

Ressaca Farmhouse

Maintenance Program & Plan

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Abstract

This paper consists in a Program & Maintenance Plan for the Ressaca Farmhouse. It is a representative of the rural earthen constructions when Brazil was colony of Portugal. Nowadays there are only a few of these constructions in the city of Sao Paulo. This is an example of farmhouses built in that area before it's urbanization.

The conservation and maintenance of Ressaca Farmhouse is under the responsibility of the Department of Historic Heritage (DPH) of the Municipality of Sao Paulo.



Figure 1: The Ressaca Farmhouse nowadays.

Introduction

The Ressaca Farmhouse is now restored and in good shape. Nevertheless since the restoration in 1978 no plans for maintenance and management were made. For a long time this building remained closed without being used. This situation caused an accelerated deterioration and exposed the property to vandals. Works that sometimes occurred were always responses to the needs of the building itself or intention of occupation of some of the managers that have been there.

The Municipality of Sao Paulo has seven other similar earthen constructed houses, under the care of the DPH. This year, a contract was signed with a specialized restoration company aiming to achieve the maintenance of 14 historic buildings managed by DPH. This study has the purpose to propose the guidelines for maintenance of those buildings.

Background

Geography

Sao Paulo is the largest city in Brazil, Latin American and the entire Southern Hemisphere. With 1.523km² and 11,016,703 inhabitants (2006) is the third most populated metropolis in the world. It is located in the southeast of Brazil in a 760m high plateau.



Figure 2: Aerial view of the centre of the city

Rivers Tietê and Pinheiros border the central area of the city, but its territory spreads out east, west and south. A preservation area called Serra da Cantareira limits the northern expansion. The city is 60km away from the coastline to the south.



Figure 3: Satellite view of São Paulo

Climate

The climate of Sao Paulo is considered subtropical, with a decrease of rainfall in the winter and average annual temperature of 19 degrees Celsius, with mild winters and summers with moderately high temperatures, increased by the effect of pollution and the high concentration of buildings. The warmest month, January, has an average temperature of 22 ° C and coolest month, July, 16 ° C.

The humidity index is considered acceptable throughout the year, although the pollution reaches critical levels in the winter, due to the phenomenon of thermal inversion and the lowest occurrence of rainfall from May to September.

The average annual rainfall is 1317 mm, concentrated mainly in the summer. The seasons are relatively well defined: the winter is mild and with no rain and summer, moderately hot and rainy. Fall and spring are seasons of transition. Frosts occur sporadically in the more remote regions of the centre, and in strict winters in much of the council. It also occurs frequently in some neighboring counties.

The situation of the site

The Ressaca Farm House is located in the south zone of Sao Paulo, next to the maneuver yard of the subway at its north, next to the Jabaquara station, final station of the North-South line. This neighbourhood has many middle class houses from the 60's. . The Ressaca Farmhouse is inserted into a large green square on high ground in relation to its surroundings. It has an annex modern architecture building in concrete that shelters a Cultural Centre with a library, and where exhibitions, theatre classes, dance, music, painting, etc are performed. The square is frequented by residents in the neighbourhood to practice for physical activities and for recreation. In its surroundings some residential buildings with more than 15 floors are being constructed but municipal laws protect its views.



Figure 4: Aerial view of the site (red), the house (red circle), Jabaquara subway station (red arrow), area for residential buildings (yellow polygon), planned sidewalk (yellow line). 2000, archive PMSP/SEMPA.

History

The farmhouse is known by IPHAN (Institute of National Historic and Artistic Heritage) since 1938, when a photographer from the Department of Culture registered it. Nevertheless it gained legal

protection by the federal agency. It was protected by CONDEPHAAT (the state agency) in 1972, for its historical value.



Figure 6: Photograph from Benedito J. Duarte, 1938. Archive DPH/STLP

On the wall over the entrance door is engraved the date of 1719, which is probably date of construction of the house. Furthermore, by the time of its restoration in 1978 the tiles were still original, showing the dates of 1713, 1714 and 1716 and the name of the manufacturer (CR - Cristiano Raposo, or Antonio Branco Raposo), owners of neighbouring site.



Figure 5: Tile found in 1978's restoration with date of 1714 and manufacturer's name. Photo by Jorge Hirata. Archive DPH/STPRC

The black-cinnamon wood used in the construction should have been extracted from the region, once was mentioned in a study of 1938 from botanical F. C. Hoehne, the profusion of cinnamon trees in neighboring Park Jabaquara, remnant of green area located near the site of Ressaca.

