# Maitreya Eco Village



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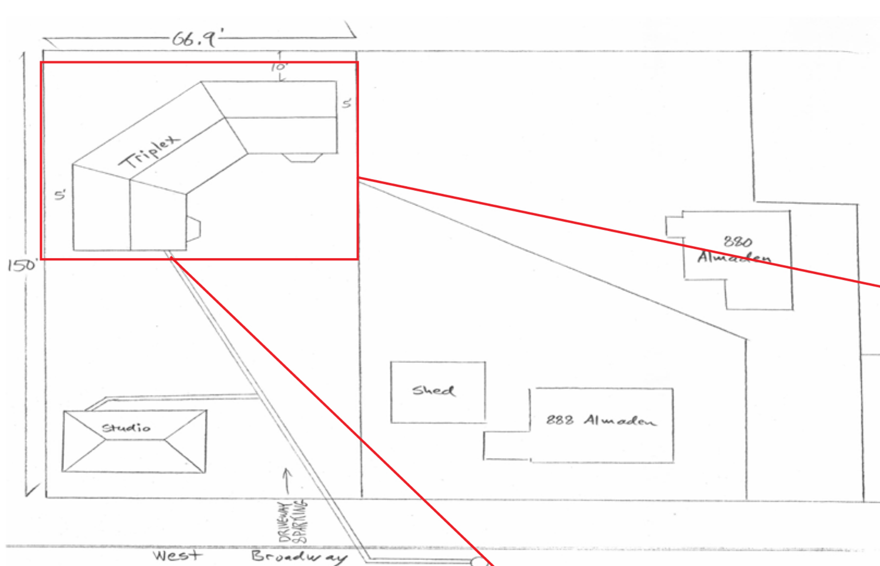
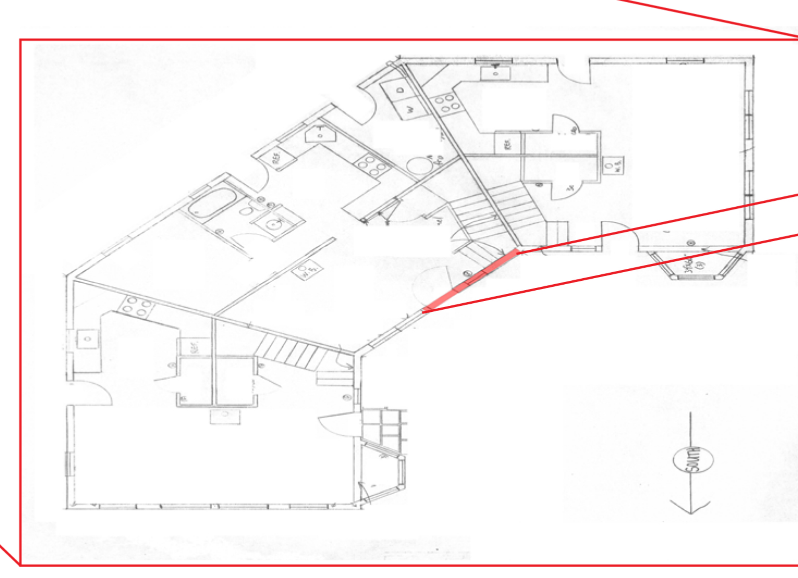
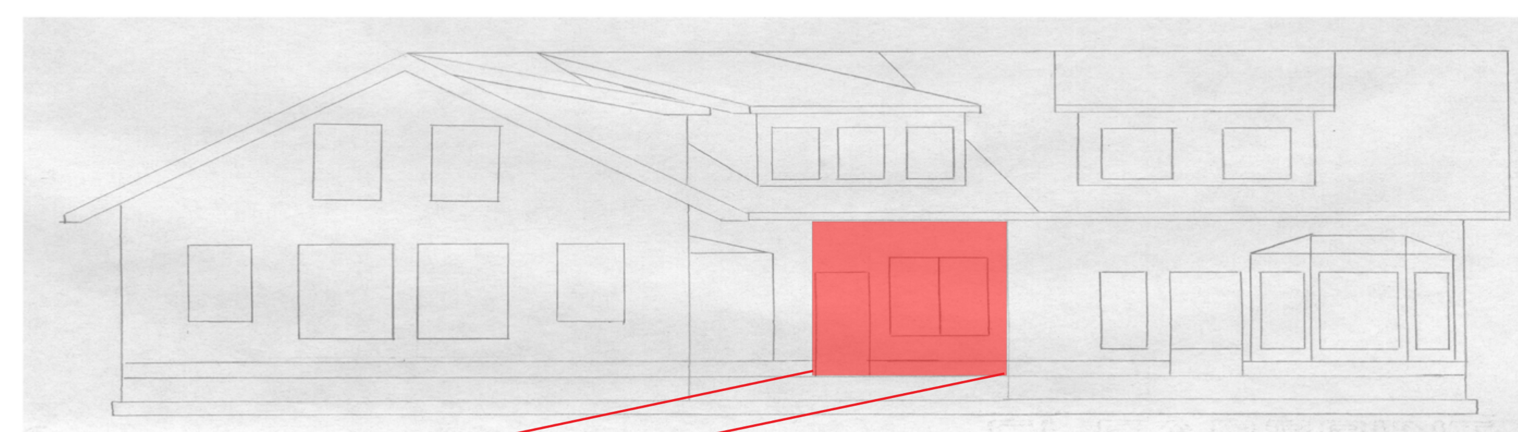
On a corner lot in southwestern Eugene, Oregon, a tiny eco-village has sprung up. It began as a real estate investment in 1981 and soon turned into a landscape of experimental buildings. From the standard 1930's home that was originally on the lot to extremely experimental yurt like structures made of cardboard and corrugated plastic election signs, this eco-village is looking to transform the world, one building at a time. The building we are focusing on is a U-shaped, gable-roofed triplex with cedar shake siding. Inside the building, the walls are plywood covered with plaster and painted, the ceiling is exposed log with wooden decking, and the floor is compressed sand, earth, and chopped straw, held together with linseed oil. The real difference between this building and most contractor-built homes, however, is the wall assembly.

