

UNIVERSITY OF ARKANSAS

OFF-THE-GRID

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UNIVERSITY OF ARKANSAS

THE PROBLEM

MICHAEL HILL, A RESIDENT OF A SMALL COMMUNITY IN SOUTHERN ARKANSAS, WANTS TO BUILD A SMALL HOME ON THE LAND HE INHERITED FROM HIS GRANDFATHER. SITUATED AMONG A SMALL GROVE OF TREES ON A HILLTOP ARE EXISTING DILAPIDATED STRUCTURES INCLUDING THE OLD HOMESTEAD, WHICH SUFFERED HEAVY TERMITE DAMAGE AND IS BEYOND REPAIR.

HOW CAN A NEW STRUCTURE ON A TIGHT BUDGET DISPLAY FUNDAMENTAL SUSTAINABLE PRACTICES AND ACT AS A LEARNING TOOL?

THE PROJECT

THE GOAL WAS TO CREATE AN OFF-THE-GRID HOME THAT RECLAIMED AS MUCH MATERIAL FROM THE SITE ITSELF AS POSSIBLE. THE CLADDING OF THE HOUSE IS RECLAIMED BARNWOOD FROM A NEARBY STRUCTURE AND CORRUGATED METAL FROM THE ROOF OF THE OLD HOUSE. THE STACKED SPACES PROVIDE 854 SF OF CONDITIONED SPACE AND ALLOW FOR ONLY 574 SF OF FOUNDATION. THIS ALLOWS FOR TWO SLEEPING AREAS COURTESY OF A CUSTOM DAY BED IN THE LIVING AREA FOR GUESTS.

A WASTE COMPOST SYSTEM IS USED TO FERTILIZE THE LANDSCAPING, WHICH REQUIRES MINIMAL MAINTENANCE THROUGH USE OF LOCAL DROUGHT-RESISTANT PLANTS. CAREFUL WINDOW PLACEMENT ALLOWS FOR CROSS-VENTILATION, MINIMIZING THE NEED FOR AIR CONDITIONING, PROVIDED BY A MINI-SPLIT UNIT, AND HEATING IS LARGELY HANDLED BY A WOOD BURNING STOVE. AN ARRAY OF 9 SOLAR PANELS ON THE ROOF AND A STORAGE BATTERY PROVIDE ALL OF THE RESIDENT'S ELECTRICITY DEMANDS. WATER USAGE IS MET THROUGH USE OF AN EXISTING WELL. THIS HOME IS LITERALLY OFF-THE-GRID, WITH NO RELIANCE ON OUTSIDE SOURCES.



A VIEW OF THE MAIN LIVING SPACE. LARGE OPENINGS ALLOW FOR NATURAL LIGHTING. CHEAP MATERIALS ARE USED TO FINISH OUT THE STRUCTURE IN AN ATTRACTIVE WAY.