In 1780 appears for the first time in documents the designation "Ressaca."

In 1872 the site was divided into four parts that were sold. One of them included the house. In 1900 this site was added to two other neighbourhoods. All together took the name of Ressaca. In 1908 the site was divided again into seven parts, and Antonio Cantarella, who urbanized the district of Jabaquara, opened the avenue with the same name and divided the neighboring district of Indianópolis, bought the

one that contained the house.

Since 1930 the site has become part of the district of Jabaquara. With the neighborhood urbanized, the Park Jabaquara disappeared in order to lead the airport of Congonhas.

Antonio Cantarella urbanized the site in 1960 but municipality approved the streets plan, with 40 lots only in 1970. At that time was in construction the Jabaquara Station and the maneuver yard of the subway, involving the expropriation of nearly a third of the site.

Deposition of the family Cantarella informed that they always kept the house carefully, which was used, with its garden, swimming pool, tennis court and lake, to rest on weekends.

The situation of the environment in which the house was abandoned after the division, and the beginning of the work of the subway, contrasted with that found in 1937.

During the urbanization process, the small house had been saved, however in very disfavored situation. It was isolated in a remaining rise of the original land.



Figure 7: Situation of the house before expropriations, reconstitution of surroundings and restoration. Archive DPH/STLP

The protection by CONDEPHAAT, in 1972 came later, when Nothing that could remember the ambience of the original site existed anymore. Architect Luis Saia¹ recommends, in addition to the restoration of the house, the restoration of the area as well, *“the rebuilding of its landscape and its dignity, criminally deformed by greed property”*.

The building was restored between October 1978 and July 1979, under the sponsorship of Project CURA/Jabaquara that deeply remodeled the region through the construction of large maneuvers yard of trains of the first subway line of São Paulo, the North-South, held by the Metropolitan Company - METRO.

The Project envisaged then, the rescue of the house and its surroundings, which included the following issues:

- Expropriation of the house’s and its neighbours’ lots.

¹ Cf. Luis Saia’s analysis. Designation Process CONDEPHAAT 190/72.

- Restoration of the house
- Remodeling of its immediate surroundings through expropriation of the lots around it and deploying a square
- Construction of an annex, now occupied by the Cultural Centre Jabaquara
- Setting guidelines for occupation of the surroundings aiming the preservation of the views of the house.

This project provided the return of the house and its immediate surroundings to a conformation similar to that found in 1937, based on photographs, creating a public park and an important area of leisure in the district. This is the conformation that remains today.

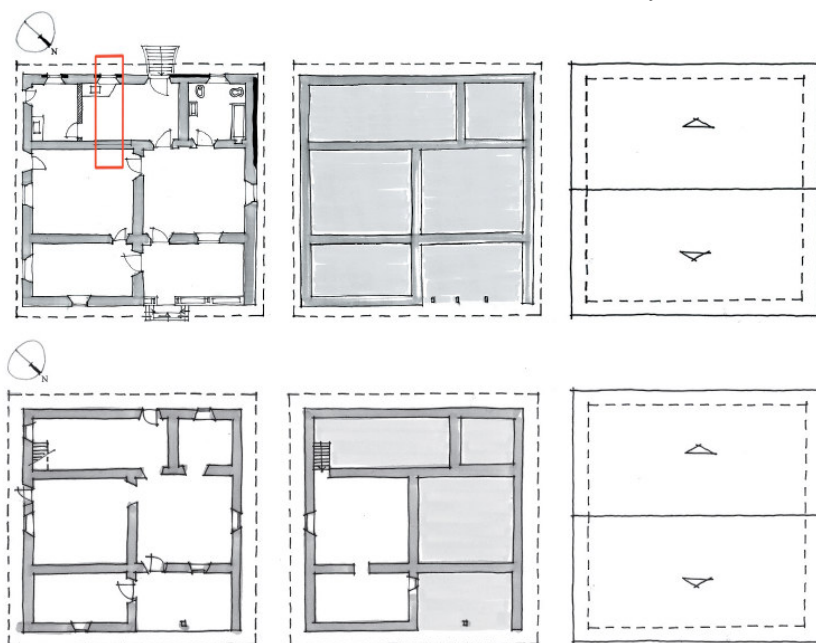


Figure 8: Plans of the house (floor plan, jirau and roof) before and after restoration. Lia Mayumi, Doctor Thesis, 2005.

