D.G.P.S. SURVEY REPORT

Proposed Area – 2.128 ha.

Modification of 220KV DCDS CHURRI- KOTMIKALADUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

FOREST DIVISION	:	MARWAHI
DISTRICT	:	BILASPUR
RANGE	:	PENDRA
STATE	:	CHHATTISGARH

Name of the Applicant:

CHHATTISGARH STATE POWER TRANSMISSION CO. LTD
DANGANIYA RAIPUR,CHHATTISGARH.

PROJECT :

Modification of 220KV DCDS CHURRI- KOTMIKALADUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

THIS DGPS REPORT IS SUBMITTED BY AGENCY:

DGPS SURVEY AGENCY NAME :

“RAJIV SAHU”

Executive Engineer
(EHT : M&M.) Dn. CSPTCL KORBA

Divisional Forest Officer
Marwahi Division Pendra Road

INDEX

Executive Engineer
(EHT : Maint.) Dn. CSPTCL KORBA

1. ABOUT US

From last 15 years we are giving our services for civil construction and building work at Korba and surroundings. We are involve in survey from last 10 years. We are doing topographical survey by using Total Station and DGPS(last 2 year). Now we are introduce us in Drone Survey also from 2018

Scope of work :

1. Detail survey of land, marking all important amenities.
2. Route Survey for road and ash pipe line, water pipe line etc. Providing L-Section C- section.
3. Route Survey for canal (WRD Department).
4. Finding out Catchment area for Annicut proposal.
5. Area grading, Cut-fill Quantity Calculation
6. Route Survey for Electric Tower Spotting
7. Layout of building columns according to drawing. for Power Plant, multistory building, colonies etc.
8. Drone Survey for mapping.

Our valuable clients are:

1. NTPC, CHHATTISGARH
2. ACB INDIA LIMITED
3. INDU PROJECT LIMITED, HYDERABAD
4. NAGAR NIGAM, CHATTISGARH
5. CSEB, CHATTISGARH
6. PRASAD AND COMPANY(PROJECT WORKS)LIMITED
7. DC INDUSTRIAL PLANTSERVICES PRIVATE LIMITED
8. HOUSING BOARD, CHATTISGARH
9. VANDNA GLOBAL (VANDANA VIDYUT POWER PLANT &VANDNA ENERGY POWER PLANT , KORBA)
10. WATER RESOURCE DEPARTMENT, CHHATTISGARH
11. ACPL,HYDERABAD (ATHNA POWER PLANT)
12. SV POWER PLANT
13. HARSHA ABAKUS Pvt. ltd.(survey of land at Tilda & finding out Soil Resistivity of land)

We are also doing work for forest clearance also

PROPRITER:
Rajiv Sahu (BE Civil)
Mob:9827194408
H. No 64
Avinash Capital Homes
Saddu, Raipur

