proposed hot axle sidings of CSR 208m two nos and buffer stop are proposed. Station Building is proposed.
- 2.6.9 Ralapet (Km. 209.13)** : This station is located at 19°17'28"N and 79°25'00"E. This is an existing halt station. Low Level Passenger platforms of 243.84 x 5.50 m is proposed. FOB and Station Building are proposed.

- 2.6.10 Asifabad Road (Km. 216.57)** : This station is located at 19°15'25"N and 79°25'01"E. This is an existing crossing station. Proposed to extend the Low level Passenger platform of 435 x 9.00 m and 328 x 9.00 m common loop line of CSR 715m is proposed. FOB and Station Building are proposed.
- 2.6.11 Repalliwada (Km. 224.32)** : This station is located at 19°10'35"N and 79°25'50"E. This is an existing halt station.
- 2.6.12 Rechni Road (Km. 230.45)** : This station is located at 19°08'26"N and 79°27'06"E. This is an existing crossing station. The existing R&D line is proposed to be converted into common loop line of CSR 750m and with sand hump. A Goods common loop of 686m is proposed. FOB and Station Building are proposed.
- 2.6.13 Bellampalli (Km. 240.85)** : This station is located at 19°03'11"N and 79°29'10"E. This is an existing crossing station. Existing high level passenger island platform of 567 x 6.00m is maintained. FOB and Station Building are proposed.
- 2.6.14 Mandamari (Km. 250.25)** : This station is partly covered under patch tripling in progress between Mancherial and Mandamari section. During third line an additional loop line is proposed and existing FOB is proposed to be extended. The proposed 3rd line towards Bellampally will be starting from here.
- 2.6.15 Ravindrakhani (Km. 254.00)** : This station is already covered under the ongoing patch tripling
- 2.6.16 Manchiryal (Km. 260.54)** : ---do---
- 2.6.17 Peddampet (Km. 269.58)** : ---do---
- 2.6.18 Ramgundam (Km. 274.25)** : ---do---
- 2.6.19 Raghavapuram (Km. 283.67)** : This station is partly covered under patch tripling in progress between Ramagundam and Raghwapuram station. During third line connection will be given from KZJ end for all the tracks proposed for tripling work between Raghapuram and Kazipet stations.

- 2.6.20 Peddapalli (Km. 291.73)** : This station is located at 18°36'50"N and 79°23'32"E. This is an existing crossing station. Proposed widening of existing High level Passenger platform, loop line of CSR 750m with buffer stops are proposed as the platform is becoming island platform and CSR is increasing of the existing loop line.
- 2.6.21 Kottapalli (Km. 300.17)** : This station is located at 18°23'24"N and 79°24'13"E. This is an existing halt station. One Passenger platforms of 440 x 5.50 m is proposed for extension and other platform requires widening due to it is becoming island platform. FOB and Station Building are proposed as these are being dismantled during commissioning if 3rd line.
- 2.6.22 Kolanur (Km. 305.29)** : This station is located at 18°29'46"N and 79°25'10"E. This is an existing Crossing station. Proposed Passenger platform of 450 x 5.50 m. The proposed loop line of CSR 750m with buffer stop are proposed. FOB and Station Building is proposed as the HL platform is becoming island platform.
- 2.6.23 Odela (Km. 310.8)** : This station is located at 18°29'25"N and 79°26'58"E. This is an existing halt station. Both Passenger platforms 405 x 5.50 & 334 X 5.50m are proposed for extension and widening. FOB , because of island HL platform is coming. And Station Building is proposed.
- 2.6.24 Potkapalli (Km. 314.22)** : This station is located at 18°25'44"N and 79°27'50"E. This is an existing Crossing station. Passenger platform of 486 x 5.50 m, loop line of CSR 750m and shunting neck of CSR 120 m with buffer stop are proposed. Exg. Up loop as proposed as longer loop of 1500m. FOB and Station Building is proposed.
- 2.6.25 Bisugirshariff (Km. 324.64)** : This station is located at 18°20'53"N and 79°29'00"E. This is an existing halt station. Now proposed to be converted into crossing station. One Passenger platforms 450 x 10.00 m, one loop line on UP line side of CSR 750m and sand hump are proposed. FOB and Station Building is proposed.