The Object as such; function, size, materials, status

It is a construction of 175m² with a square plane (13.30m x 13.16m) with 0.55m thickness walls made with earth, in the technique known in Brazil as “*taipa de pilão*”. Nowadays it is coated externally with mortar of *sand + adobe + lime + cement* and internally with *sand + adobe + lime*. Its coating is in white limewash.

It has a two waters roof, with wooden structure and ceramic tiles of the colonial type.

Its windows and doors are made of wood. The windows have vertical bars of square section in the external side, in a reconstitution based on documents and old photos. The floor, originally in beaten land, today is in ceramic tiles with natural land color.

By the external side, surrounding the house, there is a sidewalk of approximately 1.10m of width in rustic rocks and a grass area. The high of the internal floor is 0.28m in relation to the square.

The house with five rooms, one balcony and a jirau has typical plane of brasilian rural colonial houses. The balcony, which gives access to

the interior of the house is tipped by a room with exclusive access. The other door is connected to the central room of the house, which leads to the other rooms. Except for two rooms there is no ceiling, and from inside it is possible to see the roof with its wooden structure and tiles. Covering the other two rooms there is a wooden ceiling, the jirau floor, with access by fixed wooden stairs.

In one of the rooms' floor there is an archaeological window with 2 x 2 m where can be seen traces of a foundation of a wall that existed dividing the room. This wall was not there anymore at the time of restoration and the option was for not rebuilding it, leaving only the window as a witness of the past time. At the moment we cannot see the ruin because it is covered with plaques of fibro-cement with wood.

- Nowadays the house has permanent vigilance and is administered by the DPH's Division of Iconography & Museums. Currently it hosts the exhibition Sao Paulo Faith and Party, with musical instruments of Sao Paulo tradition, which runs until March 30, 2008.

It's state of conservation is good. It has an annual but not planned maintenance.

In 2007 cracks appeared on the walls in one of the corners of the house. Those cracks are under investigation by gypsum spies. This monitoring will last six months. After this period, the study of the reports will provide the possibility of adopting effective measures. As precaution, a tree that was very close to the house has been removed and a work of drainage of the ground was held to eliminate the accumulation of water just by the wall and changes in the accessibility were made so that there are no obstacles to the flow of water.

It is very common in the city of Sao Paulo, as it is in tropical countries, the attack of insects to wooden parts of the buildings. Outbreaks of insects were discovered in the house and some wood parts need replacement. We even found deformities in timber of the roof structure that can cause infiltration.



Figure 9: Cracks on the south-eastern wall.2007 Photo: Aline Carvalho

- While implementing a system for combating and preventing attacks of insects with previous study in progress, a plan for periodic inspections and measurements of the air temperature and relative humidity, humidity rates of the various materials of the building (wood, earthen walls, plasters) and species of insects incidents throughout the year is being developed and it generates graphics and reports. Large and sudden variations in relative humidity and temperature cause deformation and infestations. From these results will be adopted measures to balance these rates and combat specific pests.

Except for doors and windows, wooden parts are painted in synthetic enamel paint that should be removed and replaced with oil paint.

For the ladder of access to jirau, will be designed and installed a handrail.

Staples system will be developed to lock tiles, avoiding its handling by wind and consequential infiltrations.

The electrical installation and lighting equipment, which have presented many problems and wear in recent years, should be subject to new project including telephony and logic. The lighting of the square must be improved.

The accessibility will receive adjustments required by law and should be completed with the implementation of the passage referring to the Cultural Center. A rest rooms for visitors and support room next to the house will be built.

A cover with glass and metal structure will be designed for the archaeological window.

The control of vegetation near the house and removing of a bamboo tree which produces shadow, causing the retention of moisture in the soil and on the earthen walls are being planned..

Analysis

This small house, a sample of the significant rural earthen buildings of the period in which Brazil was colony of Portugal, reflects the way of life in the farms at that time. It is a document of vital importance in the historic process of urbanization of Sao Paulo, because it represents the preservation of the identity and the history of the neighborhood. Most of the population from the district where the site is, although living next to the house and in contact with it daily, probably don't know its origin, its value and importance. A set of actions for recovery is required as well as the awareness that can bring people to be proud of living beside this monument. It also can attract visitors from other parts of the city who don't even know about its existence.

Self-sustainability is still a distant goal according to the current situation, but the implementation of such actions could lead to its future viability.

