LUND UNIVERSITY

HOUSING DEVELOPMENT AND MANAGEMENT

COURSE "Conservation and management of historical buildings"

"MAINTENANCE PLAN FOR THE BELL TOWER OF SANTA CRUZ, GUANACASTE, COSTA RICA"

Fig.1. Photo of the old Santa Cruz, catholic church, dedicated to the Esquipulas Christ. Courtesy of "Ministerio de Cultura Juventud y Deportes"

By: Archt. FRESIA CÉSPEDES CORDERO.

Guanacaste, Santa Cruz, Costa Rica

March, 2006.

Special thanks to:

Ministerio de Cultura Juventud y Deportes of Costa Rica, how provide my with the information that I need according to realize this project.

Arquitectos de Costa Rica S.A, how have all the author writs of the plans that appear in this document.

"El día quince de enero
La iglesia con gran fervor
Celebra tu dulce nombre
Como amante salvador.

Todo el mundo cristiano
Se mueve con alegría
Para venirte a gozar
Y estar en tu compañía.

Todos los caminos llenos
Vienen a tu romería,
Vienen también al santuario
A solemnizar tu día[1]"

---

[1] **Un known**, Pieces of the prayer for the Esquipulas Christ, Mentioned by: **Roberto Cabrera Padilla**, in his book "Santa Cruz Guanacaste, una aproximación a la historia" Ed Guayacan. 1989, S.J, C.

LIST OF CONTENS

INTRODUCTION

Religion, culture and society, together in the creation of new cities, give way to different concepts different ways of thinking, as different cultures, give different shapes and forms to all the cities around the word. In Costa Rica the colonial period marked our cities development, creating a specific model from which go on with.

Spanish urban development in Costa Rica has been qualified according to the changes in urban design, in a way these changes or models of growth related to the functional needs of the city. But also the strategic location of the towns, that was became a new point in the conquest of an unknown territory during the conquest.

Under this concept we can distinguish in Costa Rica two different types of cities: the first one works like a settlement, supplying services and developing economy activities, each one of them with its own influence border[2], these cities were isolated and their population had to provide their own resources, the exchange products of them was archaic, the communication in between the attraction poles was the street used for the product exchange around the country.

The second type of city was that born in the border limits of the attraction poles, becoming a border town, that lived and grew depending on the product exchange between mayor cities (see graphic1).

Under these circumstances Santa Cruz was born, between Nicoya and Liberia as mayor cities, were the study object is located, Santa Cruz suffer the consequences of being a "border city[3]"
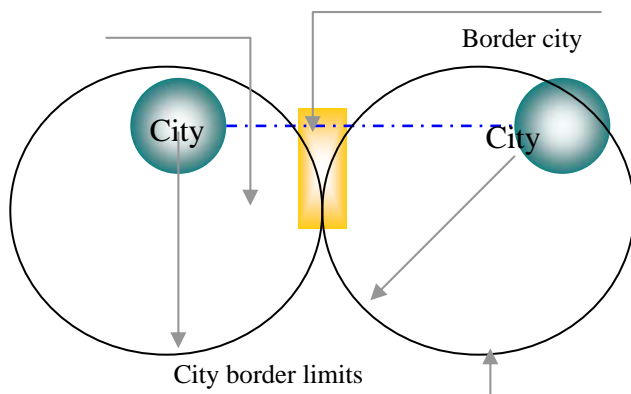
Graphic 1: "colonial cities origin"
In this graphic we can see how was the creation of the new cities in Costa Rica during the colonial period. Its important to analyze how Santa Cruz was establish, because in that way we can understand the church roll in the town development and how import is an icon as the study object in terms of cultural heritage.

Santa Cruz became a town in the 18th century and the inhabitants came from Nicoya[4] looking for better agricultural soil and natural resources. It is located 49m above sea level,

---

[2] Calabrese Omar, "La era neobarroca" Madrid, Ed Cátedra 1989. "…the border separate and includes all the elements that make sense in to the same system of thing…The external thing are separated from it for simple opposition…or does thing are part of another system…"
[3] Miquel Izard , "Marginados, fronterizos, rebeldes y oprimidos" España, Ediciones del Serbal S.A 1985, were he presents a study case about migrant people and the way assume their own space, creating a policultural environment defined in their own terms.

with an extension of 1.325 Km2 and 31.113 inhabitants at present, the Municipality represents the local government. This city is dedicated to the Esquipulas Christ, and this faith became the center of it's history, identity and culture since 18 th century, when it was introduce by the Guatemalan influence and supported by the catholic church.

Myths, legends and vision came part of the culture ideology that worked as control over the population. In this senses the inhabitants built the first church in 1822. It was built with lime, stone and wood, and later destroyed by an earthquake.

In the same place in 1890 was rebuilt the second church with a wooden structure, a concrete façade and the bell tower betwen 1900 to 1910. These new façade and the bell tower where built with concrete and steel bars, a new way of building at the moment.