CLADDING WAS GATHERED FROM LOCAL SOURCES RATHER THAN LEFT TO WASTE



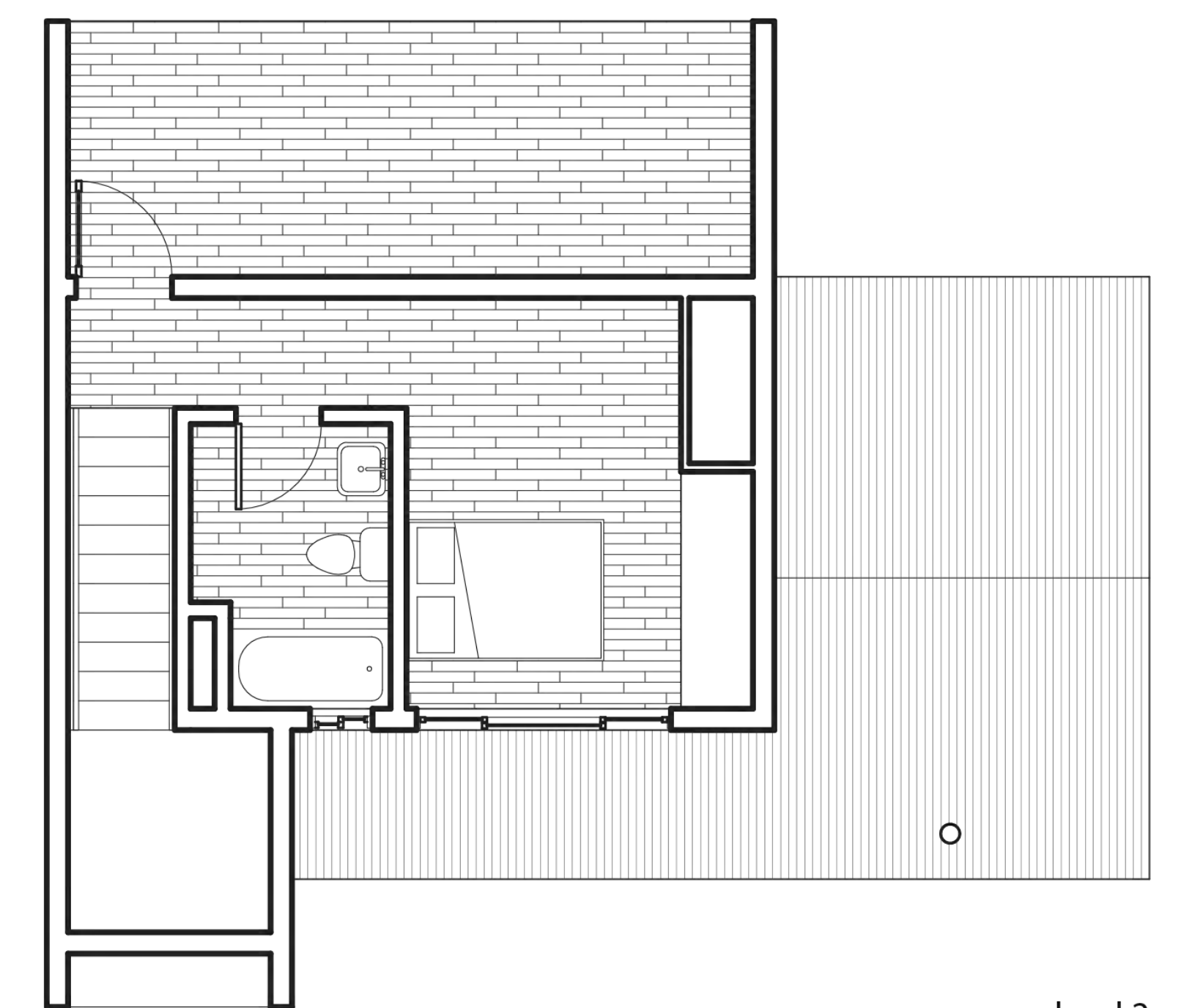
STACKING THE PROGRAMS HELPED TO REDUCE THE FOUNDATION FOOTPRINT. THE STRUCTURE CAN ACCOMMODATE TWO BEDS IN 854 SF, ROUGHLY HALF OF THE NATIONAL AVERAGE.

