

Gorton Complex. Conservation Management Plan. Rosario. Argentina

CMHB2007. Case of study. Final report.

Carolina Rainero

Architect

Facultad de Arquitectura, Planeamiento y Diseño. Universidad Nacional de Rosario. Argentina.

crainero@sede.unr.edu.ar ; carorain@arnet.com.ar



...The physical resources, both buildings and infrastructure, associated with industry are often large and complex and may not be of great architectural merit on their own. Nevertheless, their preservation and reuse are important in a cultural sense. The first priority should be to protect the remaining physical resources, thus preventing any further deterioration.

Only then can we ask ourselves what to do with these buildings and artefacts and begin to think about how to interpret them. Reuse is critical many times because the resources are too vast and cannot be preserved by public initiatives alone. As much as possible, reuse should be keyed to the ways in which the built resources can be used to tell the story of the place based on creative collaboration between the multiple actors involved in the management plan...

Abstract

Planning the development of a region in a sustainable way requires a thorough analysis of everything that takes place there, so that we can understand the challenges the region poses and how to act, accordingly, from the social and urban point of view.

Nevertheless, the complex selected, and the surrounding landscape, preserve an extraordinary record of agricultural and industrial development.

Mills, railroads, storehouses and “estancias” remain not only as important physical artefacts, but they also collectively tell the story of the construction of that territory and might be of immense cultural and economic value.

This study aims at demonstrating that the Gorton complex is a cultural resource on which local and regional development projects can be planned. The study involved not only the documentation of the resource and its potential but also the proposal of concrete steps towards initiating a planning process for the region.

Introduction

During the last 30 years the concept of architectural heritage has changed from considering it in an individual perspective to a more comprehensive notion of environment, that is to say, taking into consideration the close interaction between buildings and landscape. And the heritage itself becomes a cultural resource which can promote the improvement of the environment.

The actions on cultural heritage have moved from studying an isolated heritage to a cultural landscape, from heritage conservation to management of cultural resources and from public actions to participative enterprises.

Nowadays a heritage site program management is based on three aspects:

- Cultural landscape –interaction building-site.
- Participation of local residents.
- Sustainable development.

After researching the metropolitan area of Rosario for the last two years I can define a cultural landscape according to the productive activities of the region. This particular productive landscape has a strong structure according to the agro-exported model that was established in the country during the second half of the nineteenth century in Rosario city and its hinterland.



Rosario Metropolitan Area

Because of this, a large number of landmarks are still present in the flat land. An important industrial heritage needs to be re-discovered. This cultural structure that comes from the economic one could allow possibilities for regional development.

Unfortunately, recent changes in the productive processes determined that a large number of marks of the regional system have started to degrade because of their lack of use.

The Gorton Complex, located in Pérez, a city in the metropolitan area of Rosario, used to be an important locomotive reparation workshop in the country and now needs to be redeveloped. Because of the restructuring of the railway company it was shut and for the past 30 years the complex was left to degradation, with a legacy of high unemployment and the haunting shadows of the gigantic plant.

The economic and environmental revaluing of the Gorton complex is a structural project that is essential for Pérez city.

At present, different initiatives are being carried out to revitalize this heritage: a civil cooperative work association has been set up in order to keep the complex working and the municipal government started to buy a couple of the cottages within the complex for different uses. However, a comprehensive view of the complex as a functional unit is still needed. Therefore, the conservation of the Gorton complex is still at risk.

Objectives

This research project intends to define a management methodology that will, at the same time, be applied to this study case.

Background

History

In order to study the Gorton complex we need to understand first its importance at a territorial scale.

The territorial structure in terms of the productive structure of the metropolitan area of Rosario city was linked by the rail, the “estancias” with the flour mills and the railroad terminals and the docks at the port of Rosario. In this way, we may recognize a complex net of landmarks that respond to the productive line between the “estancias”¹, the port and the different industrial facilities.

These marks may be classified into three types: **towns** (agricultural communities), small productive units, **single buildings** (territorial landmarks) and their **connections**, which were possible thanks to the existence of the train.²



Agricultural landmarks



Industrial landmarks



Infrastructure landmarks

Wherever the railroad tracks penetrated the grassland, a village appeared at intervals of ten to twenty miles. A brick railway station house, built by the

¹ Denomination given to a farm given over to cattle-raising and agricultural activities. It can be defined as a country property.

