Pre-Approved Accessory Dwelling Units Design

Abstract

The Municipality of Anchorage, Alaska (MOA) is addressing a local housing shortage with a goal of adding 10,000 new housing units over the next decade, of which 5,000 are intended to be Accessory Dwelling Units (ADUs). To support this effort, a student team comprising five undergraduate students at UAA developed two ADU designs: a 400 ft^2 unit and a 900 ft^2 unit. The designs are intended to be pre-approved by the MOA building department, creating a catalog of publicly available plans for various building sizes and types. These pre-approved plans are intended to reduce the time, cost, and complexity typically associated with residential design and permitting. Because the plans are reviewed in advance for code compliance, structural feasibility, and constructability, homeowners can use them without going through a full customized design process, making new housing more accessible and affordable.

Both ADUs are designed on CMU block foundations to provide durable, cost-effective, and constructible structural support suited to Anchorage's soils and climate. The 400 ft^2 design offers an efficient solution for single occupants, rental use, or multigenerational living, while the 900 ft^2 design provides a larger option for small families or long-term tenants. Both designs prioritize affordability through standard materials, efficient layouts, and durable finishes, while also including recommended upgrades such as triple-pane windows and solar panel readiness. Together, these ADUs create scalable, sustainable, and climate-responsive housing solutions for Anchorage residents.

This project idea, which was one of many, was presented by clients to the UAA Civil Engineering Capstone class in the form of a Request for Proposal (RFP) and an accompanying presentation. The student team then submitted requests to be assigned to their preferred project. Upon selection, the team was assigned to the client, who was responsible for outlining the scope, deadlines, and deliverables. The team was also provided with two professional mentors (one architect and one licensed structural engineer) and a faculty advisor (also a licensed structural engineer). The mentors were responsible for guiding the students throughout the semester and providing feedback on all their final deliverables, which included 95% plans and specifications, 3D renderings, a poster, and a final presentation. The student team began the semester by forming a fictitious company, submitting a proposal in response to the RFP, and negotiating a contract that outlined deliverables, deadlines, and fictitious design fees. As the semester progressed, the team had weekly meetings with the professional mentors, ultimately producing and submitting plans and specifications at 35%, 65%, and 95% levels, as well as two mid-semester presentations. Each submission was commented on by both the mentors and the client. This process produced highly professional plans while fostering valuable real-world technical and professional skills beyond the classroom.