COMPENSATORY AFFORESTATION LAND AGAINST 2.025 HA. ALTERNATE APPROACH ROAD AT CHHOTEDONGAR IRON ORE MINE OF JAYASWAL NECO INDUSTRIES LIMITED. TOTAL PRIVATE LAND FOR CA ABOUT 2.050 HA. AT VILLAGE KODO SALEBHAT.

FOREST DIVISION WEST BHANUPRATAPPUR
DISTRICT KANKER
CHHATTISGARH

D.G.P.S. SURVEY REPORT

PREPARED BY:

COMPUTER PLUS
SOFTWARE DEVELOPMENT & CONSULTANCY
Certified: ISO 9001:2015

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COMPENSATORY AFFORESTATION LAND AGAINST 2.025 HA. ALTERNATE APPROACH ROAD AT CHHOTEDONGAR IRON ORE MINE OF JAYASWAL NECO INDUSTRIES LIMITED. TOTAL PRIVATE LAND FOR CA ABOUT 2.050 HA. AT VILLAGE KODO SALEBHAT.

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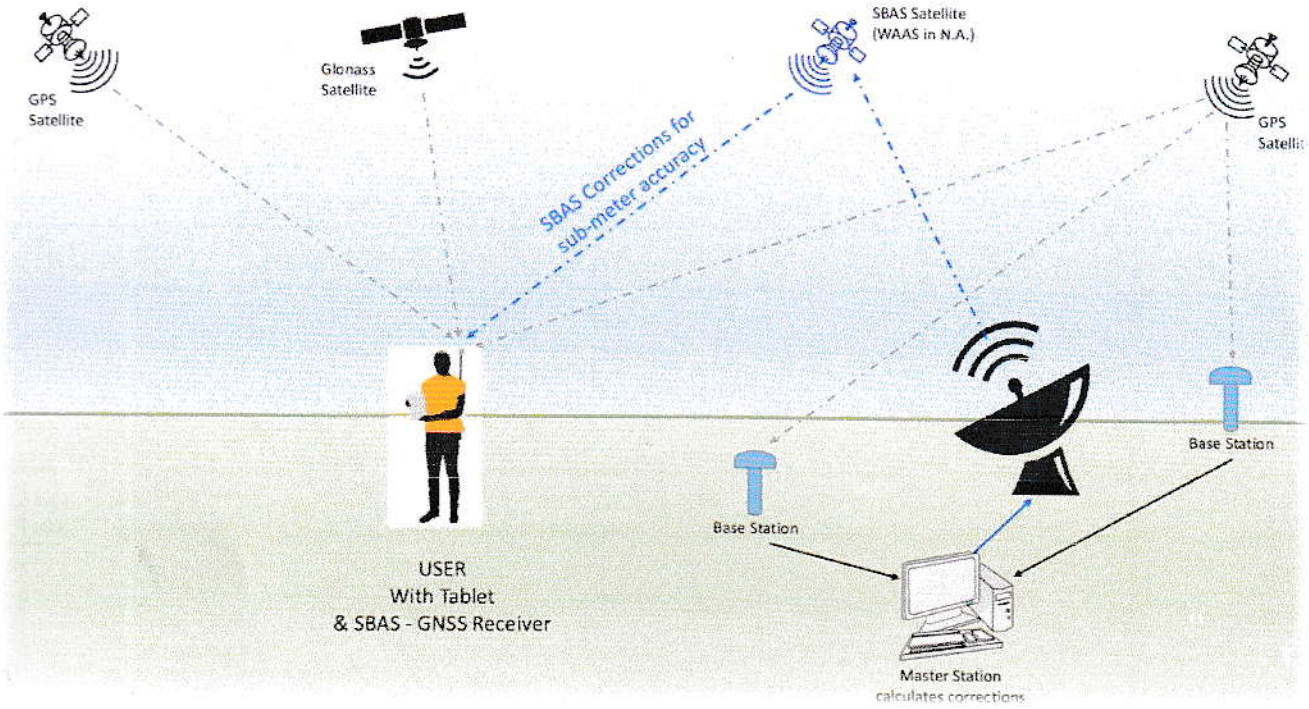


JAYASWAL NECO INDUSTRIES LTD. RAIPUR (C.G.)