The church's façade was destroy in 1970 by the achon of man hand in order to build a new and modern construction[5]. They also tried to blow the tower with explosives, but they didn't success. The only reason why the bell tower is still standing is because of the opposal of the inhabitants of Santa Cruz, they don't let the engineers destroy the tower but for the façade it was to late.

Fig 2 and Fig 3. "Internal and external views"
This pictures represent how the church looks in 1934 after the construction of the new and modern church, until now the only part of the church that remains is the bell tower. Photos courtesy of MCJD of C.R

The bell tower remains as a social and cultural symbol from a past time, standing with dignity, facing the city with pride, building the present on the basis of its history.

---

[4] Roberto Cabrera Padilla, "Santa cruz Guanacaste, una aproximación a la historia y la cultura populares. Ed Guayacan 1989. San José, Costa Rica.
[5] La Nacion, october 1970, San José, Costa Rica.

LOCATION AND ENVIROMENT

Santa Cruz is a young city located between Liberia and Nicoya, it is the third of eleven districts in Guanacaste, in the north eastern part of Costa Rica, (see fig 4 and fig 5), with 31.113 inhabitants and 1.325 km2 of extension.

Fig 4 "Map of Costa Rica"

Fig 5 "Map of Guanacaste districts" Santa Cruz is the third one

In 1848 this little town became a district established in December 7th by the 167 Law. Until then the local government was and still depends of the Municipalidad of Santa Cruz. This city is located in a natural valley, surrounded by rivers, with excellent natural condition for a developing city, the primary economical activity in the region is tourism[6], most of the beautiful beaches in Costa Rica are located in the region. (see fig 6)

Fig 6 "Santa Cruz sunset view"

Is easy to see in this picture the great natural condition of the natural environment in the site, for the development of a new town or city, lot's of space for agriculture and plane topography.

Santa Cruz has two seasons: the dry season and the rainy season, the highest temperature during the day is 30°C, and by night it falls to 18°C. The folklore mysticism and culture is very rich, specially during the religious festivities on January 15 th, (see fig 7).

---

[6] Miguel Salguero, "Cantones de Costa Rica" Editorial Costa Rica, 1991, San José.

Fig 7 "Esquipulas Christ festivity"
Religious activities are very important for the inhabitants of Santa Cruz, their town is named Santa Cruz, because of the Santo Cristo de Esquipulas. The bell tower is an important icon during the festivity. (Photo courtesy of Roberto Cabrera Padilla. Santa Cruz Guanacaste.)

Santa Cruz, as all Costa Rica, is located in an earthquake zone and buildings are very susceptible to that kind of phenomena, specially those built in ancient constructive systems ussing clay and stone, Due to this reason the first church collapsed. However, the bell tower held on during the earthquake of 1950[7], it is build with concrete and steel bars.

LEGAL ISSUES

Costa Rica's government created the Law N 7555 on October 20, 1995. This law regards the conservation of architectural and historical heritage[8]. The goals of this law look foreward to the: conservation, preservation and protection of the architectural and historical heritage of Costa Rica, they also describe what it is and how are we going to take care about the different characteristics. All the responsibility lays in the ministry of culture and sports, and works together with a special governmental group composed by different representatives of the state. Under this law, the local government or Municipality has no responsibility at all in this subject matter, the responsibility on municipality is to suggest to the ministry the sites in danger.

In the bell tower case the community of Santa Cruz who approached ministry and ask for its designation, in the heritage list. But at the moment they couldn't give this designation because the tower wasn't over 100 years old, but the social pressure over the designation worked, and the bell tower was listed in July 29, 2005. This news was published in the official newspaper of Costa Rica "La Gaceta". (See fig 8)
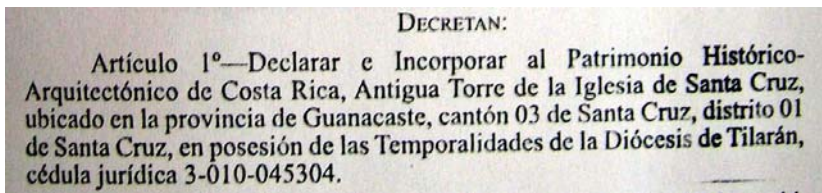

Fig 8. "Paragraph informing of the listing in the official newspaper of Costa Rica"
In this photograph of the paragraph of the official new paper it can be read, how the tower were listed.

---

[7] La Nacion, Op Sit.
[8] Ley de patrimonio histórico arquitectónico de Costa Rica, "Legislación del patrimonio Histórico Arquitectónico, ley numero 7555" Imprenta Nacional, San José Costa Rica 1995.

BELL TOWER VALUE IN THE URBAN ENVIROMENT

The bell tower became a sign of Santa Cruz's cultural heritage, and it is symbolism not only depends on the architectural volume or form, or in the use of the building or the permanent adorment of it's façades, the feelings for it grow very deep in the population's social environment, the meaning of place make sense in this building. Its height an the way it interacts with the public space or park in front of it. In Aldo Rossi´s words "…the meaning of place is that unique relationship between a spot in the city and the buildings around it…the selection of the spot was relevant in the classical word, the situation, the state ruled by the *genius loci* or local god…how looks what is happening in that spot…[9]".

