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And this whole house has been damaged but then if you look at the sociological and psychological aspects why these houses are located here, on the top of the ridge or the top of a in a slightly higher area, it's not a mountain area but slightly but if you ever looked from the rich houses villages, you will see the whole entire village. So, this is where the traditional, the landlords or the rich people who used to settle down on the top.

So, it shows the significance of the status of that particular community and who try to look at the whole village and including in some villages even the entry point of a different community also from the external side, it depends on the untouchable. So, this is the condition, social systems which has been prevalent in these areas and now what happened to these houses.

So, people who were not having any house to live there, so when these people have migrated to a different place because they could able to afford somewhere and they could able to live somewhere else. So, that is where this unsafe houses has become a shelter for the corridor between these two families has become a shelter for the homeless people, but the question is, is it really safe to live there?

Because aftershocks might keep coming on and there might be a possibility that you can see that whole damage has been occurred. So, there is a great possibility that this may also collapse and the wash areas has been damaged behind and the toilets.

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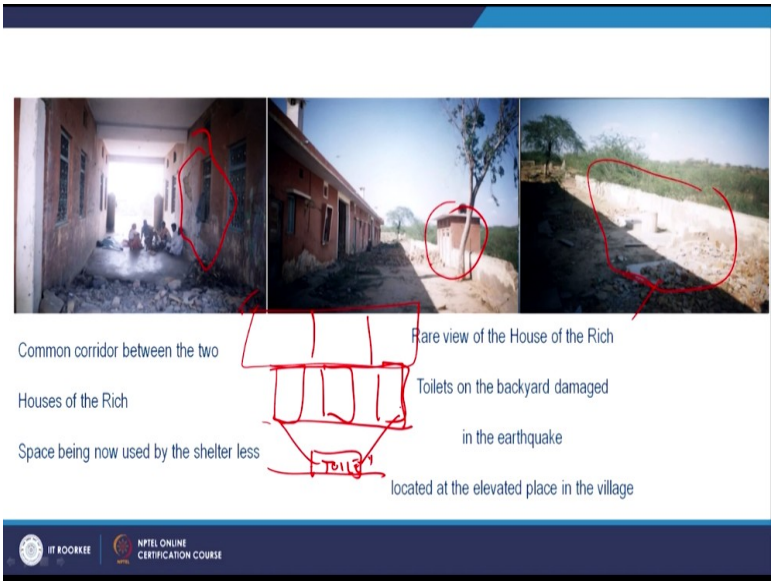

But you look at it the wealthy class of the village, they have a detached toilet system and detached washing systems towards the rear side so which means though the independent families are segregated by wall and the common corridors at the end like you have the 3 families living like this but they have a common toilet. So, they gather at the rear space and at the same time they have their personal demarcation of their space.

So, this is how the whole and this is completely treated as one unit to represent one family belonging.

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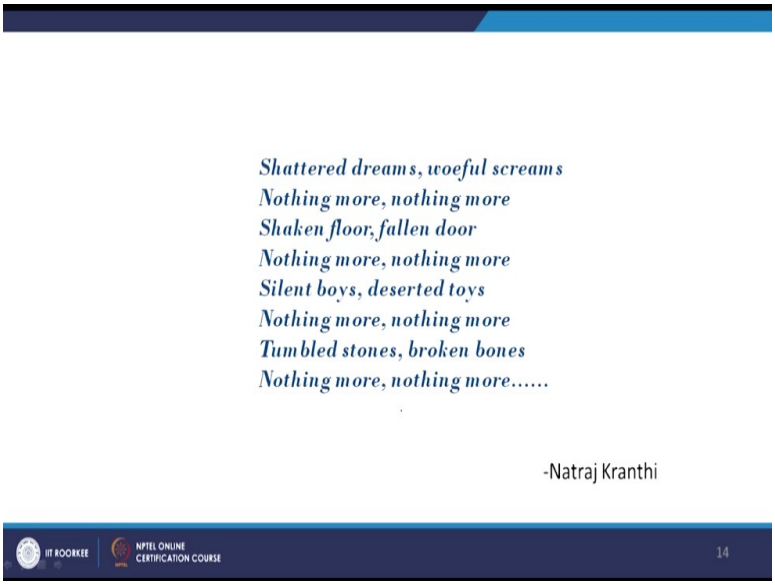

So, this is the story of immediately after the earthquake but now I will just read out a poem which has been written by Natraj Kranthi and it was at the moment of the earthquake impacts. He talks shattered dreams, woeful screams, nothing more, nothing more, shaken

floor, fallen door, nothing more, nothing more, silent boys, deserted toys, nothing more, nothing more, tumbled stones, broken bones, nothing more, nothing more.