Proposal

This proposal is a Maintenance Plan from the Maintenance Program which contains all the information according to *Dick Sandberg's Practical Binder*.

Objectives of maintenance

- Keep the property in perfect conditions of use, safeguarding its constructive features and preserving its historical value.
- Avoid damage that adversely affects the health of elements and lead to adulteration and devaluation of the property.
- Fix recurrent problems, which extend attacking other parts of the building if not resolved on time.
- Avoid large expenditure on periodic restorations for lack of maintenance.

Other goals

Allow the property, by keeping it in perfect condition, to be valued by users bringing them consciousness and proud of its historical importance.

The Maintenance Plan covers repair services necessary for the proper operation and conservation of the building such as: minimization, control and combat of threats, correction of problems, accessibility, improvements in comfort and safety, prioritized according to the needs and availability of resources.

When those works were accomplished following the recommendations listed in item 5 of the binder², the building can be maintained in excellent conditions with only regular maintenance service.

Repairs

1. Treatment against termites: For this work we already have reports of diagnosis waiting for the hiring of propretreatment that will be conducted by the same company that made the diagnosis. The treatment will cover five years and contain informations on the system of maintenance treatment and prevention procedures when required
2. Replacement of timber damaged by attack of termites or by deformities. This work must be done before treatment against termites and simultaneously to items 3 and 4 below, sice the three items are dependent on the dismantling of the roof. The majority of the wood sold in the Brazilian market has unknown origin which means that it is often harvested before the time, not completely dry, causing deformities after its use. The timber that is going to be used must be certificated and draught. It is possible to reuse timber removed from buildings that were demolished and because it is in good condition, and old enough to guarantee the necessary dryness for its safe appliance.
3. Replacement of timber painting: synthetic enamel painting is not appropriate to the conservation of wood, because a raincoat layer prevents it's "breathing" or the exchange of moisture with the environment. It even favours the proliferation of funghi that rots the wood. It will be removed through chemical

² Maintenance Program Binder, Description of Special Maintenance Requirements

and mechanical process and in its place will be applied linseed oil with mineral dyes paint.

4. Staples in tiles: this will be held at the same time as the previous ones. During the replacement of the tiles locking staples will be placed in order to prevent its movement with the wind. DPH's technical team will develop these clips.
5. Electrical Installation: We have a technical report of the status of the installation. According to this, adjustments will be done in electrical installation with redistribution and resizing of circuit breakers, switches redistribution, infrastructure for telephony and logic, installation of external lighting and prediction of illumination to the archaeological window. An as-built design will be recorded in the Maintenance Program Binder.
6. Coverage of the archaeological window: DPH will design a cover for the archaeological window in glass and metal structure with ventilation and lighting. The reshuffle of the electrical installation will provide points of enlightenment.
7. Handrail for jirau's ladder: will be designed by DPH and installed at the same time as the coverage of the archaeological window.
8. Drainage of land: DPH will design drainage for the area in front of the house. It will be composed of ditches dug in the soil with special perforated drainage pipe, wrapped in gravel box, and synthetic manta to avoid the mixing of soil with gravel, covered with soil and sand mixture under grass covering.
9. Repairs on cracks. Since November 2007 a monitoring to verify the evolution of cracks is being carried out fortnightly. Until February 2008 there was no movement. The monitoring will continue until April 2008 when, through the data collected, will be held the appropriate procedure.
10. Complementation and adaptation of accessibility. DPH has already completed the design of accessibility of the Cultural Center, which complements the Ressaca Site's. It is in budgetting process and will be contracted to run yet in 2008.
11. Construction of restrooms and support room. DPH has already accomplished the project, and its implementation will be hired along with the accessibility.
12. Illumination of the square: the recovery of the existing lighting in the square and on the slope to Ressaca Site is included in the design of accessibility and attachments.
13. Manual for cleaning routine: the cleaning of historic buildings under the responsibility of DPH is in charge of a specialized hired company without any specific guidance on building's care. DPH will prepare a Cleaning and Conservation Manual that will be given to the company and will guide the employees that work at the house. The crew responsible for the cleaning routine, as well as for security will be instructed to fill out forms and to report occurrences (insects, burning of bulbs, broken glasses, leakages, etc.).
14. Construction care and equipment handling. As well as cleaning procedures, a User Manual for employees, guards, exhibitors,

etc. containing instructions for house care and handling of the equipment will be prepared. There will be a lecture for users and for effective cleaning team on history and importance of the building, and its necessary care.