This is how inhabitants interact with the building, with mysticism and respect, specially since 1970 when the government intented to demolish. It is an icon of the urban and social space. (See fig 9)

Fig. 9 "relationship between spaces"
An analyze of the tower height in relation with the street and the park in front of it, as well as the communication between symbols like the statue, the tower and the park, is relevant in this photograph, they represent the city center a mark in the landscape a sign for the pedestrian and inhabitants. This elements create the sense of please in the site.

Santa Cruz is a low density town, most of the construction is composed by one or two floor, made of wooden structure and zinc roofs. In a very simple way, very modest heigh-ceiling with one floor and long slanted that protect windows from the heavy sun (see fig. 8), It is easy to understand the architectural magnificence of the tower in this environment, if we compare the tower with other architectural pieces it probably is not very impressive, but it is important to analyse the study object in its context. Under these conditions the tower emerges as a prominent symbol, constructed with new materials in the midst of a little villa with a low urban profile. (see fig 10,11,12,13)

---

[9] Aldo Rossi. "La arquitectura de la ciudad". Editorial Gustavo Gil, S.A. Octava edición, 1986. Barcelona, España.

Fig. 10,11,12,13. "Santa Cruz's urban profile"
Observe the different scales between the elements. A prominent element surrounded by one floor wooden houses.

To analyse and comprehend dowse different scales is to understand Santa Cruz's urban profile in relationship with the bell tower. In a very illustrative way it is easy to understand the urban phenomena regarding the elements relation. In this urban scale and image, the tower became the most important architectural element in the surroundings, bringing order into the urban pattern.

## THE BELL TOWER AS A CULTURE HERITAGE LAND MARK

Social, culture and anthropological values are present as signs in the bell tower, in a cultural way, the tower was build over qualitative bases.

There are two mayor actors in the city development, first the catholic church as a powerful institution in charge of the control of the population and the second one is the population it self, represented by Doña Bernabela Ramos a visionary woman that donate the property to build the church.

Santa Cruz´s park has been given her name, and her donation respond to a religious need and overall to a legend "…the legend says that the Esquipulas Christ appeared between two trees in this property, people tried to took away the image but it still come back to the same space[10]" These two actor are represented in the urban pattern as spaces, conforming the center of the city (see graphic 2)

---

[10] Miguel Salguero. Op Sit.

9

Graphic 2 "relation between spaces"

Main Street

Belltower

Park

Municipality
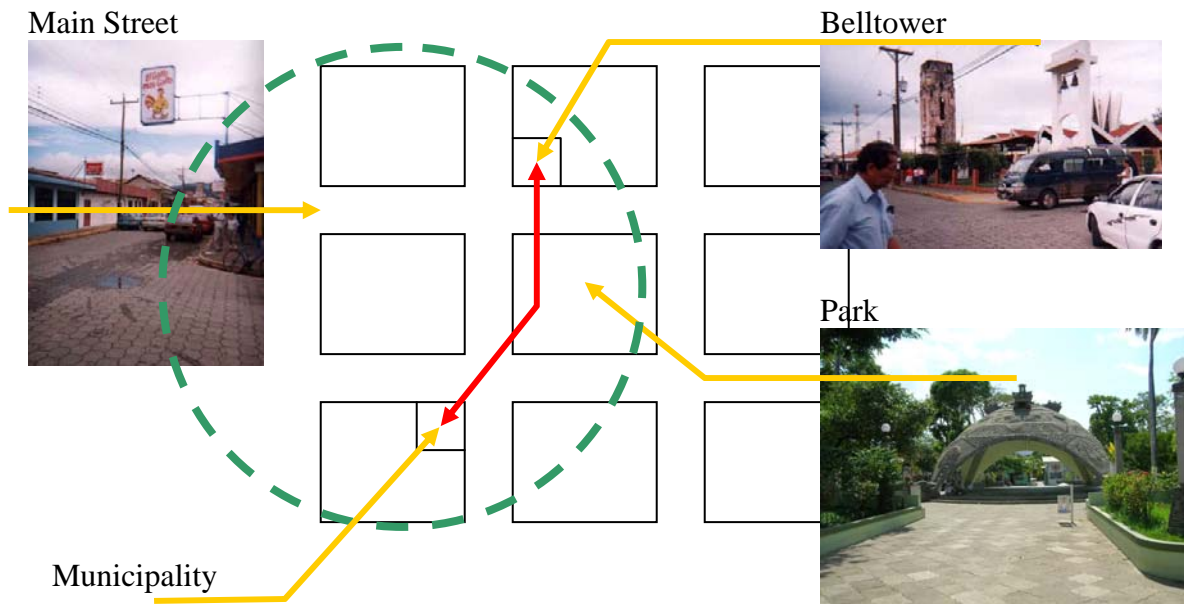
An schematic urban analysis of the Santa Cruz center, (grfic 2) puts in evidence the relation between spaces: church, local government, public space and main street, were all the economical activity takes place. The tower is the focus point of attention point, the same feeling that the inhabitant have about the building.

