PRE-HISPANIC CITY OF TEOTIHUACAN
Identification Number: 414

WORLD HERITAGE COMMITTEE, UNESCO
36 COM 7B.101 RESOLUTION REPORT
Saint Petersburg, 2012

DIAGNOSTIC FROM THE STATE OF CONSERVATION AND
BUFFER ZONE OF TEOTIHUACAN ARCHEOLOGICAL SITE
CENTRAL AREA OF MONUMENTS, EXTENDED AREA OF
MONUMENTS AND GENERAL PROTECTION
2013 REPORT

INSTITUTO NACIONAL DE ANTROPOLOGÍA E HISTORIA
ZONA DE MONUMENTOS ARQUEOLOGICOS DE TEOTIHUACAN
MANAGEMENT PLAN PROJECT, DIAGNOSIS 2013

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Introduction Page

The Mexican State, as UNESCO member and upon the signature on 1984 of 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, acknowledges its international duty of ensuring “identification, protection, preservation, restoration and transmission to future generations of the cultural and natural heritage situated on its territory”¹ and submitting periodic reports² to UNESCO General Conference, in order to the state of conservation of properties belonging to the World Heritage shall be assessed by the World Heritage Committee.

This document is the Diagnostic 2013 from the State of Conservation of Archeological Monuments Zone of Teotihuacan (hereinafter referred to as “Diagnostic 2013”), in reply to that notifications issued at the 36th session of UNESCO World Heritage Committee (Saint Petersburg, 2012), whereby is requested that the State Party carries out an additional report of the report submitted on 2011 (hereinafter referred as Diagnostic 2011) updating the state of conservation of the Pre-Hispanic City of Teotihuacan and other concerns related to the problems affecting it.

On 1988, the State Party, through the Federal Executive Branch, issued under the Mexican Regulations for property assets, a Decree whereby is declared Zona de Monumentos Arqueológicos de Teotihucán (Archeological Monuments Zone of Teotihuacan) (ZMAT), with 3381.7108 ha.³ area divided into three areas.

At Zone A, which is under the custody of INAH in compliance with the Federal Ownership, are included the exposed buildings contained in the diagnostic performed on 2011. Based on the above mentioned, Diagnosis 2013 specifies the execution of the state of conservation of the exposed residential mounds within B and C zones and Grupo 5’, oriented western to Pyramid of the Moon, and update assessment of the actual situation of that zones.

Diagnosis 2013, in contrast to the Management Plan and Diagnosis 2011, sets forth as buffer zone the covering polygonal boundaries that define the 3381.7108 ha and its limited views, as stated on the corresponding Statement.⁴ Based on the above mentioned, the actual situation is assessed in connection to the current historic heritage, the performed archeological research, urban development, territorial classification, land use, urban facilities and general problems.

² Art. 29, Idem
³ Decree whereby is declared archeological monuments zone to that zone knows as Teotihuacan, OFFICIAL GAZETTE OF MEXICO, México, August 30, 1988.
⁴ Idem.
Finally, the performed work carried out by the State Party is monitored, in connection with properties conservation:

- Technical and Legal Protection
- Actions originates by Diagnosis 2011 and Diagnosis 2013
- Conservation Program 2012-2018
- Conservation guidelines
- Government binding

This Diagnosis was carried out by the National Institute of Anthropology and History (INAH), which is a competent agency in matters of monuments and archeological zones accordingly with that set forth on Art. 44 of the *Mexican Federal Law on Monuments and Archeological, Artistic and Historical Zones*, through the National Coordination of Archeology, the ZMAT Directorate and Management Plan Project, Diagnosis 2013 of ZMAT.

In connection with conservation, a document analysis containing previous research, references and field evaluation work of residential mounds, information evaluation and the performance of general cards of each zone or space with wall painting with specific proposal was carried out. Follow-up and actions originated by Diagnosis 2011 and ZMAT Conservation Guidelines.

Regarding to the Management Plan, analysis platform and archeological, conservation, urban development, and government policies monitoring were stated.

Finally, based on the diagnostic evaluations carried out, work proposals for the period of 2012-2018 were suggested.

Hereby, we want to deeply thank to all areas and the Archeological Monuments Zone of Teotihuacan workers for his valuable support at all phases of this Diagnosis 2013.

The following section is an executive summary of the questionnaires for the Periodic Reports concerning to the implementation of the World Heritage convention, specifically to the State of Conservation of the Pre-Hispanic City of Teotihuacan (Roman numerals). Diagnosis specific information is showed on Arabic numbers.

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5 *Federal Law on Monuments and Archeological, Artistic and Historical Zones*, INAH, Mexico, 1972
Periodic Report (questionnaire). Diagnosis 2013

I. Introduction
- STATE PARTY:
  - México
- NAME OF THE WORLD HERITAGE PROPERTY:
  - Pre-Hispanic City of Teotihuacan
- GEOGRAPHIC COORDINATES:
  - Long. 98°50’30” Western; Lat. 19°41’30” North; Altitude 2276 MSNM
- DATE OF INSCRIPTION ON THE WORLD HERITAGE LIST:
  - December 11, 1987
- ENTITY IN CHARGE OF REPORT GENERATION:
  - NATIONAL INSTITUTE OF ANTHROPOLOGY AND HISTORY (INAH), MINISTRY OF PUBLIC EDUCATION, FEDERAL GOVERNMENT
- DATE OF REPORT
  - DECEMBER 2013
- SIGN ON BEHALF OF THE STATE PARTY
  - DIRECTORATE FOR WORLD HERITAGE, INAH

Other basic reference data of Teotihuacan as UNESCO World Heritage
- IDENTIFICATION NUMBER:
  - 414
- UNESCO REGION:
  - Latin America and the Caribbean
- STATE, PROVINCE OR REGION:
  - State of México, Municipalities of Teotihuacán de Arista and San Martin de las Pirámides.
- CATEGORY:
  - Archeological Site
The Mexican State, as UNESCO member and upon the signature on 1984 of 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, acknowledges its international duty of ensuring “identification, protection, preservation, restoration and transmission to future generations of the cultural and natural heritage situated on its territory”\textsuperscript{6} and submitting periodic reports\textsuperscript{7} to UNESCO General Conference in order to the state of conservation of properties belonging to the World Heritage shall be assessed by the World Heritage Committee.

As of January 22, 1984, the year in which 1972 Convention was officially confirmed by Mexico, (Convention come into force until 1975), from UNESCO offices located in Mexico and the Mexican Commission for Cooperation with UNESCO (CONALMEX), a strong work efforts have been made, among 1985 and 1986 (Mexico holds one of the five vice-president positions from the World Heritage Committee) in order to generate files of the first natural and cultural properties that shall be recorded on the World Heritage List by Mexico (Díaz-Berrio, 1989).

On June, 1987, Board of Director of Committee, preliminary, recognized six of the suggested sites and finally on December 11, these six sites have become the Mexican first natural and cultural properties to be duly recorded on UNESCO List. The first sites recorded are the following: Archeological Monuments Zone of Mexico City and Xochimilco, Monuments Zone of Puebla, Puebla, Sian Ka´An Biosphere Reserve, Q. Roo, Pre-Hispanic City and National Park of Palenque, Archeological Site of Monte Alban, Historic Centre of Oaxaca and Pre-Hispanic City of Teotihuacan.

II. Statement of Outstanding Universal Value

The Pre-Hispanic City of Teotihuacan is characterized to be considered as “the most important archeological sites of Mexico and the Americas, and one of the major important sites around the world” (Plan de Manejo 2010:1); also it is the site included on UNESCO List which meet the most cultural criteria aspects (i, ii, iii, iv y vi), and from that criteria aspects the Outstanding Universal Value is assessed. On December 11, 1987, the city was recognized and declared as World Heritage and included on the World Heritage List under the archeological heritage category, due to the mounds and its buildings are considered to have intangible value of ancient civilization, evidencing one of the largest pre-Hispanic cities and the highest town-planning of the Americas.

The Criteria for selection as Outstanding Universal Value of Teotihuacan

Upon recognition of Pre-Hispanic City of Teotihuacan by the World Heritage Committee, it set out the inscription criteria stating its Outstanding Universal Value. By the statement of Outstanding Universal Value, the cultural values (historic, artistic, architectural, urban,

\textsuperscript{6} Art. 4, Convención sobre la protección del patrimonio mundial, cultural y natural, UNESCO, Paris, 1972.

\textsuperscript{7} Art. 29, Idem
etc.) of a heritage property may be recognized and considered as World Heritage at a specified site or moment.

The selection criteria basis for Teotihuacan register shows the following:

(i) represents a masterpiece of human creative genius

(ii) exhibits an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture, monumental arts, town-planning or landscape.

(iii) bears a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.

(iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates one or more significant stages in human history;

(vi) To be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.
(Operational Guidelines, 2008;23)

The Format for Inscription (Format for Inscription, 1987), details five selection criteria whereby the Outstanding Universal Value of the Pre-Hispanic City of Teotihuacan is assessed. Accordingly with this document:

(i) Excavations have revealed a diverse architecture structures, wall paintings, and a wide variety of pieces of sculptures, decorates and objects that with its unique features provides a special value for the Mexican high plateau which was, at that moment, the first one to eliminate the known universe and create a new dimension.

(ii) Teotihuacan, one of the most ancient and important and true "city" of ancient Mexico, has developed an important civilization and at the peak of its development - even after that period- was considered as one of the most powerful cultural region of Mesoamerica. Teotihuacan presence extended its cultural influence throughout this region and even beyond.

(iii) Pioneer at the Americas, concerning urban planning revolution, the City of Teotihuacan with its special physical complexity, also was a pioneer in social, political and economic structures.
(iv) During centuries, the regular urbanization structure connected by orthogonal axis among surrounding geographical lifts was used as a model by many pre-Hispanic cities.

(vi) Referring arts and thinking matters, some important events of the history of Ancient Mexico were carried out at that location. Teotihuacan, even, after the city abandonment, preserves the pre-hispanic thinking and continues associated to the main myths of diverse cultures. (Diaz-Berrio, 1989; 59)

The main objective to record a site into the World Heritage List is to preserve its cultural properties, as well as it Outstanding Universal Values. In order to assess if the site meets authenticity\(^8\) and integrity\(^9\) conditions, it is necessary that the current state of conservation of the cultural properties shall be known.

**III. Statement of authenticity and/or integrity**

To assess, that the values of a site included on World Heritage List are maintained over the time, cultural properties shall meet authenticity and integrity conditions.

A property meets the authenticity conditions, if it can truly exhibits the original features such as form, materials, design, function, tradition, technics, location and environs.

Observing the information source is able to understand cultural values in order to characterize, determine, assess and monitor properties.

If physical material, structures, coverings and ornaments of property, are stably maintained and the deterioration process is controlled, the heritage property meets integrity conditions.

The results of the Diagnosis carried out between 2011 and 2013, established that it is possible that the physical material, consisted of structures, coverings and ornaments shall require in short-term and medium-term attention, as well as, material replacement such as cement and polymers for material currently used to preserve heritage property, and those materials shall be consistent with or similar to that originally used on structures, supports and finishes of buildings. Accordingly to that stated through Diagnosis 2013, the site was engaged on the development of knowledge, technics and material for preservation and conservation. For this reason, the actions to be performed in the next years will be guided by the results obtained from the mentioned diagnosis.

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\(^8\) If its values are truly exhibit by its form, design, material, use, function, technics, environs features, etc.  
\(^9\) That is, if physical material, structures, coverings and ornaments are stably maintained and the deterioration process is controlled.
Taking into account the above mentioned, the property maintains the authenticity and integrity values showed for its inclusion on the World Heritage List.

**IV. Management**

Regarding to heritage property protection regulations, the State Party has specific regulations in order to protect archeological property. During the last years, in a special manner, work has been performing with local authorities in stating special regulations for image and conservation. As it is mentioned on the general information, on the third quarter of 2013, a Coordinating Agreement was executed by National Institute of Anthropology and History and the municipalities where the Property is located. The Agreement set forth the creation of a Committee to protect the Zona de Monumentos Arqueológicos de Teotihuacan (Archeological Monuments Zone of Teotihuacan) and the environs thereof; it shall inspect all actions suggested related to urban development, image, environs and works that may damage the site.

**V. Factors affecting the property**

The pressure of urban development of Mexico City is one of the main factors that affect the whole Zona de Monumentos Arqueológicos de Teotihuacan, considering that 90% of the Pre-Hispanic City of Teotihuacan is not exposed. In this regard, the surrounding settlements, which are human settlements established since XVI century, bears previous buildings developed before Spanish conquers occupancy. The establishment of a Coordinating Agreement and a Committee to protect ZMAT are the actions taken by the State Party in order to execute long-term prevention, protection, preservation, research, and urban development and public work planning.