Instructions and restrictions for maintenance

Roof

- Roof must have *fortnightly* and *after storms* inspections to verify its problems in order to solve them (displaced or broken tiles, mortar fixing, for example).
- Others of same kind must always replace broken or cracked tiles.
- Tiles that are displaced must be replaced to its original position with the staple.
- Mortar fixing must be redone when necessary.
- The status of wooden parts of the roof structure must be checked *quarterly* (wilting, sealing, distortion, disruptions, spare parts, etc.).
- Damaged timber must be replaced by others with the same features (type, dimensions, finishing)
- Extremely dry wood should receive treatment for hydration with linseed oil.
- Distorted timber, depending on the case and after inspection by staff of the DPH, will have their placement reversed to reverse the distortion, after hydration with linseed oil.
- *Twice a month* the leaves that fall on the roof and become trapped between the tiles, ultimately entering the building must be removed.
- The wooden parts of the building must receive *annually* painting of linseed oil-based pigment, for the purpose of protection and hydration of the wood. For the first painting, the enamel has to be removed.
- *Monthly* inspection must be performed to detect the presence of termites.

Ceiling

- The balcony ceiling must receive *quarterly* inspection to check its status (wilting, sealing, distortion, disruptions, spare parts, attack of insects, etc.).
- Others must replace damaged parts with the same features (type, dimensions, finishing).
- Extremely dry parts must receive treatment for hydrating with linseed oil.
- The timber must receive *annually* painting of linseed oil-based pigment, for the purpose of protection and hydration of the wood. For the first painting the enamel painting has to be removed.

- *Monthly* inspection must be performed to detect the presence of termites.

Jirau

- The area of jirau (rooms 7 and 8) will be swept *daily* to remove of dust, dried leaves, nets, and so on.
- This place must be clear and not be used as a deposit.
- The existing window must remain open *during the day* (except for rainy days) to encourage ventilation.
- The entire structure of jirau must be painted every year of linseed oil-based pigment, for the purpose of protection and hydration of the wood. For the first painting enamel should be removed.
- *Monthly* inspection must be performed to detect the presence of termites.

Walls

- Dust on internal walls of the house need to be removed *weekly* with feathers duster.
- The external walls must be washed *monthly* with light pressure jet or mild splash and soft catch.
- It is not allowed to apply any object (posters, frames, conduits, pipes, etc.) on the walls in any way (nails, glue, tape, etc.).
- Furniture may not lean on the walls. Limiters in the feet of tables and cabinets will be glued, if necessary, in order to keep them away of the walls.
- For exhibitions, panels or other objects (since light) may be hung on the structure of the roof to be at the walls.
- *Every two years*, or whenever necessary, the internal and external walls will be limewashed in white. The floor near the wall should be protected with plastic tarpaulin to avoid spray. Doors, windows, linings and structure of the roof should also be protected from spray of limewash painting.
- Limewash must be made with virgin lime hydrated at least 60 days in advance.
- When necessary, previous limewash layers will be removed with metal spatula and the surface should be sandpapered to eliminate "steps".
- Repairs and reconstitutions in the coating must be carried out with cement, lime and fine sand (dash 1:3:7) mortar, over spread base of cement and sand (dash 1:4), applied with metal plasterer's trowel.
- Every cracks must be monitored through gypsum spies *twice a month* during *six months*, generating reports and tables, analyzed by technicians of the DPH, providing data for possible works.

Floors

- The internal ceramic tiles floor must be softly swept *daily*.
- There will not be applied any chemical or abrasive product for cleaning and maintenance, just sweeping.
- Floor must be protected whenever handling objects that can damage it.
- It is not allowed to make holes of any kind on the walls for fixing equipment or for other reasons.
- The stoned sidewalk around the house must be washed with water jet, light pressure, *every month*.

Frames

- The frames should receive stain painting in *every three years*, or whenever necessary. Every three applications, all layers above should be removed.
- *Daily* cleaning must be done with soft duster, dry cloth or, if necessary, damp clothe.
- All repairs, replacements or transplants must be carried out with wood of the same kind, certified and drought. The element, after the repair should keep the same characteristics.
- When the windows were open, users have to be aware that the coating on the walls around them cannot be damaged.
- Distorted timber will be treated with linseed oil in order to try to reverse the situation.
- For the safety of the house the existing metal locks must be used and the users must take care with the coating. taking care for its management not to damage the coating. Installation of fasteners, locks, or other equipment in frames without the authorization of DPH won't be allowed.
- Doors and windows have to be inspected *once in a month* to verify if they are functioning properly (opening, closing and locking). Damaged parts or pieces must be fixed, repaired or replaced by others. DPH will be necessarily informed about it.
- *Monthly* inspection will be performed to detect the presence of termites.