TODAYS SITUATION, URBAN DESCRIPTION OF THE SURROUNDINGS

Santa Cruz as a border city presents many urban design problems, mostly refered to the change in use of its areas. The city is not prepare for the population growth and tries to supply economical needs. These issues along poverty, cultural identity loses and non planned growth, this little city tries to keep up with global flow, but in the matter of urban image, cultural values and folklore it is loosing the battle. (See fig 14,15,16,17)

Fig. 14,15,16,17 "Usage and image problems"
The uses changes and the non planning growth of the city is bringing caos in it, the pedestrians, bicycles and vehicles, all compete for the same space, creating insecurity and pollution.

10

The bell tower is not an exception in this environment, it was built with a purpose and specific use.

As most of the houses in the surroundings today work as shopping centers, the tower is used as storage building and its deterioration is easly to detect, the urban problems embrace it and cover it with pollution and isolation, (see fig 18): a fence has been built around the building, interrupting the integration with the public space.

The door of the building are closed, and there is no access to it, the only way to approach it is walking through the church gardens destroying the grass (see fig 19, 20)

Fig. 18. "Chaos in the urban environment"
The problems surrounding the tower: the car traffic and the pollution within, makes the tower look like an isolated element in the middle of all the urban confusion around it.

It is not hard to create accessibility to it, the location of the tower is a perfect spot in the city, specially with the main façade facing the park and the main street.


Fig 20,21. "communication between spaces"
The permeability of the fence is not enough to integrate the tower with the public space, instead of that, it creates the sense of isolation

Usually urban problems are very hard to solve, but in this case because of the environment, location, and sense of place of the tower it can be done making a few changes in the surroundings, for example, creating a pedestrian site in front of the building, in this way three important elements will be in communication, the tower, the park an the main street, solving problems like insecurity, pollution and isolation.

STUDY OBJECT DESCRIPTION

According with the plans[11], Santa Cruz's bell tower is a 4.32*4.36 square building (see draw1). The stair only leads to the second level. To acces the third floor is necessary to use a ladder, which doesn't exist any more, it used to be in wooden structure it don't last until today. (see drawing 2)
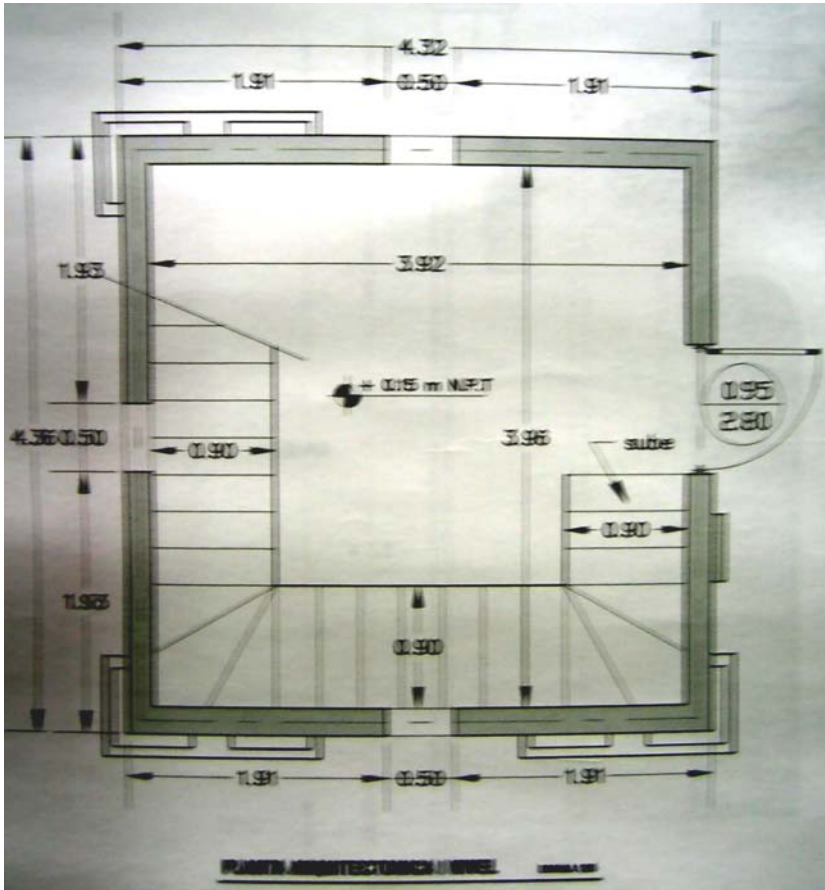

Drawing. 1. Plan of the bell tower's fist floor"

According with the plans, the solid concrete walls work as support structure, the columns in corner have an esthetic function, non structural. One door three windows about 0.50m each. The floor level from the ground is 0.15m.