**VI. Monitoring**

With the tools developed for the state of conservation diagnosis of 2011 and 2013, specifications for a systematic monitoring were established to inform the state of conservation of exposed archeological monuments and buffer zone. The development of conservation program 2012-2018 and the development of conservation work plan that shall be executed on the first quarter of 2014, shall allow to accurately state key elements to measure the state of conservation, work schedule and the monitoring frequency of the above mentioned aspects.

Monitoring system and checking activities are under the duty of Technical Deputy Directorate for Zona de Monumentos Arqueológicos de Teotihuacan and its Department of Technical and Legal Protection, as well as its Department of Conservation.
Throughout the Diagnosis, all actions taken associated to conservation matters and executed as a result of the Diagnosis 2011 could be found.

**VII. Summary of conclusions and suggested actions**

i. **The State Party**, through National Institute of Anthropology and History has taken actions in order to ensure conservation of cultural properties; specifically those included on Zona de Monumentos Arqueológicos de Teotihuacan, as well as, its *Outstanding Universal Values*. Although, Mexico City development and the suburban areas put pressure on territories of Teotihuacan de Arista and San Martín de las Pirámides municipalities, Diagnosis 2013 has generated the proposal specifications to amend the municipalities urban development planning and protect the urban area of the Pre-Hispanic City of Teotihuacan.

ii. The State Party, regarding the authenticity and Property conservation and its Outstanding Universal Values, executed, by local governments and the National Institute of Anthropology and History (Federal agency), a Cooperation Agreement for ZMAT Protection and also the creation of a governing body and by means a Committee shall examine, under the applicable law, cultural and development policies specially focus on special plans for municipality development related to urban development, land use, potentiality, and touristic development.

iii. During the first quarter, in connection with archeological monument conservation, and as consequence of the result obtained from Diagnosis 2011 and 2013, a work plan 2014-2018 shall be executed to maintain structures, supports, finishes and pictorial layer of the exposed archeological monuments.

Other future action suggested is the urban development plans inspection and a proposal shall be submit to the State of Mexico local authorities and local congress in order to Development Plan for Teotihuacan de Arista and San Martín de las Pirámides municipalities be examined and amended; by that amendment shall be introduced the change of land use of those zones where is prohibited construction activities under the applicable regulations, and for those zones that have large amounts of archeological remains shall be acknowledged as **Zone with High Potential of Archeological Remains**, paradoxically only 1% of all municipality territory is acknowledged as it.

Other action shall be the acquisition of land which is considered as zone with high potential of archeological remains to extend the zone under the custody of the federal government.
iv. The National Institute of Anthropology and History is an agency of the National Council for Culture and the Arts which main function is Research, Preserve, Spread and Creation activities. Archeological Zone of Teotihuacan, which is part of INAH, is the entity responsible to execute the suggested actions by the Technical Deputy Directorate for of Archeological Monuments Zone of Teotihuacan and its Department of Technical and Legal Protection and Conservation.

v. Execution Schedule for 2014-2018 period shall be provided on the next periodic report.

vi. At this time, international support has not been considered.
1. Management Plan Project, Diagnosis 2013

1.1 Objectives

The main objective of this document is reply to the additional information request (additional to that provided on 2011) regarding to the state of conservation of Teotihuacan, its buffer zone and its environs, applicable regulations and the actions to solve urgent concerns, including that connected with vendors, land use and urban development. WHC restates its request on the preparation of conservation guidelines that establish the actions for control of flooding and works related to protection covers.

In this regard, the specific objectives stated on Diagnosis 2011 are maintained, and are as follows:

- Provide information to facilitate and guide on make decisions and take actions directed to protect, preserve and conserve the ZMAT tangible and intangible archeological cultural properties.
- Identify deterioration causes, processes and effects that affect the site values and are considered as a threaten element for conservation and loss of Monuments Heritage.
- Provide updated information about UNESCO General Conference through the World Heritage Committee, related to the state of conservation of the majority exposed archeological monuments of the Pre-Hispanic City of Teotihuacan, to provide periodic follow-up works of the state of conservation of the Pre-Hispanic City of Teotihuacan, as well as any site included on the World Heritage List.
- Provide information to INAH authorities regarding to archeological research and conservation that provide planning, execution and monitoring works of that site, as well as the development of programs of maintenance and emphasizing on short, medium and large term actions for site conservation and restoration.

Taking into account the requested information, new specific objectives were included in order to update the regional assessment:

- Produce analysis tools to register, assess, analyze and follow the state of conservation of the exposed monuments trough forms for conditions report and a database.
• Produce analysis tools to register, assess, analyze and follow-up, on archeological research basis, the local and regional development through basic information forms and a database.

• Produce analysis tools to assess, analyze and follow-up regional development of policies intended for urban development and shall guide the State Party policies for ZMAT preservation.

• Finally, all these tools together allow to follow the results and also to continue entering into the Geographic Information System (SIG) the research, conservation and operation activities executed by ZMAT and the inspection scheduled for Management Plan 2015.

### 1.2 Diagnosis 1996-1997

During 1996-1997, due to the need to protect the Central Area boundaries, INAH by the ZMAT Research and Conservation Department, carried out a diagnosis\(^{10}\) of the archeological site state related to the urban development and the housing social needs.

From that moment, the polygonal periphery that limits the protected 3381 ha area was considered as the buffer area, accordingly to the above-mentioned Decree and specific proposals were made, and through INAH, the State Party has been working into.

• The first proposal created the Unit for Archeological Rescue, in charge of research the periphery of Central Area of Monuments. Systematic work basis were stated and the technical activities were connect with the archeological site legal elements set forth on the Federal Law for Monuments and Archeological, Artistic and Historic Sites, its Regulations and the above mentioned Statement\(^{11}\).

• Second proposal was the creation of the Unit for Legal Protection, entity in charge of monitoring the correct application of the named regulations by ZMAT. Currently, these two units are incorporated to the Department of Technical and Legal Protection.

• Third proposal, originated from the analysis made of the obtained information, was a proposal to acquire by federal government those land considered that have high potential archeological remains, and now, the protected surface under the custody of INAH has been increased by the incorporation into the federal territories of new land.

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\(^{10}\) Diagnosis Card 1996-1997  
\(^{11}\) Trinidad Miguel Ángel y Néstor Valadez, 1996
• Fourth proposal was apply, together with municipality authorities, the stated regulation for control the urban development, and on 2013, a Governing Committee, head by INAH, was established and it shall assess and approve or reject plans or projects that are intend to carry out urban development, public works and/or tourist development actions by municipalities.

1.3. Timely submission of information

Base on the information requested by the World Heritage Committee, the information shall be provided as follows:

• Additional information of the property state of conservation (Number 2)
• Information connected with buffer area, large view, regulations and actions taken on land use and urban development matters (Number 3)
• Conservation guidelines for ZMAT intervention (Number 4)
• Attention of drainage systems and protective covers (Numeral 5)
• Additional information concerning conservation and technical and legal protection (Number 6)
• Final considerations (Number 7)
2. Diagnosis of the State of Conservation of the Teotihuacan Residential Mounds

2.1 Work methodology and record cards

As herein previously stated, Diagnosis 2013 continues with the work carried out on 2011 at central area, in connection with the state of conservation of exposed residential mounds, extended Area of Monuments (“B”) and General Protection (“C”). As part of the performed Diagnosis, a short description of Residential Mounds, record strategy of the state of conservation of each one, intervention proposals and the level of attention required are showed.

Attachment 1 includes the following of each one of the residential mounds: general cards by zone of analysis, specific cards for wall painting, forms for condition report obtained on field and location drawing, mounds, zones of description and location of wall paintings and covers.

The state of conservation assess of Atetelco, Zacuala, Zacuala Patios, Grupo 5’, Tetitla, Teopancaxco, Tepantitla, Yayahuala, La Ventilla Frente 1, La Ventilla Frente 2, La Ventilla Frente 3, La Ventilla Frente 4 and La Ventilla Frente 5 mounds was carried out.

The stated strategy allowed to gradually make progress on the deterioration register by residential mound and the followed steps are:

- Review references and print mound drawing\textsuperscript{12} to locate architectural spaces and areas with wall painting.
- Detailed photography record of each architectural space, streets and walls with wall painting.
- Creation of Forms for Condition Report intended to record in field.
- Amendment of Mound drawing, set the zone nomenclature, rename and add photographs on Reports of Conditions.
- Determination of record zones and analysis of information.
- Record of the state of conservation in field.
- Entry with Access software, by zone, architecture forms and, by wall and piece, cards of wall painting.

\textsuperscript{12}(Drawings made on 2010 by the staff of Topografía de SaburoSugiyama and other ones provided by Archeology Gonzalo of ZMAT were used.)
Herein below is showed the Report of Conditions form used to record the specific deterioration of architectural structures and wall painting. It consists of a list that numerate the deterioration elements observed, a section to introduce the appropriate remarks and the photographs that describe the area are attached thereto. At the heading is stated the name of the described area (Figure 1).
Figure 1. Report of conditions to record deterioration.

The previous figure is an example of a record in field of architectural elements. The following figure shows an example of Report of Conditions to record in detail the Wall Painting (Figure 2).
Figure 2. Report of conditions with an example of the deterioration record of a wall painting.
With the information obtained from the Reports of Conditions, the general cards by zone were carried out and they used the same format of those used for Diagnosis 2011. They are consistent with INAH *Ficha del Consejo de Arqueologia (Card of Archeology Council)* (FCA) and bears the title of the *State of Conservation of Cultural Properties of the Archeological Zone of Teotihuacan*. Containing general information of the current state of conservation of each one of the established zoned inside and outside of the residential mounds.

Cards consist of five sections:

I. Name, Location, Period, Architectural Description and Constructions Method
II. General deterioration and types of intervention
III. Intervention background
IV. Level of attention
V. Positioning

Damage inspection was included into architectural Diagnosis and wall painting Diagnosis. Deteriorations affecting elements of Teotihuacan construction methods, such as floor, walls, taludes, tableros and coatings were included on first group. On second group, pictorial layer changes observed on walls and/or floors, with or without design were registered. A database with Access platform was originated to incorporate the information in order to be accessible and to follow-up and proceed the state of conservation and handle.

Below is showed the cards structure used to carry out the architecture assess by zone of residential mounds (Figures 3 and 4):
First section.

At first section of card, the general data of mound to be assessed is provided. This information consists of the Name or archeological denomination of mound, the zone within the mound and the space within the zone. Location or positioning of mounds is graphically made based on sectors established by R. Millon and by UTM coordinates.
The Temporality is established by absolute or relative dating suggested by different researches that worked on those residential mounds.

The Architecture Description is carried out by in situ observation of current state of structures, along with those descriptions made by different researchers who have worked on that site. Regarding to Construction Method, the information thereof is based on in situ observations, on description of previous excavations and the construction styles stated for Teotihuacan. Almost all information contained in this section is general for all residential mounds.

Second Section.

The second section of Diagnosis card consists of two sections: General Deterioration and Type of Intervention. In order to accurately determine the state of conservation of the different elements that must be assessed, as well as to facilitate the assessment by area of specialization, the area is divided into Structure, Support, Mortar, Plaster, Pictorial Layer, and Floor.

General Deterioration column specifies the effects produced by the different deterioration agents on the assessed structures. At Type of Intervention column is showed the possible actions that may be taken to preserve the structure.

In this aspect is required to clarify that the actions stated in this column are general actions that may be taken as basic stabilization procedures and the use of compatible and reversible material, and those are suggested actions that meet the Theoretical-Practical Guidelines and Methodology for Intervention from the Project for Conservation of Archeological Monuments of Teotihuacan, from the ZMAT Department of Conservation and Preservation; they do not be considered as unique solutions in order to solve the problem found. Preservation actions that shall be followed on each mound or structure shall be determined by the specific assessment.

Third Section.

All information obtained from the research carried out related to the Background of Intervention is mainly connected with archeological and conservation interventions background.
Fourth Section.

Point four contains an assessment of the *Level of Attention* required or priority of intervention required by mound, and an established period of time. The terms that shall be specified on the card are as follows: large, medium, short or urgent.

Fifth Section.

In order to facilitate the location and identification of recorded mounds and group of buildings, the information will be supplemented with two architectural plants, one general and other specific, from ZMAT, and representative photographs of the assessed sites.