So, this was on the wake of this disaster, one of my friend Natraj, he has written this kind of narrative of explain the pain and agony of the families and what happens to their dreams, what happened to their flows, what happened to their belongings, you know how they are, how the people, the children can become orphans when the parents die and you know how people die, what kind of panic situation it was, that is the.

And in such kind of situations, obviously one of the important aspect is the schools like as I showed you some community hall infrastructure; even these kind of infrastructure has been affected. So, many of these schools were damaged and many of the community halls, community centers have been damaged. So, this actually says that you know they are afraid to go to school.

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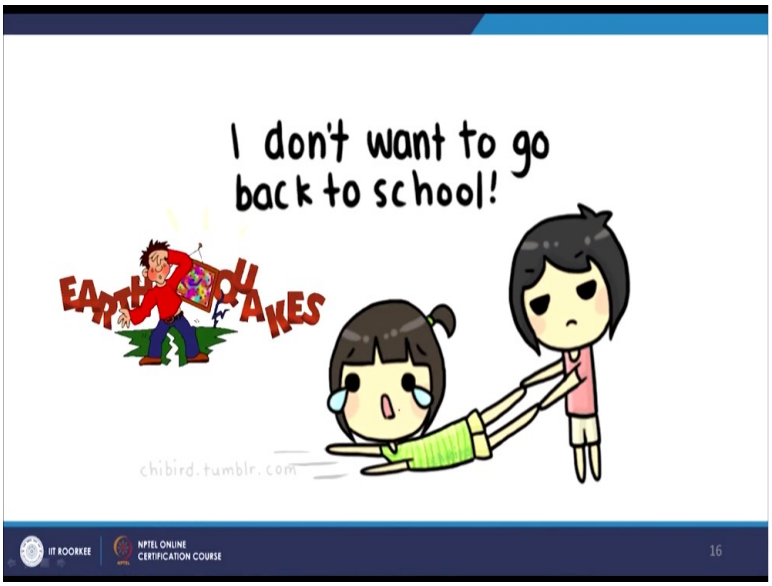

So, that is where the schools have been stopped for about one year, nearly one year. So, how about education, you know what to do, how we can engage the community and the children because you know that is also needed, what happens to the school education and where do we provide the school facilities and this is where many NGOs have came forward, many development agencies have came, they collaborated in different forms as I am not going in detail about how differently they have collaborated.

But at least some of them they sponsored it, some of them they worked independently, some of them they collaborated with partnerships. So, these are some of the examples you can see that the weave of the classrooms.

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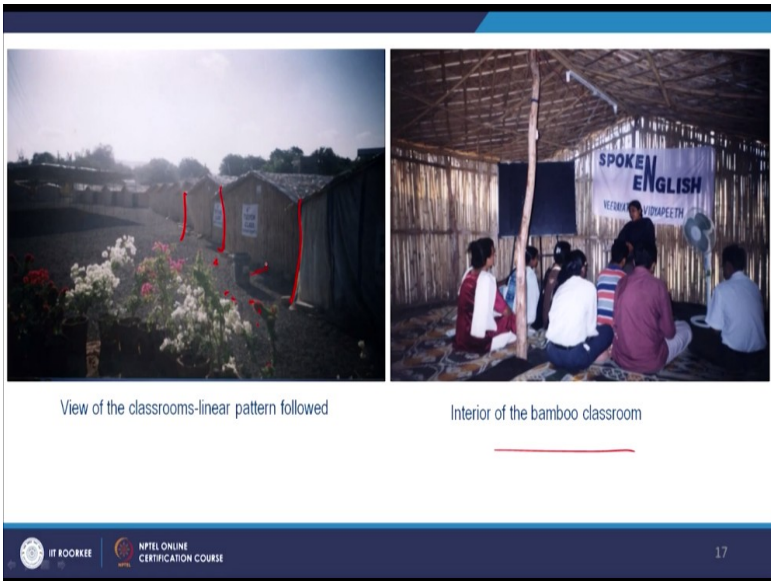

This is a school, a temporary school, which has been constructed to provide some education facilities for the people who does not have school, I mean at least from the neighborhood areas and you can see that the kind of linear pattern has been organized to organize the school and this is the interior of a bamboo classroom but now the question is, yes they are good at least bamboo has been supplied.

And it has quickly erected to make assemble because it is very easy to build bamboo, you just have to make kind of panel-based and make some studs, make the structure with the poles and then tie up and then what you see here is this is a gravel you know the gravel, they put the gravel on the top so that even if the rain comes it does not become dirty and because there is hardly any level difference.

It is hardly 5 centimeters to 10 centimeters level difference and even in case when rain happens, so that is where they put the gravel so that the water can percolate and this whole school has been established. So, here then people, the local teachers or the local educated graduates, they started volunteering themselves to teach to the children.