The tower is 19.70m height (see draw 3), and has three floors. It was built in concrete, with steel bars, the plaster is also concrete, and the paint is a mix of clay and natural pigments.

Inside the tower there is a concrete stair used to access the bell, that no longer exists, it also has two clocks in the façades, that don't work at the moment, (see draw 3).

---

[11] The plans were made taken the matures in the site, by Arquitectos de Costa Rica, Santa Cruz, Guanacaste, Costa Rica, used with permition in this document. Guanacaste 2006
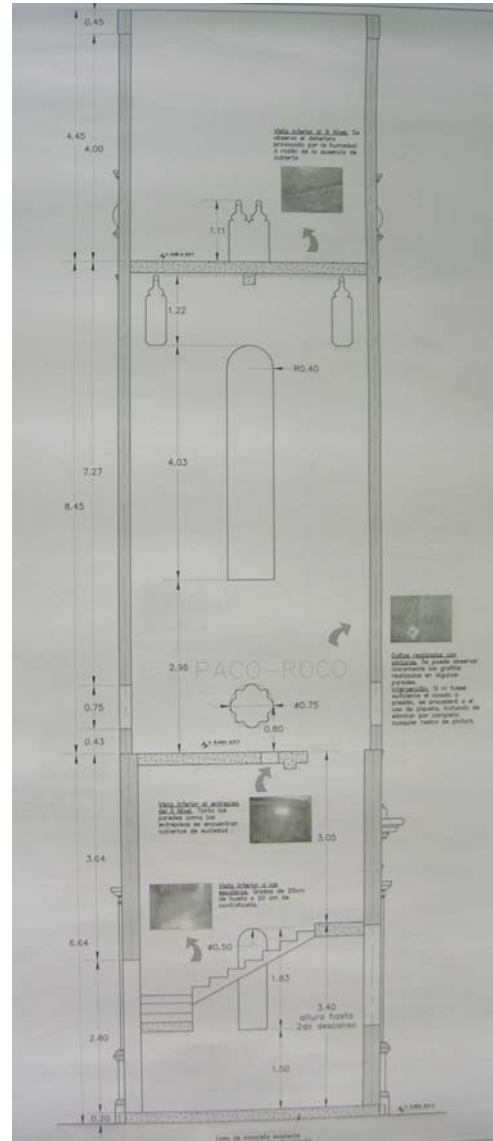
PLANTA ARQUITECTONICA III NIVEL   ESCALA 1:50
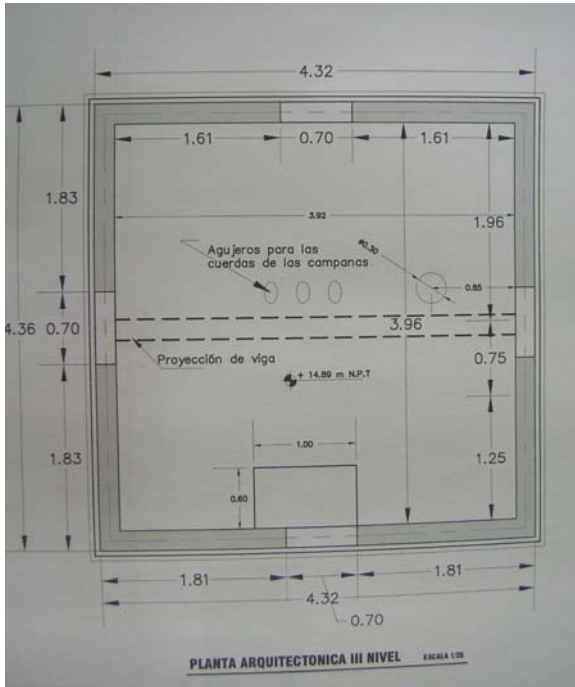
Dra.2. "Third floor"
This plan indicates the location of the stairs as well as the holes for the bell ropes.

Dra.3. "Section view"
Three levels appear in the section, the cupola and the ladder are gone, the first one was removed in 1970 and the ladder before that time.

The bell tower has four façades, very similar between each other, with the exception of one, were appear the door, in this faced used to be the rest of the building that was demolished in 1970 according to build the new modern church. (see drawing.4 and fig 22.)

According with the permanent adornment, I can say that this tower seems to by under the historicism architectural period, specially for the columns in the corner and the shape of the windows, it is hard to locate the architectural movement according with dates in this building, most of the architectural movements tuck long time to cross the ocean at the end of 1800´s, and when that happened they don't were pure movements.