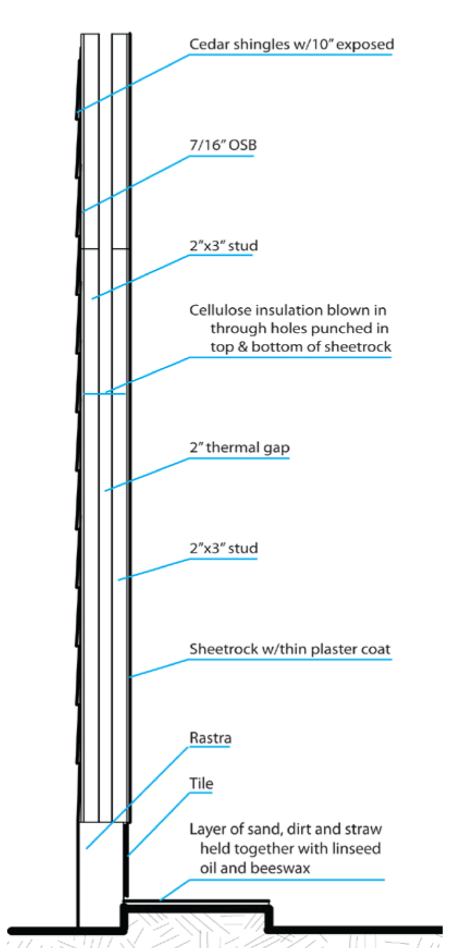
Attempting to reduce heat loss during winter months due to thermal bridging, the stud wall assembly was redesigned so that each stud consists of two 2"x3" studs separated by a two inch gap. The entire wall, including the two inch gap between the studs, was then filled with lightly compacted cellulose insulation. Our mission was to discover whether or not this method was successful in decreasing heat loss through thermal bridging.