Format for Wall Painting Record includes information of the formal description of design, manufacturing technique, stratigraphy and chromatic range as specific elements (Figure 4).
Figure 4. Format for the state of conservation of properties. Wall painting.
2.2 Teotihuacan residential mounds

2.2.1. Features

The Pre-Hispanic City of Teotihuacan, represents a Classic Period exceptional example, at Central Plateau, of urban and architecture development from; it is characterized by its urban orthogonal trace and its extension of 20 km² urban area (Figure 5) consisting of a central area with monumental architecture and a peripheral residential area that had almost 2000 residential mounds. At their peak (350-550 d. C.), the city was occupied by almost 100,000 inhabitants.

![Figure 5. The Pre-Hispanic City of Teotihuacan suggested by Millon, 1973.](Image)

This complex city developed an infrastructure including the base of pyramids, platforms, avenues, streets, plazas, residential mounds and an impressive hydraulic system with a water storage system supplied by rainwater harvesting and drainage. The use of this construction techniques, continuously used in Teotihuacan (as talud-tablero), was extended throughout Mesoamerica, but with the corresponding regional variants.
Architecture structures of the City of Teotihuacan were homogenously and completely or partially painted (red. p.e color.), or were painted with designs, therefore wall painting has become an essential feature of their architecture. The structures and wall paintings were closely connected. Wall painting, as architectural decorative technique, restricts and adds significance to that space. Symbolic two-dimensional representations that were inspired by deities, animals, plants and human figure were predominated.

Residential mounds – previously named as palaces -, have been considered and named by some researchers as barrios which are groups within the areas of the city. They have been defined as the way in which the Teotihuacan society organized their political and economic structure through an architectural space added to the urban design and therein the social production relationships, properties use and consumption, and rules and strategies were originated.13

Inside these barrios were groups of residential units or spaces intended for many families, where between 20 and 100 persons could be housed. Generally, their dimensions measure, by each side, 60 m (3600 m2), outlined by streets, although, there were ones which dimensions exceeded 100 m., while other smaller ones measure less than 30 m. by side.

Accordingly with the interpretative description of the ancient city suggested by Millon, it was estimated that at their highest peak there were almost 2000 residential units, Teotihuacan barrios and foreign barrios – zapoteca, maya, from veracruz, from west-, that were closely connected by their blood and political relationship and common origin, and the activity in which they were engaged – trade-.

There were mounds of different socioeconomically level, where public areas intended for worship (temple of barrio) and for products exchange (public plaza) were developed, and other mounds were residential-administrative units and residential units for handcrafted, service and maintenance. Inhabitants lived on residential areas with different social level, where significant construction quality and ornamentation (wall painting) differences were observed. Other common spaces were the areas of services, disposal, water supply and the streets that were used to delimit and provide privacy to the inhabitant’s everyday life.

13 Manzanilla 1993: 31-46
14 Gómez Chávez 2000
15 Millon 1973
The elements of Barrio are as:

- **Temple of Barrio**, this is the group of buildings intended for religion issues which mainly consist of bases for temples and altars that are located on a complete block, and they may be considered as the religious areas where interaction and connection among the inhabitants from different social level were carried out.

- **Public plaza**, it is a space without presence of architecture, and it is considered that in that space the temporary sales activities, product exchange were executed, and also public activities of political and celebration nature.

- **Administrative area**, all activities connected with the State were carried out, buildings intended for administrative, governmental, teaching, and secular activities.

- **Residential units**, units for dominant class, mainly for businessman, astronomer, members of military group and priests, and others.

- **Residential units**, houses for domestic groups or for trades that were consisted of families that worked in specialized manner on production.

- **Common spaces**, where diverse activities and services were carried out; area intended for disposal, water supply (artesian well or cistern), crossing and sales, and others.

Many of these elite residential mounds preserve important murals with beautiful manufacture and diverse themes connected with expressions of power that characterize the Teotihuacan elite party in power.

### 2.2.2. Materials and construction and decorative techniques

Teotihuacan inhabits developed constructions procedures to build-up bases for pyramids with square plant and one architectural element widely extended in other Mesoamerican settlement; this construction system followed this steps:

- **Wall intersections** to create construction fill are initiated. Walls are mainly built-up with volcanic stones and back filling.

- The space created by these intersections are filled with different materials (soil, mud, archeological material waste, masonry remains –in the event a previous construction exists-), the material is compressed into the construction fill in order to provide mass to the structures. On the created surface are highlighted the hitch that will be the platform for the bodies. Protruding stones are placed in order to wall intersection provide support to the added mass.
• Finishes for side bodies are made creating the wall on talud or tablero-talud, and protruding stones are placed in order to support coating and the stone staircase is conclude.

• Architectural finish is made on talud, tablero-talud or any other element is covered, the “lining”, or “Teotihuacan render”. In the event structure has sculptural elements, they are place on stone staircase or on tableros 17.

• In the case of residential mounds, the first construction stages are generally build up on bed rock (tepetate) where space distribution from walls limiting rooms, corridors and patios is established. Generally, rooms are located around the patio and it is limited by on step which forms part of the portico that allows room access. In each residential mound are higher structures, small bases with decorative front on talud tablero.

• A new constructions stage is initiated from the previous stage; it may be through a space alteration or creating over structures. If the same distribution is maintained, walls are reused and rooms are filled with stones, mud, trash, and sometimes with adobe. In the event, distribution is change, walls are demolished, but just at specific level, and the material from demolition is used as fill and the new level as base for the new distribution.

• Most of construction material for walls is volcanic, and mud is used as cement. These walls will be externally covered with a thick lining of volcanic stone, lime and sand with rustic render. Then, they were covered with fine render of lime and sand and was applied a lime fine plaster (stucco), and decorated with just one color or geometric or figures design.

• System and construction materials for floors initiate by tepetate rodding filling placement 18 and on it, just as walls, thick gravel, lime and sand lining is placed. Fine render and plaster are the next steps that shall be done on the finishes and floor surfaces.

• Adobes, (bricks of mud, sand and sun-dried), were used as construction fill, and sometimes used on walls.

In order to fill structures with color inert powders 19, agglutinant substances (mucilage of prickly pear, and others), cements (hydrated lime) and loads (grounded volcanic stone, sand and silts).

17 Morelos 1991: 103-111
18 Sedimentary deposit which parental material is volcanic tuff.
19 Pigments of mineral source as clay (soft pigments) or with crystals (hard pigments)
Plaster application and surface polishing were done to obtain compact and isolated areas, originated two-directional chromatic saturation and clearly forms. With some rough and fine layers of plaster was obtained depth and shine pictorial layers, to do that they were polish with an instrument. It is possible that was not enough the fresco technique to apply color on that areas while plaster was wet, therefore it is considered that pigments were applied on dry surfaces. However, if clay is applied on fresh plaster, it shall maintain and delay lime dry\textsuperscript{20}.

Recent pictorial technique researches help to define the methodological steps used by Teotihuacan specialized painters:

- Plaster is compress and using an instrument is polished –probably a piece of leather without tan procedure, textile, sponge fibers from maguey, or a piece of semiprecious stones with one plain side- and water.
- A preliminary draw and outline are done; the area is divided to know how many figures shall be drawn. The outline is free-hand drawn with a too diluted red color line.
- A clayed layer is applied in order to pictorial layer be burnished.
- Many layers of pigments are continuously applied to obtain the chromatic saturation resulting the thickness and density of pictorial layer
- Pictorial layer is burnished, but is differentiated the supply of materials: First, clayed pigments, then the hard ones.
- Order of use of pigments was: first red colors, then ochre and green colors, and finally black, blue and brilliant green colors.
- Finally, the line of outline is used to cover the preliminary draw line, and sometimes, in the area, the details are drawn with polychromy (Magaloni 1991:194).

Accordingly pigment color, the mineral content is as follows: Yellow (iron oxide), Blue (azurite), Greenish blue (malachite and \( \gamma \) calcite), Ultramarine blue (dioxide of magnesium with calcium carbonate and light sulfate), White (color of plaster), Black (pyrolusite), Ochre (iron oxide and lepidocrocite), Red light (iron oxide), Dark red (hematite), Brilliant green (malachite), Pastel green (malachite and calcium sulphate), Matt or olive green (malachite and lepidocrocite), Dark green (malachite, azurite, pyrolusite and hematite) (Magaloni 1991)

\textsuperscript{20} Magaloni 19996: 188-194
2.2.3. Description of residential mounds

Here below is showed the description of assessed mounds, their state of conservation; it is divided into architectural deteriorations and damages affecting the wall paintings. Intervention proposals are suggested which are the basic actions that shall be taken in order to stabilize archeological elements, those proposals shall follow the rules and guidelines set forth by DCRZMAT for conservation and restoration purposes to carry out interventions. And at the end of description the urgent intervention areas and the intervention level required on the other structures that are part of the mound are mentioned.

2.2.3.1 Atetelco

It is located approximately 2.5 kilometers from the Pyramid of the Sun; Atetelco is a Teotihuacan barrio with “luxury” architecture and coverings. It is comprised by a main patio with a central altar (red patio), a patio which is surrounded by portico and residential rooms with decorative wall (White patio), and a smaller patio in dimensions that arrange other smaller in dimensions rooms areas, but also have painting walls with design (south patio). In order to deteriorations of this residential mound be recorded, it was divided into eleven zones, the zones where deterioration was more important and required short-term attention are: Zone I, Zone II, Zone III, Zone V and Zone VI.

At 1940, this residential mound was investigated by Pedro Armillas (sponsored by Viking Group). Walls reconstruction was carried out and a reinforced concrete slab was placed on White patio. At 1940s and 1950s, Agustín Villagra and Santos Villasánchez placed those pieces recovered from excavation II made on painting walls known as: “Procesión de coyotes”, “Procesión de cánidos” and “La danza de los guerreros” of this patio. At red patio, Carlos Margain carried out the reconstruction of the main place of worship and at the 1960s Laurette Séjourné started the first restoration and consolidation works, also archeological excavations. At 1990s, Rubén Cabrera carried out new researches preservation works, in new areas located at the south-east of this mound, of the exposed areas, and wall paintings was initiated, and also were placed coverings.

As of 2010 up to now, DCRZMAT has carried out periodic activities in the form of annual season of the Project for Preservation of Archeological Monuments of Teotihuacan. These actions are connected to superficial cleaning, consolidation and filling of holes, retouches, and adhesion pastes for render and plaster of diverse archeological structures allowing stability of these elements. Following, in the state of conservation section, is reported the most common damages observed in this mound and the spaces that need an urgent intervention.
State of conservation

Structures with sheet cover have abrasion marks at ground, due to in coupling of sheet cover are leaks, holes, sediments in the drainage channel and runoff. Also there are superficial dirty, bird biological attack – mainly dropping at zones V y VI- and rodents as *techalotes* and marsupials –tlacuaches- that use base fill to make their dens.

Many of walls that are located at coverless area (Figure 6) have lost the external covering, due to support and even structure is uncovered, and in many cases loss and detachment of construction materials is observed. At exposed spaces is humidity in excess, moss, lichen and microorganism biological attack. At rainy season, minor plants are developed and serious problems are originated by humidity captured by walls and absorbed from subsoil.
Architecture

In this deterioration report is mainly focused on zone I, where almost all structures within this area are exposed and, therefore, seriously damages are present. At the original walls there is humidity in excess, due to portico and room are not covered, except room 1 that has a roof, but humidity is introduced by walls and floor until it reaches the render. Generally speaking, there is mortar loss, that in almost of cases presents adhesion paste and consolidation from previous interventions, therefore material again is detached and adhesion paste is separated. Moss and microorganisms development is observed on surface. At corridor 1 of zone I, there is a structural crack on the base intended to support room 4, and also on south tablero tlacuche dens are observed causing filling material detachment and causing inner holes.
Zone III has a cover, but almost all walls located outside have been rebuilt. Runoff stains, dirty caused by dust accumulation and biological remains such as cobwebs are observed. That zones without cover present humidity in excess, with microorganisms multiplicity on surfaces and moss growth. There is loss of wall joint and exist cement retouches. Some stones of crown of portico walls are separated.

Rooms 1, 2 and 3 of zone II, that have concrete slab were not examined, due to those rooms are now used as warehouse for archeological and preservation materials and maintenance.

**Wall painting**

Room 1 of zone I, that has sheet cover presents, in almost all wall paintings color loss and root marks, glaze and salt bloom are observed (Figure 7). Dusty materials that are detaching from larger layers were found. Most of them are crackled and in some of them cracks and fissures are observed. General layers present adhesion lack and in some detachment is observed.

