D.G.P.S. SURVEY REPORT

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:

Executive Engineer
(EHT: Maint.) Dn. CSPTCL, Korba

DGPS SURVEY AGENCY NAME :

"RAJIV SAHU"

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ENCLOSED DATA

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DATA ENCLOSED IN SOFT COPY

1. SURVEY REPORT
2. KML FILE
3. SHP FILE
4. MAPS IN JPEG AND PDF FORMAT

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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.

PROPRIETOR:
ER. RAJIV SAHU
B.E. (CIVIL)

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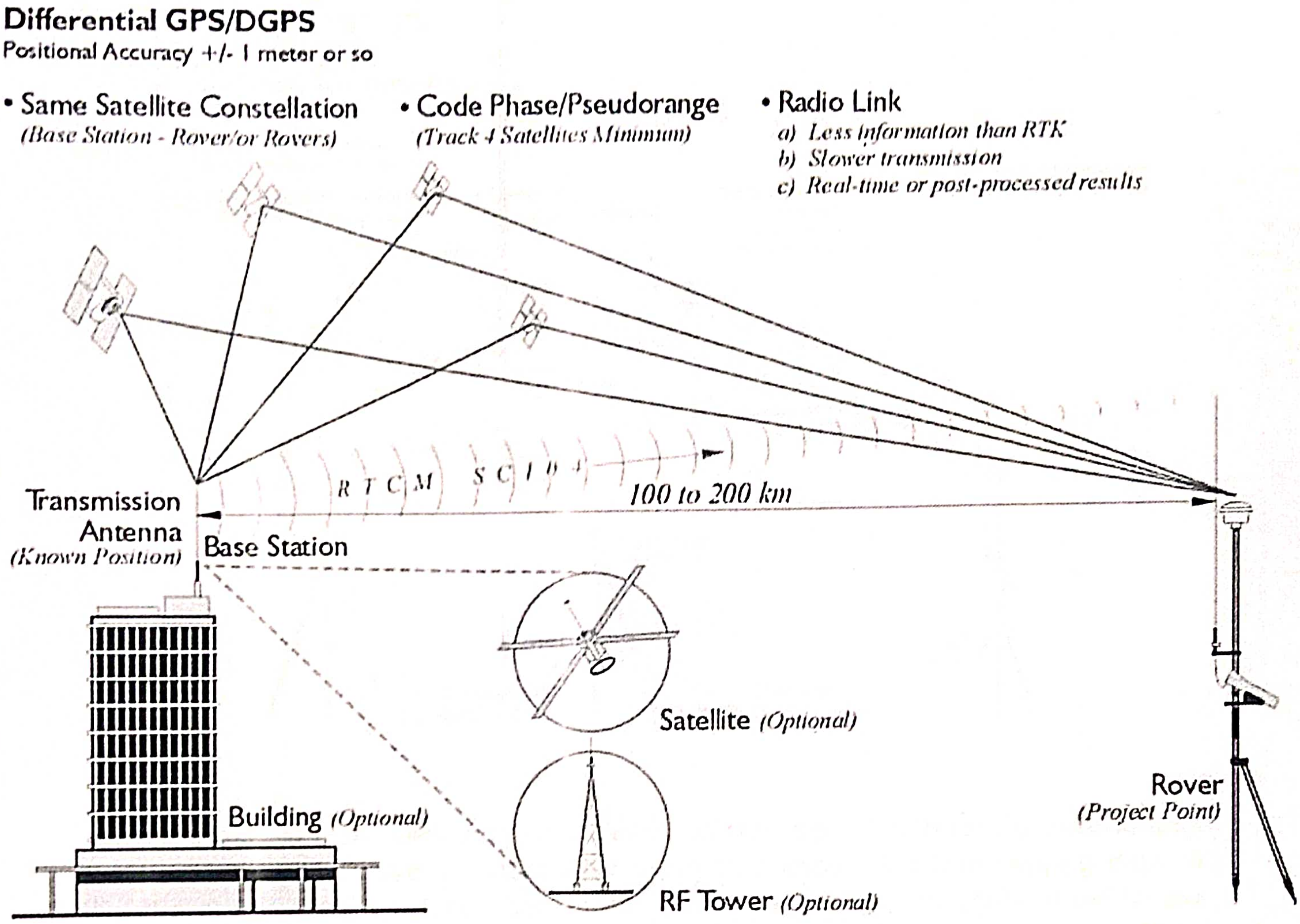
2. INTRODUCTION TO DGPS



