

Expansion of Eglise Évangélique Luthérienne

Balagué, Haiti

June 28, 2017

The village name, Balagué, was spelled for me by two different people - Baladaguae and Baladague. The spelling I have chosen to use was taken from the spelling on the back of tee shirts worn by many people who were celebrating the 18th anniversary of the church.



We took the cut-off to Colminy and very shortly we came to a fork in the road. We took the right fork, which showed much more travel than the left fork. We then drove along a road that passed through rice fields. We passed irrigation canals, and in due time at the junction of a major irrigation canal and the river, we came to Balagué.

GPS N 19° 13.660' W 072° 40.314'

Wednesday Morning Church Service

As we pulled up to the church (Eglise Évangélique Luthérienne), there were 150 or so people sitting under a large mango tree. Most were sitting on the ground. There was singing going on. I joined the group under the mango tree.

This was their normal Wednesday morning service.

Preliminary Inspection of the Church Building

Helen told me that the church was too small. That was evident. They wanted to expand it by moving a wall about 3 meters. She wanted me to do an inspection, so I did. An elderly lady, probably 55, so she was 20 years younger than me, joined me. She kept brushing the children off the wall who were hanging onto the windows looking in at the VBS that was going on inside. As I took photos and examined the structure, she pointed out things to me. She did not speak English,

but she understood building problems, and we could communicate well.

The church was supposed to be confined masonry, but was infill masonry. The walls and the columns were not bonded together, and they were moving in different directions. The only top beam was at the front, and it lacked the ability to hold the front of the building together. The roof was metal and had minimal overhangs (good to withstand windstorms). The church had a double door in front and a smaller door on each side of the building. Normally with confined masonry or with infill masonry, there is a column on each side of each door, and the door frames are attached to those columns. In this case the front door lacked columns, and the door frame was previously attached to concrete block. For the side doors, at least one of the columns was missing, and the door frames had broken loose from the concrete block.

Detailed Inspection

Locations are based on standing at the street and looking at the building. I started the inspection at the rear corner of the building on the left side, and proceeded across the rear of the building, then up the right side of the building, across the front of the building, and back towards the rear on the left side.

One of the first things that I noticed is there was no bonding between the columns and the infill block walls, as illustrated in this photo. In this photo, the block wall has been plastered.



The foundation was made of fairly large rock that were mortared together. However, some of the mortar was weak and had eroded away.



Photo was taken at the rear of the building, on the left side, and illustrates how the block wall is not tied to the column, how the block in the wall are not bonded together with mortar, but just held apart with mortar, and how the mortar between the rock of the foundation has eroded. There is also erosion on the lowest concrete block shown in the photo. In other areas of the building there was much more erosion in some of the concrete block.

One of the leaders of the church told me



that the columns were set into the ground approximately two thirds of a meter. That is approximately 26 inches.

This photo illustrates severe erosion on the lower row of concrete block on the right side of the building.



This photo illustrates the same thing near the front of the right side of the building and shows the front column.



This photo illustrates erosion of one of the large stones in the foundation. Combined with the erosion of the mortar between other stones, it demonstrates that the foundation should be plastered to protect it.

This photo shows vertical cracks between the column and the block wall. It also shows horizontal cracks in the column. Based on the location of the horizontal cracks, it appears that they are caused by the rebar wraps around the vertical rebar, and that the wrapping rebar is oxidized and has expanded slightly. If the oxidation continues, and it will, in time the column will have severe horizontal and vertical cracks.



This photo was taken at the front of the building. It illustrates that a column was placed into the wall as confined masonry and met a beam that was poured



across the top of the wall. The concrete left gaps so neither the beam nor the column is effective. Further, the photo illustrates that the wooden top plate is not attached to the wall for at least one meter.



This photo illustrates the upper right corner of the front door of the church. The door is contained in a steel frame, and the steel frame was anchored into the concrete block wall. Since the concrete block were weak, and the cells were not filled with concrete, movement of the frame caused the concrete block to break. The only thing holding the door frame in place is that it is sitting on the slab, and it is nominally attached to the beam above it.

This photo illustrates several things.

1. The concrete beam across the front of the building is not continuous.



2. There is no horizontal beam halfway up the wall.
3. There are no columns on either side of the doorframe.
4. The wood truss and metal roof are sitting on top of the walls and not

attached substantially to the walls.

5. The overhang from the roof is minimal. This reduces the impact of high winds, which could tear the roof off, but it increases the erosion of low-quality concrete block that are used in building the walls.

6. The gable end is open (closed on the other end), so there is a larger updraft when winds hit the front of the church.

This is the side door on the left side of the building. In this case the metal door frame is attached to a column. The quality of the concrete in the column was not sufficient to hold the door frame in place, so repairs had to be made.



The upper portion of the same door frame. On the latch side of the door frame, repairs have been made because movement of the door frame had broken the block which were to hold it in place. There is no concrete beam above the doorway to help hold the door frame in place. A wooden beam rests on

the top of the wall around the exterior of the church. Wood trusses in the metal roof are attached to the nominally 5 cm by 10 cm wooden beam.

More to come