PROJECT REPORT ON SURVEY CAMP



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DEPARTMENT OF CIVIL ENGINEERING

SAINTGITS COLLEGE OF ENGINEERING

PATHAMUTTOM, KOTTAYAM

2015 – 2019



CERTIFICATE

This is to certify that the project work entitle “Survey camp at Saintgits college of engineering, kottayam” is a bonafied work carried out by the candidates of b.tech in civil engineering in 6th semester at Saintgits college of engineering, kottayam.

This project fulfills the requirement of the curriculum prescribed by APJ Abdul Kalam Technological University.

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| **Head of the Department** | **Staff Member In-Charge** | **Camp Coordinator** |
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DECLARATION

I declare that this report on survey camp prepared during the academic year 2015-2019, has been the result of my own effort and it has not been submitted to any other institute or published any time before.

Name: Aysha Nazir

Roll no.:MGP15CE039

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ACKNOWLEDGEMENT

I commence with the holy name of almighty GOD benevolence and beneficence who enabled us to complete this project. On the occasion of completion and submission of this project, we would like this opportunity to express our deep sense of gratitude to Saintgits college of engineering, kottayam for providing us the opportunity to work on this project.

We express our sincere thanks to **REEBU Z KOSHY , Head of Civil Engineering department** for his support and guidance for doing the project.

I thank **Mr. Kurian Varghese**, coordinator of the camp, **Asst. Prof. Cherian C K**, **Asst. Prof. AJESH K KOTTUPPILIL, Asst. Prof. Vincy Koshy** of Civil Engineering Department and all other staffs for their sincere and valuable presence during the progress of the survey camp.

Finally yet importantly we would like to express our gratitude to our beloved parents for their blessings, our friends/classmates for their help and wishes for the successful completion of this project.

SQUAD MEMBERS

STAFF MEMBERS

MR.KURIAN VARGHESE

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CONTENT

INTRODUCTION

The survey camp conducted was aimed to gain essential knowledge and exposure to the real work, and to encourage leadership and teamwork skills and this camp enabled us to gain so. Through this camp we were able to learn all the technical aspects which is required in surveying.

The Survey Camp was conducted to prepare a detailed topographical and contour plan of our Campus. Dumpy level and Total Station were used for complete work and contours were plotted using

LOCATION

The site selected for our survey camp was a portion of SAINTGITS College of Engineering campus, Pathamuttom, near Changanachery. It is 14 km away from Kottayam town. The terrain of the land has slopes and undulations and numerous features such as buildings, trees, steps, etc. The portion we surveyed is the front region of the college, the Administrative Block.

INSTRUMENTS USED

1. DUMPY LEVEL WITH TRIPOD
2. LEVELLING STAFF
3. TOTAL STATION
4. PRISM
5. TAPE

CAMP DIARY

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| --- | --- | --- |
| **DATE** | **TIME** | **WORK** |
| 08-01-2018  MONDAY | 9:30am-4:10pm | The survey camp of the academic year was started. Introduction to dumpy level surveying. Took instruments and TBM established. Conducted the reconnaissance survey. Started from TBM (known) , Completed our area , Returned back to TBM.  Calculations using height of the instrument method, Found errors, Gave necessary corrections to points, Returned instruments |
| 09-01-2018  TUESDAY | 9:30am-5:30pm | Introduction to total station surveying, Total station surveying started from a known TBM and transferred the plot into resection.  Co-ordinates and reduced levels of required points of AB Block and front region of the college was saved.  Stopped the work |
| 10-01-2018  WEDNESSDAY | 8:45am-12:00pm | Continued the work using total station and prism. Collected data with the help of a computer. Returned instruments |

CAMP REPORT

OBJECTIVE:

The objective of this survey is to prepare a detailed map of SAINTGITS College of Engineering Campus including contours. The steps followed were as follows:

1. Reconnaissance Survey
2. Key Plan
3. Marking Stations
4. Reference sketches
5. Dumpy level Survey
6. Total Station Survey
7. Contouring
8. RECONNAISSANCE SURVEY

The objective of reconnaissance survey was to fix best positions of survey lines and stations and also to get a clear idea of the site so that the time and expense required for the survey can be estimated approximately. We along with our staff members walked around the area to be surveyed to have a clear idea of the site. Thus the reconnaissance survey was conducted.

1. PREPARING KEY PLAN

During the reconnaissance survey the Key Plan of area was prepared accounting of north direction. Boundaries, buildings and other details were shown in the key plan.

1. MARKING STATIONS

Boundary points were selected enclosing the whole plot to be surveyed. Pegs were driven in position to mark the points.

1. REFERENCE SKETCHES

In order to avoid the difficulties due the loss of pegs at boundary points, reference sketches of points were prepared by taking measurements from two or three well defined points to these boundary points.

1. DUMPY LEVEL SURVEY

This survey was done to get a rough idea of the plot and to set up TBMs using fly leveling. The total traverse was divided into two:

5.1 FIELD WORK

At first the instrument was set up at a station near the Temporary Benchmark (TBM) whose reduced level was assumed to be 100m.

Procedure

* Leveling and centering of the instrument is done.
* Hold the leveling staff at the required point.
* Sight the leveling staff through the dumpy level and note down the reading as back sight (BS), foresight(FS) or intermediate sight(IS).
* Find the Height of the Instrument (HI) at each instrument station.
* Calculate the RL at each point where the leveling staff is held.
* Enter the data in the tabulation table.