![Figure 7. Atetelco, Zone I, Room 1, South-west corner. Glaze and salt bloom are observed, also crackled surfaces and detachments.](image-url)
At corridor 4 of zone III there is a wall painting with heraldic design. This design is known as “La biznaga”. It presents marks of humidity and microorganisms’ biological attack and also an alga not identified (Figure 8).

Figure 8. Atetelco, Zone III, corridor 4, South wall. Wall painting known as “La biznaga”, presents marks of humidity and biological attack.

Zone V, is an area whose murals require short-term intervention; the most common deterioration observed in this zone are located at portico and room 1. Although, these spaces have cover salt problems exists, they are consolidated and retouched, but loss of adhesion paste and pictorial layer and color loss caused by runoff are observed. The other murals of this zone, that are not roofed, and are “covered” with asbestos sheet, at diverse layers is observe adhesion lacking and loss, salt bloom, touches with cement and microorganism biological attack (Figure 9).
Room 6 of zone VII, south wall of this space is in badly state of conservation. At support, loss of plaster, mortar and pictorial layer is observed, as well as on adhesion paste and floor joint. Material is separated and crackled plaster, and also the mortar is practically lacking. Due to it is a roofless zone, detachment risk is present (Figure 10).

Zone VIII, room 2, is a small space of mural with red color, and it presents lack of layer adhesion and loss of color. The remaining of mural presents touches with cement, loss of support, mortar and plaster, depending of the area. There are moss, microorganism colonies and small plants growth on floor joint, and at that point polychromy at joint is observed (Figure 11).
Figur3 11. Atetelco, zone VIII, room 2, north wall. Small plant presence, humidity and loss of lining.

**Intervention proposals**

Below is listed some basic actions that shall be carried out for architectural structure and covers stabilization:

a). Crown consolidation and joint and holes sealing in order to avoid infiltration of water into walls and stop detachment of materials. Sealing of cracks, fissures, examination of adhesion paste, as well as replace lacking or deteriorated adhesion paste. Adhere layers. Non-abrasive cleaning of surfaces performs with tools and executed by training staff.

b). Place new roofs that meet their intended use to protect wall paintings, but considering constant monitoring and maintenance of those roofs. Examine sealing of joints and holes, appropriate desilting of drainage and channels of roof.

c). General cleaning, to remove moss and fumigate in order to control plagues and microorganisms. Change access door of rooms to avoid rodents and other animals—tlacuaches – can come into.
The suggested actions and interventions shall follow the regulations and guidelines set forth by DCRZMAT, but specific Diagnosis should be done before the intervention is carried out on those elements. Theoretical-practical guidelines for preservation are based on previous researches carried out on 2005 by Alonso y García. Some of these actions and definitions are adapted to ZMAT specific provisions and a search of those provisions may be done on Theoretical-Practical Guidelines and into the Project for Preservation of Archeological Monuments of Teotihuacan and also in the methodology of the Project for Preservation of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

Intervention level required and priority zones for intervention

DCRZMAT has annual seasons of work where the activities carried out are focused on the preservation of residential mounds of Atetelco, therefore here is suggested that the Project for Preservation of Archeological Monuments of Teotihuacan shall give priority to that actions intended for murals and floors with plaster (room 1 of zone I and zones V an VI), requiring urgent attention, on the contrary in short and/or medium term they may disappear.

2.2.3.2 Zacuala

This residential mound is located in straight line at N2W2 quadrant of Millon grid and at 400 meters south-east of the Pyramid of Sun. It is located at the current Barrio de Purificación into San Juan Teotihuacan municipality.

With an area of approximately 4500 m2; it is limited by streets that constituted blocks –with other residential mounds such as Yayahuala and Zacuala Patios-. This and other mounds formed part of a complex hydraulic system and also an inner communication system among “barrios” and with the rest of areas of the city.

Comprised by a central patio and platform –where the temple of barrio probably was established-, around this central patio were allocated portico that lead to inner patios and around them were allocated room with smaller dimensions. During the 1950s, Laurette Séjourné examined it.

State of conservation

All structures of this residential mound are exposed and visitors are not allowed; some walls maintain the polychromy, although designs are not clearly distinguishable, also there are in situ fragments of murals.

The common deteriorations present in these architectural structures of Zacuala are: biological attack of small plant, microorganisms, moss and lichens, insects and big animals.
as techalotes and/or tlacuaches. It is frequently observed loss of joint, holes and constructions material detachments (mainly xalnenes) (Figure 12).

![Figure 12. Zacuala, Zone III, room 15, north wall 1. Holes, loss of joint and minor plants development may be observed.](image)

In general terms, almost all walls present loss of joint, dens and construction material detachment. At walls and floor with lining, lack of adhesion of layers, holes and detachment are observed. The wall painting preserved can be observed humidity, support, mortar, plaster, edge and pictorial layer loss (Figure 13).
Architecture

Construction fill of platform 1 of zone IV, presents holes and tunnels caused by dens of rodents and/or marsupial—tlacuache—, originating detachment and loss of construction material. The entrance of one of these dens is located on the upper side of this structure talud at the east view of this structure, and as a consequence moulding, tableros, adhesion paste of talud and the fill stability is lacking and collapsing (Figure 14).
Wall painting

All wall paintings are exposed; therefore they are susceptible to deterioration caused by meteorological agents. Humidity release represents a problem for the most of them causing commonly outdoor damages.

In addition to the most common deterioration observed on architecture structures, Zacuala wall paintings present lack of adhesion of layers, holes, loss of support, mortar, plaster, pictorial layer, adhesion paste and surface (Figure 15). It is commonly observed fissures, cracks and salt bloom. It should be noted that a few interventions have been applied to these murals. Touches and adhesion pastes are in bad conditions and the cement mortar used on some of them could be observed.
Intervention proposals

Basic actions that should facilitate stabilization of Yayahuala residential mound structures are the following:

a). Reinforcement of architectural structures: this could be done by joint retouch –change cement joints to mortar based on lime-sand-, introduction of fill, cracks and holes sealing. Examine adhesion paste and touches on lining.

b). Weeding, fumigation and pest control. The dominant fauna, techalotes y tlacuaches- shall be control; therefore a special examination in order to determine the best procedure to control or eliminate pest fauna based on expert biologist opinion shall be carried out.

c). Examine, desilt and unblock Teotihuacan drainage channels. Creation and orientation of slopes towards site drainage, absorption well or rainwater harvesting.

Intervention level required and priority zones

In general terms, Zacuala archeological elements are stable, however, a medium-term intervention in some murals should require emergent actions and the other remaining walls with pictorial layer shall be included into a preservation program strategically created for Zacuala site.
2.2.3.3 Zacuala Patios

Located in straight line at Millon N2W2 quadrant, about 400 meters of the Pyramid of Sun, in a 1350 m² area. Examined on the second half of the 1950s by Laurette Séjourné, but it was not completely released due to it adjoins with current residences established on the barrio of Purificación of San Juan Teotihuacan.

Deterioration record was carried out just in one zone -zone I-, south-east located of Zacuala residential mounds. This zone has a main patio –patio 1- and four bases are allocated around it. Platform 3 has been mainly examined, at south and south-east diverse portico with their rooms are allocated. Platform 1, at north, have corridors where probably inner patios with portico and rooms were allocated.

State of conservation

Most of the architectural elements of this mound are exposed. A 2 X 2 roofing built with zinc sheets and metal structures covers murals of the platform 3 (Figure 16) and some asbestos sheets with stones laid on them to avoid asbestos sheets be removed by wind, but architectural structures and most of polychromatic findings are outdoor (Figure 17).

Figure 16. Zacuala Patios, platform 3, east wall
Architecture

Majority of structures present at crown loos of joint, at sides’ wall and “half round” walls. Inside them there are holes, detachments and humidity. Inside structures, are holes, detachment and humidity. At some walls are salt formation, severe structural cracks at portico 2, room 2a, room 1 and portico 3. Detachment of lining is also observed, majority of them have holes, and detachment caused by the use of materials such as blocks and xalnene rocks.

Generally, there are attacks of microorganisms, moss and lichens, minor plant development. Also, big animals made their dens on the south wall of corridor 5, portico 5 of south wall (Figure 18).
Humidity cannot be removed, this problem cause the development of minor plants and moss, loss of mortar and adhesion paste of walls and linings, lack of adhesion of layers, fissures, cracks, holes, detachments of construction material and plaster and adhesion paste. There are runoff marks, loss of support, mortar, plaster and adhesion paste (some of them were built with back filling and currently are replaced by approved back fillings) (Figure 19).
Wall painting
Recent reinforcement of some coatings is observed on most of murals that are in outdoor conditions. Few differences between recorded deteriorations and exposed murals with roofing are observed, the most important are: lack of adhesion of layers, holes, detachments of plaster, pictorial layer, adhesion paste, stains and superficial dirty. Biological attack of insects and arachnid, cracks and fissures and crackled surfaces, root marks on specific areas and salt bloom are observed. Humidity in excess and microorganism attack is a serious problem for wall paintings (Figure 20).

Figure 20. Zacuala Patios, Zone I, room 2, south wall.

Intervention proposal
Basic actions are suggested to facilitate stabilization of structure and murals from Zacuala Patios residential mounds, but those interventions shall be urgently carried out and site monitoring shall be included into the DRCZMT preservation program:

a). Reinforce cracks, fissures, joints, core of walls and lining by the introduction or filling of cracks with back filling base on lime-sand. Examine joints that present cement-sand mortar and be proportional replaced by approved pastes for exposed or covered structures. It is important to note that those interventions shall use consistent materials, reversible and proved efficacy to those materials used on this and in other archeological zones.
b). Schedule periodic works for weeding, fumigation of insects (ants and arachnids) and control of animals (birds, techalotes, dogs, moles, tlacuaches), as well as other activities for frequent small repairs (dust and trash removal). These activities shall be done by trained staff using appropriate tools.

c). Avoid humidity at foundation, walls and floors, re-route slopes with filling surface and rainwater harvesting towards harvesting and absorption wells –properly desilting- and routed to archeological drainage.

d). Use render or lime-sand filling layers consistent with the original materials to mainly protect fragile structure and wall paintings.

e). Replace roofing and sheets and use a roof previously approved and examined by a multidisciplinary approach in order to avoid runoff, direct sun radiation, and also supply an appropriate light to observe wall paintings. In addition to the continuously monitoring and maintenance (desilt channels, seal of joints and waterproofing to avoid rusting).

f). Assess, if some structures of the whole mound should be recovered up. The decision adopted must be produced as a result of an agreement executed by diverse experts of different areas taking into account that in the event the needed human and material resources are absent to carry out the actions, considering excavated structures shall be maintained on the original matrix.

**Level of required intervention and priority zones**

Urgent action is required for polychromatic coverings, due to whole or one element that form part of them is in risk to disappear.

Medium-term action is required for architectural structures, due to be needed preservation works for the majority of walls and linings; those works may be included on a useful scheduled preservation program.
2.2.3.4 Grupo 5’

Located in straight line at western, about 200 meters of the Pyramid of the Moon and in N5W1 sector of Millon, the access to this site is the same used for “Museo de los murales teothuacanos Beatriz de la Fuente”, within the territory or the Central area of Monuments.

On approximately 20,000 m² area are the exposed structures. This mound consists of three pyramidal bases with talud-tablero walls that are allocated around one plaza. In order to examine damages, it was divided into two record zones (Figure 21).


State of conservation
Structure 1, half of west structure 2 and porticos, room and corridors located northwest Grupo 5 are in danger, due to they are in outdoor conditions. Damage examinations were focused on architectural structures, because exist few coverings with pictorial layers; just two pieces were recorded.

**Architecture**

Development of minor plants, microorganisms, moss and lichens, *techalotes* dens and tunnels caused by anthills is still extended. At walls, loss of joints, detachment of materials, holes and root is observed, in addition to the lack of adhesion of layers, structural cracks and fissures. The covering preserved at the small amount of walls, lack of support, mortar, plaster, adhesion paste, fissures, cracks, crackled surfaces and salt presence are observed.

![Figure 22. Group 5’, zone I, plaza 5H, north-east corner.](image)

**Intervention proposal**

Some basic actions shall stabilize structures of Grupo 5 and are the following:

a). Reinforce cracks, fissures, joints, core of walls and lining by the introduction or filling of cracks with back filling based on lime-sand. Examine joint that present cement-sand mortar and be replaced with the approved pastes accordingly with exposed structures.
b). Schedule periodic works for weeding, fumigation of insects (ants) and control of animals (techalotes and tlacuaches). These activities shall be done by trained staff using appropriated tools, but under DCRZMAT monitoring.

c). Use render or lime-sand materials and other materials consistent with the original materials; it is important to use consistent, reversible materials whose efficacy has been proved in this and in other archeological zones.