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And similarly, some the school office, some of the office buildings and they have also developed in the laminated paper pipes, you know you will also see that from the Tadao Ando's work and the temporary shelters which will actually provide with the laminated paper pipes and this was about in those days I am talking about 2002 which has costed about 27,000 rupees per unit.

So, which was very reasonable amount of cost. whereas, the dining hall which is completely built with the canvas material, so that itself has costed about 18,000 material but then if you talk about the durability or if there is any kind of rain occurs then obviously this may not so better and but this is little better than the canvas aspect of it. What they do is, they have this walled structure and they put a mat on it, the tarpaulin sheets or some kind of waterproof materials so that it can actually protect as a roof.

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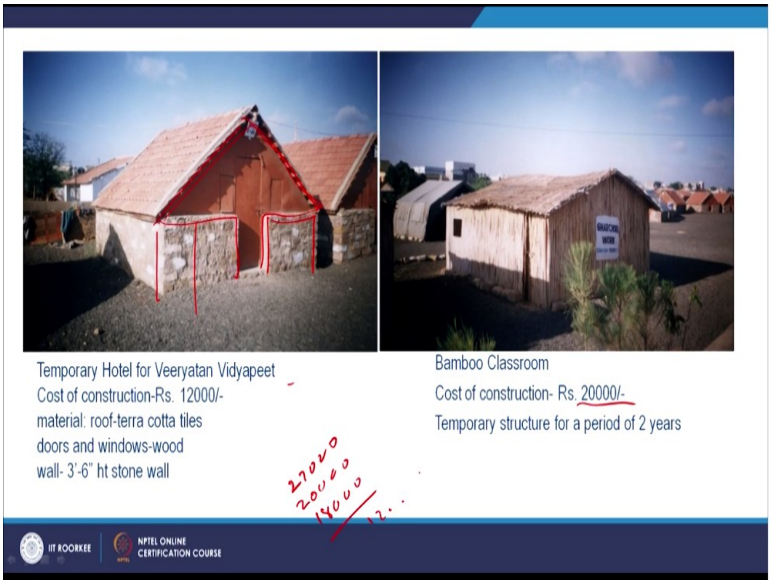

And some of the hotels because a lot of NGOs coming forward, so where do they stay, you know there is many offices coming here and going and doing lot of reconstruction work. So, there is lot of movement is going on in this work and this is where they also developed some kind of residential aspects of it that is where they built till the sill level with the stone wall with a random, rubble masonries.

And then, this is a kind of wooden material or a tin material and then this is the traditional tile pattern roof where the terracotta tiles and the doors and windows are made with the plywood, the plywood material which is made about 3 feet 6 inches stone wall and this bamboo construction was about 20,000 rupees. So, if you compare the cost the terracotta was 27,000 and this one was bamboo was 20,000 and the canvas was about 18,000.

So, the more the material we are improving obviously and this is about 12,000 you know because that is where you are using the stone and as well as the plywood material into it and this all temporary structure for a period of 2 years and because for 1 year they completely abandoned the school education.

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And many NGOs came forward how we can actually generate some alternative livelihood items, you know like the woman how they can be educated the unemployed youth, how they could be provided with some kind of alternative skills because like tailoring, sewing, embroidery or any craft making, so this is one of the so what they did was they had a stone wall and they made a vault and they have a truss, the metal truss.

And in some places they have also had this asbestos and the tin sheet, the tin sheets as well and the galvanized sheets and they put it on the top and that way because being a hot place they also have kind of some places they had some little insulation sheets, you know the materials which can make and the flooring it has again a kind of mats which has been laid out, in classrooms there is a normal mats and as well as and this is a computer lab you know it's an air-conditioned computer labs which has a semi-circular trussed roof.

And this is again a prefabricated trussed roof and here they have actually established a training center even computer training center as well.

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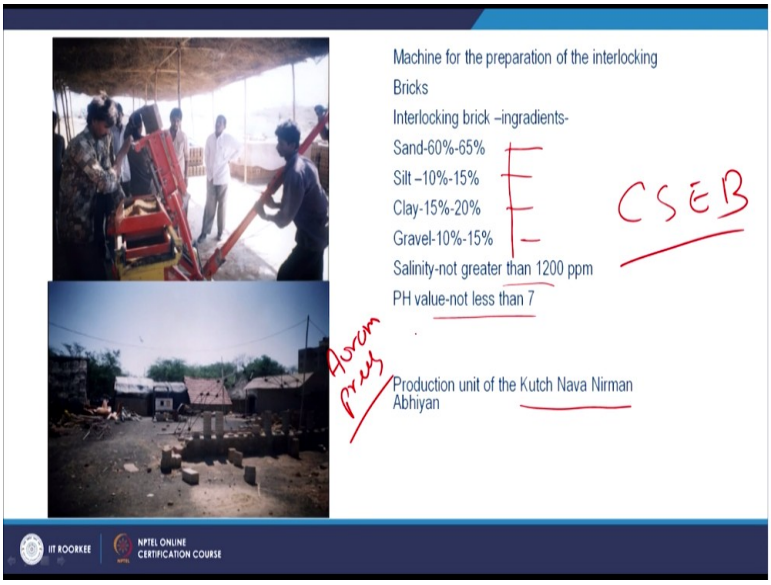