SIGNS OF DECAY IN THE TOWER

In the bell tower there are many signs or decay, it is a isolated building, located between the catholic church and the park of Santa Cruz in the middle of a low density town, it have become an hitus in the city, because its height, and the prominent location.
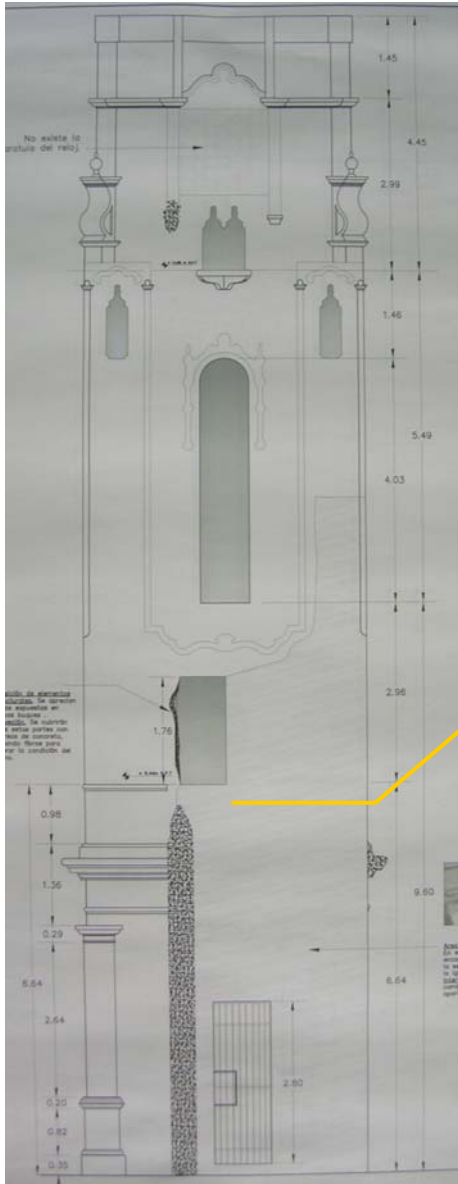

Fig.22. "old church building"
There can be seen the way how was connected the church and the bell tower.
Drawing 4. "lateral view"
How it is today, without the rest of the façade, the marks were the building used to by are easy to see until now.

Today's tower situation can by describe with five evaluation parameters such as: crakes in the blaster, holes in the blaster, shape loses, structural problems and missing elements. The crakes go from 1mm to 25mm if the crake is bigger and dipper than 25mm is going to be listed as a hole in the blaster, many crakes are not shown in the plans because they were to little to be listed. (Drawing 5)

CRACKES IN THE PLASTER

The crakes in the façade are the sign of time and weather over the structure, it appear when the plaster has to move according with the hot and cold, dowse changes start cracking the plaster, then the algis, and fungus get in this little crakes making the problem even grows.
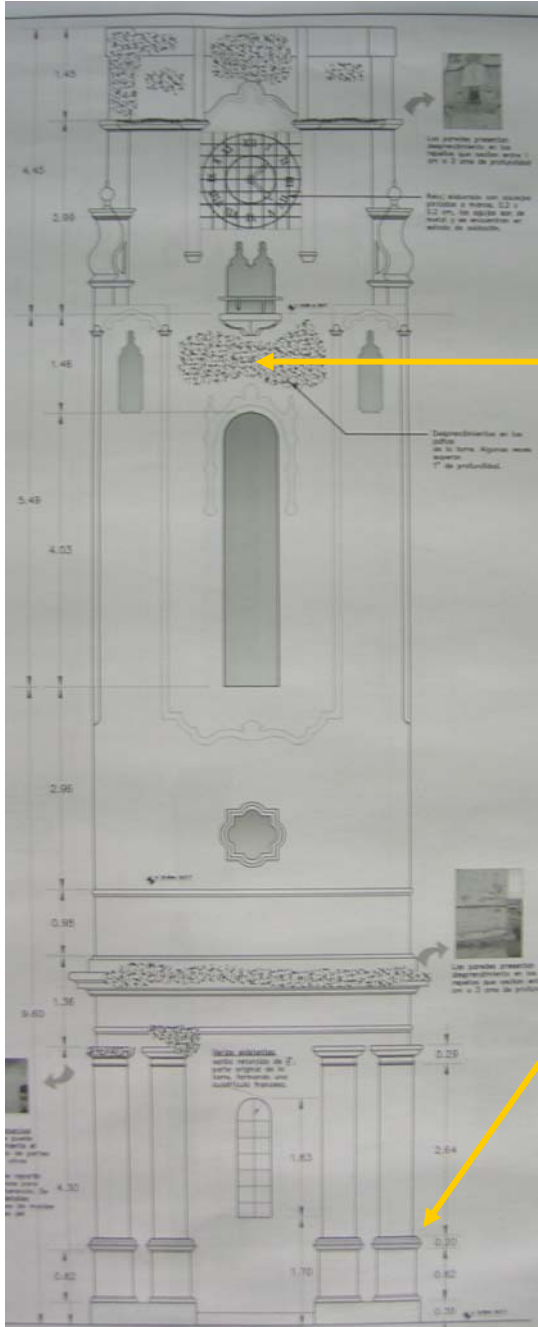
Dra.5. "front view"

Mayor crakes as the one show in the photographs, have not become structural problems in most f the cases are plasted crakes.