**Level of required interventions and zones that require priority intervention**

It is important to develop an urgent intervention project to stabilize structures of Grupo 5’. In the event, basic actions were not applied it is possible that in medium and short-term they may disappear.

### 2.2.3.5 Tetitla

This architectural mound is located south-east the Pyramid of the Sun, into the current barrio of Purificación, San Juan Teotihuacan municipality. It consists of diverse groups of three-bases –mound of three temples-, and around them are allocated porticos and rooms of different sizes. There is a public plaza located at north, one temple of barrio at south, and one patio allocating porticos and smaller-size rooms, but walls are widely decorated. It is the explored residential mound that has more than one hundred of murals, most of them covered with roofs.

On an approximately 3600 m² area, at its four sides is delimited by streets and at all directions adjoin with other residential mounds. At the end of 1950s and at the beginning of 1960s explored by Laurette Séjourné. Some of the most recognized murals were released at 1960s. They are: “Las diosas de jade”, “Los felinos anaranjados” “Los buzos”, and “Las águilas”, and others.

This residential mound had undergone different construction, refurbishment, and maintenance activities stages that are evidenced by wall overlapping. The areas where two construction phases or structures overlapping, are noticed structural instability or humidity problems caused by the current slope among phases, or inner and outer room level are commonly observed. Covered or exposed architectural elements–some of them with pictorial layer and damages on designs of walls- with different deterioration are observed. Damages are increased at those areas under meteorological agents. For deterioration examination purposes, it was divided into thirteen zones (Figure 23, File of Tetitla, drawing 504, zones for recording).
In 2011 were carried out the most recent interventions and National School for Conservation, Restoration, and Museography (ENCRyM) was in charge of works carried out on 11, 13 and 14 porticos of patio 10 located at zone IV.

**State of conservation**

Frequently deteriorations found in Tetitla are similar to those recorded from other residential mounds. A comparison is made between the actual damages found on structures with roof and that without it. The roofless zones have lost 90% of the area considered as support, while support of roof zones is still preserved, even though, detachment of some specific pieces and lack of attachment of layers are observed.
**Architecture**

At roofless zones, loss of joints, detachment, separation of construction materials, biologic attack, in the form of moss and lichen development, specifically on walls and crowns, are observed.

Crowns of rebuilt walls within roof area present loss of joints, detachment of stone material, inner holes primarily caused by rodent dents —techalotes— and mortar detachment.

**Wall painting**

Most of murals of Tetitla have roof which is built with zinc sheet and supported, at best, by a metallic structure. The roof of other structures is built of asbestos sheet and wood beams supports, whose objective of archeological elements protection is not complied with, and also increase the deterioration caused by the lack of maintenance and improper positioning.

The mural known as “Las diosas de jade” is in portico 11 of patio 10 located at Zone VI, presents lack of mortar, plaster, pictorial layer, in addition to loss of surface and adhesion pastes. There are crackled surfaces, fissures, scratches, holes, biological attack, dens, detachment and dirty all over its surface. Reinforcement touches and chromatic reintegration are observed. Roof is composed of asbestos sheet and wood beam support, so it became into habitat where wasps make its home (Figure 24).
Also in the same zone and patio, but in portico 13 is the mural “Felinos anaranjados”; its state of conservation is stable. Loss of mortar, plaster, pictorial layer and surface is observed. Lack of adhesion of layers and incomplete adhesion pastes. There are stains, peeling, fissures, crackled, holes, wasps attack, dents of rodents, and in other specific zones are cracks, peeling and moss growth. Specifically, there is humidity at upper and lower structure. Consolidated touches and adhesion layers of previous interventions are observed. Roof was built with asbestos sheet, metallic sheet and a channel to route rainwater towards metallic support (Figure 25).
At walls of zone V, patio 25, portico 25A and 25B, rooms 25A and 25B and corridor 25 are “Las águilas” and “Los cánidos”. They are considered as fragile murals where loss of mortar, plaster, pictorial layer, adhesion layer and surface were recorded. There are holes and lack of attachment of strata. On specific areas are marks of humidity, at north-east wall salt bloom and glaze, detachment and break up of plaster, dirty in general, surfaces with cracks and fissures. This area has a roof of asbestos sheet and masonry support (Figure 26, Figure 27 and Figure 28).
Figure 26. Tetitla. Los Cánidos, Zone 5, Portico 25.

Figure 27. Tetilla, Zone V, patio 25, north wall. “Las águilas”, dark marks, humidity and detachment of pictorial layer are observed.
In the same area, portico 26, is located the wall painting known as “Los buzos”. It is a stable wall painting with superficial dirty, some fissures and cracks on specific areas. Touches, adhesion paste and chromatic materials of previous interventions were observed. This area has a roof of asbestos sheet and masonry support (Figure 29).
**Intervention proposals**

Some basic actions shall stabilize structures of the residential mound of Tetitla are:

a). Reinforce cracks, fissures and different layers of coverings by lime-sand filling materials or back filling. Examinations of joints of exposed walls, and replace them if loss of joint is observed or they were done of cement-sand back filling.

b). Schedule periodic works for weeding, fumigation of insects and control of animals, as well as frequently small maintenance activities (dust and trash removal). These activities shall be done by trained staff using appropriated tools.

c). Suggest and build a new roof intended to protect the whole mound. If changes are not applied, it is suggested to examine and replace –previously assessed- roofs with wood supports and asbestos sheets for other sheets manufactured with runoff and drop proof materials that allow the appropriate observation of murals. Design and placement shall avoid sun’s rays and rainwater splash. Monitoring and maintenance shall be regularly carried out (channels desilting, sealing of joints and waterproofing to avoid rusting).

These suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and García research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

**Level of intervention required and zones where priority intervention is required**

Due to exposed structures have become more fragile than the architectural elements with roof, it is urgently need to develop projects for continuously preservation and approved by DCRZMAT.
The remaining architectural structures shall be stabilized and reinforced at medium-term, after those actions were carried out, regularly roof monitoring and maintenance, and as architectural elements shall be needed.

2.2.3.6 Teopancaxco

This mound is located at S2E2 quadrant of Millon, at 500 linear meter of the south-east corner of La Ciudadela and south of the church of the community of San Sebastián Xolalpan, San Juan Teotihuacan municipality, is also known as “Casa Barrios”, “Casa del Alfarero” or Teopancaxco. Figure 31.
In 1884, Leopoldo Batres excavated the property owned by the potter José María Barrios, and reported the famous mural “Sacerdotes frente a disco solar” or “Sacerdotes del Océano” and is released the room where those wall paintings are located. Peñafiel took photographs and Adela Breton made copies of them. Diverse research have been carried out in this site, some of them connected with iconography, others with ceramic and mound architectural allocation (Manzanilla 2012: 22-25).

The interdisciplinary researches (1997-2005) and strict methodology of Linda Manzanilla stand out and suggest that this residential mound was the center of a multiethnic barrio located at south-east periphery of the ancient city of Teotihuacan. Based on archeological evidences recovered and studies of archeological assess has been suggested that Teopancaxco carried out activities connected with pottery, basket making and mainly garment manufacturing for intermediate hierarchy, as it is called by Manzanilla. Also, the inhabitants of this mound developed close relationship among the corridor of Teotihuacan sites towards the coast of the Gulf of Mexico (Manzanilla 2012: 25-30).

This mound comprised a main plaza of barrio and around it is allocated some elements – porticoed architectural structures, room and corridor- such as: ritual, area, administrative, residential sector, one zone for specialized handcraft and area for kitchens and warehouse.

**State of conservation**

Public access of this settlement is not allowed, so it is delimited by hurricane mesh and staff of ZMAT is in charge of its surveillance. Archeological elements excavated during the project named “Teotihuacan: elite y gobierno” (Teotihuacan: elite and government) supervised by Linda Manzanilla were consolidated and reincorporated. Exposed structures were only examined and classified into two record zones Figure 30.
Architecture

Advanced deterioration of walls –most of them were not reinforced during excavation. Joint material is separated or dusty causing loss of surface and holes. Some of these holes were originated by roots, higher or minor plants and/or dens Figure 32.
Some stones that are part of walls have been detached and xalnes have been separated causing the risk of instability of structures. There is humidity and runoff marks, salt presence and collapsing (mainly observed on the stone staircase of the external wall of this plaza). Development of moss, lichens, microorganism and humidity in general, due to it is a roofless zone. Room 7 is the only one covered by a cross-hatch pattern supported by wood beams; however, problems of humidity are present.

**Wall painting**

The wall painting was discovered at the end of the preceding century, known as “Sacerdotes frente a disco solar”, and a large retouch of almost half of the space is observed. The level of deterioration originated by humidity, located at front trough plaster, is serious. Massive growth of microorganisms and high presence of salts in form of glaze and bloom, which cause the detachment of external layers including those which pictorial layer. Loss of color and surface is noted. Marks for humidity and biological attack. Dust in pictorial layer Figures 33 and 34.
Intervention proposals

Some basic actions for stabilize structures of Teopancaxco are the following:

a). Handle humidity problem of room 7 through the placement, at the external view of structure, of absorption blocks or layers for dry or at the front of south wall create dry areas. Reinforce cracks, fissures, joint, retouch of walls and covering by the injection or filling of opening with lime-sand back filling. Manage salt layer and bloom problem. It is important that on interventions be used consistent, reversible materials whose efficacy has been proved in this and in other archeological zones.
b). Schedule periodic works for weeding, fumigation of insects and control of big animals, as well as frequently small maintenance activities (dust and trash removal).

c). Replace roof by one previously planned and originated from a multidisciplinary study in order to avoid runoff, sun radiation, and also with an appropriate eave –skirt- to avoid water gathering on the external side of south wall of room 7. If this roof is replaced continuously monitoring and maintenance (desilt channels, seal of joints and waterproofing to avoid rusting) shall be carried out.

d). Examine, if some structures of zone I and the exposed elements of zone II should be recovered up. The decision made must be produced as a result of an agreement executed by diverse experts of different areas. Taking into account that excavated structures shall be better preserved in its original matrix, especially if the human and material resources required to usually surveillance and maintenance are lacking. It is suggested to reintroduce all exposed structures and wall painting remains, due to it is unlikely to a suitable protection cover be scheduled.

These suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and García research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

**Level of intervention and priority zones where intervention is required**

It is suggested to develop a project to plan and place one roof intended to protect the wall painting remains of room 7, but an urgent intervention for stabilization shall be carried out. As consequence of the rapidly loss of covering and its fragility originated from meteorological agents is important to prioritize its preservation.

In the event, basic preservation in short-term is not provided to covering and exposed architectural structures, they are in risk to disappear in short and medium term.

It is noted that urgent interventions and/or preservation activities carried out on Frente 1 shall be inspected by DCRZMAT, and they shall follow the stated use of lime-sand pastes procedures and the suitable approved ratio for structures –covered or exposed- and for the purposes they may be used – for reinforcement or filling layer.
Tepantitla

This architectural mound is comprised of three residential groups with central patio and porticos that allow access and movement in a main patio, it is allocate in a surface of 40 x 45 meters. The exposed structures and publicly opened zone cover an area of 1800 m2. This mound is not completely excavated and only the south-west boundary is known.

Designs have been explained as representations of "Paraiso de Tláloc" where human beings, butterflies, natural springs and small streams refer to an idyllic place of happiness and joy. Another explanation approach of these designs suggests that is represented at least eight different ways of ball game where scoreboards and players with diverse wardrobe and head-dress are represented.

In connection with ball game representations, persons intending to perform dances and rituals associated to this activity are noted. Also head, bones and legs are reproduced, and probably related to sacrifice ceremony. Additionally, there are flowers, bushes and seeds identified as hallucinogenic that may be used in self-immolation ritual.

Due to on 2002-2005, Coordinación Nacional de Restauración del Patrimonio Cultural (National Office for Restoration of Cultural Heritage) of INAH, with budged provided by World Monument Foundation, carried out a conservation, preservation, restoration, protection, refurbish and presentation of this residential mound, the majority of these architectural elements and covers have remained stable. Below are mentioned some of the most common deteriorations recorded on this residential mound.

