3.16 A Photogrammetric-Based Approach For As-Built Measurement Using 2D Projective Transformation and GIS

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The availability of as-built measurements are very important for several applications such as architectural renovation and maintenance. This paper describes an approach for as-built measurement for a building facade using photogrammetry. A set of images were acquired by a consumer-grade digital camera that capture the building facade. In addition, a set of control and check points were by a reflector-less total station. The 2D projective transformation was used to establish the geometrical relationship between the images and the control points on the ground, which amounts to a solution of a linear system of equations. The parameters of the 2D projective transformation were used to rectify the acquired images into a vertical plane and using a grid size of 2cm x 2cm in the ground. The rectified images were imported to a GIS software for quick geo-referencing and digitization. Part of the digitized information were compared with their counterparts in the ground and an accuracy of ±2.5 cm was obtained. The end results of this approach can be delivered as a CAD-drawing or GIS Shape files.