COMPUTER PLUS RAIPUR PVT. LTD. * RAIPUR *

Submitted To

M/s Jayaswal Neco Industries Limited,
Siltara, Raipur
Chhattisgarh

Report Prepared By

Computer Plus Raipur Pvt. Ltd.
Software Development & Consultancy
Devendra Nagar, Raipur, (C.G.)

TABLE OF CONTENTS

MAPS ON A3 & A0 PAPER SIZE PRINTOUT

DATA ENCLOSED IN SOFT COPY

1. ABOUT US

Computer Plus Raipur Pvt. Ltd. an **ISO 9001:2015 certified** organization working in the field of I.T. Consulting & Software Services. We are registered organization under **Directorate of Geology and Mining, Chhattisgarh**. We are serving since 1998 & head office in Raipur, (C.G.), with core competence in the areas of Integrated Business Solutions with Implementation and Support.

Our Team:

We're justifiably proud of the team we've assembled. Initially numbering just two programmers, **Computer Plus Raipur Pvt. Ltd.** has grown steadily and now has over 250 staff members. The **Computer Plus Raipur Pvt. Ltd.** team is made up of highly-qualified, talented and innovative IT and GIS professionals each with their own area of expertise. Their experience spans the full range of custom software development, from small entrepreneurial projects to complex systems for major corporations.

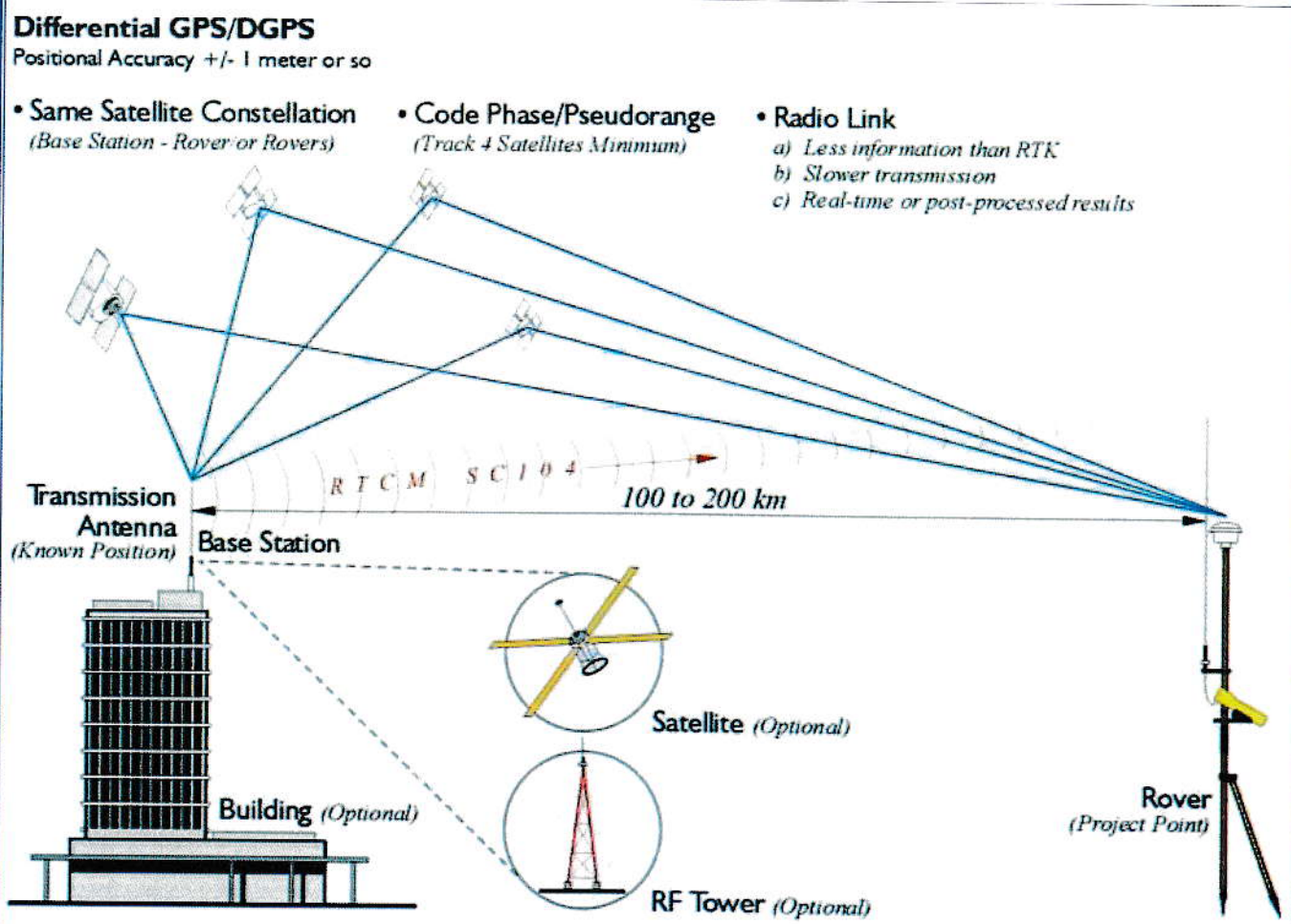
Our Mission:

Computer Plus Raipur Pvt. Ltd. mission is to solve challenging technical problems in partnership with our clients.
How we achieve it:

- We understand the business needs of our clients, and how technology can be a tool to make modern businesses more profitable for both private and government sector.
- **Computer Plus Raipur Pvt. Ltd.** combines technical excellence with great customer service and value for money.
- We value creativity and collaboration; ideas are shared and everybody contributes on an individual basis toward the common goal.

  We create new teams for each project, ensuring the best possible combination of skills and experience to meet the client's needs and deliver high quality solutions.

2. INTRODUCTION TO DGPS



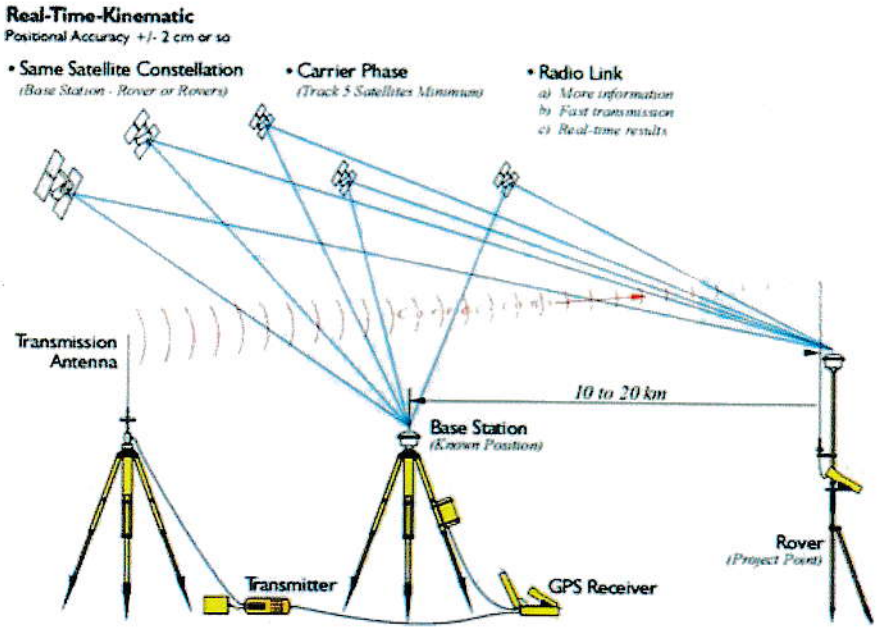
The term DGPS is sometimes used to refer to differential GPS that is based on pseudo ranges, aka code phase. Even though the accuracy of code phase applications was given a boost with the elimination of Selective Availability (SA) in May 2000 consistent accuracy better than the 2-5-meter range still 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 operate in real-time. In such an operation pseudo range-based version 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, some one-way, communication with the base stations. Radio systems, geostationary satellites, low-earth-orbiting.

