INTRODUCTION

Adobe Dome House, Dehesa de la Villa, Spain

Building accounts for thirty-five percent of the carbon dioxide emissions in the United States. This is why it was important to construct an off-grid sustainable home. Superadobe is a construction technique developed by the Spanish architect Félix Candela. It utilizes tubes filled with a mixture of lime, water, earth, and sand. These tubes are formed by coating polypropylene sacks with Adobe mixture material. These sacks are then placed in the formwork and filled with a mixture of lime, water, earth, and sand. Once all the bags have dried, a flame is used to burn off all of the synthetic material, leaving only the Adobe mixture inside. This process creates a structure reminiscent of a clay coil pot. Superadobe is a construction technique that uses recycled materials and is well adapted to virtually all climates. Although solar orientation is important and can be changed with each additional layer, the majority of the home is designed to privilege views of the Sierra de Gredos mountains to the north, an unobstructed view from nearly any location in the house. The plan of the house was then drawn on the ground and an earthbag was then placed in the home towards the north; creating voids for the windows. The earthbag coils taught me about material assembly, force loads, and adobe curing. More importantly, the slow process of building the walls gave me a greater understanding of scale and enclosure. It was remarkable how the space was filled with the geometry of the earthbags. As the structure took shape, it became clear that the walls were acting as great thermal insulators while also acting as a breathable skin. The process was broken down into six stages: site analysis, foundation work, earthen wall construction, plastering, roofing, and masonry. Each of these stages was carefully planned and executed to ensure the longevity of the structure.

CONSTRUCTION

The construction of the dome is a slow process. These photos were taken daily over a month. The first three photos show the domes being constructed. Every day, an additional layer of earthbag coils is added to the structure. The height of the dome increases with each additional layer. The process is repeated vertically for each additional layer, the circle becomes smaller and creates the dome structure. The first ring's interior dimension is small enough to accommodate a skylight, the second ring's dimension is large enough to accommodate a window, and the third ring's dimension is large enough to accommodate a door. Each additional ring, the circle becomes smaller and creates the dome structure. The last ring's interior dimension is small enough to accommodate a skylight. The adobe walls of the chicken coop are composed of a failed wall previously used around the windows in the living room. The only purchased construction materials were foundation aggregate, liquid lime, and three types of plaster: 1) a lime plaster used in Florida, 2) a lime plaster used in Florida, 3) a lime plaster used in Florida.

APPLICATION

Superadobe construction can be broken down into six stages: site analysis, foundation work, earthen wall construction, plastering, roofing, and masonry. These homes are inherently well isolated and well adapted to virtually all climates. Although solar orientation is important and can be changed with each additional layer, the majority of the home is designed to privilege views of the Sierra de Gredos mountains to the north, an unobstructed view from nearly any location in the house. The plan of the house was then drawn on the ground and an earthbag was then placed in the home towards the north; creating voids for the windows. The earthbag coils taught me about material assembly, force loads, and adobe curing. More importantly, the slow process of building the walls gave me a greater understanding of scale and enclosure. It was remarkable how the space was filled with the geometry of the earthbags. As the structure took shape, it became clear that the walls were acting as great thermal insulators while also acting as a breathable skin. The process was broken down into six stages: site analysis, foundation work, earthen wall construction, plastering, roofing, and masonry. Each of these stages was carefully planned and executed to ensure the longevity of the structure.

PETAL CHAIR

Inspired by the Adobes, each chair is composed of recycled papier mâché and is built using a paper frame and recycled metal. The lifted footrests were designed as a functional element to create a sense of enclosure and to provide support.

PLASTERING

These images show the process of putting the papier mâché outside of the domes with a coat of tar for waterproofing. The clapboard is then fastened with nails and screws and painted. These homes are inherently well isolated and well adapted to virtually all climates. Although solar orientation is important and can be changed with each additional layer, the majority of the home is designed to privilege views of the Sierra de Gredos mountains to the north, an unobstructed view from nearly any location in the house. The plan of the house was then drawn on the ground and an earthbag was then placed in the home towards the north; creating voids for the windows. The earthbag coils taught me about material assembly, force loads, and adobe curing. More importantly, the slow process of building the walls gave me a greater understanding of scale and enclosure. It was remarkable how the space was filled with the geometry of the earthbags. As the structure took shape, it became clear that the walls were acting as great thermal insulators while also acting as a breathable skin. The process was broken down into six stages: site analysis, foundation work, earthen wall construction, plastering, roofing, and masonry. Each of these stages was carefully planned and executed to ensure the longevity of the structure.

ADOBE STAIRS

While walking up in the home, the client decided to redesign the kitchen dome into a cylinder with a roof terrace on top. A local structural architect and myself designed the stairs to reach the terrace by utilizing the existing domes. The stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs. These stairs were then designed to accommodate the stairs.