Electrical installation

- Lighting equipment must be handled carefully whenever bulbs have to be changed and outbreaks reposed, because they are very fragile. Those procedures should be in charge of the hired maintenance company.
- Bulbs out of order must always be changed by similar ones.

- Installation of extensions of lighting, energy points, removal and replacement of equipment or parts of the electrical system won't be allowed without the permission of DPH.
- Any problem on electrical installations must be immediately reported to DPH that will trigger the maintenance company.
- At exhibitions or other uses of the property, any needs for electrical infrastructure must be reported to DPH.
- *Monthly* inspection to verify the status of the facilities will be held.

Accessibility

- The roads and ramps for accessibility, in the excerpt in masonry, will be washed with water jet under pressure *every week*.
- The guidelines will be painted *every year* in white limewash.
- The floors and parts that will not be painted must be protected from spray.
- The handrails should be painted *every two years*, or whenever necessary, in synthetic enamel.
- The passage in metallic structure, as well as the metal handrail, must be inspected *every three months* in order to prevent rust. Oxidized excerpts, must be sandpapered, receive application of rust neutraliser product and later painting.
- The metallic passage floor will be painted in epoxy paint *every 6 months*, especially in removable grilles. When repainted, these elements must be sandpapered to remove excessive layers of ink in order to prevent difficulty of removing them from the structure.
- Grid of removable floor will be removed *weekly*. The structure and the floor under it should keep clear by removal of leaves and other elements that are adhered providing its oxidation.

Drainage

- *Every 5 years* (or when flooding occurs) the permeability of the floor around the house has to be checked. If it has low permeability, must be withdrawn at surface layer of soil on the drains and new test directly on the mass grave has to be made. If drainage is satisfactory, the area must be recovered with earth added to a percentage of sand and the grass replanted. If even after the removal the flow of water is not experiencing, the composition of the drains should be redone.

Archeological window

- The panels over the archaeological exploration must be inspected *monthly* to check its stability. In this inspection they must be raised to check the status of prospecting (cleaning, presence of insects, etc.).

- The area must remain clean. For that purpose, the unwanted material has to be removed manually, without the use of tools, accessories or equipment of any kind.

Vegetation

- Trees next to the house have to be pruned *quarterly* in order to avoid them to reach the roof.
- Plants that grow between the stones of the sidewalk have to be removed *monthly*.
- Grass on courtyards around the house has to be trimmed *every three months*.

Humidity and insects

- Monitoring of the relative humidity of air and of constructive elements (wood, earthen walls, etc.) throughout the period of *one year*, with *monthly* inspections generating charts, reports and measures to balance the humidity.
- Monitoring of the presence of insects throughout the year, with *monthly* inspections generating reports, graphs and prevention measures.

Fire fighting equipment

- Validity of fire extinguishers must be checked and change of those within one month before its expiration.

Maintenance routines will be done according to the instructions and restrictions for maintenance above and in the following time ranges: daily (d), weekly (w), fortnightly (f), monthly (m), quarterly (q), semi-annual (s-a), annual (a), every two years (2y), every three years (3y), every five years (5y), after storms (a.s.). The inspections will be followed by a report where of all the results will be registered in their respective drawings. Appendix 1 shows a table of the routines.

Method

The contracted maintenance company technically supervised by DPH will execute items 2 to 8 and 13 of repairs listed above. Architects and engineers from STPRC will develop the necessary designs. The amount of workmanship will be listed in the maintenance contract and DPH will provide money for the purchase of products and materials, according to the proposed schedule.

Some of the works and repairs needed for proper maintenance of the house, as conclusion of accessibility, construction of annexes, lighting of the square, and preventive treatment to combat termites, have their projects and budgets already completed and are already been hired. Others, which depend on designing such as electrical installation, coverage of archaeological window, handrail of the staircase and drainage, will be developed and implemented in accordance with the schedule. The replacement and painting of the woods, and the stapling of the tiles, will have priority in the schedule because they are bound to treatment against termites.