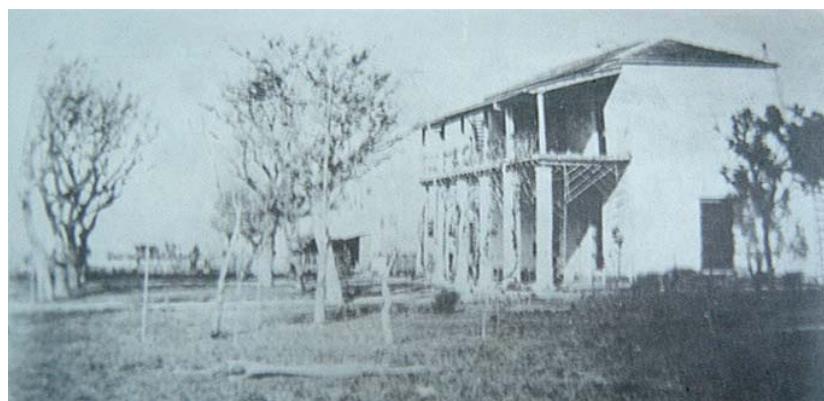
² The production heritage of the region can be considered as such as it perfectly fits the TICCIH² definition of industrial heritage: ‘... the remains considered as belonging to the industrial culture are those that possess a historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills, industries, mines; sites given over to activities such as processing, refining, for harbour or for storage; those used for generating and transmitting energy; those for transportation including its infrastructure...’

British company, provided the core for both the streets and the settlement. The development of land was linked to the railroads. Wheat was the main crop the European immigrants raised at the Pampas. Immigrants brought new life, industry, trade and values to the region. By the end of the nineteenth century, Rosario city hinterland rose as the richest and most progressive area of the country.



Landscape before European Immigration – New Agricultural landscape

In 1898 the English Company **Ferrocarril Central Argentino** took over the line and a few years later decided to establish the largest workshop in the country to repair locomotives in that village and it was establishing in 1910 **Rosario Metropolitan Area** is made up of a large number of agricultural villages turned into towns and small cities. They are really unique because they combine rural and urban scales. This is the case of **Pérez**³, which is 20 km far from Rosario. Founded in 1860, the first intervention on the land – according to local documents- was the small *estancia* **San Sebastián**⁴.



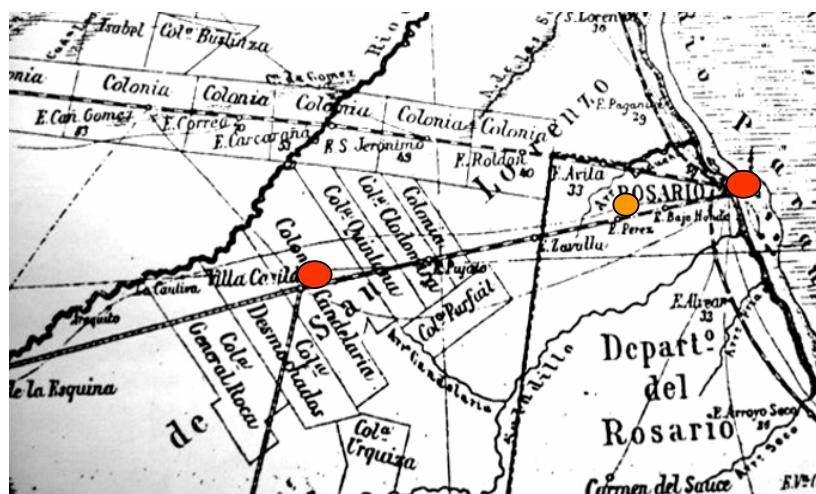
San Sebastian Estancia

By 1883 the town began to grow rapidly because a private railway⁵, Oeste Santafesino, which ran from the agricultural community **Candelaria** to Rosario port, passed by.

³ Population of about 35,000 inhabitants.

