

# Production of compressed stabilized earth block essay sample



**ASSIGN  
BUSTER**

The environmental advantages of building with Stabilized Compressed Earth Blocks using AnyWay products Earth building using AnyWay's new line of products has much to offer those who place value upon environmental sustainability. It enables us to incorporate the land we live on into our buildings, saves energy both in the process of creating the building materials and in importing them to the building site, creates more efficient thermal and acoustic isolation, and adapts itself to the local environment in which we live. In the last years has arisen a global movement that emphasizes the need to use advanced technologies in the building process which protect and preserve the world we live in. AnyWay's innovative technology enables the use and recycling of local readily available materials while creating strong and easy to use earth blocks.

Cost and Energy Efficient in production The cost of an Earth Block wall system is about 40% cheaper than conventional systems. Earth Blocks are made on-site, saving in transportation costs and fuel consumption while requiring little energy in the block making process. Cost and Energy efficient through the lifespan of the building Earth Block building creates incredible energy savings for the owner throughout the life of the building. The thermal mass quality of Earth Blocks alone can offer the owner savings of up to 14% on cooling and heating costs. When the owner's home energy requirements are reduced this much, the community saves as well. Non-Toxic Block making itself is a non-toxic process, and accordingly the buildings themselves are comparatively clean. Often, manmade ingredients of modern construction (like concrete) contribute to an environment that is filled with toxic chemicals and gases. It's a win-win for both occupant and the

community when new buildings are constructed with earthfriendly materials. Structural walls A wall system using Earth Blocks can be as much as 40% cheaper than the conventional alternative.

Durable When you consider that the oldest structures standing throughout the world today are made of earth, to say that Earth Blocks are durable seems an understatement. Fire and Pest Resistant Earth Blocks are fire, bullet, sound and bug resistant to the point of being considered “ proofed”. Using Earth Blocks increases your comfort and your enjoyment of your home. Virtually Soundproof Earth Blocks are so dense a building material that, if they wish, occupants can be effectively “ shut off” from the outside world. Earth block buildings create their own world on the inside which most people find is an added attraction. Aesthetically Pleasing The use of Earth Blocks as the primary building material provides an opportunity to explore an endless number of creative architectural designs. The natural colors of the earth can be used to enhance the warmth of the living environment.

Exteriors are typically given a weather-resistant skin which can be colored or left natural, while interiors can be plastered with a variety of decorative mixtures or left exposed. Arches and rounded corners are options that allow for additional flexibility in design. Earth Block buildings have a look and feel which envelops their occupants and blends beautifully with the natural world.

Environmentally Friendly When you consider the attributes listed above, the underlying theme is that building with Earth Blocks is environmentally friendly. From the construction of the block itself to the finished home, this is a way of building which benefits everyone. Soil is the result of the

transformation of the underlying parent rock: it is transformed into smaller components and aggregates by the weather, the water, biological processes and by animal and plant life.

**Visual Examination** The dry soil is examined with the naked eye to estimate the relative proportions of the sandy and fine fractions. Large stones, gravel and coarse sand are removed in order to facilitate the evaluation. **Smell test** The soil should be smelt immediately after removal. If it smells musty it contains organic matter. This smell will become stronger if the soil is heated.

**Touch Test** After removing the largest grains, crumble the soil by rubbing it between the fingers and the palm of the hand. The soil is sandy if a rough sensation is felt and has no cohesion when moist. The soil is silty if it gives a lightly rough sensation and is moderately cohesive when moistened. The soil is clayey, if when dry it contains lumps or concretions, which resist crushing and if it becomes plastic when it moistened.

**Lustre Test** A slightly moist plastic ball of earth is cut in two with a knife. If the freshly revealed surface is dull, the soil will be predominantly silty. A shiny surface on the other hand indicates the presence of a plastic clayey soil.

**Adhesion Test** A slightly moist plastic ball of earth is prepared and a knife is stuck into it. When the knife is withdrawn, some soil may stick on the blade: a gravely or sandy soil will not stick, a silty soil will stick a bit and a clayey soil will stick a lot. **Washing Test** Wash the hands with the slightly moistened soil. The soil is sandy if the hands easily rinse clean. The soil is silty if it appears to be very sticky and the hands can be rinsed clean with difficulty.

The soil is clayey if it gives a thin film and the hands can be rinsed clean quite easily.

Jar test is a simpler procedure than a lab- test. This gives the earth block producer good feeling of the soil composition through a layering effect. After being shaken in a capped jar filled with water, and allowed to settle, the course materials sink to the bottom of the jar: small gravels at the beginning, then sand, silt and the finest at the top, clay. Procedure: 1. Pick a straight sided jar with a flat bottom, such as a tall olive jar, or larger mayonnaise jar. 2. 3. Fill about 2/3 of the jar with the soil to be tested. Fill the jar with water, making sure that the soil is completely saturated and the water level is near the jar top.

