

## Adaptive Assemblies: A Scalable Solution for Atlanta's Affordable Housing Crisis

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**Abstract :** Among other cities in the United States, the city of Atlanta is experiencing levels of growth that surpass anything we have witnessed in the last century. With the surge of population influx, the available housing is practically bursting at the seams. Supply is low, and demand is high. In effect, the average one-bedroom apartment runs for 1,800 dollars per month. The city is desperately seeking new opportunities to provide affordable housing at an expeditious rate. This has been made evident by the recent updates to the city's zoning. With the recent influx in the housing market, young professionals, in particular millennials, are desperately looking for alternatives to stay within the city. To remedy Atlanta's affordable housing crisis, the city of Atlanta is planning to introduce 40 thousand of new affordable housing units by 2026. To achieve the urgent need for more affordable housing, the architectural response needs to adapt to overcome this goal. A method that has proven successful in modern housing is to practice modular means of development. A method that has been constrained to the dimensions of the max load for an eighteen-wheeler. This approach has diluted the architect's ability to produce site-specific, informed design and rather contributes to the "cookie cutter" stigma that the method has been labeled with. This thesis explores the design methodology for modular housing by revisiting its constructability and adaptability. This research focuses on a modular housing type that could break away from the constraints of transport and deliver adaptive reconfigurable assemblies. The adaptive assemblies represent an integrated design strategy for assembling the future of affordable dwelling units. The goal is to take advantage of a component-based system and explore a scalable solution to modular housing. This proposal aims specifically to design a kit of parts that are made to be easily transported and assembled but also gives the ability to customize the use of components to benefit all unique conditions. The benefits of this concept could include decreased construction time, cost, on-site labor, and disruption while providing quality housing with affordable and flexible options.

**Keywords :** adaptive assemblies, modular architecture, adaptability, constructability, kit of parts

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