Rajiv Sahu

Executive Engineer
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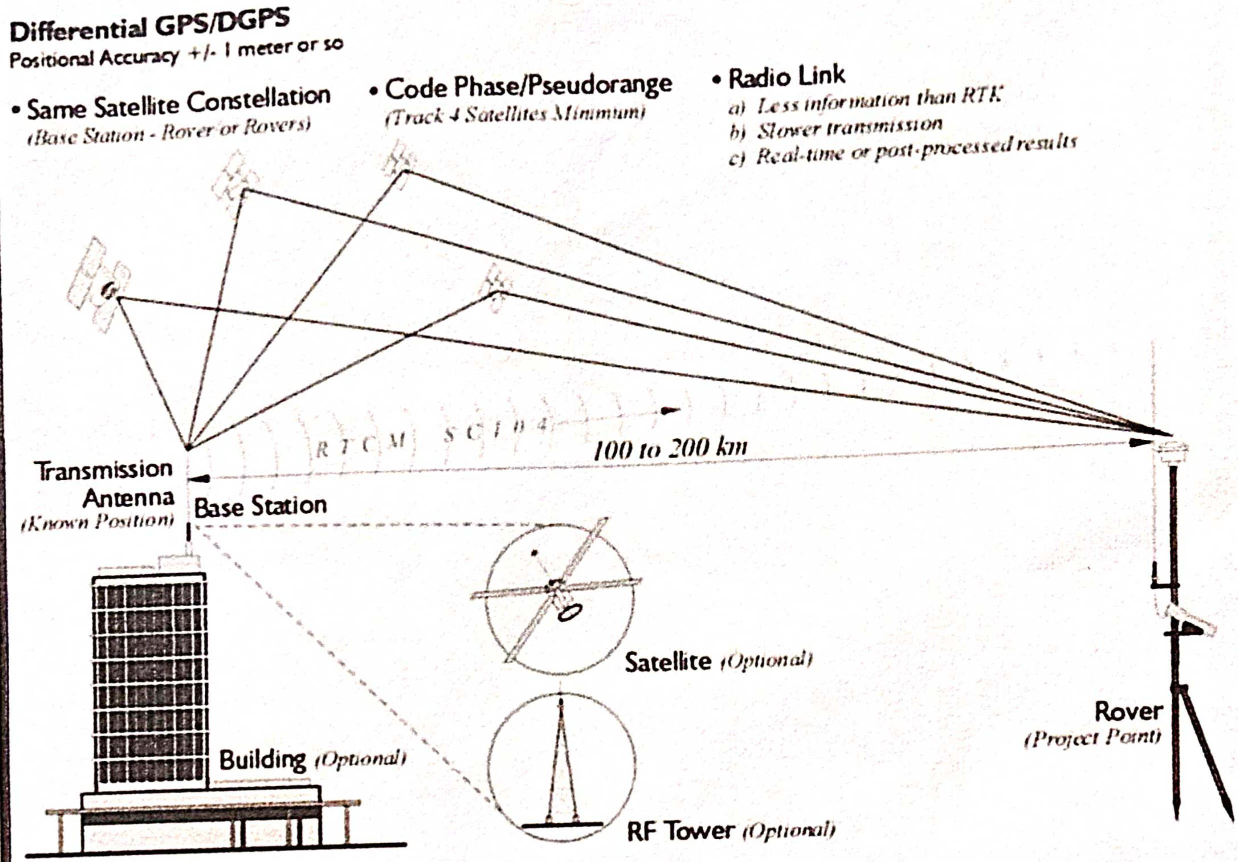
2. INTRODUCTION TO DGPS



The term DGPS is sometimes used to refer to differential GPS that is based on pseudo ranges, aka code phase. Even though the accuracy of code phase applications was given a boost with the elimination of Selective Availability (SA) in May 2000 consistent accuracy better than the 2•5 meter range still requires reduction of the effect of correlated ephemeris and atmospheric errors by differential corrections. Though the corrections could be applied in post processing services that supply these corrections, most often operatein real-time. In such an operation pseudo range based versions can offer meter •or even sub meter results.

Usually, pseudo range corrections are broadcast from the base to the rover or rovers for each satellite in the visible constellation. Rovers with an appropriate input/output (I/O) port can receive the correction signal and calculate coordinates. The real-time signal comes to the receiver over a data link. It can originate at a project specific base station or it can come to the user through a service of which there are various categories. Some are open to all users and some are by subscription only. Coverage depends on the spacing of the beacons, aka transmitting base stations, their power, interference, and so forth. Some systems require two-way, someone-way, communication with the base stations. Radio systems, geostationary satellites, low•earth•orbiting.

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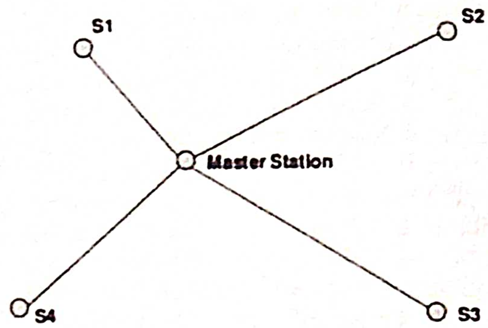
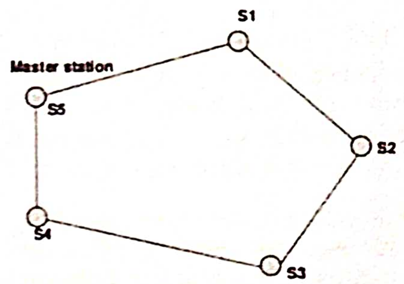
2. STATIC METHOD