SURVEY METHOD

1) RTK (Real Time Kinematic)

A. Real-time Kinematic



Most, not all, GPS surveying relies on the idea of differential positioning. The mode of a base or reference receiver at a 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 receivers on 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 in real-time.

In this category of GPS surveying work there is sometimes a distinction made between code- based and carrier-based solutions. In fact, most systems use a combination of code and carrier measurements so the distinction is more a matter of emphasis rather than an absolute difference. Well that's a bit 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.

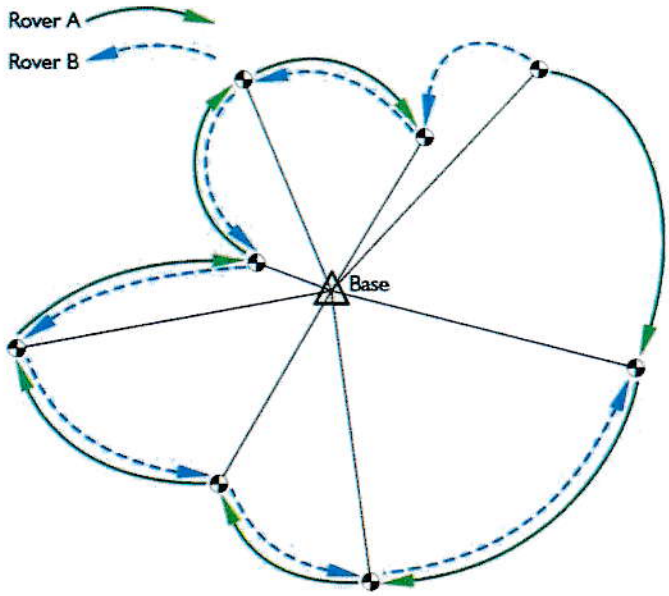
Errors in satellite clocks, imperfect orbits, the trip through the layers of the atmosphere, and many other sources contribute inaccuracies to GPS signals by the time they reach a receiver.

These errors are variable, so the best to way to correct them is to monitor them as they happen. A good way to do this is to set up a GPS receiver on a 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 corrections can be communicated from the base to the rover. It works well, but the errors are constantly changing so a base station has to monitor them all the time, at least all the time the rover 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 later in post processing.

Real-time positioning is built on the foundation of the idea that, with the important exceptions of multipath 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 baseline match. The shorter the baseline, the more the errors are correlated. The longer the baseline, 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 send 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 a short 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 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 these radial base lines, it would be tough to catch it because there's no real redundancy. The illustration shows a way 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 point twice with four to eight hours between the first occupation and the second occupation on the point. Another way is to move the base to another 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-occupation of the project points after one base station has been moved to a new control point, or two base stations can be up and running from the very outset and throughout 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 antenna is blocked or tilted until the lock on the satellites is interrupted. It is then re-oriented on the unknown position a second time for the repeat solution. This does offer a second solution, but from virtually the same constellation.

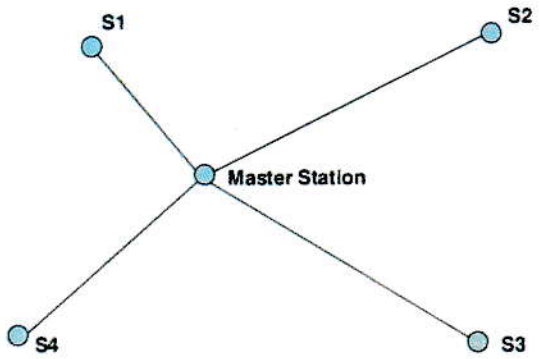
More efficiency can be achieved by adding additional roving receivers. However, as the number of receivers rises, the logistics become more complicated, and a survey plan becomes necessary. Also, project points that are simultaneously near one another but far from the control station should be directly connected with a baseline 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 download the positions from more than one base and process your new position based on these continuously operating reference stations and have some redundancy.