⁴ Owner: Roque Pérez

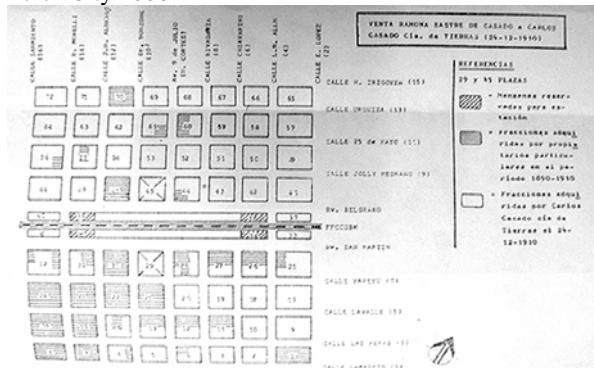
⁵ Owner: Carlos Casado del Alisal



Ferrocarril Oeste Santafesino



Pérez City 2006



A chess board design Urban 1880

The urban geometry of the town was based on the agricultural colonies' guidelines (a chess board design) and it developed orthogonally to the rail track.

In 1898, the English Company **Ferrocarril Central Argentino** took over the railway line and a few years later, in 1910, it decided to set up in Pérez the largest workshop in the country to repair locomotives.

■ The complex. 1910

The complex, built in a field of about 28 ha. wide, was made up of a locomotive repair plant, a small neighbourhood with cottages and a recreational space called Social and Sports Club Central Argentino.



Gorton Complex

By 1947, the railway was bought by the national government. Eventually, due to different economic slumps, the **complex⁶** was closed down in 1961, and this led to degradation and environment decline. Nowadays, the complex owner, a private company called Nuevo Central Argentino, has started to use it as a terminal port. In spite of this, this re-use concerns to only 20 percent of its surface so it does not represent a real conservation of the site and the buildings have become a deserted industrial landscape, isolated from city life.

Geography

The province of Santa Fe is part of what is called Argentine Pampa, a region which is characterized as a vast flat plain (Humid Pampa), situated on the west side of the Paraná River.

From a production point of view, the weather conditions and fertile soil make this area the main agricultural area in the country, and an industrial settlement has been developed by the Paraná River⁷.

Its continuous geography includes a great number of small streams that flow into the Paraná basin.

Rosario city is located in the southern part of the province on the west side of the river and it has a natural port.



Argentina agricultural region



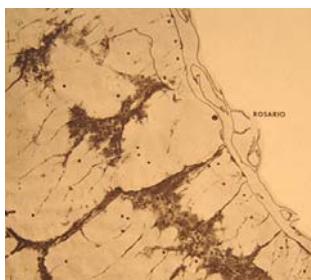
Santa Fe province

⁶ Talleres del Ferrocarril Central Argentino Pérez

⁷ 4.500.000 km² basin.



Study area



Land and streams of the area



Agricultural land division



Area Landscape

Climate

The climate in the western region of the Paraná River is also an important factor for the agricultural activities environment because of the heavy rainfall, warm temperatures (16° in average) and high humidity

Protection

In Argentina there is no heritage policy and, especially, no industrial heritage policy.

There is no catalogue, not even an inventory of industrial heritage.

Architecture

Traditional Architecture

- **The building. Gorton Giants. 1914**

The built area is about 60,000 square meters and 2,000 people used to work there; the town owed its existence to the workshop.

The complex was designed as a linear group of buildings connected to and located next to the rail road track.



Rail road track

Gorton Complex from the railroad track



The site in the landscape

One of the buildings, Office 1, the administrative areas which was the entrance to the complex, still remains as an example of the of British railway construction style. It has been developed as a brick building, made up of the academic guidelines, the basement, development and crowning.



The chimney building.

The two-storey construction has a linear layout and is absolutely symmetrical with a central section. The entrance is located in the building axis and the upper part of this module is emphasized by a clock.

On the external façade, a facing bricks construction enhances the simple shape of the building. It displays a marked sense of continuity emphasized by the treatment of the continuous basement, the rhythm of the windows and pilasters and the cornice. The pitch roof is hidden from the outside view. The bolstering of the plaster walls harmonizes with the rhythmic distribution of the windows.



Entrance view



Entrance building



Entrance building (NCA. Archive) view



Entrance building. General view



Entrance building view from the railroad track

The main building is a large industrial warehouse with a symmetrical layout, a metal structure and an iron sloping roof.