I. Rapid Static Method



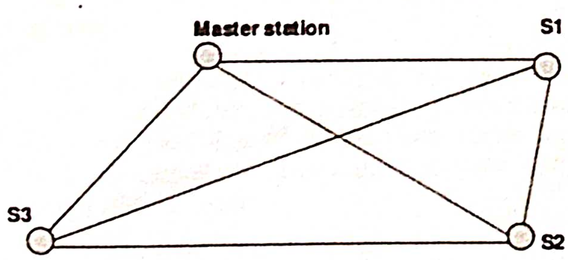
Schematic diagram of Rapid Static Method

II. Traverse Method



Schematic diagram of Traverse method

III. Trilateration Method



Trilateration method

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project points, the unknown positions, successively with more than one rover. It is best if these successive occupations are separated by at least 4 hours and not more than 8 hours so the satellite constellation can reach a significantly different configuration.

RTK and DGPS are radial. You have a known point in the middle, the base, and then the unknown points around it. This provides little geometric solidity .If there's an error in one of the sera dial base lines, it would be tough to catch it because there's no real redundancy .The illustration shows away around this difficulty. There are two receivers ,A and B, and it's possible by double occupation, one receiver going one way and the other going the other, by double occupying the unknown points to get some redundancy and some checks against the positions from a base. Another way to do it is to use one receiver. That receiver would occupy each points twice with forte eight hours between the first occupation and the second occupation on the point. Another way is to move the base to an other known point .Then if you have vectors from another base into these points, you have a check .This approach allows a solution to be available from two separate control stations. Obviously, this can be done with re-occupatio no the project points after one base station has been moved to a new control point ,o ratio base stations can be up and running from the very outset and through out of the work as would be the case using two CORS stations . It is best if there are both two occupations on each point and each of the two utilize different base stations.

A more convenient but less desirable approach is to do a second occupation almost immediately after the first .The roving receiver's an tennais blocked or tilted until the lock on the satellites is interrupted .It is then reoriented on the unknown position a second time for the repeat solution. This does offerasecondsolution, butfromvirtuallythesameconstellation.

More efficiency can be achieved by adding additional roving receivers. However, as the number of receivers rises ,the logistics become more complicated, and a survey plan becomes necessary . Also, project points that are simultaneously near one another but far from the control station should be directly connected with a base line to maintain the integrity of the survey. Finally, if the base receiver loses lock and it goes unnoticed, it will completely defeat the radial survey for the time it is down.

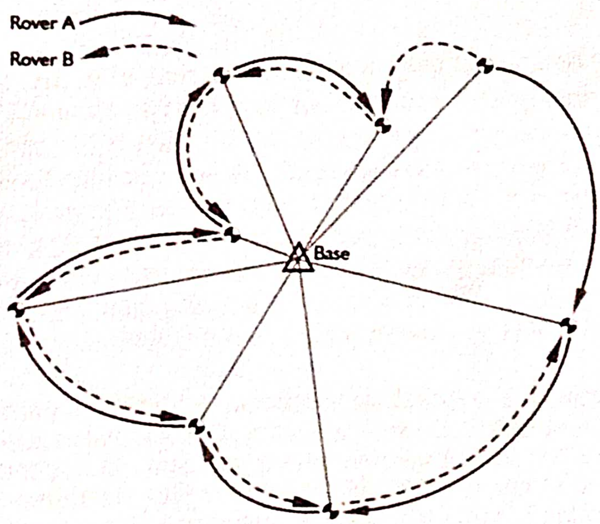
These are a few possibilities to consider when you are doing a real-time survey.

An advantage to continuously operating reference station network is that since those bases are operating simultaneously and all the time, it's possible to down load the positions from more than one base and process your new position based on these continuously operating reference stations and have some redundancy.

station whose position is known exactly, a base station .This base station receiver's computer can calculate its position from satellite data, compare that position with its actual known position, and find the difference .The resulting error correction scan be communicated from the base to the rover .It works well, but the errors are constantly changing so a base station has to monitor the mall the time ,at least all the time there over receiver or receivers are working. While this is happening the rovers move from place to place collecting the points whose positions you want to know relative to the base station ,which is the real objective after all .Then all you have to do is get those base station corrections and the rover's data together somehow. That combination can be done over a data link in real-time or applied dl at era post processing.