4. Add about one teaspoon of ordinary table salt, which will aid in settling the fine clays. 5. Cap the jar and vigorously shake it until all of the material is in suspension. 6. Place the jar on a flat shelf and wait approximately 6 hours. (After 4-8 hours, all material should have settled out, with almost clear water between the top of the soil and the water level above). 7. Consider the entire soil depth from bottom to top as 100% and mark equal increments of 10% on the side of the jar. This will give you a rough idea of the percentages of the above ingredients in your soil.

This test measures the proportions of clay, silt, and sand/gravel. The jar test consists of the following steps: 1. Filling a quart size canning jar up to 1/3 of its volume with dry soil; 2. Adding clean water up the second-third of the jar's height; 3. Adding a pinch of salt to the water; 4. Mixing the soil, water and salt with a paddle or other device; 5. With the lid on the jar, shaking the

jar vigorously until the soil particles are in suspension; 6. Letting the jar sit for one hour; 7. Again, with the lid on the jar, shaking it vigorously, and allowing it to sit for one minute; 8. After one minute, marking the height of the fine gravel and sand, which will readily settle to the bottom of the jar, as T1; 9. After 30 minutes, add second mark to the point where the fine gravel, sand and silt have settled out of the water, as T2 will; 10. another 24 hours, adding a mark at the highest level of the fine gravel, sand, silt, and clay, just where the water and soil contents have separated visually, as T3; and, 11. Calculating the percentages of the ingredients of the soil by following the equations where  $T1 = \text{depth of sand}$ ,  $T3 - T2 = \text{depth of clay}$ ,  $T2 - T1 = \text{depth of silt}$ , and where each depth is divided by T3 and then multiplied by 100.

Fill the wheelbarrow. Consider to place the wheelbarrow under the wire mesh. Level the top with the ripper. Check that it is filled according to the requirements.

Deliver to the mixing area

For example: for each mixing we will use 1/3 bag of Soil Block (1 bag= 25 kg, 1/3 bag= 8.33 kg) which provide 6% out of 132 kg earth. It is recommended to split the bag evenly to three buckets. In order to prepare 132 kg earth we will need: A. 10 liter bucket= 12 kg (1 liter= 1.2 kg) B. 1 wheelbarrow smithy is 60 liter= 72 kg (60×1.2 kg)

That means that for each mixing we will need: 1 (72 kg) wheelbarrow + 5 (12 kg) buckets= 132 kg (earth) + 8.33 kg Soil Block + water 72 kg 12 kg 12 kg 12 kg 12 kg 12 kg

+

132 kg earth

+

1/3 bag = 8.33 kg

+

water

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TM

DRY MIXING

COMPONENTS

72 kg 12 kg 12 kg 12 kg 12 kg 12 kg

+

132 kg earth

+

1/3 bag = 8.33 kg

PROCESS

Pour the Soil Block (1/3 bag= 8.33 kg) on the pile of Soil (132 kg earth).

Mix all the components.

Move the pile 2 or 3 times to obtain a uniform color and homogenous mix.

Check regularly the block height. Do it at least once every new batch of mix: test the first block of every new mix! Tilt the block on its edge and check the 4 corners with the block height gauge. The block height gauge must touch gently the block: it must neither be loose nor scrape the block. A slight friction is acceptable. If the mix quality is perfect and yet it still happens, correct the adjustment of the top plate (see p. 27)

Note When the top plate is well adjusted, but if the block height gauge does not give a good result, that means that the quality of the mix is not correct: a too dry mix will give thicker blocks, when a too wet mix will give thinner blocks. Irregularities in the corners can come from a mix, which is not homogeneous, and/or, the mould not evenly filled. When the mix quality is alright and the height is not correct then check the adjustment of the top plate (see p. 27). When the block height gauge test is not satisfactory, always check first the quality of the mix, and never touch for any reason the top plate adjustment! | P a g e 23

Every morning: Check that the machine was well cleaned the previous evening. Check that all the bolts are tightens strongly: especially those from the lever and the opening and lid/lock mechanism. Beware: A disregard to this will let the bolt loose and later the machine will get damaged! Fill the 7 grease nipples with the grease gun till some grease appears on the side of the shafts. Clean the excess of grease. Grease the roller Grease the piston shaft Grease the sliding guides of the piston with the fingers.



Every evening: Clean the dust and brush the machine especially the piston mechanism. The machine should be very clean and should look like new!

Check that no bolts are loose and, if any, tighten them strongly.