HOLES IN THE PLASTER

The holes in the tower appear when part of the plasted is missing or about to fall (see fig 23, 24) other kind of holes appear and they are not structural problem, but the hole cross the concrete wall as it is shown in (fig 23, 24) in most of the cases these holes were done for a reason, specially in the rainy season when the roof was liking and the water gets in to the tower the only way to take it out was drilling a hole in to the wall.

Fig. 23,24. "Non estructural problems"
Non structural problems are the ones that don't interfere with the building structure such as the crakes in the plasted, there are not only crakes, the tower shown missing plaster parts, and missing parts in the permanent adornments. There are also holes in the third floor, this create liking problems.

SHAPE LOSES

Shape loses are the problems that has some elements in the tower, they has loos part of their shape this problem can be seen in most of window, corners and permanent adornment, they have failed in the past time without appropriate attention. (see fig 25,26)
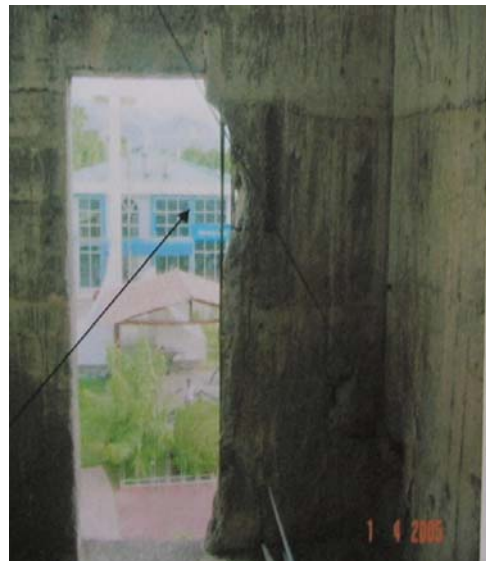

Fig. 24,26 "missing parts in element's shape"
The first part was to identify how many parts are missing an the to analyze, how is going to react the new concrete with the old one, and in that way define what kind of concrete is going to be used to rebuilt those elements.

ACESSIBILITY PROBLEMS

Accessibility problems were identify specially inside the tower, were the stair has bad shape and are unsafe, the accesses to the third floor is impossible, because the wood ladder disappear in time, and the windows don't have any protection of the weather. Approach the tower from outside it can be done in an unconftable way, there is no fire protection or light power, according to the public services such as toilets are inexistent. (see fig 25,26,27)

Fig.25,26,27. "un security and accessibility"
According to the plans the stair only have 0.90m and don't have any security element, and the accessibility from outside can be done walking over the grass in the church garden.

Accessibility from out side.

MISSING ELEMENTS

There are only three elements missing in the tower, the copula, the bell and the clock in the rear façade all of them were remove in 1971, according to built a new church, when the government want to demolish the entire building, in old photographs it can be seen the bell tower with the copula as it is shown in the following pictures see (fig. 28,29)

Fig 28,29. "Missing elements in the bell tower"
Comparing the two pictures is easy to see that the copula is missing, the clock don't work any more and bell, was remove in 1971.

RESCUE PROPOSAL

The proposal is divided in three phases, first rescue the tower, second rebuild the bell tower copula and in third place integrate the tower with the public space. The first face began in October 2005, and it was done fallowing different procedure, first the tower was clean with pressure water, then the cracks and holes in the blaster were fixed with concrete using chemical product to improve the adherence between them, in this case the old concrete has in it 30% less cement for a combination that support 210kg/cm2 using Portland type I cement with, river sand, stone and water[12]. With this information the combination of cement stone and sand was made in the same way that it use to be. (see fig 30,31,32)

Fig. 30,31,32. "cleaning poses"
First the tower was cover for protection, then it was clean with pressure water, in the photograph it can by seen the clean surface, ready to work over it.

---

[12] M and M, Remodeling and consulting. Ing Mateo Quintavalle, "Restauracion concervativa de la torre colonial de santa cruz" technical matter in santa Cruz Tower. Santa Cruz, Guanacaste Costa Rica.

FIXED SHAPE LOSSES

After the cleaning process, comes the fixing process, the most important thing was to now what kind of concrete use for filling the holes, the concrete was done with 30% lees cement as we us to do in Costa Rica at this moment. (see fig.33,34)
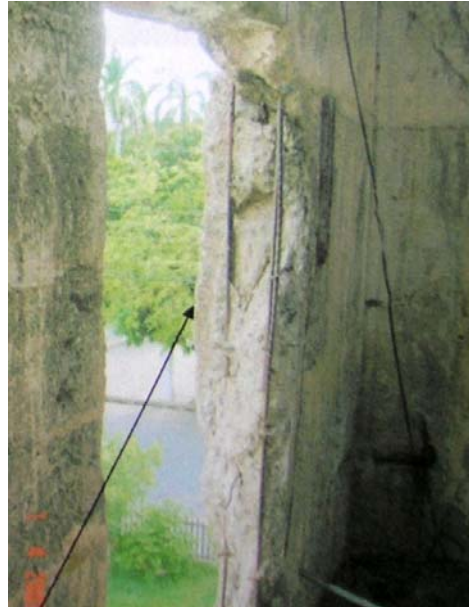

Fig. 33,34. "Shape reconstruction"
The shape reconstruction in different elements was made as appears in the photographs, filling the holes with concrete, made with cement, sand and water.