Real-time positioning is built on the foundation of the idea that, with the important exceptions of multi path and receiver noise, GPS error sources are correlated. In other words, the closer the rover is to the base the more the errors at the ends of the base line match. The shorter the base line ,the more the errors are correlated .The longer the base line ,the less the errors are correlated.

The base station is at a known point, whether it was on a building permanently or it's a tripod mounted base station. The fact that it is in a known position allows the base station to produce corrections .The constellation is telling the base station that it is in a slightly different place ,so corrections can be created to sent to the rover at the unknown point .The corrections are applied in real
time.



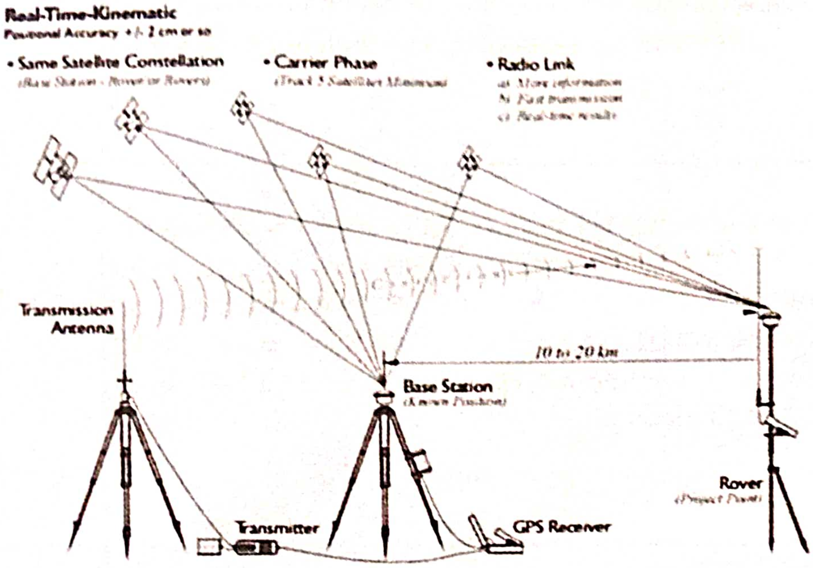
RADIAL GPS

Such real-time surveying is essentially radial. There are advantages to the approach.The advantage is a large number of positions can be established in as hurt amount of time with little or no planning .The disadvantage is that there is little or no redundancy in positions derived ,each of the baselines originates from the same control station. Redundancy can be incorporated, but it requires repetition of the observations so each baseline is determined with more than one GPS constellation. One way to do It is to occupy the

SURVEY METHOD

1 RTK (Real Time Kinematic)
2 STATIC METHOD

1 Real-Time Kinematic



Most, not all, GPS surveying relies on the idea of differential positioning. The mode of a base or reference receive rata known location logging data at the same time as a receiver at an unknown location together provide the fundamental information for the determination of accurate coordinates. While this basic approach remains today, the majority of GPS surveying is not done in the static post processed mode. Post processing is most often applied to control work. Now, the most commonly used methods utilize receiver son reference stations that provide correction signals to the end user via a data link sometimes over the Internet ,radio signal , or cell phone and often inreal-time.

In this category of GPS surveying work there is sometime sad distinction made between code• based and carrier based solutions. In fact, most systems use a combination of code and carrier measure men tsetse distinction is more amateur of emphasis rather than an absolute difference. Well that's abet of discussion about static surveying, but as you know, a good deal of GPS these days is done not static .Much work is now done with DGPS or real-time kinematic, RTK.

Errors in satellite clocks, imperfect orbits, the troth rough the layers of the atmosphere, and many other sources contribute in accuracies to GPS signals by the time they reach a receiver.