Site Plan


Floor Plan

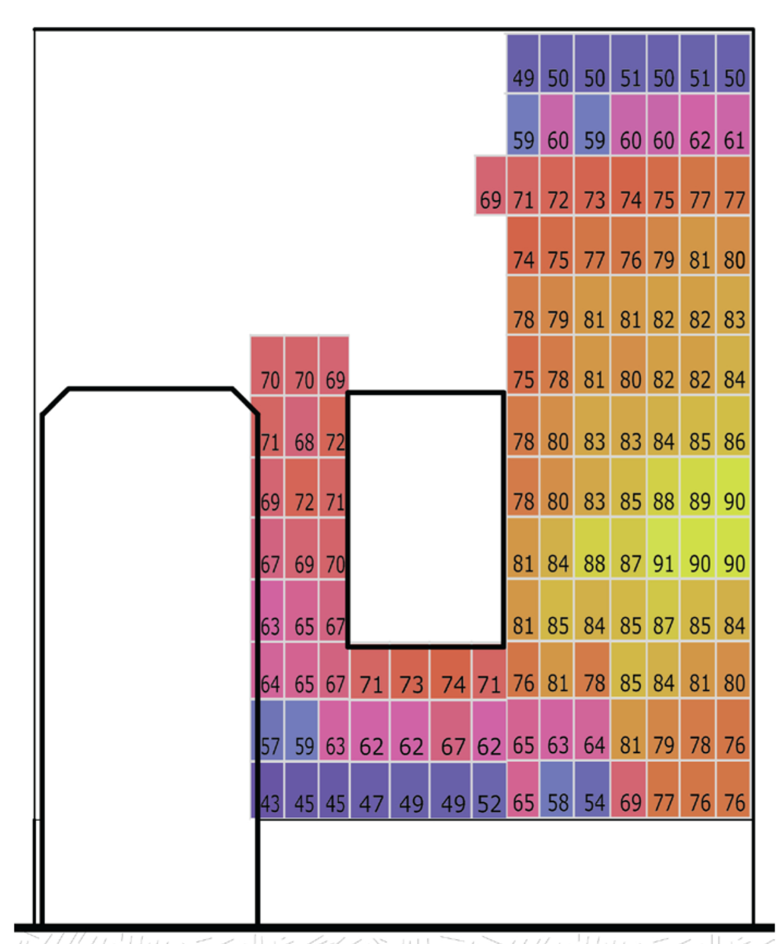

South Elevation


Perspective by Builder Robert Bolman

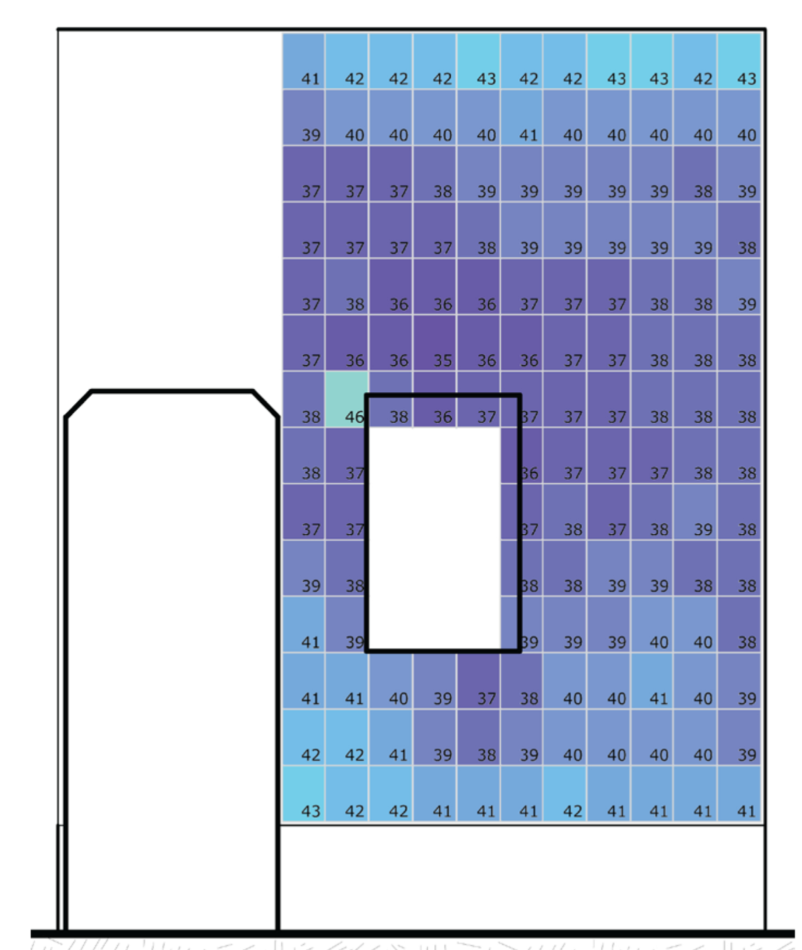


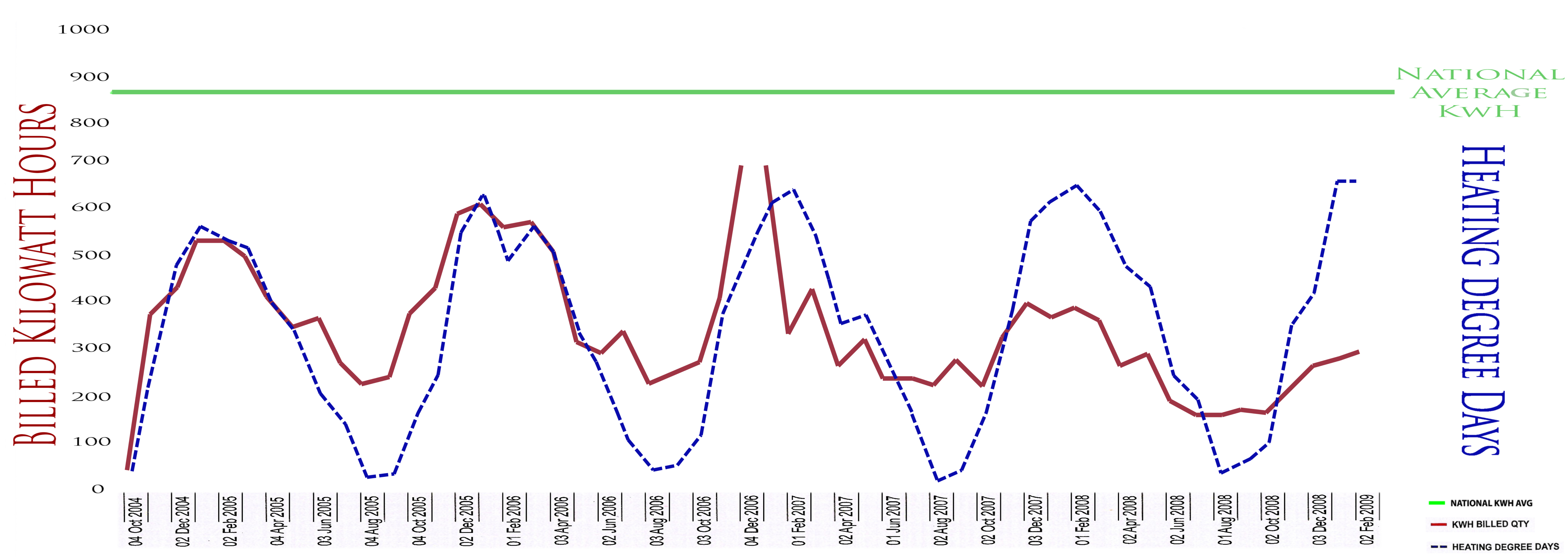
Wall Section

During this time, the wall was receiving direct sun, but was still chilled by the previous night. We hoped to find out the effects of solar gain on the wall. We hypothesised that thermal bridging would appear as cooler zones. The cooler areas around the window and door and along the top and bottom plate have solid wood members without thermal gaps. The cool bands at top and bottom accrue less solar gain do to shading from rosemary bushes and a short eave.


February 9, 2009 at 10:00 am

The preliminary results seem to show a higher interior temperature difference average at the middle of the wall. Both the top and bottom of the wall have the smallest difference in temperatures. The average temperature difference for the measured wall area is 7 degrees. The area performing the best is directly over the window, with differences there being around 10 degrees. The areas performing the worst are the top and the bottom of the wall assembly.



February 20, 2009 at 8:00 pm




In order to test our hypothesis , it was necessary to get an accurate image of the temperature conditions along the wall. To do this, we set up a grid system on the wall. Then, using a ray-tech gun, we tested the temperature at each point in the grid. This method was used on both the interior and the exterior of the building in order to find the difference between interior and exterior temperatures. We repeated this procedure at different times of day two separate times. One day we tested in the morning and another day we tested in the evening, both in the hopes of

finding thermal leaks by analysing where the temperature differences were greatest. Based on the results of our tests, it appears that the center of the wall, especially the area surrounding the window, is well insulated, having the largest temperature difference. However, we have found that the temperature difference at the top and the bottom of the wall assembly were within an acceptable range. These findings lead us to believe that the cellulose insulation has actually not settled , leaving the wall devoid of serious temperature stratification and performing as desired.