Project Name: Murphy House DADU

Preface: This design has been modified to be more accommodating for accessibility. The renderings show the original design without the new changes and therefore further demonstrate the adaptability of the design.

Universal Design: Murphy house is designed with mobility-aid accessibility in mind. It includes widened doorways, wide main pathways, a zero-threshold shower, a shower bench, stepless entry, sinks and bar top that can be wheeled up to, and pocket doors for ease of access. For easier grabbing, the pocket doors can either have extra end pulls or full ADA compliant door handles. For further ease of access, the main pathways through the house are straight lines, to avoid any possible collisions. The washer and dryer nook is designed assuming the LG WKEX200HBA wash-tower which has the controls in the center so they can be easily reached, unlike most stacked washer/dryers. As a whole, Murphy house has an open concept so that the space can be rearranged according to occupants needs. The office can also be converted into a smaller bedroom if needed. For the flooring, grinding and polishing the concrete slab is a cost effective and material efficient method. Concrete is also great for durability and smoothness, which is important if the occupant utilizes a mobility aid. Though if the client is more concerned with falling then it's an easy addition to install fall-rated cork flooring and underlayment. The drywall and countertop edges can also be rounded to reduce fall hazards. There is a bench immediately at the entrance so the occupant can sit down to remove their shoes if needed or put down any items they are carrying. The entrance is otherwise cleared, to ensure plenty of room for the occupant, and guide dog if applicable, to go in and out with ease.

Sustainability & Resilience: Murphy house is built using Structural Insulated Panel (SIP) walls and ceiling, Insulated Concrete Form (ICF) foundation, triple pane windows, Fujitsu mini-split heatpump (which has heating and cooling), 4kW solar array with Enphase micro-inverters, HEPA filtration, ENERGY STAR 50-gallon domestic hot water tank, ENERGY STAR appliances (energy-efficient), WaterSense plumbing fixtures (low-flow, water saving fixtures), and concrete floors. All of these components mean the house is highly energy and water efficient, Net-Zero energy and will have superb indoor air quality. It is built in a South facing orientation with extended roof eaves so the interior will get natural solar lighting, winter heat gain and summer shading. Which will help naturally regulate the temperature of the home. This home would come with 5-Star Built Green, EPA Indoor airPLUS, DOE Zero Energy Ready and ENERGY STAR certifications.

Affordability & Cost Effectiveness: The highly insulated envelope plus highly efficient heatpump and 4kW solar array combines to a home that has superb indoor air quality and keeps the utility costs at little to nothing. While there is a bit of a higher upfront cost for this kind of home, it will save money overtime and make bills significantly less and more predictable. This is hugely important for those who rely on a heavily regulated income/savings. The home is also built to last a lot longer with its high-quality envelope and finishes, which means less maintenance or replacements overtime. Moreover, by decreasing the undulations in the envelope and keeping the overall design simple, we are able to reduce the material waste and increase the cost effectiveness. This DADU, turn-key and including the solar array, would cost around $425/sf. This figure does not, however, include tax or site work.

Innovation & Creativity/Aesthetics: The building techniques used, such as use of SIPs and ICFs, are innovative and are still not highly used technique. They are a great way to increase the quality of the

home while also making it more efficient, sustainable, and durable. SIPs also create a vaulted ceiling which makes the space feel larger and are naturally more soundproof than a traditional envelope. We also assumed triple pane windows higher on the wall to allow extra privacy and retain internal home temperatures. We use the thermal mass from the concrete floors with under-slab foam insulation to distribute heat more evenly through the house. Which, coupled with the mini-split, means we can use a single head and centrally locate it. We also only use induction stoves which produce less indoor air pollutants, uses less electricity and are faster to respond.

For a little more “pizzazz” to the exterior, a small section of locally-sourced cedar siding can be added to further highlight the entryway.