These errors are variable, so the best to way to correct the mistook monitor them as they happen. Ago Ordway to do this is to setup a GPS receiver on a

3. About the Project

Title:	Modification of 220kv dcds churri- kotmikaladue to construction of new bg electrified east-west rail corridor
Description:	Modification of 220KV DCDS Churri- Kotmikala due to construction of new BG Electrified East-West Rail corridor from Gevra Road to Pendra Road Railway line between loc. No. 278-281 having R.L. 1.03 Km under deposited scheme under EE (EHT-Maint). Village : Kesla
Actual Route Length:	605 Meter

Executive Engineer
(EHT : Maint.) Dn. CSPTCL KORBA

4. INTRODUCTION TO SURVEY SITE

The survey site located at Kesla Village.(PASAN),Range name is pendra,Distt. Bilaspur, Division Marwahi,**Chhattisgarh**.

Modification of 220KV DCDS CHURRI- KOTMIKALADUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

		UTM				
SNO.	LOC.NO.	EASTING	NORTHING	NORTHING	EASTING	TYPE OF TOWER
1	EXISTING LOC. NO.281	615246.978	2523198.791	22°48'44.90"	82°7'22.69"	(A2+0)
2	AP-1	615487.464	2523053.462	22°48'40.05"	82°7'31.13"	BN60+9M
3	AP-2	615548.74	2522964.779	22°48'37.19"	82°7'33.23"	BN60+18M
4	AP-3	615629.406	2522779.387	22°48'31.15"	82°7'36.00"	BN60+18M
5	AP-4	615732.095	2522762.162	22°48'30.58"	82°7'39.55"	BN30+3M
6	AP-5	615910.443	2522798.336	22°48'31.72"	82°7'45.85"	BN60+0
7	EXISTING LOC. NO.278	61065.9184	2523198.792	22°48'28.60"	82°7'51.29"	(A2+0)

Executive Engineer
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5. CO ORDINATE FOR THREE ALTERNATE ROUTE

Modification of 220KV DCDS CHURRI- KOTMIKALADUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

PROPOSED ROUTE

UTM COORDINATE FOR PROPOSED ROUTE, LENGTH 608 METER, AREA 2.128 HACT

		UTM						
SNO.	LOC.NO.	EASTING	NORTHING	LATITUDE	LONGITUDE	TYPE OF TOWER	DEVIATION	SPAN
2	AP-1	615487.464	2523053.462	22°48'40.05"	82°7'31.13"	BN60+9M	08°59'10" RT	290 MT
3	AP-2	615548.74	2522964.779	22°48'37.19"	82°7'33.23"	BN60+18M	11°28'49" RT	108 MT
4	AP-3	615629.406	2522779.387	22°48'31.15"	82°7'36.00"	BN60+18M	57°55'23" LT	202 MT
5	AP-4	615732.095	2522762.162	22°48'30.58"	82°7'39.55"	BN30+3M	21°10'40" LT	105 MT
6	AP-5	615910.443	2522798.336	22°48'31.72"	82°7'45.85"	BN60+0	42°48'12" LT	190 MT
							DISTANCE FROM AP-1 TO AP-5	608 MT

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ALTERNATE-OPTION-1

Modification of 220KV DCDS CHURRI- KOTMIKALADUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

UTM COORDINATE FOR ALTERNATE OPTION-1 , LENGTH 805.5 METER, AREA 2.652 HACT

		UTM				
SNO.	LOC.NO.	EASTING	NORTHING	LATITUDE	LONGITUDE	SPAN
1	AP-1	685296.317	2514051.659	22°43'25"	82°48'15"	0 MT
2	AP-2	685483.973	2514039.868	22°43'24.93"	82°48'21.80"	190 MT
3	AP-3	685718.839	2514002.137	22°43'23.23"	82°48'30.01"	240 MT
4	AP-4	685879.35	2513846.497	22°43'18.10"	82°48'35.57"	225 MT
5	AP-5	685881.882	2513694.292	22°43'13.16"	82°48'35.59"	150.5 MT
					TOTAL ROUTE DISTANCE	805.5 MT

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ALTERNATE OPTION-2

Modification of 220KV DCDS CHURRI- KOTMIKALA DUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