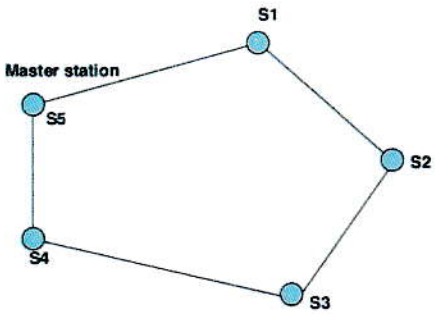
2) STATIC METHOD

I. Rapid Static Method



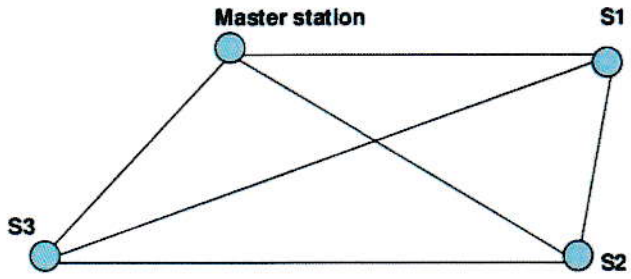
Schematic diagram of Rapid Static Method

II.Traverse Method



Schematic diagram of Traverse method

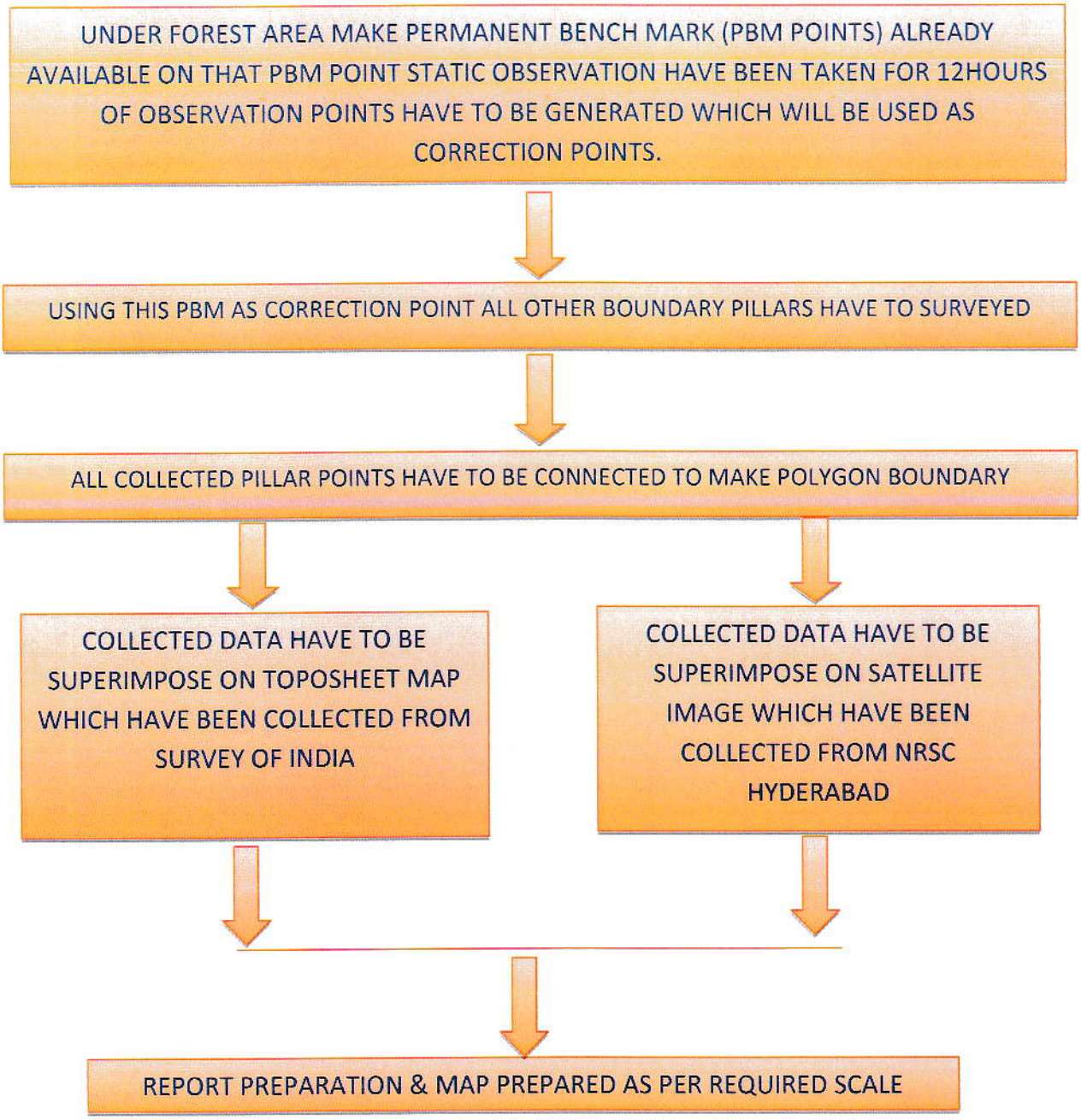
III. Trilateration Method



Trilateration method

3. METHODOLOGY USED

Following Methodology have been adopted for DGPS Survey of the proposed site.



4. DETAILS OF SURVEYED SITE

The surveyed area **Compensatory Afforestation Land Against 2.025 Ha. Alternate Approach Road At Chhotedongar Iron Ore Mine Of Jayaswal Neco Industries Limited. Total Private Land For Ca About 2.050 Ha. At Village Kodo Salebhat,** which comes under **Block Pakhanjur, District Kanker, State Chhattisgarh**. Survey site comes under **Forest Division West-Bhanupratappur, Forest Range Koylibeda and Forest Circle Kanker.**

It is covered in Survey of India Toposheet No. **65A/13**.

Details of area surveyed and land details are given below:

AREA DETAILS & LAND CLASSIFICATION

Sr. No.	District Name	Division Name	Range Name	Block Name	Village Name	Khasra No.	Land Type	Area (In Hectare)
1	Kanker	West - Bhanupratappur	Koylibeda	Pakhanjur	Kodo salebhat	18	Private Land	2.050
Total Area								**2.050**

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परिक्षेत्र अधिकारी
कोयलीबेड़ा