Manuals for use of the house and cleaning are also priority items and will be developed immediately. Procedures for fixing cracks, will only be specified after finishing the ongoing research.

Results/Current Status of the Work

The Maintenance Program and Plan for Ressaca Farmhouse is already showing results for sure, because the Maintenance Program, developed according to Dick Sandberg's Practical Binder has already been sent to the administration of DPH, to the company hired to develop the maintenance and is been used as a model for the Maintenance Program of other buildings managed by DPH. This means that the Ressaca Site has already an accurate and documented diagnosis of its status and needs, with reference documentation organized in the binder. As soon as the contract for maintenance has been signed, the Maintenance Plan will be put into practice.

Discussion & Conclusions

The participation of architects of the Department of Historic Heritage of the Municipality of Sao Paulo in the program Conservation and Management of Historic Buildings happens in very opportune moment, as the DPH is in process of signing a contract with company specialized in building restoration that will be responsible for maintenance of 14 historic buildings managed by DPH in the city of Sao Paulo. In preliminary meetings with that company, it was clear the maintenance had to be planned and the appropriateness of the model provided by current CMHB to our needs.

In Technical Section of Projects, Restoration and Conservation (STPRC) of the DPH, each architect is responsible for technical affairs of one or two from the 14 buildings. In our team there is a constructor engineer to support in specific subjects.

The Maintenance Plan being prepared for Ressaca Farmhouse is already been used as a model for 13 other buildings, where each architect is working on its own Maintenance Program. It has already been presented and in discussion with the hired company.

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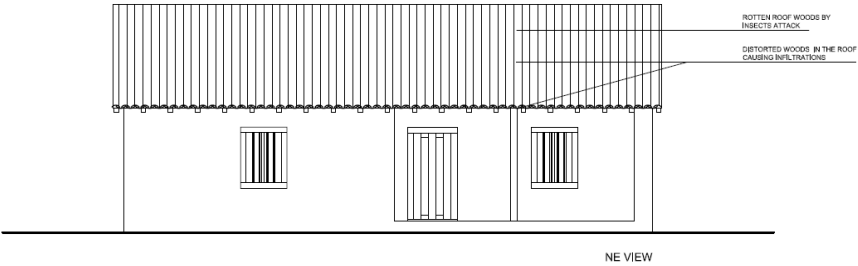
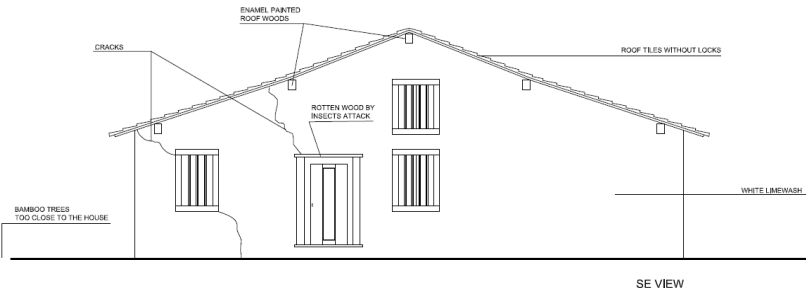
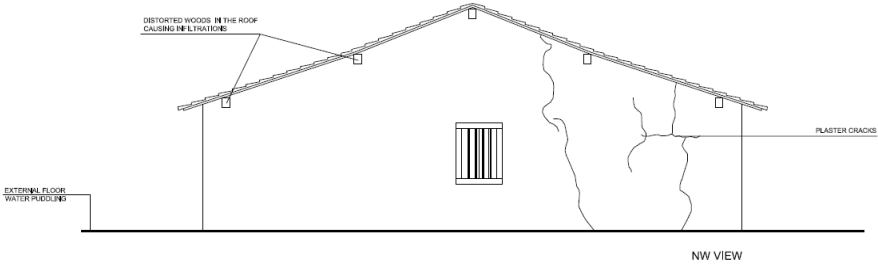
2000 *Restaura o*. Tradu o: Beatriz Mugayar K hl. S o Paulo: Ateli  Editorial,. Cole o “Artes & Of cios”, v. 1.