ADDED ELEMETS

To improve the safety the stairs were fix, filling the gaps and some time rebuilding part of the step and adding a steel element to prevent that people fells down, they also ad electrical power and water to the building, the accessibility to the third floor was solve adding a new steel ladder, in the place were was before the wood one. (see fig 35,36,37)

Another problem was the liking in the third flour, this was solve with a non permanent roof, that is going to prevent that the rain water gets in to the building for the moment, waiting to start the second face of building the copula. They decide to drain the water with a 4" pipe cover with concrete, that comes from the roof and cross all the floors, in its way out (see fig38)

Fig.35,36,37 "accessibility an security solution in the stairs"
The stair were built and the steel element added, to prevent accidents, and the steal ladder is in the position it used to be long time ago. T

The material change respond a economical reasons, the steel last longer than the wood specially in high humidity countries as Costa Rica.

ACCESIBILITY

The accessibility to the tower from out side was solve creating a side walk, that connect the street with the main entrance in the tower, this side walk go all around the tower, on this side walk are going to de four light in the corners to create a cousin filing at night, and to try to integrate the tower with the church.

The kind and colour of paint was made by analyzing the composition of the paint in the bell tower, the chemical study reveal that the tower was red, in the permanent adornments the colour define was impossible so the engineer and the city mayor decided the colours. (see fig 40,41)

Fig 38 "Rain Water pipe"
This is the way how the rain water go out the building, using a 4" pipe covered with concrete, this pipe come all the way from the roof to the side street, crossing all the floors in the building.

Fig.40,41 "lighting and accessibility"
Side walk that connects the tower with the main street, improving with it the accessibility to the tower, lights, locate in all of the corners around the bell tower, to improve security at nights. In the other photograph, grawnd light, to create the feeling of magnificent using lights from bellow.

The color of the tower was red, about the ornaments, were painted in white and yellow.

FINAL RESOLTS

As is going to be presented in the final result, the restoration of the tower is complete, according to the professional in charge of the process, these restoration is a true restoration, that's why the permanent element has not rebuilt completely.

fig. 42,43. "permanent adornments"

The permanent adornment were fix, and the façade painted in red as the result of the chemical study dictate, the permanent adornment were paint in yellow.

Fig 42,43 "Stairs reconstruction"

The people in charge of the rebuilt added new elements according to prevent accident and provide electricity to the bell tower.

Fig 44,45 "Clock in the front view"

The clock were added, it doesn't work still, the shape loses were fix by filling the gaps with concrete and then the surface has being painted.

Fig 46,47 "reconstruction in columns"

The no structural elements as the columns has being painted I white, and the hole were in 1970 were put the explosives are evident, as part of the tower history.

REFERENSES.

1. BENEDETTI, Mario <u>Yesteday y mañana</u>, Ed Espasa Argentina 1994
2. BORJA, Jordi. "<u>La ciudad multicultural</u>" Caracas 2000. <u>www.Innovarium.com</u>.
3. CABRERA Padilla. Roberto <u>"Santa Cruz Guanacaste un aproximacion a la historia y la cultura populares"</u> Costa Rica ediciones Guayacan, 1989.
4. CALBRESE Omar. <u>La Era Neobarroca</u>". Madrid, Ed Catedra, 1989.
5. CASTELLS Manuel. <u>La Ciudad Informacional</u>. Alianza Madrid 1996.
6. Código Urbano, República de Costa Rica. Ed. Porvenir San José 1996.
7. CULLEM Gordon <u>El Paisaje Urbano</u> Blume Barcelona 1974.
8. GARCÍA, Canclini Néstor. " <u>Imaginarios Urbanos"</u> Bs As 1996.
9. GARCÍA, Canclini Néstor, "La ciudad espacial y la Comunicacional",
10. IZARD Miquel <u>"Marginados, fronterizos, rebeldes y oprimidos"</u> España, Ediciones del Serbal S.A 1989
11. LYNCH, Kevin <u>La Imagen de la Ciudad</u> G.Gilli Barcelona 1998
12. RAPOPORT, Amos <u>Aspectos Humanos de la Forma Urbana</u>, Ed GG Barcelona 1978.
13. ROSSI Aldo. <u>La Arquitectura de la Ciudad</u>. Ed GG, Barcelona, 1986.
14. SALGUERO <u>"Cantones de Costa Rica"</u> Editorial Costa Rica, 1991, San José.