वन मण्डलाधिकारी
पश्चिम भानुप्रतापपुर वनमंडल
भानुप्रतापपुर

उप वन मण्डलाधिकारी
(पूर्व) कांपसी उप वनमण्डल

5. CONTROL POINTS

Primary Control Point (Fixing of Base Station Point)

Details of primary control points used for fixing of Base Station Point are given below.

Primary Control Point (Fixing of Base Station Point)

Sr.No.	Point ID	Geographical Coordinate		UTM Coordinate		
		Longitude	Latitude	Easting	Northing	Height
1	BP 1	80° 56' 10.708" E	19° 59' 53.604" N	493337.390000	2211285.975000	331.590
2	BP 2	80° 56' 12.830" E	19° 59' 54.778" N	493399.067000	2211322.035000	327.508

Surveyed Ground Control Points

Point ID	Geographical Coordinate		UTM Coordinate		
	Longitude	Latitude	Easting	Northing	Height
1	80° 56' 5.700" E	19° 59' 54.900" N	493191.881079	2211325.861752	331.856
2	80° 56' 8.100" E	19° 59' 54.200" N	493261.610282	2211304.317568	332.798
3	80° 56' 14.100" E	19° 59' 52.900" N	493435.939217	2211264.290832	331.018
4	80° 56' 14.800" E	19° 59' 54.300" N	493456.295454	2211307.317684	330.811
5	80° 56' 10.318" E	19° 59' 56.259" N	493326.072113	2211367.571200	330.196
6	80° 56' 10.700" E	19° 59' 57.000" N	493337.192030	2211390.357606	328.521
7	80° 56' 10.200" E	19° 59' 57.000" N	493322.663443	2211390.363136	329.888
8	80° 56' 7.000" E	19° 59' 58.300" N	493229.695922	2211430.359386	330.852

JAISWAL NECO INDUSTRIES LTD RAIPUR (C.G.)