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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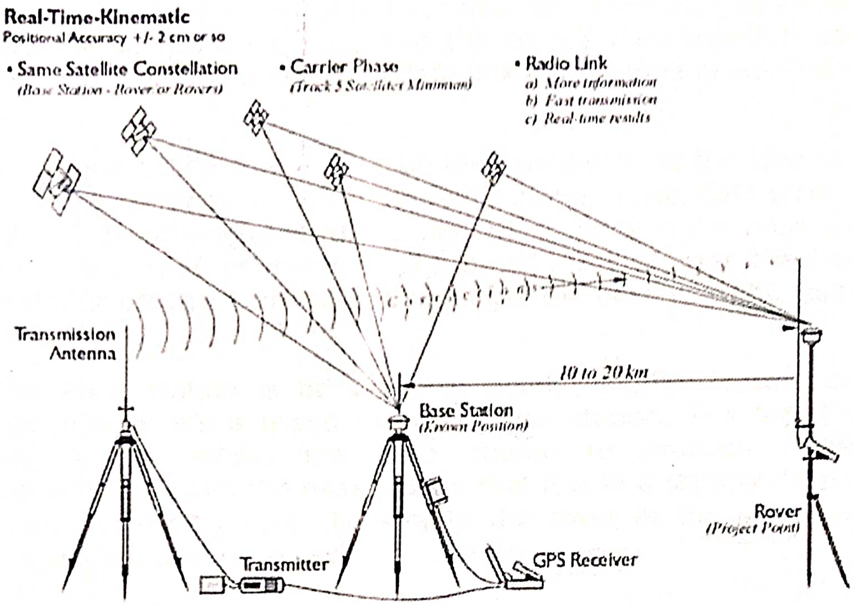
SURVEY METHOD

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

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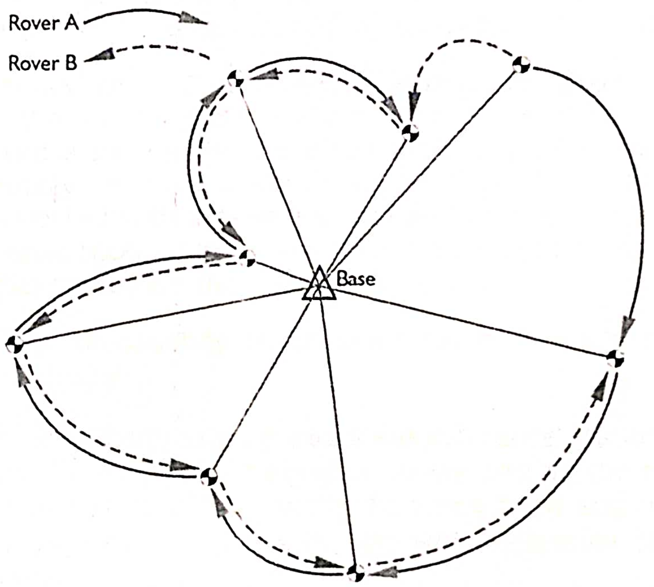
station whose position is known exactly, a base station .This base station receiver's computer can calculate its position from satellite data, compare that position with its actual known position, and find the difference .The resulting error correction scan be communicated from the base to the rover .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

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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.

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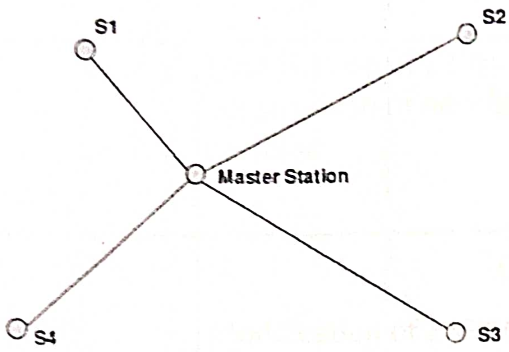
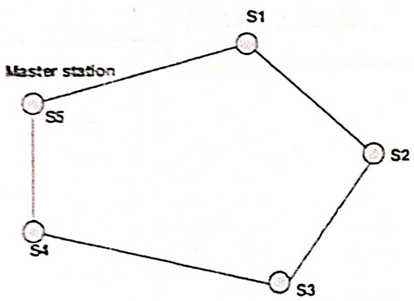
2. STATIC METHOD

I. Rapid Static Method



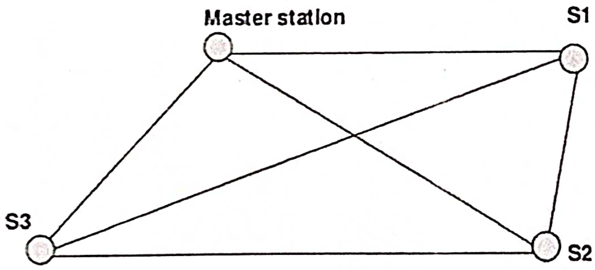
Schematic diagram of Rapid Static Method