Main building exterior view



NCA⁸ archive workshop interior view



NCA archive workshop interior view



NCA. workshop interior view



NCA. workshop interior view

The complex consists of offices, a lunch room, drawing offices, a medical office, a power station and water deposits.

The workshop itself is made up of four sections:

- modelling section, store and foundry
- forging section
- main block: machinery adjustments, tenders, boiler, copper foundry, assembly
- paint workshop

⁸ NCA Nuevo Central Argentino

The workshops, offices and warehouse are no longer in use with their original purpose.

Next to the complex, a group of houses were built for the senior staff and some semidetached one-story houses for the skilled workers. The external features are the facing bricks and exposed metal drainpipes, pitches and hipped corrugated iron roof, galleries with wooden pillars, bow windows and wooden fences.

The fields of a rectangular shape go from one pedestrian street to the other. The club was devoted to tennis courts and a large golf field.

The complex was organized following the linearity that the railway suggests and according to the order of the chess city design, even though it is at least eight blocks long.



Gorton Complex Cottage



Gorton Complex Cottage Archive view



Perez Municipality





Semi-detached houses



Area view of Gorton Complex. Golf field



Tennis courts

There's no axis in the composition and order is adopted in line with the function or activities that each building holds.

The main building is the workshop itself and it was made up of a single aisle 100 meters wide and 300 meters long.

The chimney building.

Modern Architecture

Only one modern architecture piece has been added, but it can be removed without damaging the complex.

Problem

Nowadays, only one building is in use and the others are suffering degradation. They are deteriorating and will crumble down unless they can be preserved or new uses can be found.

Even though the damages are not serious, a complete conservation programme should be established.

The office building façade and roof we managed to have access to have been seriously damaged by humidity.

The internal walls lime mortar fell off long ago.

The roof zinc sheets have to be replaced.

All in all, the main challenge is to promote a real rescue action.

Hypothesis

- A management program has to focus its actions not only in the correct conservation of the buildings but in a sustainable development as well.
- Values have to be recognized in a participative way and, once they are clarified, they may be re-valued and become the basis for a future proposal.
- The challenge is to make it possible for such enormous richness of heritage to attract private investment and growth, but this can only be achieved through public incentives, wise use of resources, and a new type of regional plan focused on culture.

Aims of the project

- Preserve the material aspect of the buildings and their intangible values.
- Develop the use of local culture to achieve economic development, at both city and regional scales.
- Conserve the resources, including elements of the natural landscape, the historic built factory that embodies the history of the place.
- Promote public policies to maintain these resources until appropriate private uses can be developed.
- Create a partnership of public and private organizations. Private investment for reuse or sensible new construction is essential to preserve the historic complex.
- Regenerate the complex environment and quality of life.

Method

The methodology that is used is based on a master plan with a participatory approach.

The first step has been to organize a seminar with the aim of:

- Forming a qualified workforce of experts, technicians, politicians and other local agents directly involved in the promotion and revitalization of the region⁹.

⁹ Aims of the master plan and objectives of the individual projects.
Defining the master plan and the individual project.

- Reaching a consensus on a common working framework of objectives and methodology to promote the comprehensive development of the area.
- Defining the future lines of collaborative work in the overall promotion of the site.

The seminar was conceived as a highly participative event, including an explanation of the local initiatives already in progress and the articulation proposals made by experts, and discussion groups.

It is important to think regionally, knowing and respecting our resources, and considering the concept of residents and memories as important cultural resources.



Defining the projects Seminar

The project will be developed in two scales: the territorial scale and the local project scale.

The first one introduces cultural tourist activities by establishing an interpretation space so as to exhibit a transport museum, with tourist guiding. The second scale will introduce a new use of the complex building office.

Management master plan¹⁰

The project fosters a development program of a single site while, at the same time, it saves the complex by reusing it.

It is necessary to promote a plan that may re-value the complex, from a perspective that considers not only the building heritage but also the cultural and ethnographic aspect.

Proposal

- To conserve and enhance the site.
- To preserve the material aspect of the buildings and their intangible values.

Method

Development of the project basis in LFA¹¹

¹⁰ The present work is structured based on the guidelines of the Dick Sandberg's Practical Binder for Maintenance Program

1 Analysis of the Context of the project. – project environmental/background information (SWOT¹²)

The site, the buildings, the machinery, the landscape are the material testimony but their value remains in the intangible memory of people.

