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Please copy and paste this embed script to where you want to embed This report focused on various methods used in execution of topographical survey of the new bus park area, gidan kwano campus. The practical was carried out using the basic survey principles and methods. The major field survey operation includes reconnaissance which involves field and office reconnaissance, followed by data acquisition which involves third order theodolite traversing, perimeter leveling to determine height of points, tacheometry for detailing and spot heightening and Azimuth observation to determine the swing of the traverse line. May 2, 2015 1| 1.0 INTRODUCTION The main purpose of this project is to determine the relief of the Sacred Light Lodge Amorc premises. This would serve as data for engineering and construction purposes, the model will serve as a tool in guiding the architects and engineers on site. Every position on project site has a specific height value and it can be determined from the model and the various areas can easily be compared. Accurate positioning is not a question anymore because the plan is properly coordinated and geo-referenced. For instance the X, Y & Z of any point on the plan can be gotten and can be located on ground and vice versa. Because of the Z-component in the plan, areas of cut and fill can easily be determined and calculated. 2.0 TERMS OF REFERENCE The terms of reference for the project entails: To carry out a traverse/boundary survey of an area of 1.11 Hectares at the project site. To carry out topographical survey at 5m by 5m intervals within an area of 1.11 Hectares at the project site. 2| To adjust the traverse network. To produce digital and analogue topographical map at scale of 1:500 2.1 Project Site Location PROJECT SITE Fig. 1: Location map of the project site at the Sacred Light Lodge Amorc, Amuwo Odofin LGA. 3.0 METHODOLOGY Prior to the commencement of the topographic survey, we spent some time planning smooth execution of the project based on the following: 3| i. Reconnaissance ii. Chaining and Pegging iii. Lattice Design iv. Hardware and Software Requirement v. Test of Instrument vi. Digital Processing and Plotting vii. Project Schedule viii. Personnel ix. Transportation x. Feeding xi. Safety xii. Report Writing and Submission 3.1 Reconnaissance Reconnaissance survey which is also known as a preliminary survey (a preliminary inspection of an area to obtain geographic, hydrographic, or similar data prior to a detailed survey) was done before the field work was carried out. The two forms of preliminary survey carried out were: Office Reconnaissance This involves obtaining necessary information about field observation location that will guide and give idea on what we are to do on the field in order to obtain a maximum level of accuracy. The following tasks were carried out. 1. Preparation of suitable and accurate field book. 2. Strategizing for the actual commencement of the field work which concluded the office reconnaissance. 4| Field Reconnaissance This involves preliminary inspection of the area before commencing the field work, for the purpose the following. This survey involved visiting the site location and thorough planning was done on how and where the instruments would be placed to yield best results. These involved: 1. Searching for suitable coordinated control. 2. Inter-visibility between the stations involved. 3. Selection of station which will be used as target. 4. Selection of station which will be used as stand point for the Total Station. 5. Location of good site which will permit clear observations to be taken after creating arbitrary point on the area to be surveyed. 6. Chaining and pegging the spot height 3.2 Test/Adjustment of Instruments After getting the instrument, they were tested on the site of survey. Tests were done on the Total Station to avoid collimation error. The leveling screws of the total station were also noted to be complete so as aid proper stance of the total station on the tripod. All instruments were tested okay and those meant to be adjusted were adjusted properly. 3.5 Control Establishment Control surveys establish a common, consistent network of physical points that are the basis for controlling the horizontal and vertical positions of other surveys including transportation improvement projects and facilities. Corridor control surveys ensure that adjacent projects have compatible control. Project control surveys provide consistent and accurate horizontal and 5| vertical control for all subsequent project surveys — photogrammetric, mapping, planning, design, construction, and right of way. The following policies, standards, and procedures are applicable to all control surveys including transportation improvement projects, etc. This includes surveys performed by Government survey staff, Survey consultants, Local Government Agencies, Private developers and others. Verified reference second order controls were used to transfer the X, Y and Z coordinates to other controls so that all the controls and positions of spot height can have unified and homogeneous coordinates in both longitude and latitude and UTM coordinates. These controls are transferred in phases along the project area. Four numbers of temporary benchmarks(TBMs) were established within the project site for references. NAME X Y Z TBM1 526025.980 713347.855 10.1 TBM2 526025.581 713366.649 10.44 TBM3 526038.916 713293.758 10.14 526010.583 713291.585 Table 1: Coordinates of Established Temporary Benchmarks 10.13 TBM4 6| TBM 2 TBM 1 TBM 4 TBM 3 Fig. 1: Location map of the project site showing the established TBMs. 3.6 Lattice Design We carried out lattice design for the spot height. The provisional boundary of the project area was given. This boundary was plotted in AutoCAD environment. Subsequently, the lattice design was done within AutoCAD environment by gridding the project area. The gridded lines were printed and taken to the field to serve as guide during chaining and pegging operations. 