SUSTAINABILITY

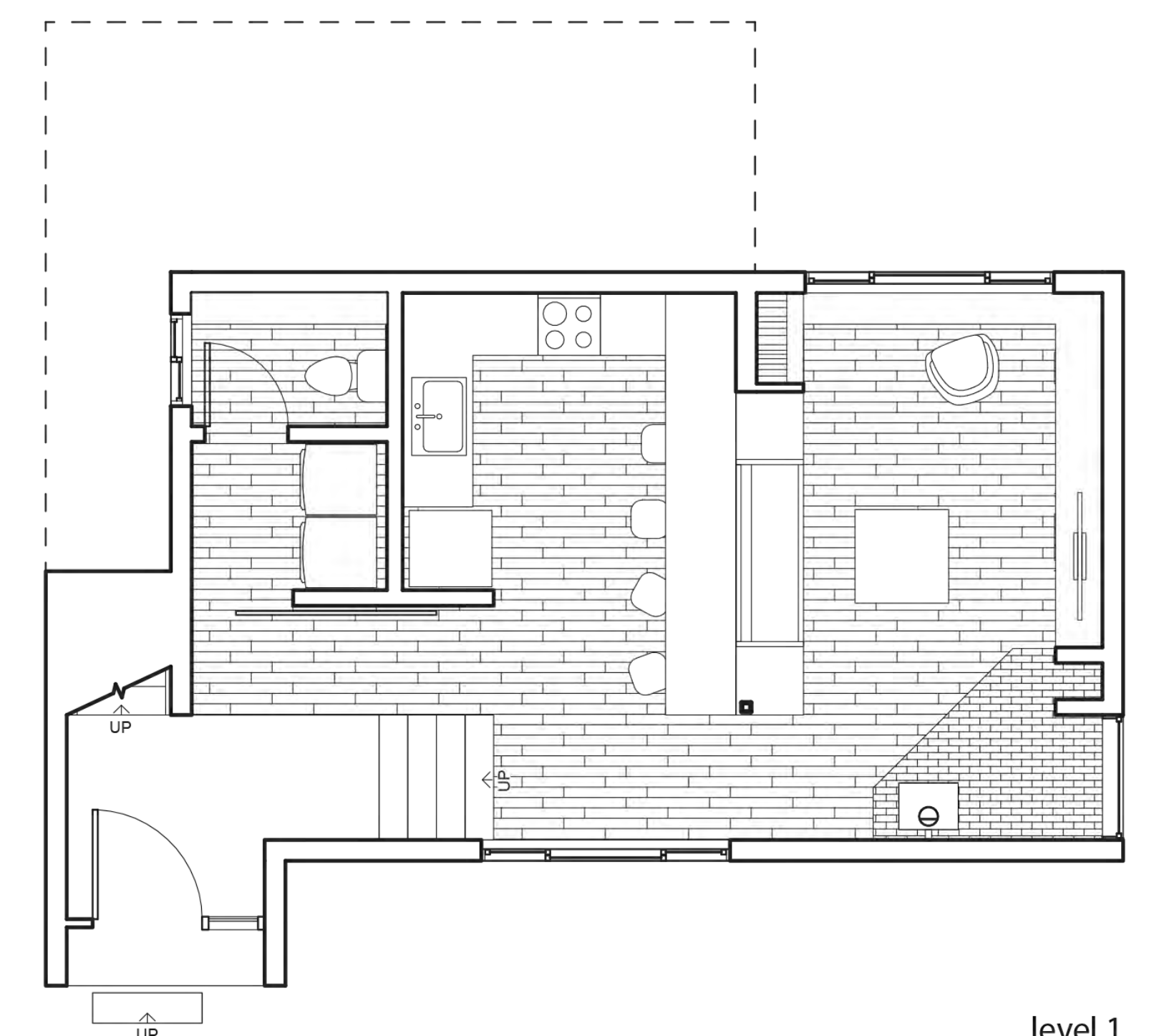
IN AN AREA SKEPTICAL OF THE PRACTICALITY OF SUSTAINABLE DESIGN, THIS PROJECT PRESENTS A COMPLETELY OFF-THE-GRID DWELLING AS AN ALTERNATIVE EXAMPLE AND LEARNING TOOL FOR HOW TO BUILD EFFECTIVELY AND CHEAPLY. IF ITS CONCEPTS ARE REPEATED, THIS PROJECT COULD LEAD TO A SIGNIFICANT DROP IN ENERGY DEMAND IN A SOCIETY THAT RELIES HEAVILY ON COOLING AND HEATING SYSTEMS.

THIS PROJECT HAS ALLOWED ME TO FOCUS ON APPLYING SUSTAINABILITY AT THE INTIMATE LEVEL OF THE DWELLING AND HAS REALLY CHALLENGED ME TO THINK ABOUT HOW TO INCORPORATE SUSTAINABILITY INTO THE EVERYDAY LIFESTYLE OF THE COMMON PERSON, EVEN THOSE FAR REMOVED FROM THE CITIES WHERE IT SEEMS MOST CRITICAL. IN MY PURSUIT OF A SUSTAINABLE DWELLING, I HAVE FOUND THAT THE THINKING OF BUILT SYSTEMS IS COMING FULL-CIRCLE, TO A FOCUS ON RESPONSE TO INSTEAD OF TRIUMPH OVER NATURE.

VERNACULAR STRUCTURES



level 2



level 1