2.6.26 Jamikunta (Km. 330.98) : This station is located at 18°17'25"N and 79°28'37"E. This is an existing Crossing station. Existing High level Passenger platform of 521 x 9.00m is maintained. Loop line of CSR 750m with sand humps are proposed. FOB and Station Building is proposed.

2.6.27 Uppal (Km. 342.97) : This station is located at 18°11'02"N and 79°28'54"E. This is an existing Crossing station. Existing low level Passenger platform of 420 m is maintained. Loop line of CSR 750m and siding of CSR 120m with buffer stop are proposed. FOB and Station Building is proposed.

2.6.28 Hasanparti road (Km. 354.74) : This station is located at 18°04'46"N and 79°30'09"E. This is an existing Crossing station. Existing High level Passenger platforms of 350 x 9.00m & 325 x 9.00m are maintained. Loop line of CSR 715m and siding of CSR 120m with buffer stop are proposed. FOB and Station Building is proposed.

2.6.29 Komatipalli (Km. 360.25) : This station is located at 18°01'29"N and 79°30'29"E. This is an existing halt station. Now proposed to be converted into crossing station. Two loop lines of CSR 750m with sand humps are proposed. RBG room is proposed.

2.6.30 Kazipet (Km. 366.86): This station is located at 17°58'23"N and 79°36'20"E. This is an important existing Junction station. Two additional loop lines are provided along with crossovers and sand humps.

2.7 Level crossings:

There are 65Nos. of level crossings in the balance length. All existing level crossings are proposed to be extended suitably to accommodate the proposed line. No change is proposed for class of level crossings.

Spl. Manned	:	12 Nos.
'A' Class Manned	:	13 Nos.
'B' Class Manned	:	07 Nos.
'C' Class Manned	:	<u>33 Nos.</u>
Total	:	<u>65 Nos.</u>

Road crossings:

RUBs: All existing Road under bridges are retained spans

ROBs: OneROB (165 A) proposed with RCC Box by Box pushing technique to create required vent way. All other existing ROBshave provision to accommodate the new line proposed.

2.8 Residential Quarters:

Minimum provision of staff quarters have been provided in the estimate. The details of staff quarters are as below:

Type-II	:	190 Nos.
Type-III	:	12 Nos.
Type-IV	:	6 Nos.
Total	:	208 Nos.

2.9 S&T

The cost of S&T works work out to Rs.445.32 Cr. Standard III (R) with 2ND distant signal proposed.

2.10 Electrical (G)

The Detailed estimate for electrical portion works out to Rs. 42.12 Cr. for the following:All new stations service buildings viz., station building, platform, PWI officers, Relay, Battery and Generator room and Residential quarters will be electrified. Provision of electrical pumps at all new stations have also been made for water supply arrangements to stations.

2.11 Electrical (Trd.)

- 1 The Kazipet-Balharsha section is double line section forming part of the Delhi-Chennai diagonal. The section has been earmarked as High Density Network. Therefore while planning for the TRD work provisions have been kept in line with the Report No. TI/Report/00076 (09/2008).
- 2 Accordingly, the contact wire of 150 mm² has been considered with corresponding span lengths. For restricting the feeding zone length during outage of intermediate TSS all the feeding posts have been provided with PTFE Neutral section. Also for uniformity same have been provided for existing double line section also.
- 3 The TSS have been augmented uniformly with Transformer of 30.24 MVA either by planning replacement or by planning additional fan units. Also the existing 2-line control and relay panel have been planned for replacement by 3-line panels. The Capacitor bank have also been augmented.
- 4 In addition the existing switching posts have been planned for augmentation through gantry modification and additional interrupters for 3-line section. New neutral sections have all been made PTFE type. For control of additional switching devices replacement of SCADA for BPQ-KZJ section.
- 5 Electrification of proposed triple line from BPQ to KZJ (Excluding the patch from RGPM to MMZ) has been planned and provided for as the TRD part of detailed estimate at a total estimated cost of Rs. 184.76 Crores.

