3D MODELLING OF UNDERGROUND AND SURFACE UTILITIES MAPPING WITH INTEGRATION OF ATTRIBUTES USING VBA MACRO

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Abstract: For the purpose of facility management, it is important to have detailed and updated database of underground and surface utilities. But such data are not always available with adequate accuracy and 2D fails to give information regarding vertical profile of underground utilities. This may lead to misconception for field workers and specialist as well. Hence in this study a prototype has been developed using GIS, Trimble Sketchup and VBA macro to integrate attributes for 3D texturized features and finally visualizing the results in open source applications such as Google Earth for Adama Science & Technology University (ASTU) campus. The textures of the utilities were designed both manually and by close range photogrammetry. The dimensions, locations and vertical profile of the features (utilities) were collected using Total Station and GPR (Ground Penetration Radar). This new approach especially for underground infrastructure using 3D GIS techniques is believed to be more efficient and cost effective to integrate and update existing traditional CAD maps.

Keywords: 3D Modelling, Surface & Underground Utilities mapping, VBA Macro, Close range photogrammetry.