State of conservation

Some of the architectural elements of this residential mound were rebuilt to provide support to reinforced concrete slab. The roof allowed the wall painting named as “El Tlalocan” is stable. But the deterioration level noted on the wall paintings known as “Sacerdotes sembradores” of room 2A, “Los Tláloc rojos” located at corridor 9 and “Escudos rojos” within room 5, is severe and short-term basic preservation is required, otherwise they are on risk to disappear.

Architecture

Some common recorded deteriorations of exposed structures are: loss of joints, detachment and construction material loss, cracks and fissures, some of the latter structural. Seasonal humidity –rainy season- is a critical problem, due to inner ponding and humidity formation of structures cause the development of minor plants and biological attack of moss, lichens and microorganisms. The use of gray cement and sand in reconstructions and joints of
original elements is widely spread, so rainwater has been maintained during long time causing inner leaking into walls and formation of glaze and salt bloom on specific areas. Salts included in cement migrate and crystallize when they reach the surface of walls where finish is made of lime plaster (with or without pictorial layer). The consequences: loss of layers attachment and pictorial layer disappearing (Figure 35 and Figure 36). Another damage noted is the biological attack of insects, rodent and reptiles –such as tesencoyote– that when they made dens and holes unbalance the structures and through them construction material is detached and take to outside.

Figure 35. Tepantitla, Zone I, room 15, South-east corner. Rebuilt wall, joints with gray cement back filling, holes and construction material detachment and loss of cover are observed.
Figure 36. Tepantitla, Zone III, western wall. Loss of construction material on wall, attack of inferior plants, moss and microorganism are observed.

Recorded damages of architectural elements protected by roof are not as severe as the common ones related to minor maintenance, that is, non-abrasive cleaning activities to remove accumulated dust.

Special attention should be observed in room 1 of Zone V, due to this wall has problems to eliminate humidity and since it is in an upper level than room 2A of Zone VI, the “Sacerdotes sembradores” wall painting begins to present critical problems of salt glaze and loss of attachment of fine plaster, plaster and pictorial layer. In room 5 of Zone V similar deteriorations are observed in south wall where “Escudos rojos” wall painting is located and the humidity leaked by roof –runoff and splash- is maintained for long time periods causing salt glaze (Figure 37).
Figure 37. Tepantitla, Zone V, Room 5, south wall. It was noted that the roof is not suitable to protect completely “Escudos rojos” wall painting, therefore leaking, direct radiation, abrasion in form of wind and microrganism attack were recorded.

In Platform 1 of Zone V, damages for loss of joints at rebuilt walls attached with cement-sand back filling were recorded; humidity in excess in this structure, water absorption and runoff from the roof intended to protect the wall painting known as “Los Tláloc rojos” have produced salt bloom and loss of pictorial layer (Figure 38).

Figure 38. Tepantitla, Zone II and Zone V, Platform 1, south end of Platform 1. Roofs 1, 2, and 3 that in rainy season caused runoff and splash towards wall paintings, one of them is “Tláloc rojos”, are observed.
Wall painting

Wall paintings of Tepantitla are covered, whether reinforce cement slab, in the case of rebuilt walls (Patio 2 of “El Tlalocan”), or by a roof built with zinc sheet and clay roofing tiles supported by one structure and wood slabs (for the remaining walls with wall painting).

Wall painting known as “El Tlalocan”, situated at Zone VI, Portic 2, was recorded as stable, but it is important that monitoring actions for rebuilt wall behavior over the originals structures are carried out, as well as the dome placed on patio.

The most common damages are: loss of layers attachment, holes on specific sections of plaster and pictorial layer, fissure and cracks, superficial dirty, insects and arachnid attacks (Figure 39 and Figure 40).

Figure 39. Tepantitla, Zone VI, Portic 2, east wall 2. This wall painting is stable, dust in its surface and on the floor where it is founded is observed.
Special attention should be observed for south walls of corridor 2 and portico 2, due to humidity gathered in Platform 1 –north wall- may migrate to its external surface and finishes (Figure 41). Also at room 2A, where the “Sacerdotes sembradores” wall painting is located, and as above-mentioned has problems of salt glaze, were excavated in front of these wall paintings two wells for dry purposes in order to retained humidity could be evaporated trough these ditches filled with gray tezontle gravel (Figure 42).
Figure 41. Tepantitla, Zone VI, Portic 2, south wall scene 3. Stable mural, it is suggested monitoring for gathered humidity in Platform 1 be carried out.

Figure 42. Tepantitla Zone VI, Room 2A, west wall. Ditch for dry purposes filled gravel, almost all surface of wall painting is observed salt layers.

In Zone V, Room 5, is located the wall painting called “Escudos rojos”, also with critical problems of humidity retaining. The deterioration level is advance and it is predicted that in short-term it could disappear if it is not urgently maintained (Figure 43).
Propuestas de intervención

Some of the basic actions that stabilize architectural structures of Tepantitla are:

a). Reinforce cracks, fissures, joints, core of walls and covers with back filling base on lime-sand, basically on exposed elements. Joints that present cement-sand mortar will be replace with approved pastes and suitable for exposed or covered structures. It is important that materials used shall be consistent, reversible and proved efficiency materials to those used on this and in other archeological sites of the country.

b). Schedule periodic minor maintenance for weeding, fumigation of insects and arachnids, and control of animals such as techalotes and tlacuaches. A frequently dust cleaning activities shall be done by trained staff using the appropriated tools avoiding to affect covers mainly of pictorial layer.

c). Replace roof and use a cover previously approved and examined by a multidisciplinary approach in order to avoid runoff, direct sun radiation, and supply an appropriate light to read wall paintings. Continuously monitoring and periodic maintenance of these new covers, as well as channels desilting, seal of joints and waterproofing to avoid runoff and water leaking shall be performed.
All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical practical guidelines are based on Alonso and García research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

**Level of intervention required and priority zones for intervention.**

The deterioration of coverless structures is higher than the architectural damages of architectural elements with cover. Specific diagnosis and continuous preservation projects, previously approved by DCRZMAT, are urgently be developed, whose main objective shall be the recovery and stabilization of the following murals “Los Taloc rojos”, “Escudos rojos” and “Sacerdotes sembradores”. On the contrary, in short and medium term these murals are in the risk to disappear.

All urgent and preservation interventions may be performed in Tepantitla, shall be under DCRZMAT monitoring, it is required to open a file including an specific diagnosis of each mural, the history of executed urgent and preservation interventions, and a monitoring program.

### 2.2.3.7 Yayahuala

This residential mound located in current Barrio of Purificación of San Juan Teotihuacan municipality, located in N2W2 sector, about 800 meters south-western of the Pyramid of the Sun. With approximately 3600 m² area, a main patio with central altar surrounded by different size rooms and four streets representing “sidewalk” delimitation comprise the mound (Figure 44).
In the decade 1960s was explored by Laurette Séjourné, stating that different construction, refurbish and maintenance activities stages were performed in this barrio, but one of the last Teotihuacan occupancy stages, Xolalpan 450-650 B.C., is exposed since the excavation was performed.

Mound was divided into six zones for examination purposes (Figure 45), conservation diagnosis mainly focused on architectural structures. As complete designs of murals are not preserved, just plaster with paint remaining, and the depicted scenes are incomplete, a description of them can not performed due to the state of conservation of pictorial layer.
State of conservation
All architectural structures of this residential unit are outdoor becoming more susceptible to the deterioration effect of meteorological agents such as rain, humidity, wind, radiation, abrupt change in temperature, relative humidity and hail. In addition to damages caused by biological effects as plants, microorganism, insects, rodents and reptiles. The periodic weeding (three times per year) to counteract plants growth and the damage caused on archeological elements has not been suitable for that purposes.

Architecture
The deterioration of Yayahuala structures commonly recorded are the following: longitudinal and structural cracks, fissures, water leakage, salts, ponding, construction material detachment and separation, plant growth and microorganism development (Figure 46).
When basalt sandstone —ixtapatetes— that provide support to talud-tablero, architectural element pertaining to Teotihuacan construction system, is cracked and fallen down it is in risk of collapse, same situation may be originated if there are inner holes and construction material detachment in base filling, then deformation of structural components deformation (moulding, tableros, corner of talud and filling) and finally collapse. Structures of Yayahuala, in outdoor conditions, commonly, platforms and portico walls, corridors and room undergo these types of damages (Figure 47).
Usual deterioration noted on wall and floor covering is the effect caused by humidity release, biological attack of moss, lichen and microorganism. Lack of layers adhesion, holes, and loss of mortar, plaster, adhesion paste and surface were registered.

Wall painting
The mounding wall painting and floor remains with stucco plaster have been outdoor, so medium term intervention is required at the following deteriorations: humidity problems, lack of adhesion, loss of mortar, plaster, pictorial layer and adhesion paste. Fissures, cracks, crackled surfaces, spots and runoff are observed (Figures 48 and 49).
Intervention proposal

Basic actions that facilitate stabilization of structures of Yayahuala residential mound are:
a). Consolidate walls through injection of lime-sand mortar into cracks, fissures, and replace loss joints. Adhesion of layers of preserved coverings also must be examined; replace adhesion paste and retouches needed, but approved pastes and in proportional manner as stated for exposed structures invariably be applied.

b). Schedule more frequently works for weeding, animal control -techalotes y tlacuaches- and minor maintenance activities (dust and trash removal). These activities shall be carried out by trained staff using the suitable tools for cutting up weed and dust removal avoiding structural damages.

c). In order to avoid ponding, re-orient floor slopes towards archeological drainage of site with filling surfaces, construction of absorption well for rain water harvesting without forgetting periodic works for desilting and unlock.

d). Use render or layers of lime-sand filling materials consistent with the originals to mainly protect those susceptible structures as stone walls with xalnenes.

e). Plan, construct and install a cover, whose design is based on Teotihuacan materials (clay render) and also the construction technique used at that moment. This cover proposal may be originated from a multidisciplinary study to rebuild a Teotihuacan barrio. As this suggested cover shall use wear materials, periodic maintenance and proper monitoring shall be performed (desilt of channels, seal of joint and constantly replacement of organic materials).

All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and Garcia research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).
Level of required intervention and priority zones
Although immediate attention of this mound deterioration is not required, or its integrity is in danger, medium-term actions to stabilize archeological structures are suggested. Due to the mound has completely released and if a cover designed with Teotihuacan materials and technique is place, the barrio distribution may be showed, museographically speaking.
LA VENTILLA

The urban barrio of La Ventilla is located south-western of La Ciudadela, at S1W1, S1W2, N1W1 and N1W2 quadrants of the ancient city of Teotihucan planimetry (Millon 1973). First is mentioned below the features of a barrios as now is known, after that each mound is described.

There are diverse architectural mounds with different features delimited by streets that create blocks, and at the same time, form a complex hydraulic structure and internal communication system among other mounds and the remaining city. For this and other reasons, this site has been considered as a model of barrio of the city. Until now, the most complete researches have carried out in this mound, by those studies is clearly noted the level of progress reached in the city by Teotihuacan elite related to urban and architecture development conception, both in arrangement and distribution space, and infrastructure problems solutions.

The name of the mound referred to the name where the mound is located, that is, Rancho de La Ventilla. Different excavation areas were opened during research. For that reason, each mound is now being exhibited preserve the name granted during exploration process: Frente 1, Frente 2, Frente 3, Frente 4 and Frente 5. Based on their features is considered that each mound had different function: some of them intended for elite group occupancy where administrative and residential activities were carried out. Other residential mounds with minor constructive quality and comfort architectural features referring size of rooms and patios were intended for handcraft activities and residential staying of craftsman and/or inhabitants serving the elite group; a complex social and economic interaction, and also religious, among the mounds is showed by archeological evidences.

2.2.3.1 La Ventilla Frente 1

This area located south-east of this residential mound is also known as Templo del Barrio (temple of barrio) spans 4,350 m2 of extension. Comprise a set of buildings around an open plaza allocated towards the fourth earth directions, and altar in the center delimited by high and thick walls surrounded by streets (East, North and Western). This space is allocated in 60X70 meters quadrant. In contrast to other mounds of this barrio, room inner space is larger.

State of conservation

Some factors affecting the state of conservation of archeological properties of Teotihuacan are meteorological agents, the exposed time of structures, its life history and type of use. Type and degree of deterioration observed on outdoor architectural structures are different to
the covered ones. Damages are caused by external factors (rain, humidity, wind, radiation, abrupt change in temperature, relative humidity, hail, fire, plants, microorganisms, insects, arachnid, animals, inappropriate interventions that not were suitable stabilized and consolidated, site disoperation and misuse). And intrinsic causes originated since excavation time, or inappropriate stabilization and consolidation, or the selection of materials not suitable for outdoor conditions.