UTM COORDINATE FOR ALTERNATE OPTION-2 , LENGTH 1550 METER, AREA 5.3819 HACT

		UTM		LAT/LONG		
SNO.	LOC.NO.	EASTING	NORTHING	LATITUDE	LONGITUDE	SPAN
1	AP-1	685027.323	2514219.71	22°43'30.57"	82°48'5.87"	0 MT
2	AP-2	685070.057	2514045.514	22°43'24.89"	82°48'7.30"	178 MT
3	AP-3	685187.443	2513938.118	22°43'21.36"	82°48'11.36"	157.5 MT
4	AP-4	685251.056	2513692.822	22°43'13.36"	82°48'13.49"	250 MT
5	AP-5	685432.806	2513616.196	22°43'10.80"	82°48'19.82"	195 MT
6	AP-6	685668.354	2513558.027	22°43'8.81"	82°48'28.05"	255 MT
7	AP-7	686185.541	2513532.335	22°43'7.77"	82°48'46.17"	515 MT
					TOTAL ROUTE DISTANCE	1550 MT

Executive Engineer
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6. COMPARATIVE STATEMENT FOR ALTERNATIVE ROUTE

SELECTION CRITERIA FOR TRANSMISSION LINE ROUTE

- The alignment of the transmission line should be most economical from the point of view of construction and maintenance.
- Routing of transmission line through protected/reserved forest area should be avoided. In case it is not possible to avoid the forests or areas having large trees completely, and then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees are minimum
- The alignment of the transmission line selected should be the shortest possible one.
- The route should have minimum crossings of Major River, Railway lines, National/State highways, overhead EHV power line and communication lines.
- The number of angle points shall be kept to a minimum.
- It would be preferable to utilize level ground for the alignment.
- Crossing of communication line shall be minimized and it shall be preferably at right angle. Proximity and parallelism with telecom lines shall be eliminated to avoid danger of induction to them.
- Areas subjected to flooding such as nala shall be avoided.
- All alignment should be easily accessible both in dry and rainy seasons to enable maintenance throughout the year.
- Certain areas such as quarry sites, tea, tobacco and saffron fields and rich plantations, gardens & nurseries which will present the Owner problems in acquisition of right of way and way leave clearance during construction and maintenance should be avoided.
- Angle points should be selected such that shifting of the point within 100 m radius is possible at the time of construction of the line.
- The line routing should avoid large habitations, densely populated areas, **Forest**, Animal/Bird sanctuary, reserve coal belt areas, oil pipe line/underground inflammable pipe lines etc. to the extent possible.
- The areas requiring special foundations and those prone to flooding should be avoided.

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COMPARATIVE STATEMENT FOR ALTERNATIVE ROUTES

Modification of 220KV DCDS CHURRI- KOTMIKALA DUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

Discription	Proposed route	Aternate Route-1	Alternate Route-3
Colour in map	Red	Pink	Blue
Route Length	608 Mt	805.5 Mt	1550 Mt
BEE Length	494 Mt	685 Mt	1348 Mt
No. Angle Point	5 No.	5 No.	7 No.
Forest Area Type	Protected Forest	Protected Forest	Protected Forest
Forest Area	2.128 Hact	2.652 Hact.	5.3819 Hact
Density of tree other than forest			
Wild Sanctury/National park	No	No	No
Rivers Crossing	No	No	No
National Highway	No	No	No
State Highway	No	No	No
Railway Crossing	No	No	No
Places of Archological importance	No	No	No

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7. AREA SUMMARY REPORT

Modification of 220KV DCDS CHURRI- KOTMIKALA DUE TO CONSTRUCTION OF BG RAILWAY LINE FROM GEVRA ROAD TO PENDRA ROAD. VILLAGE : KESLA

Protected Forest Land Proposed Area Statement (in Ha)								
Sl. NO.	Loc. No.	RANGE NAME	DIVISION	District	Land type	Old_Compt	New_Compt	Area ha.
1	Exist Loc No. 278-281	Pendra	Marwahi	Bilaspur	Protected Forest	P1456	P2357	2.128
Total Protected Forest Land Proposed Area (in Ha) 2.128								