Levels were taken continuously in the line of level and also the TBMs. And after sights to all TBMs were taken the survey was continued in a different route and was stopped at the TBM where it started. Hence a closed traverse was conducted.

5.2 OFFICE WORK

A table is drawn with Point Id’s, Fore sights and Back sights and reduced levels. The obtained values were plotted on the table and by Rise and fall method reduced level of each point was calculated. Checks were also done using the equation. ∑Rise-∑Fall = 0

TABULATION TABLE

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| STATION | BS(m) | IS(m) | FS(m) | HI(m) | RL(m) | REMARK |
| AC | 1.295 |  |  | 101.295 | 100 | TBM |
| AC1 | 2.16 |  | 0.275 | 103.18 | 101.02 |  |
| AC2 | 2.32 |  | 0.215 | 105.285 | 102.965 |  |
| AC3 | 2.69 |  | 0.03 | 107.945 | 105.255 |  |
| AC4 | 2.04 |  | 0.42 | 109.565 | 107.525 | Porch |
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ERROR=

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| STATION | CORRECTED RL |
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1. TOTAL STATION SURVEY

To make the framework of the area Total Station Surveying was done by the method of measurement of coordinates.

PRINCIPLE

Total station is an EDM instrument, where EDM stands for Electronic Distance Measurement. It works on the principle that velocity x time equals distance. Knowing the velocity of the infrared radiation emitted by the instrument, the machine calculates the time required for the beam to come back to it, after reflection from the reflector of the instrument. The readings obtained by the instrument are in polar coordinate system but it shows us the value in rectangular coordinate system (ENH). While stake out, the reverse happens.

6.1 FIELD WORK

From the given Temporary Benchmark, new station points were established near the plot using Total Station and prism by the method of resection. For that first the instrument was setup at the TBM, North direction was fixed and ENH-Easting, Northing, Height values were given for that point. Two resection points were marked on the ground and a new station was established near those points by method of resection. This process of resection continued till the plot was reached. Method of measurement of co-ordinates was used for taking the required readings. Readings of boundary points, TBMs, points representing building components, trees, points representing depression, elevation and sudden change in slope and curve and other land features are taken by inputting suitable Point ID’s and reflector height used and then sighting them. Method of resection was used for shifting the instrument station.

Procedure

* Centering and leveling of the instrument is done.
* Select programs-station setup-set job-click F4.
* Select Resection-height of instrument-height of reflector-start survey.
* After shifting, select resection and enter the heights of instrument and reflector-pt ID will be asked-F1 to measure more points.
* Press F4 to compute standard deviation.
* Continue surveying.

6.2 OFFICE WORK

The readings taken and stored in the Total Station was downloaded using the Leica Software and transferred to AutoCAD. By checking the points and Point ID’s given in preliminary sketch corresponding points were located in AutoCAD. Boundary was then drawn by connecting the boundary points. Features like building were drawn connecting the corresponding points

**7.** CONTOURING

PREPARATION OF CONTOUR MAP

In order to know the topography of the area the contour map was prepared. The contour line connects the points of equal elevation. The contouring was conducted in two stages:

7.1 FIELD WORK

The method adopted for contouring was indirect method of contouring. The Total Station was setup near the resection points and co-ordinates and reduced levels of station were established. The readings at points representing depression, elevation and sudden change in the slope and curve were taken.

7.2 OFFICE WORK

The contour lines were plotted by arithmetic method of interpolation. The elevations of points were marked on the plan in AutoCAD. The position of contour points were located by arithmetic calculation and contour lines were drawn through appropriate contour points and the reduced level of that line was marked on the line.

LEVELLING FIELD BOOK

FLY LEVELLING – BENCHMARK ESTABLISHMENT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **STATION** | **BS** | **FS** | **HI** | **RL** | **REMARKS** |
|
| TBM |  |  |  |  | Benchmark |
| A2 |  |  |  |  |  |
| A4 |  |  |  |  |  |
| A6 |  |  |  |  |  |
| TBM8 |  |  |  |  |  |
| A8 |  |  |  |  |  |
| TBM9 |  |  |  |  |  |
| A10 |  |  |  |  |  |
| A12 |  |  |  |  |  |
| TBM10 |  |  |  |  |  |
| A14 |  |  |  |  |  |
| A16 |  |  |  |  |  |
| A18 |  |  |  |  |  |
| A20 |  |  |  |  |  |
| A22 |  |  |  |  |  |
| TBM |  |  |  |  |  |
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Arithmetic Check:

∑FS - ∑BS =

F.R.L - L.R.L =

CONCLUSION

This camp really helped us with the practical parts of survey fieldwork as we were working in conditions we will surely have to face in the future. We could know the problems faced during surveying and could get solutions. It increased our confidence in handling instruments as well as completing projects within given deadlines. We were able to understand the basic principles of surveying using Dumpy Level and Total Station. We took note of how to take fly levels using a Dumpy level. We gained first hand concept of the subject matter that made it easier for us to grasp the concept. We are now confident enough to announce that we can survey any region with the Total station being the most modern instrument. This survey camp was thus informative, effective and enjoyable.