GPS Surveying
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Lecture - 19
GPS Field Surveying

Welcome friends. Today I am going to demonstrate on GPS surveying work as a part of lesson number 19th. In this lesson first we will go for control point establishment then we will go for identifying point objects and line objects. Point objects by stop and go method, line object by kinematic method and establishment of control point by GPS positioning. Now in order to establish the control point first we have to identify the reference station at which we have to establish our reference control point.

Now, we have identified these as the primary control point where we will set up our base receiver. Now, you know in case of GPS surveying there were three steps; first it is the setting up of instrument followed by some parameters to be selected then we should go for actual measurement of the signals or the parameters of the GPS observables And once the observables are over the field work will be over then we have to take our receiver to the office and we have to transfer the information or data GPS data from field computer to office computer by using downloading software and then we have to bring that data to the processing software to process it.

Now, let us start with the setting up of instrument at the reference station. Now as you know that is the tripod stand which we have to set up in the just on the station point and it is to be properly labelled as well as cantered. So, we have centred it properly then this is the (Refer Time: 02:54) head which has to be fixed on the tripod head with taking these level horizontal as well as looking through this optical (Refer Time: 03:09) we can centre it. Already we have done it in our class number 8 during demonstration of GPS methods I had detailed shown this work so now it is the repetition. Only thing is that now we are carrying out these establishments using a different kind of receiver.

After setting up the tripod stand properly levelled and centring, now we will fix up the antenna on the top of it. After fixing the antenna we will connect the antenna with the GPS receiver. In these case the controller and receiver is put together. So, there is no independent controller here, so let us connect it, we are connecting the antenna. Once the

antenna is connected now we should start our work like first we have to provide the initial parameters for observations that is to be done through the field software which is the GPS (Refer Time: 04:31) software what these particular receiver.

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And now I am entering the receiver. So, once it is there first we have to create a job, now new job. Suppose let us give it as g p s; GPS 0 1. So, we have taken this as the name of this survey I have. So, these are the default parameters we are taking it. So, we have created a job now I have to set up my instrument like configuration it is the base receiver settings. Internal antenna so antenna height, measure the antenna height. So, here we can see here, it is 1.12. So, let me leave it 1.12 meter vertical, so that is what we have given the parameters now options. So, it is the static survey post processing, so that is having checked.

So, after configuration then option then we have to go for measurement, before measurement if we want we can see the status of the satellites you can see beta place to 0.17 satellites are there so it is ok. If we want to see the satellites, satellites are positioned like this and then signals. You can see these are the signals fine all are K, so record is being continued; rec means recording is done, so things are recorded. Now with that we can we have started to take the measurements. Now, this will be continued till we complete our work is over for our rover static measurements and after taking

measurements we will come back here and we will get out of our reference measurement observations.

So let us go for rover receiver measurements. Friends, now we will collect the field data. There are different types of data, but fundamentally we can divide the data in three types; one is that point data another is the line data and the area data. But, for area data we can also collect by using simply point data if the area is in regular shape by joining points along the regular sides. And if the area is irregular in shape then we can go by around the area to have the boundary of the area, so it is the line. Fundamentally, we will like to collect point information object along the site and line like the corner of this road, we will like to take the corner of the road and we will like to take some field objects like this point there is another central point that flag then there is a lamp post like that.

Now to take out the point object or line object as we have already learned for point object we go by stop and go method and for line object we go by kinematic method. And for both the cases we go we have to initialize the rover receiver. Now, this is the rover receiver already we had set up our reference receiver to the reference station which will be considered as the base station and we will be collect the data using rover receiver which is placed on a stand on a rod having two parts, and this is height about 2 meter.

So, to initialize this process first to carry out to take out the data first we will like to create a job using the ProMark field software. So, already you have seen those things. Now I am directly showing it from your menu window job new, so let us say this GPS objects as the name of the file, so let me save it. Now after getting it let me initialize this from bar and let the ID of this point is 0.003. So, antenna already we know vertical 2 meters height name is that as; s s h h 111660, so that is now initialization process has started. It will take 1 minute so out of that 52 seconds are left. So, the initialization is going on.

This is a very important process and during initialization the receiver should be in a very static condition and also this receiver should get this antenna should get signal from the same set of satellite at least 4 or 5 satellites which are common to our reference receiver. So, now initialization is over. Now we will go for stop and go method of surveying to collect the point information. The first object which I like to get the location is that lamp post. Already initialization has been done simply by tapping the log the ID is given

description I can write as lamp post. Now it has started to take reading and 30 second I have taken as the epoch duration of taking the measurements of 1 second epochs so it is taking.

So, the measurement is over now we can go to the next point. Next point I will like to take please location of arrangement for water arrangement this is an arrangement given for water in these field. So, I want to locate what are the locations are there, so tap. So, ID is 005, now I can give the name water (Refer Time: 13:54). So, now it has taken started to take the data. So, 30 seconds these are duration having 1 epoch, so 30 records will be available for this location. So, measurement is over now we will shift to the next point (Refer Time: 14:35). This is another water pipe where we can take, so 6 another water to so log, so it is taking measurements.

Next we will like to take the location of the flag stand. This is the flag stand of IIT Roorkee, and here on Independence Day we go for hosting of our national flag. So, this is the location, so tap 7 this is flag host. With these I will like to conclude my I mean collection of point position data because of the limitation of time. Now I would like to take data in linear objects like the corner of our roads. Let me initialize, so this from bar and let the id of this point is 0.003. So, antenna already we know vertical 2 meter height name is that as s h h s s h 111660, so it is now initializing process has started. It will take 1 minute so out of that 52 seconds are left. So, the initialization is going on.

This is a very important process and during initialization the receiver should be in a very static condition and also these receivers should get this antenna should get signal from the same set of satellite at least 4 or 5 satellites which are common to our reference receiver. So, now initialization is over, now I have started to log, so it is taking data. Now you can see in the screen as we are preceding that is also arrow is also showing and with respect to each epoch of observation they are showing the path so nicely in the screen. That is way you will able to confirmed that yes you are automatically you are doing it is working.

So, let me go to the other side of the road. Now you can see in your screen so nicely it is giving as the difference the width of the road by simply getting the corner of the road. So, you can see in the screen how the difference two both side of the road is giving as nicely. Even in kinematic condition we are getting very good relative accuracy.

Here we are stopping it. With these I want to conclude my demonstration for the GPS surveying field collection of data, so our rover work is over. Now we have come back again to our reference station to exit from our reference observation. So that is all about our reference observation. Now, next we will download the data from reference receiver as well as from rover receiver and we will extract the data to the post processing software then we will process.

It in this today's class first we have established the control point which we had done on the reference station, and then we had gone for collection of point data by stop and go to method. And in doing that we had continued the reference station at the reference point and taken the rover receiver in this field and after opening the job for point object I had initialized the receiver and then collected the different object points. After that we had opened another job to collect the kinematic linear objects in these vertical class demonstration class I have collected the corner of the roads and both corner of two roads. And you know doing that first we have opened a job where first we had initialized the receiver then gone for collection of line data.

So, in this way we have collected point objects available around these area and line objects in this area which we will be downloading and process in next class that means last class of these course. With these I want to conclude. See you in the next class which is the last class of this course that will be on GPS processing of data which have been collected today in during this demonstration.

Thank you.