Pérez inhabitants find in the **Gorton Complex** a source of recognition and identity in what used to be the driving force and the heart of the town. Nowadays it has been excluded from their lives but there is always a way to restore it.

2 Stakeholder Analysis¹³.

The project provides the platform that will allow a joint interaction, by putting together the interests of the main actors, the local government, the company owner of the site and the citizens.

The management of the place has to be addressed by introducing a comprehensive program supported by public and private sectors, non-governmental organizations and civil-society organizations so as to involve the inhabitants in its rescue.

Actors involved in the project

It is necessary to work at different levels to achieve the proposal with the following actors:

Municipality of Pérez

Regional government

Communal Committee

Owner of the complex. New Argentine Central.

3 Problem analysis/Situation analysis

Survey-documentation-value

The documentation process has already been done by recording archive documents, provincial libraries and by an intensive work with citizens involved in the survey actions.

- Recognizing the immense values that the complex has, which confirm its cultural heritage condition so as to understand the need to preserve it, not only for a private use but for social uses as well.
- As there is no real protection of the site and, based on the result of the valuation processes, it is going to be presented so as to be listed as a *national historic site*.
- The possible re-uses are going to be defined in a second open seminar in compliance with the aims of development agreed on the first one.

4. Activity plan

1. First approach and characterization of the object.

Location: Gorton complex is located in Pérez city.

Architecture and construction: English Railway Architecture.

Owner: Nuevo Central Argentino.

Field: 26 ha.

¹¹ The Logical Framework Approach. A summary of the theory behind the LFA method. SIDA.

¹² Strengths – Weaknesses – Opportunities - Threats.

¹³ 1. Beneficiaries/Target group
2. Implementers
3. Decision-makers
4. Financier

Built area: 60,000 m²

Complex: workshops, semidetached houses, social club

Plan and sections of the complex drawing in different scales: 1:500 and 1:200

To develop this work the main sources of information have been the review of newspapers, bibliography and interviews.

Note:

The information gathered is considered only the beginning of a task that has to be based on direct information. But this will only be possible once the authorities meet the owners in order to allow a detailed survey.

2. Re-definition of the limits of the object project.

3. Physical, social, economic survey and records of the complex and its context. Identification of principal values.

- Definition of values.

Emotional values:

Identity: The city inhabitants are related to the complex

Cultural Values:

Documentary values: The complex is considered the biggest and first of its type in Argentina.

Historic value: In the urban history, the small town became a city because of the complex existence.

Architectural value: The building was planned on a grand scale following the traditional pattern of the English railway architecture.

Urbanscape: The artefact is significant as it represents an important feature in the urban land.

Use values:

Functional values: The building is still in use, so the structure is still important as a functional structure. The size and shape of the building offer different possibilities for new uses.

Social value: The social structure of the area is highly related to the historic development of the city. So the building has an immense impact on the local society.

In fact, the vast complex is now a question of pride for the local people.

Economic value: The building can allow a great number of new uses in connection with a cultural – educational project. Besides, it can play a vital role to exploit the area as a tourist site as there are other historic buildings around it.

Educational value: The artefact is important for research and study of the history, architecture, politics, archaeology, and urban design of the city.

4. Analysis and reinforcement of the site values.¹⁴

The main significance of a place is its relation to the town life.

The complex is part of an organically evolved landscape resulting from an initial social, economic and administrative imperative. It then developed its present form by its association with, and in response to, its natural environment. Such landscapes reflect this process of evolution in their form and component features¹⁵ and such concept will be reflected in the project, retaining an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress.

¹⁴ Defining cultural significance according to the Burra Charter means "aesthetic, historic, scientific or social value for past, present or future generations".

¹⁵ Guidelines on the inscription of specific types of properties on the World Heritage List

5. Design of the management project¹⁶. Conservation and development projects.

Regional scale: metropolitan area of Rosario City.

Project: The wheat route.

Methodology¹⁷:

- Identification of resources
- Documentation of resources
- Value
- Interpretation of the whole
- Project design

Summary: A network of specialized interpretive sites and museums will be set up so as to promote what to see and do in the region.