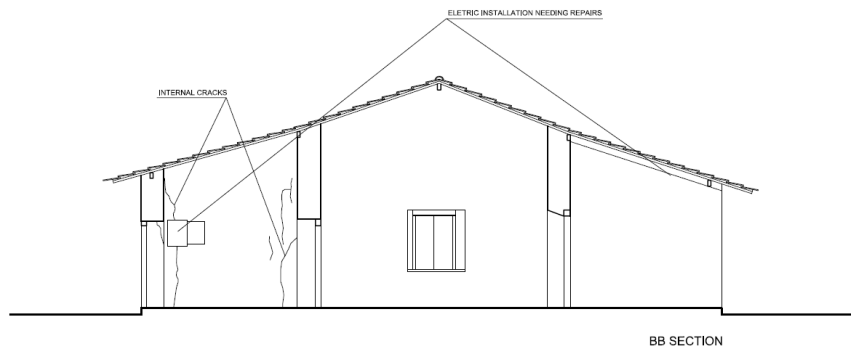
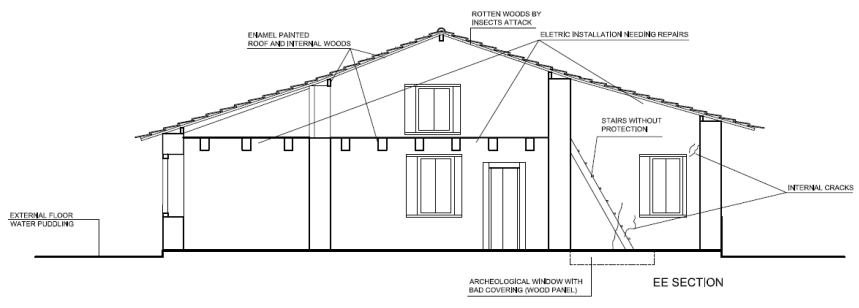
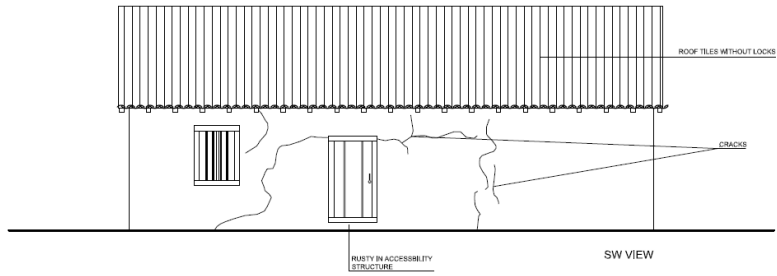
Archives:

- DPH/STPRC – Department of Historic Heritage / Technical Section of Projects, Reatoration & Conservation
- DPH/STLP - Department of Historic Heritage / Technical Section of Survey & Research
- DPH/STCT - Department of Historic Heritage / Technical Section of Criticism & Designation
- IPHAN, 9th. RS – Institute of National Historic and Artistic Heritage, 9th Regional Section
- CONDEPHAAT – Council for Defense of Historic and Artistic Heritage

Appendix 1

Status of the building





Appendix 2

Repairs time table

	Work
	Assessment
	Monitoring
	Project / design
	Budget
	Bid

	Mar	Apr	May	Jun	Jul	Aug	Sep
Treatment against termites							
Replacement of timber							
Replacement of timber painting							
Tiles staples							
Electrical instalation							
Archeological window							
Handrail							
Drainage							
Cracks monitoring/fixing							
Acessibility							
Restrooms & support rooms							
Square illumination							
Users manual / lectures							

Appendix 3

Table for maintenance routine

a.s. (after storm), d (daily), w (weekly), f (fortnightly), m (monthly), q (quarterly), s-a (semi-annual), a (annual), 2y (every two years), 3y (every three years), 5y (every five years)

	a.s.	d	w	f	m	q	s-a	a	2y	3y	5y
Roof	Inspection substitution			Leaves removal	Inspection termites	Inspection structure		Oil painting			
Ceilings					Inspection termites	Inspection structure		Oil painting			
Jirau		Sweep Open windows			Inspection termites	Inspection structure		Oil painting			
Walls			Cleaning/duster internal	Cracks monitoring	External washing				Limewash painting		
Floors		Internal sweep			Sidewalk washing						
Frames		Duster cleaning			Inspection Termites/funct.					Stain paint	
Electrical instalation					Inspection status						
Acesibility			Masonry wash Clean remov. floor grids			Inspection metal parts rust	Paint metal passage	Paint borders (limewash)	Paint handrail		
Drainage											Permeability test
Archeological window					Panel inspect.						
Vegetation					Removal on sidewalk monitoring	Pruning Trees/grass					
Humidity & insects											
Fire fighting equipment								Exchange extinguishers			