3.7 Hardware and Software Requirement The hardware and software used for the project were identified during the planning stage. The hardware and the software used for the project are given as follows: 3.7.1 Hardware Requirement The hardware used for the project are: 7| i Field Instrument 1. 2. 3. 4. 5. 6. 7. 8| Total Station (TS06). Measuring tape. Reflector. Tripod Stand. Tribrack Field Book Downloader 3.7.2 Software Requirement The under listed are the software we used for the project: 1. Compaq Laptop (HDD of 720GB, RAM of 6GB, processor speed of 2.23GHz) and 2. 3. 4. 5. 6. 7. 8. 3.8 windows 7 as the Operating system. Google Earth Microsoft Word Microsoft Excel ArcGIS 10.2 Software AutoCAD 2013 Software AutoCAD Raster Design Golden Surfer 10 Digital Processing Digital processing of topographic data includes the following sorting of xyz data, processing of data in a topographic software that will be compatible with AutoCAD and ArcGIS 10.2. 3.9 Project Schedule As contained in our proposal, we ensured that the entire project was executed and submitted within the speculated time. 3.12 Processing of Total Station Data The data files were downloaded from the total station and saved into a USB Flash-Drive; The total station produces data files in a proprietary IDX and DXF file format containing FIX (FIXED), MEAS (MEASURED) and plotted data. The Data output is in the form of (*.idx) text file, to extract the coordinates of position from the downloaded data, the file is processed by importing to Excel software, where the unusable data is deleted and the spot height and Horizontal coordinates data are retained and saved for further processing. 9| 3.13 Processing In Surfer 9 The data saved with excel format (*.xslx) were imported to the surfer environment and converted to grid format (*.grd). SURFER contains a powerful tool that allows quick design of survey contour and 3D surface and display of results. Its powerful drawing engine can display background files in DXF, DGN, TIF, files at any rotation and scale. Design tools allow quick creation of planned lines. SURFER automatically stores the information to a project directory, allowing set up of new surveys or to quickly switch to an existing survey. The Surfer software was used to process the sorted data, drawing of contour lines with a specified contour interval and 3D surface also plotted there. 3.14 Processing in ArcGIS and AutoCAD The next and last stage of processing is to produce the Topographic maps in AutoCad. The following procedure is usually carried out in creating the DTM IN ArcGIS10.2: Ingest the XYZ data from Microsoft Excel to ArcGIS; this is accomplished by using the Tools Add XY Data option. The projection information (WGS84) is as follows; WGS 1984 UTM Zone 31N Projection: Transverse Mercator False Easting: 500000.000000 False Northing: 0.000000 Central Meridian: 3.000000 Scale Factor: 0.999600 Latitude of Origin: 0.000000 Linear Unit: Meter 10 | Files are displayed as Event files (Excel file), then exported as shapefile. A triangulated irregular network (TIN) would be created using the coordinates data point shapefile. Output projection is typically specified to be the same as the input data. Raster interpolation of the point data is also performed using the same input data and TIN was created using the “create TIN” option within the 3D Extension of ArcGIS. This is followed by the creation of the TIN file and the raster file. The DTM is then produced by converting the TIN to 3D. AutoCAD was used to plot the traverse/boundary lines using poly-line tool and spot height also plotted in AutoCAD by running script. AutoCAD drawing can be produced by importing the drawing in ArcGIS format into AutoCAD. The AutoCAD drawing can also be done by transferring the drawing from the Surfer Environment to the AutoCAD environment to save time and avoid much editing of drawing from the ArcGIS environment. For the project area, the AutoCAD drawing has been provided, so that architects and engineers would be able to work in a user-friendly environment. The details of survey area also plotted in AutoCAD. 11 | 3.15 Deliverables Submitted along with this report are the following: 1. 1 No contour map of the Project Area of scale 1: 500. 2. 1 No spot height map of the Project Area of scale 1: 500. 3. 1 No map showing detail and the perimeter of the project area 4. 1 No. Copy of detailed project report. 5. 1 No. DVD storage device containing information about the project. 12 | 4.0 RESULTS 3D surface of the project site 13 | Wire frame of the project site 14 | 92%(12)92% found this document useful (12 votes)16K viewsThe document discusses a topographic survey report for the Rawalpindi Ring Road project in Pakistan. It provides background on the project, describes the scope and components, and details th...SaveSave Topographic Survey Report (Complete) For Later92%92% found this document useful, undefined 86%(7)86% found this document useful (7 votes)6K viewsThis document summarizes the methodology used to conduct a topographic survey of a 1.11 hectare site for the Sacred Light Lodge Amorc project. Key steps included establishing control points,...AI-enhanced title and descriptionSaveSave Report on topographic surveying For Later86%86% found this document useful, undefined