The Agronomy School dependent on the University has moved into Zavalla to the Villarino Park and the first industrial school in the country –Casilda– has been turned into the veterinary school.

Viewed collectively, these efforts represent the beginning of a new economic role of the region, rooted not only in its traditional advantages of location and access but also in its culture and heritage.

The wheat route is a rich, man-made landscape that encompasses much of the agricultural and industrial history of the Pampa region.

It is home to many of our most important social, economic and heritage resources.

As Rosario metropolitan area inhabitants, it would be sensible for us to manage these many resources as they might eventually spring economic and social development.

Seen in this way, the historic complex and its environment are important to the economic future of the region and it will be set as an interpretation site of transport.

¹⁶ Actors' forum, re-defining values and goals.

¹⁷ I. Identify the boundaries which will be covered by the Wheat trail

II Survey and cataloguing all the prospective historic sites and structures, by using the established criteria for identification of historic site and structures.

III Inventory of the remaining historic sites and structures

IV Photo documentation and graphic presentation of existing sites and structure

V Mapping of historic sites and structures



The Wheat Route



Veterinary school. Casilda

Local scale: Pérez city

Project: Training and educational development. The office building will be renovated to house a variety of contemporary uses: schools and educational institutions, new productions

Methodology:

The project will be developed through the following steps:

Preliminary investigation:

- Topographic research
- Historic documentation
- Architectural survey

Identification of the main cultural resources.

- Appraisal – valuation process

Project design

Summary: Craftsmanship local school

According to the preliminary approach the local residents considered that the local government might promote a cross project between the Gorton owner and the Education Minister so as to found a Craftsmanship Training School.

As the complex still remains in people's minds as a working –industrial-place involving almost everyone in town, I consider that a suitable use should derive from the education field by creating an industrial or a

craftsman school. On one hand, it is will be related to the working culture and, on the other hand, it will be useful because of the lack of expertise in traditional construction that the region has been undergoing lately.

If we consider the values of the complex in a wider context, it may be turned into a regional railway visitor centre or museum, embedded in a production route, for example.

Summarizing, at the territorial program scale, the project should be considered within the natural framework of the route and its intangible and symbolic dimensions, and at the site project scale, the management program should be focused not only on the site conservation¹⁸ but also on the rescue of the memory of the place as a community identity factor.

6. Analysis of the resource needed to develop the project considering:

- Technical expertise
- Equipment
- Premises
- Funds
- Time

Defining projects schedule and budget: Funding will result from a variety of sources but most projects are made jointly, so they will be financed by local governments and private companies.

7. Indicators/Measurement of Objectives

8. Risk Analysis and Risk Management

9 Analysis of the Assumptions

- Relevance
- Feasibility
- Sustainability

Results

The expected result of the intervention is as follows:

- Revitalization of the city life by the rescue of the paradigmatic site. This will be a positive influence for the future intervention on the other heritage buildings.

- Rehabilitation of this area and maintenance works for many years of this emblematic site.

Gorton Complex will be a mixed function complex, integrating its original use to educational and tourist uses. The complex open space between buildings will be open to the community as a public park.

- Enhancement of this site identity by reinforcing its history passed on as a testimony of the heritage that we must recover and revalue.

- The Gorton complex will become a first example of the Wheat Trail adaptive reuse.

Preliminars Conclusions

- We can conserve our industrial heritage by integrating the building project into regional development projects.

¹⁸ The conservation program may be set up according to the guidelines of the maintenance program and plan developed by Dick Sanders, Arch.

- Based on recent examples, the inter-institutional coordination has been used in former rehabilitation and restoration projects with very satisfactory results, such as the appropriation of public spaces and buildings, reinforcing local identity.
- The productive structure has left a great number of buildings that can be turned into cultural resources for the development of regional projects.
- Public policies should include cultural resources in the national and regional development strategies.
- The major benefit of these projects will be the raising of local awareness on the preservation of historic buildings and how citizens can improve their living conditions from architectural conservation and environmental values.

This plan will become a management plan model, a strategy for preserving, enhancing and developing the industrial heritage management.

References

En Web

<http://whc.unesco.org/en/culturallandscape/> Cultural Landscapes of Universal Value. Components of a Global Strategy. History and Terminology 1992.