2.1.12 FINANCIAL PLANNING:

1	Project Sanctioned Cost	Rs. 2020.00 crs.
2	Cost of Detailed Estimate	Rs. 2388.24 Crs.
3	Period of Completion	08 Years

Department wise Breakup of Estimate:

Sl.No.	Department	Cost in Rs. (Crs.)
1	CIVIL	1716.05
2	S & T	445.32
3	ELECTRICAL (Genl.)	42.11
4	ELECTRICAL (Trd.)	184.76
Total Rs.		2388.24

Year Wise Requirement of Funds:

Sr No.	Year	CIVIL	S&T	Elect. (G)	Elect. (Trd.)	Total
1	2015-16	20.00	0.00	0.00	0.00	20.00
2	2016-17	276.00	25.32	5.00	26.76	333.08
3	2017-18	350.00	90.00	7.00	35.00	482.00
4	2018-19	350.00	120.00	12.11	50.00	532.11
5	2019-20	350.00	120.00	9.00	40.00	519.00
6	2020-21	350.05	80.00	7.00	29.00	466.05
7	2021-22	10.00	5.00	1.00	2.00	18.00
8	2022-23	10.00	5.00	1.00	2.00	18.00
Total		1716.05	445.32	42.11	184.76	2388.24

2.1.13 YEAR WISE TARGETS FOR COMMISSIONING:

Sl.No.	YEAR	BLOCK SECTION	Nos. of Block Section	LENGTH (km)
1	2015-16	NIL	0	NIL
2	2016-17	NIL	0	NIL
3	2017-18	NIL	0	NIL
4	2018-19	Asifabad to Mandamari (ASAF to MMZ)	04	33.70
		Jamikunta to Raghwapuram (JMKT to RGPM)	07	47.60
			11	81.30
5	2019-20	Manikgarh to Asifabad (MAGH to ASAF)	09	74.60
6	2020-21	1- Hasanparti to Jamikunta (HSP to JMKT)	02	23.80
		2- Hasanparti to Kazipet(HSP-KZJ) &	02	11.80
		3- Ballarshah to Manikgarh (BPQ-MAGH)	01	9.54
			05	45.14
Total			25	201.04

Note: Commissioning of section planned from 2018-19 to 2020-21 as above. Outlay beyond 2020-21 i.e. for 2021-22 and 2022-23 is indicated for balance leftover works after commissioning.

- **REQUIREMENT OF LAND:**

Maximum land required for the construction of third line is proposed to be acquired. Number of cut and connections are proposed in order to avoid expensive land (built up area), dismantling of existing structures to be minimized and make utilization of available land. Total land proposed to be acquired is 160Hectares. The cost of wet lands, urban lands were obtained from local enquiries as well as revenue authorities.

Details of land covered by proposed line is given below:

a. Rural Agricultural land	....	100 Hect.
b. Semi-Urban land	....	20 Hect
c. Urban land	....	10 Hect
d. Forest Land	....	30 Hect
Total	....	160 Hect.

3.0 COST ESTIMATES :

3.1 CIVIL ENGINEERING:

3.1.1

1510: PRELIMINARY EXPENSES:

Sl. No.	Description	Qty.	Rate Rs.	Unit	Cash Rs.	Stores Rs.	Total Rs.
1	Survey Expenses including Plant & Establishment	201.04	44784.00	KM	9003375	0	9003375
	Total: Rs.				9003375	0	9003375

3.1.2

1520: LAND:

Sl. No.	Description	Qty.	Rate Rs.	Unit	Cash Rs.	Store Rs.	Total Rs.
1	Cost of land required for provision of third line						
	a) Rural Agricultural Land	100.00	1235000.00	Hect.	123500000	0	123500000
	b) Semi Urban Land	20.00	7175400.00	Hect.	143508000	0	143508000
	c) Urban Land	10.00	47836000.00	Hect.	478360000	0	478360000
	d) Forest land	30.00	3705000.00	Hect.	111150000	0	111150000
	Total	160.00		Hect.	856518000		856518000
	As per LARR - 2013, multiplication factor for land compensation is 2				1713036000		1713036000