This thesis presents a method for fast procedural generation of plausible buildings out of their outlines. There are a few methods in existence varying in their speed and in the amount of detail in their results. All of these methods can be utilized on diverse occasions. The user might prefer speed over complexity or maybe better-looking results over robustness to every input. The method presented in this thesis prefers speed and semi-automatic approach. It takes building outlines as an input along with some user defined parameters such as height, reconstructs the building mass with a general hip roof, and synthetizes plausible textures. The results can be then used for example in flight simulators for fast reconstruction of large urban areas based on the data available through, e.g., Open Street Maps.