<http://upcommons.upc.edu/revistes/bitstream/2099/1885/1/Preservación.pdf> De la preservación del patrimonio a la ordenación del paisaje. Sabate Bel, Joaquin.

www.incuna.org Asociación Arqueología Industrial, Patrimonio Cultural y Natural

www.juntadeandalucia.es Guía de desarrollo rural. 1997

www.monumentosysitios.gov.ar Comision Nacional de Monumentos, Sitios y Lugares Historicos

www.international.icomos.org/xian2005/ticcih-nizhniy-sp.pdf The International Committee for the Conservation of the Industrial Heritage, TICCIH.

Note: date: 12/03/2008.

- BARSKY, O y Gelman. J. *Historia del Agro Argentino. De la conquista hasta fines del siglo XX.* Editorial Grijalbo Mondadori. 2001. buenos aires. Argentina.
- Brandt, Ernesto et al. La provincia de Santa Fe en el principio del siglo XX. Sociedad Rural Santafecina del rosario. Editorial Compañía Sud Americana de billetes de banco. Buenos Aires. 1901.
- CARRASCO, Gabriel. *Primer Censo General de la provincia de Santa Fe.* 1887. Imprenta Peuser. Buenos Aires. 1888.
- CARTA, Mauricio. *L'armatura culturale del territorio: il patrimonio culturale come matrice di identità e strumento di sviluppo.* Editorial FrancoAngeli. Milan.1999.
- ENSINCK, Oscar Luis. *Apuntes para la historia de la industria en la provincia de Santa Fe.* Pontificia Universidad Católica Argentina. Facultad de Derecho y Ciencias Sociales del Rosario. Rosario. 1979.

- ENSINCK, Oscar Luis. *Historia de los ferrocarriles en la provincia de Santa Fe*. Pontificia Universidad Católica Argentina. Facultad de Derecho y Ciencias Sociales del Rosario. Rosario. 1980.
- Ferran, Doménech, Peregrina, Neus. Terrassa, patrimoni industrial. Edita Ayuntamiento de Terrassa. España. 1999.
- GUIDOTTI, Eduardo. *La provincia de Santa Fe en el primer centenario de la independencia Argentina. 1816/ 9de julio/ 1916*. Imprenta Rosso y Cia. Buenos Aires. 1916.
- Impresiones de la República Argentina en el siglo XX. Lloyd's Greater Britain Publishing Co., Ltd. Londres, 1911.
- MOLINAS, Florencio. 1910. *La colonización argentina y las industrias agropecuarias*. Imprenta Molinari. Buenos Aires.
- NOGUE, Joan (Editor). *La construcción social del paisaje*. 2007. Biblioteca Nueva. Madrid.
- Reati, Atilio. Caminos de hierro. El desarrollo del polo ferroviario de Rosario y su zona desde 1854 hasta fines del siglo XX. Editorial Municipal de Rosario. UNR Editora. Rosario. 2004.
- SCOBIE, James. *Revolución en las Pampas. Historia social del trigo argentino*. Solar Hachette. Buenos aires. 1968.
- Segundo Censo de la Republica Argentina. 1895.
- Seminario Internacional El patrimonio de la industria, la infraestructura de servicios y el transporte. Revalorización crítica y perspectivas de rehabilitación. Municipalidad de Rosario. Rosario. 2003.
- Tercer Censo Nacional. Republica Argentina. 1914. Talleres Gráficos Rosso y CIA. Buenos Aires.
- Wilcken, Guillermo. Las Colonias. Informe sobre el estado actual de las colonias agrícolas de la Republica Argentina a la Comisión Central de Inmigración por el Inspector Nacional G. Wilcken. Imprenta Litografía y fundición de tipos a vapor de la Sociedad Anónima. Buenos Aires. 1873.
- Zalduendo, Eduardo. Libras y rieles. Editorial El Coloquio. Buenos Aires. 1975.

Libraries

Biblioteca del Museo Histórico Provincial. Julio Marc. Rosario.

Biblioteca Municipal General San Martín. Rosario.

Biblioteca de la Bolsa de Comercio de Rosario

Cartography

- De Censos Nacionales y Provinciales.

Appendix 1 AREA VIEW