**Architecture**

Common damages noted on architectural structures exposed in Frente 1 of La Ventilla, are loss of joints, humidity, ponding, structural and longitudinal cracks, holes, detachments and separation of construction materials and plaster. There are problems of humidity and minor plants growth (Figure 50), biologic attack of moss, lichen and microorganism (Figure 51 and Figure 52).

Usual deterioration of architectural elements with cover is different to that observed on exposed structures. Loss of joints, holes, some of them caused by rodent and marsupial dens (techalotes and tlacuaches, respectively) are noted. Superficial dirty and sometimes anthropic trash originated from field season (Figure 53).

![Figure 50. Frente 1, Zona III, portico and room 1, west-east view, stage II. Wall and floor damages caused by meteorological agents and outdoor conditions.](image-url)
Figure 51. Frente 2, Zone I, Platform 1, West wall 1 stage III. Dark spots over plaster were observe, because microorganism spread.

Figure 52. Frente 1, Zone V, Portic 5, South-east corner. Minor plants and moss growth over as microorganisms biofilms.
Wall painting

Areas where pictorial layer is preserved, deterioration were classified into two categories: murals with covered structures and with exposed architectural elements.

Damages noted on polychromatic walls, taludes, tableros and floors protected by steel joist and zinc sheet roof are increased due to leaks of sheets. This runoff has produced ochre spots on floor and walls, in addition to continuously abrasion deterioration (Figure 54 and Figure 55). Other frequent deteriorations are: lack of layers adhesion, holes, fissures, crackles, superficial dirty, spots, biological attack of arachnids. Some specific areas present loss of plaster, pictorial layer, adhesion paste and surface. Salt glaze and bloom (Figure 56 and Figure 57).

Usual deteriorations of exposed murals are: loss of layers adhesion, humidity spots, attack of microorganisms, minor plants growth, and loss of support, plaster, pictorial layer, adhesion paste, fissure, crackles and cracks. Meteorological agents as rain and sun radiation have caused discoloration and pictorial layer detachment.
Figure 54. Frente 1, Zone IV, Platform, south wall 2. At upper talud is noted the runoff mark originated by leaks and cover rusting.

Figure 55. Frente 1, Zone IV, Patio 4, east wall 3. Runoff line created by leaks and rusting of zinc sheet of cover.
Intervention proposal

Basic actions suggested to stabilize structures of Frente 1 are:
a) Consolidate cracks, fissures, joints, and core of walls and covering trough injection or filling with lime-sand back filling. Examine joints that present cement-sand mortar and replace them with approved pastes and suitable for exposed or covered structures. It is important that materials used shall be consistent, reversible and proved efficiency materials used on this and in other archeological sites.

b) Schedule periodic works for weeding, fumigation of insects and arachnids, and control of animals (birds, techalotes, dogs, moles, and tlacuaches). As well as frequent minor maintenance activities (dust and trash removal). These activities shall be performed by trained staff and with appropriate tools.

c) Eliminate water gathered in foundation, walls and floor by reorientation of slopes and rainwater harvesting towards absorption or harvesting wells –previously desilting- and to archeological drainage that must be free of detached material blocks.

d). Use render or layers of lime-sand filling materials consistent with the originals to mainly protect those susceptible structures as stone walls with xalnenes, adobe or with wall painting over adobe.

e). Replace roof and use a cover previously planned and approved by a multidisciplinary approach in order to avoid runoff, direct sun radiation, and supply an appropriate light to read wall paintings. In addition of continuously monitoring and maintenance (desilt of channels, seal of joints and maintenance of support structure).

f). Assess, if some exposed structures or mounds should be recovered up; this decision taken must be produced as a result of an agreement executed by diverse experts of different areas. Taking into account that excavated structures shall be better preserved in its original matrix, especially if the human and material resources required to usually surveillance and maintenance are lacking.

All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and Garcia research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).
Level of intervention and priority zones for intervention.
Considering that damages of exposed structures are seriously than damages of covered architectural elements, to develop conservation projects approved by DCRZMAT is urgent, whose main purpose shall be stabilize archeological elements and then reconstruction, consolidation and maintenance. It is important to prioritize its attention due to their rapidly loss and vulnerability to meteorological agents.

In the event, basic treatment in short-term is not provided to covering and exposed architectural structures, they are in risk to disappear in short and medium term.

It is noted that urgent interventions and/or preservation activities carried out on Frente 1 shall be inspected by DCRZMAT, and they shall specially follow the stated use of lime-sand pastes and the suitable approved ratio for structures –covered or exposed- and for the purposes they may be used – for consolidation or filling layer.

2.2.3.2 La Ventilla Frente 2
Located approximately 800 meters in straight line to La Ciudadela, on S1W1 quadrant of Millon. Span south-east area of barrio of La Ventilla and spaces of this area are allocated in about 60 X 70 meters quadrant. At east is delimited by street and Frente 1. North Street is the boundary of public plaza or common spaces of this barrio. At south adjoin with a private property (Rancho El Horreo).

Researchers, that have studied the Barrio of La Ventilla, have been considering this sector as the residential area intend for Teotihuacan higher hierarchy. Various architectural groups are allocated in the internal part of this sector, their structures have excellent finishes, the wall covering has wall painting with outstanding design and manufacture. Central area consists of a big platform with talud-tablero walls, limited at east and west by plazas and around them are rooms and patios connected by corridors (Cabrera 2003: 27-28).
State of conservation

One sector of this Frente has a galvanized sheet cover supported by PTR-based metallic structure to protect one sections of main base, east and western plazas and some other structures placed around this platform. In zone IV, patio 9 is a cover made by zinc sheet and metallic structure aiming to protect portico and rooms with wall painting which are allocated around this patio.

The other archeological elements in this Frente suffer the deterioration effects caused by meteorological agents (rain, humidity, wind, radiation, change of temperature, relative humidity, and hail), biological (plants, microorganisms, insects and animals) or anthropic (excavations not properly executed and structure consolidation, trash, dropping, looting, and misuse of this site). Damages caused by any or all agents are here below mentioned.

Architecture

Half of the upper side of almost all walls was rebuilt, joint touches and humidity in excess is present, because are on a coverless area. Loss of used mortar and cracks in joints are favoring rain water accumulation. Moss growth is noted, as well as other minor plants and microorganism colonies. Plaster of wall is absent in almost all of them, and in specific cases, plaster has disappeared and modern touch replace it. Loss of support, in some cases it completely disappear, as evidenced by the adhesion paste.

Humidity in excess of coverless walls represents a serious problem, in addition to moss and microorganism colonies generation over surfaces, from the inside of walls emerge salts, and those salts migrate to supports. It is noted the loss of “half round” of plastered wall with floor originating hollows allowing minor plants growth and favoring accumulation of dirt, rain water and materials detachment (Figures 58, 59, and 60).
Figure 58. La Ventilla Frente 2, zone I, room 5, east wall. Biological attack of microorganisms and plants growth is observed.

Figure 59. Frente 2, Zone I, room 1, east wall
In case of structures with cover, registered deterioration is as follows: loss of joints of rebuilt and original walls; lack of adhesion layers, holes, detachment is observed, loss of support, mortar, plaster, pictorial layer, adhesion pastes an surface. Materials detachments, surface spots for superficial dirty (dust), splash of mortar previously used on interventions, humidity, covering fissure and cracks and salt bloom are present (Figure 61).
Zone IV (patio 9 and rooms around) has a dripping roof, as a result are abrasion marks on floor (Figure 62). In the majority of walls are dust, fissure, cracks and splash of mortar used in previous interventions. Gray cement and sand with back filling were used in some of these structures, these damages affect original walls, and humidity, marks of roots, lack of adhesion of layers, holes and salt presence are on some of them. Lack of support, plaster, mortar, pictorial layer, adhesion paste and surface are observed on coverings, additionally, fissures, crackles, salt glaze and bloom on specific areas.

Figure 62. Frente 2. Zone IV, room 6. Marks on floor are observed as a result of dropping and water condensation of roof, in addition to dust, lack of adhesion of layers and loss of plaster and adhesion paste, and others.

Wall painting
On zone I, patio 2 on stucco floor is a painted design of a standing human figure and in profile orientated towards east. The mouth of this character was represented as canine snout. Dress in with profuse head-dress, earflaps, and maxtlatlo tapa rabo*, inside it is observed testicles uncovered and erect penis from which some drops are falling. Behind the character a spherical container –likely a pulque pot- decorated with circles is represented and at both side of container, at upper part in the form of bow the ends of a band are tied. From this receptacle and the individual mouth emerge decorated scrolls. Below anthropomorphic figure maguey plants are reproduced. Researchers suggest this character

*Translator’s note. Tapa rabo= Article of clothing use by men during prehispanic period into Mesoamerican territory, designed to cover pelvis area as boxer).
is associated to fertility, pulque deity and probably to Xolotl Good, as one of Venus personifications, as a result of its dog attributes. This design—along with glyphs of patio 1—is unique in Teotihuacan. If in short-term is not maintenance, it is in danger of disappear. Damages are evident (Figure 63).

Zone IV, patio 9, mainly in porticos and rooms allocated around (room and portico 1, room and portico 2, rooms 3, 4, 5), highlight “Jaguares en procesión” murals. During diagnosis was found loss of surface, color and on some specific areas the adhesion paste. Marks of roots, lack of adhesion of layers and cracks were observed. There are areas where mortar

Figure 63. Frente 2, zone I, patio 2, floor on north-east corner.
and plaster is loss. (Figure 64) Deteriorations of “Representaciones de Venus” mural are: loss of plaster, and if it exists loss of color and floor joint, cracks and crackled surfaces, detachment of fragments, lack of adhesion of layers, marks of roots and splash of mortar used on previous interventions, loss of adhesion paste on specific areas, superficial dirty and bird dropping. (Figure 65)

Figure 64, Ventilla, Frente 2, zone IV, portico 2, east wall.

Figure 65, Ventilla, Frente 2, zone IV, room 5.
**Intervention proposals**

Considering that some structures of murals are covered and this Frente is part of “Urban System of Barrio of La Ventilla Project”, actions allowing structures and covers stabilization and consolidation are suggested.

a). Check and seal cracks, fissures, joints, core of walls and covering through injection or filling with lime-sand mortar. Inspect joints, touches and adhesion paste where cement-sand mortar is observed and replace it for approved pastes.

b). Schedule periodic works for weeding, fumigation of insects and arachnids, and control of animals (birds, techalotes, dogs, moles, tlacuaches). Minor maintenance activities (dust and trash removal) shall be frequently executed and using appropriate tools. Train staff is suggested.

c). Eliminate water gathered in foundation, walls and floor by reorientation of slopes and rainwater harvesting towards absorption or harvesting wells –previously desilting- and to archeological drainage.

d). Replace roof of patio 9 by a planned cover intended to avoid leaks, direct sun radiation and bird nesting. Canvas cover used to protect patio 1, a skirt placement is suggested, as well as the suitable monitoring and periodic maintenance.

f). Assess the recovering of some structures, consolidate archeological elements located at zone IV and zone V and cover again some of the most damaged are suggested. This decision taken must be produced as a result of an agreement executed by diverse experts of different areas. Taking into account that excavated structures shall be better preserved in its original matrix, especially if the human and material resources required to usually surveillance and maintenance are lacking.

All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and Garcia research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).
Level of required intervention and priority zones for intervention

Architectural structures, covering and murals of Frente 2 are stable, but monitoring is required. Regarding to those elements located at cover boundary, short term intervention is required, because integral part of some of them are in risk to disappear.

2.2.3.3 La Ventilla Frente 3

Located approximately 600 meters in right line to La Ciudadela and in intersection with four quadrants of Millon (N1W2, N1W1, S1W2 y S1W1), this Frente is at north of the urban barrio of La Ventilla, separated by a big space from Frentes 1, 2 and 5. For inspection purposes divided into seven zones and streets.

In about 2900 m2 of space, it is limited by streets, south, western and north. Aligned on west street, a set of portics and rooms are allocated and accessed is allowed trough them. The austere finishes of walls and floor differentiate this Frente from the others. The most abundant and large offerings and burials were found in this area and have been considered as the place of residence of craftsmen skilled on stone production (Cabrera 2003: 28-29) and (Gómez 2000).

State of conservation

The state of conservation diagnosis of this Frente focused on architectural structures and scare covering of walls; remains of pictorial layer were not registered. Diagnosis was carried out on the second semester of the year and in rainy season, a complete inspection of site was not allowed because development of minor plants in some parts.