II. Traverse Method



Schematic diagram of Traverse method

III. Trilateration Method



Trilateration method

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3. About the Project

Title:	Modification of 220kv dcds churri- kotmikaladue to construction of new bg electrified east-west rail corridor
Discription:	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

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4. INTRODUCTION TO SURVEY SITE

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

DGPS SURVEY DATA OF SITE

EASTING-NORTHING DETAIL FOR AREA OF CA LAND,4.3 HACT

	DMS CO-ORDINATE		UTM CO-ORDINATE	
SR. NO.	X(Easting)	Y(Northing)	Easting	Northing
1	616108.6226	2521772.46	82° 7'52.52"E	22°47'58.31"N
2	616119.8953	2521760.725	82° 7'52.91"E	22°47'57.93"N
3	616129.836	2521751.241	82° 7'53.26"E	22°47'57.62"N
4	616139.9403	2521738.834	82° 7'53.61"E	22°47'57.21"N
5	616147.8966	2521727.004	82° 7'53.89"E	22°47'56.83"N
6	616158.6665	2521713.25	82° 7'54.26"E	22°47'56.38"N
7	616165.2168	2521700.031	82° 7'54.49"E	22°47'55.94"N
8	616162.8048	2521676.43	82° 7'54.39"E	22°47'55.18"N
9	616174.447	2521654.142	82° 7'54.80"E	22°47'54.45"N
10	616168.8767	2521631.06	82° 7'54.60"E	22°47'53.70"N
11	616161.5005	2521611.985	82° 7'54.33"E	22°47'53.08"N
12	616148.637	2521584.815	82° 7'53.87"E	22°47'52.20"N
13	616132.4966	2521558.484	82° 7'53.30"E	22°47'51.35"N
14	616120.9217	2521533.362	82° 7'52.89"E	22°47'50.54"N
15	616108.2882	2521511.614	82° 7'52.44"E	22°47'49.83"N
16	616084.9039	2521517.108	82° 7'51.62"E	22°47'50.02"N
17	616067.6095	2521518.494	82° 7'51.01"E	22°47'50.07"N
18	616052.0207	2521519.373	82° 7'50.47"E	22°47'50.10"N
19	616022.6621	2521504.79	82° 7'49.43"E	22°47'49.63"N
20	616015.1233	2521490.009	82° 7'49.17"E	22°47'49.15"N
21	616006.9055	2521479.897	82° 7'48.87"E	22°47'48.83"N
22	615990.359	2521494.074	82° 7'48.18"E	22°47'49.02"N
23	615972.9644	2521509.693	82° 7'47.69"E	22°47'49.80"N
24	615959.8436	2521523.018	82° 7'47.24"E	22°47'50.24"N
25	615945.9365	2521534.698	82° 7'46.75"E	22°47'50.62"N
26	615930.3016	2521544.384	82° 7'46.21"E	22°47'50.94"N
27	615912.3099	2521552.455	82° 7'45.58"E	22°47'51.21"N
28	615891.5938	2521559.626	82° 7'44.85"E	22°47'51.45"N
29	615869.7926	2521571.194	82° 7'44.09"E	22°47'51.83"N
30	615878.4054	2521593.124	82° 7'44.40"E	22°47'52.54"N
31	615886.362	2521607.579	82° 7'44.68"E	22°47'53.01"N
32	615898.1051	2521621.162	82° 7'45.10"E	22°47'53.45"N
33	615925.9202	2521634.093	82° 7'46.08"E	22°47'53.86"N

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34	615952.655	2521639.711	82° 7'47.02"E	22°47'54.04"N
35	615977.1222	2521628.277	82° 7'47.87"E	22°47'53.66"N
36	615991.4472	2521649.93	82° 7'48.38"E	22°47'54.36"N
37	616007.451	2521639.231	82° 7'48.94"E	22°47'54.01"N
38	616025.3853	2521662.848	82° 7'49.57"E	22°47'54.77"N
39	616035.5456	2521675.478	82° 7'49.93"E	22°47'55.18"N
40	616043.9893	2521687.347	82° 7'50.23"E	22°47'55.56"N
41	616053.3764	2521700.509	82° 7'50.59"E	22°47'55.97"N
42	616063.0974	2521712.51	82° 7'50.94"E	22°47'56.35"N
43	616074.9789	2521728.627	82° 7'51.43"E	22°47'56.86"N
44	616083.9396	2521739.956	82° 7'51.70"E	22°47'57.20"N
45	616097.2673	2521760.86	82° 7'52.21"E	22°47'57.91"N

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