And this is all about the temporary housing but then when we moved on how in these 2 years, how we have to invest for the permanent housing because the land allocation issues, way to relocate and how to find the land, how to get the money, how to get the collaborations, all these becomes big questions you know and these are challenging issues and this is where the technology transfer also has been adopted in Gujarat case.

So, where center for earth unit in the Auroville Center has actually transferred some rammed earth and as well the compressed stabilized, here we call it as CSEB, compressed stabilized earth block. So, these are basically a kind of interlocking bricks and this is the workshop in that name. Earlier, the present Hunnarshala, it's called Kutch Nava Nirman Abhiyan and now it is called Hunnarshala Foundation.

But this was the workshop of, so, where they used to make these interlocking bricks or they used to make these kind of pre-fabrications, making these live models of the houses, demonstration units and the here, based on the silt content and the clay content is 60 to 65% of sand, 10 to 15%, clay is 15 to 20%, gravel is about aggregates are about 10 to 15% and salinity should not be greater than the 1200 ppm and pH value not less than 7.

So, that is a kind of composition through which they developed these stabilized earth blocks which are about in a square shape and this is called Aurum press.

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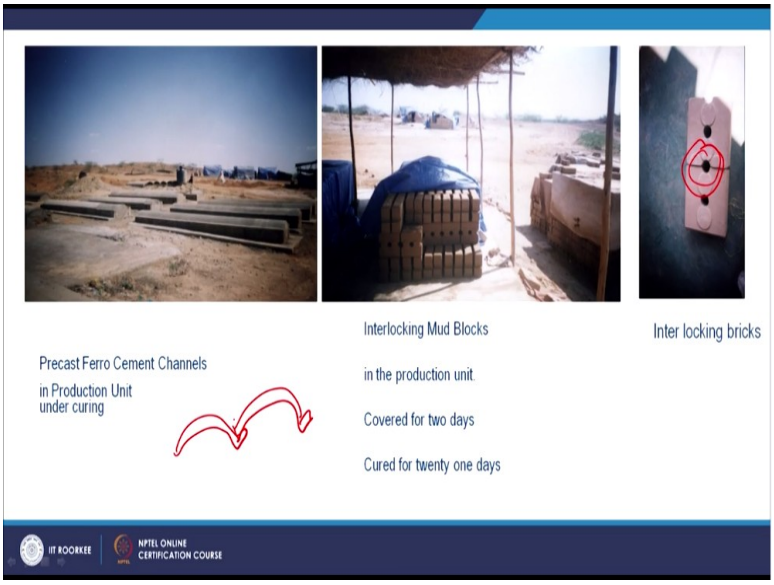

And basically what they do is they actually prepare the mixture of this, mixing with the cement 5% to 7% of the cement and to stabilize it and then they actually this is a mould process. So, they keep that and then they press it and then these moulds will come out of it and this is where the interlocking bricks because these are very helpful for having a vertical reinforcement at the corners or the junctions.

So, they can have some vertical reinforcement, there is a male and female coupling of it. So, how these two things has to match and then the reinforcement is kept whether it is a pipe inserted or 8 mm rod has been inserted into it. So, what they do is once they prepare these bricks, they do not fire these bricks, what they do is they cover with a kind of plastic sheet for two days and then they leave it for about, they cure it for 21 days in the hot sun and then they directly use it to the building material.

Also, there has been some prefab units such as Ferro-Cement Channels. So, you have the Ferro-Cement Channels which are moulds and similarly these are mostly used for toilets as well so this is how the roof structure is like. So, it couples one over the another and then it forms as a kind of roof.

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And not only in terms of this earthquake but also the previous past earthquakes, there has been some efforts by different agencies by development alternatives in Delhi, Nirmithi Kendra's in Hyderabad. This is one another model where they talk about you know the pre-cast frames you know. These are all the precast technologies in housing. So, this is a frame which has been developed by Nirmithi Kendra like a door frame.

But then this is a hollow brick model of roofs, what they do is these things will embedded into this frame and that becomes into the roof, you know so each panel is fitted with these kind of blocks and then it composed as one panel. So, this is one technology and also they developed one more technology of having a diagonal bracing and the concrete balls you know. So, they roll over even if earthquake comes and shakes.

Obviously, the building can only you know tilt a bit, so that it will not affect much damage. So, this is also one of the technology, which Nirmithi Kendra have developed.

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