Divisional Forest Officer
Marwahi Division Pendra Road

Executive Engineer
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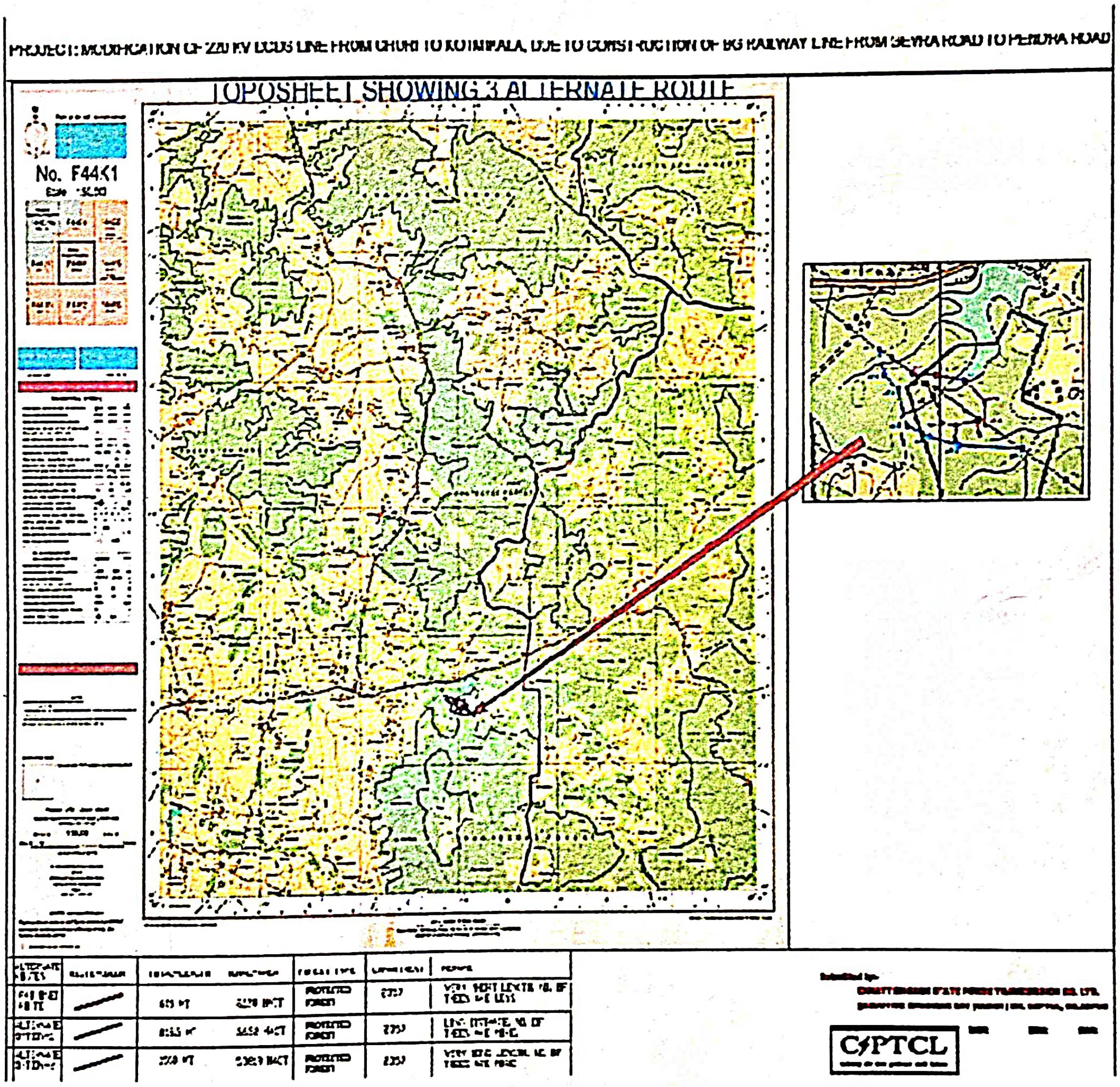
8. ROUTE INDEX MAP

3-ROUTE INDEX MAP

THREE ALTERNATE ROUTE ON TOPOSHEET



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