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कोयलीबेडा

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भानुप्रतापपुर

उप वन मण्डलाधिकारी
(पूर्व) उप वनमण्डल

6. SURVEY DATE

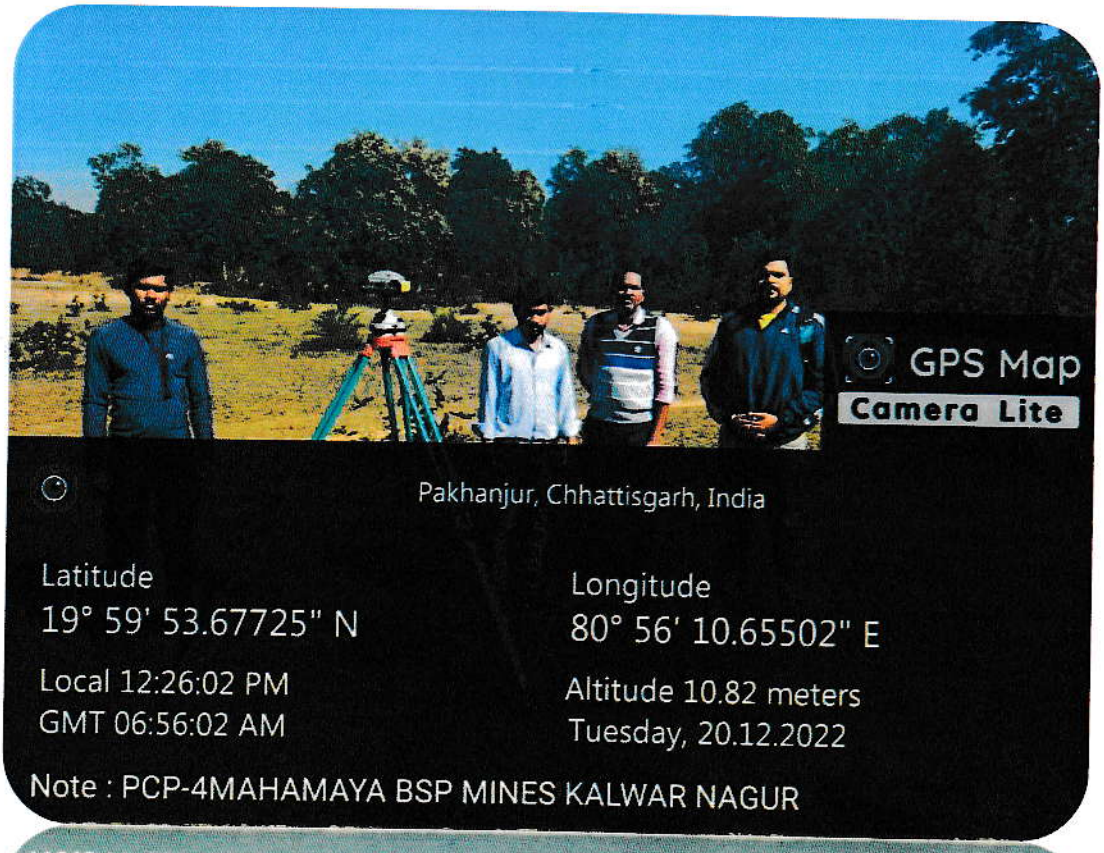
Survey Date	Observation	Survey Time	Village
20/12/2022	Base Observation	12:20 PM To 02.20 PM	Kodo salebhat
	Pillar Survey	01:00 PM To 04.00 PM	

Weather was pleasant with clear sun light. Survey point marking and temporary pillar posting has been done by a team of **Computer plus Raipur Pvt. Ltd.** comprising of following members:

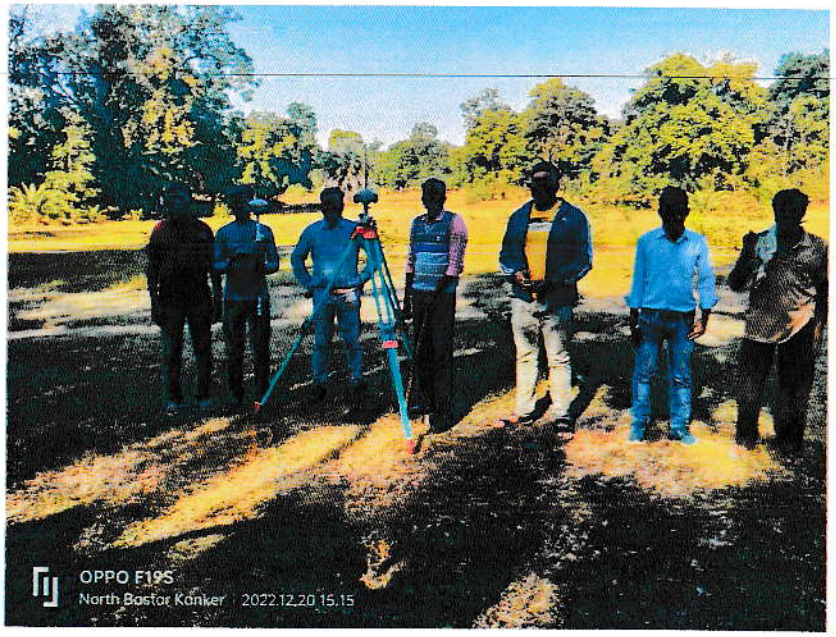
1. Mr. Surendra Pratap Singh
2. Mr. Leeladhar Nishad

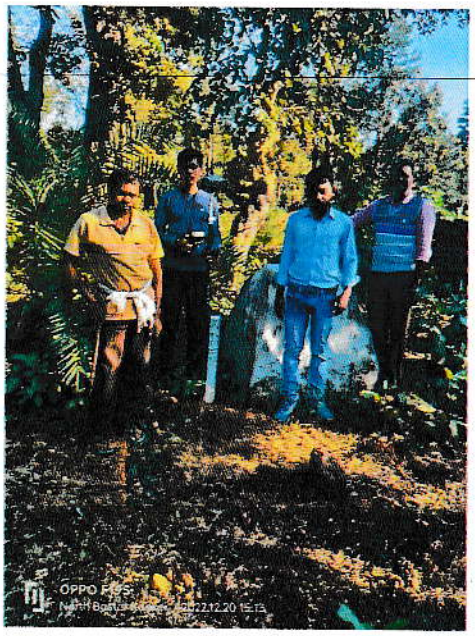
3. The team was Leaded by **Mr. Surendra Pratap Singh** and Report is prepared by **Mr. Omshankar**.

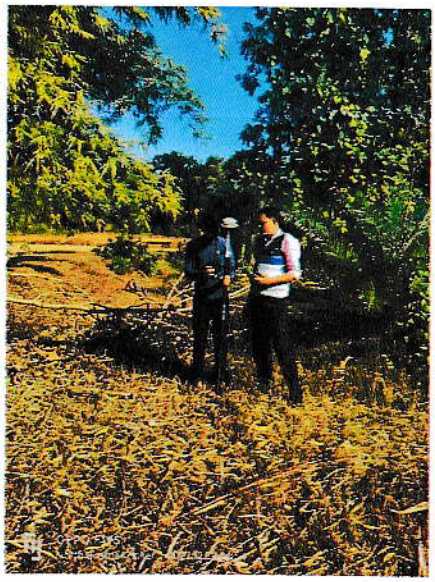
➢ Base Station Photographs



Survey Photographs







Pillar Photographs








Thank You!

DGPS SURVEY & REPORT PREPARED BY:

COMPUTER PLUS

Software Development & Consultancy

Plot No. 4 Sector-1, Devendra Nagar
Raipur (C.G.) 492001
Phone No: 0771 4031077 M: 7587113793
E-mail: info@cplus.in Website: www.cplus.in

Service providing

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- GIS MAPPING & TOPOLOGICAL SURVEY
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- MOBILE & WEB APPS
- DATA ANALYSIS WORK

Our Services:

Software Development

Web & Mobile Applications

Data Analysis

Data Entry & Document Digitization

GPS/DGPS Land Survey

GIS Mapping & Topological Survey

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360^0 Image & Video Creation

Project Support & Consultancy

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Tel.: 0771-4031077 **Email:** info@cplus.in

Website: www.cplus.in