Architecture

The most common deteriorations are: loss of joint, detachments, bursting and peeling of stone material. Holes, cracks and construction material detachment, biologic attack, humidity, moss, lichen, minor and upper plants, highlighting among joints prickly pear growth, are observed on walls. In crowns and middle part of walls are observed humidity and runoff causing spots and microorganisms proliferation. Bird dropping was noted on some wall crowns and mammal dropping on floors of western streets (Figures 66, 67, and 68).
Figure 66. Frente 3, zone I, portico 2, general view.

Figure 67 Frente 3, zone VII, platform 25, east facade, tablero.
Intervention proposals

Basic actions to facilitate structures stabilization of Frente 3 are:

a). Consolidate cracks, joints and core of walls and covering through injection or filling openings with lime-sand back filling. Check that joints presenting cement-sand mortar and replace them for approved pastes and in proportion to exposed and covered structures.

b). Schedule periodic works for weeding, fumigation of insects and arachnids, and control of animals (dogs and tlacuaches). This activities must be performed by trained staff and using the appropriate tools.

c). Eliminate water gathered in foundation, walls and floor by reorientation of slopes and rainwater harvesting towards absorption wells –previously desilting- and to archeological drainage.

d). Use render or reintegration of lime-sand filling material and materials consistent with the originals to mainly protect vulnerable structures as walls of xalnenes stones, adobes or with mural paint over adobes.

e). Plan and install an “ecological” cover using organic materials as those used in Teotihuacan period (wood, clay, common reed, plants such as prickly pear and maguey). It
shall be planned and as a result of the agreement of a multidisciplinary study, and a periodic monitoring and maintenance shall be considered.

All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and García research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

**Level of required intervention and priority zones for intervention**

Taking into account that damages of exposed structures are seriously than damages of covered architectural elements, to develop a conservation project approved by DCRZMAT is urgent; whose main purpose shall be stabilizing architectural elements, as well as preservation of plaster. It is important to prioritize its attention due to rapidly loss of these structures and their vulnerability to meteorological agents.

In the event, exposed architectural structures stabilization in short-term is not provided, they are in risk to disappear in short and medium term.

It is noted that urgent interventions and/or preservation activities should be carried out on Frente 3 shall be inspected by DCRZMAT, and they shall specially follow the stated use of lime-sand pastes and the suitable approved ratio for structures –covered or exposed- and for the purposes they may be used – for consolidation or filling layer.-.

### 2.2.3.4 La Ventilla Frente 4

Located on N1W1 quadrant of Millon grid, in straight line about 500 meters La Ciudadela. Set on the north-east area of Teotihuacan barrio of La Ventilla, this Frente is isolated by a large space from Frentes 1, 2, and 5.

In approximately 625 m² of area, a set of porticos and rooms are allocated around a sinking patio. This Frente was divided into four record zones for diagnosis purposes. A general photographic register only was performed, due to Diagnosis 2013 matched with field works of ZMAT Departamento de Conservación y Restauración (Office for Preservation and Restoration), to restoration and preservation of wall painting and finishes of this Frente.
2.2.3.5  La Ventilla Frente 5

This Frente is located in straight line approximately 750 meters La Ciudadela, in S1W2 quadrant of Millon and west to Frente 2 of barrio of La Ventilla. Adjoining in east end with west street. Set on 52 0m2 area; throughout the different work seasons Proyecto Sistema Urbano de La Ventilla” (Urban System Project “La Ventilla”) has not been completely explored, just have been excavated that structures are currently exposed.

The examined structures form part of a group of rooms, porticos and corridors built on the east end of this mound which was intended for domestic group residence and where the maintenance and service activities were carried out.

State of conservation

Structures comprising this Frente are exposed to outdoor conditions, austere coverings and lack of maintenance. Wall painting remains are not preserved and in all area vegetation growth is observed.

Architecture

The most usual deteriorations are: loss of joints and construction materials, grave separation and detachment causing structures instability. Wall crowns present separation and detachment, and in some cases cement of adhesion paste is preserved (Figure 69).
Meteorological agents as rain, hail, sun radiation and abrupt changes of temperature, have caused these structures have become extremely susceptible. Minor and major plants, root and microorganisms growth represent a serious problem causing lack of adhesion of layers, loss of support, mortar and plaster. The preserved structures have structural cracks and fissures. Covering of walls and floor can be observe loss of support, mortar, plaster, adhesion paste, surface, salt glaze and water concentrations (Figure 70).
**Intervention proposal**

Some basic actions to allow structures stabilizations of Frente 5, are:

a). Sealing of joints, core of walls and covering through filling with lime-sand back filling. Examine adhesion paste and joints, where cement-sand is observed, and replace them with approved mixtures.

b). Schedule periodic works for weeding, fumigation of insects and arachnids, and control of animals, this activities must be performed by trained staff and using the appropriate tools.

c). Use renders or layers of lime-sand filling materials and reversible materials consistent with the original ones to mainly protect susceptible structures as walls of stone with xalnenes and adobes filling.

d). Plan and install a cover, as a result of a multidisciplinary study, to avoid leaks and runoff, and to protect, without forgetting periodic maintenance and monitoring (desilting of channels, sealing of joints and waterproofing to avoid rust), of structures.
f). Assess if re-cover of this Frente is suitable, when stabilization actions required by these structures cannot be carried out. This decision taken must be produced as a result of an agreement executed by diverse experts of different areas. Taking into account that excavated structures shall be better preserved in its original matrix, if the human and material resources required to usually surveillance and maintenance are lacking.

All suggested actions and interventions shall meet rules and guidelines set forth by DCRZMAT, but a previous assess, of those elements which intervention shall be applied, must carried out. Preservation theoretical-practical guidelines are based on Alonso and García research carried out on 2005. Some of these action procedures and definitions are adjusted to ZMAT specifications and they may be review on the Theoretical-Practical Guidelines and methodology of the Project for Preservations of Archeological Monuments of Teotihuacan (Cruz, Salinas y Alfaro 2012: 17-23).

**Level of attention required for priority zones**
Taking into account that damages of exposed structures are seriously than damages of covered architectural elements, it is important to carry out short-term urgent actions to preserve Frente 5.
3. Analysis, Follow-up and Results

3.1 Platform for regional diagnosis

This section describes the regional analysis tools used to follow-up the research aspects of ZMAT “B” and “C” polygons and correlation with urban development policies and the State Party policy to Preserve ZMAT. For that purpose, a geographic platform, based on aerial photography of on line Google Earth platform, has been established.

The region, for this work, was first established, it will be used as the reference framework to arrange information into different analysis stages and levels. The advantages of this visual platform are: date (upper left side), orientation (wind rose at upper right side) and data of positioning in lower edge (Figure 71).

Figure 71. Region of analysis.

Based on this definition, grid of Teotihuacan Mapping Project\textsuperscript{21} was used as specific unit of analysis, beginning at intersection of Avenue of the Dead and the south limit of La Ciudadela Mound (Figure 72).

\textsuperscript{21} Millon 1973
Then, specific limits of polygonal were included, which were set forth by a Presidential Decree published on the Official Gazette of Mexico whereby Teotihuacan was declared as Zone of Archeological Monuments of Teotihuacan and regulations for its protection were stated\textsuperscript{22} (Figure 73).

![Figure 72. Grid of units of analysis.](image1)

![Figure 73. Polygonal surrounding the Zone of Archeological Monuments of Teotihuacan.](image2)

In this way, the creation of the different levels of information was possible. Then, the map positioning of the Ancient city of Teotihuacan was performed, based on that established in

\textsuperscript{22} Official Gazette of Mexico, 1988
1973 by René Millon, Ph. D.\textsuperscript{23}, the latter based on results from field researches carried out during the decade of 1960s (Figure 74).

One of the advantages of these layers is its individual, combined or selective overlapping allow to state diverse stages and analysis objectives with different levels of zooming and positioning. It could be noted on the following two images of the Central Area and of the Pyramid of the Sun of ZMAT (Figures 75 and 76).

\textsuperscript{23} Millón 1973
In the Figure below, the land which is part of the Federal property under the custody of the National Institute of Anthropology and History can be observed. The Figure includes those land acquired at beginning of the XX century, during the decade of the 1960s and that have acquired during the last years which is considered with high archeological potential by the Federal Government. It is important to note that many others are undergoing an acquisition process (Figure 77).
Spatially speaking, ZMAT is located in the territory of two municipalities: Teotihuacan de Arista and San Martín de las Pirámides. Both are in the State of Mexico. As could be appreciated in the Figure below, most of the territory is located in Teotihuacan de Arista municipality; meanwhile a small area of the north is situated in the territory of San Martín de las Pirámides. There is an intersection zone among both territories; currently a legal procedure is undergoing in order to establish to which one it belongs (Figure 78).

![Territorial boundaries of Teotihuacan and San Martín de las Pirámides.](image)

Based on those boundaries, the Classification of Municipality Territory was assessed, and accordingly to that set forth on the state Plans for Urban Development (Figures 79, 80, and 81) is divided by:

- **AU** – Urbanized Areas
- **AURB** – Buildable Areas
- **ANU** – Non-buildable Areas
Figure 79. Urbanized Areas.

Figure 80. Buildable Areas.
During the analysis, in three categories various inconsistencies were found, mainly in the intersection zone among both municipalities and in those zones under the current regulations construction is not allowed and must be are considered as non-buildable zone. In the next evaluation of Plans of Development of the State of Mexico will be mentioned these inconsistencies. To the competent authority for developing those plans shall be requested to include the suitable changes to preserve the World Heritage Property. It is important to point out that current work perform by INAH through ZMAT allow to include ZMAT polygonal and classify into zones, and the archeological potentiality of municipality territory into the Municipalities Plans of Development (Figure 82).
The inclusion of these three categories of Classification of Municipality Territory is showed in the Figure below. Within the polygonal, at the center, could be observed a zone without symbols and is the Federal property under INAH custody (Figure 83).

AU– Urbanized Areas  .  AURB– Buildable Areas  .  ANU– Non-buildable Areas  

Figure 82. Municipality of Teotihuacan, Map E6-pa, Archeological Heritage.

Figure 83. Regional urban planning.
The objective to know the process among heritage property, urban plan over the years, and current population was complied with the inclusion of topographic information into other stage of analysis. As set forth on the ZMAT Statement, the region and views shall be considered into protection and preservation of the heritage property. The following three photographs show on one hand the zone topography, the strategic location of the Ancient City of Teotihuacan, and on the other the two protected zones of views of the zone declared through Decrees such as Protected Natural Areas\textsuperscript{24}\textsuperscript{25} (Figures 84, 85, and 86).

Figure 84. Topography of Valley of Teotihuacan

\textsuperscript{24} Executive Decree of State whereby is set forth the State Park known as “Cerro Gordo”, 1977

\textsuperscript{25} Executive Decree of State whereby is set forth the State Park knows as “Sierra Patlachique”, 1997
Figure 85. Location in the Valley of the Ancient City of Teotihuacan

Figure 86. Protected Natural Areas and connection with the Ancient City

Other level of analysis is the Land Use which is established by Teotihuacan and San Martín de las Pirámides city hall. Based on development plans of municipalities, land use is considered as:

- Residential
- Agricultural
- Industrial
- Livestock
- Ecological
Figures 87 to 94 show the different types of Land Use within municipalities' territory and specifically within the polygonal that surrounds ZMAT.

Figure 87. Residential Land Use

Figure 88. Agricultural Land Use
Figure 89. Industrial Land Use

Figure 90. Livestock Land Use
Factors have affected Teotihuacan are the following:

- Proximity to Mexico City
  - During the last decade of XX century until now, the urban zone of Mexico City has been expanded to east, north and northwest. As consequence, new generations are in pressure to search housing alternatives. New urban development, especially those closely located to large urban settlement.
development creation has caused urban area rise, both Federal District and suburban area of the State of Mexico.

- **Road and means of transportation**
  - The need of road and collective means of transportation orientated towards the north-east of the State of Mexico providing a fast alternative of movement between periphery and downtown of the city was caused by population growth.

- **Centros de servicios en cabeceras municipales**
  - Municipal seats, headquarters of city hall of this area, have become administrative and commercial centers for adjacent towns; as the inner development has been spatially connected with municipal seat and originating an ever larger urban group. On the other hand, they are where the road and means of transportation plans are focused on. Therefore they become the city access center or from the city to their communities.

- **Agricultural activities abandonment**
  - Lack of support for agricultural activities, migration from field to urban areas, change of activity of family members to professional, administrative, technical or handmade service rendering activities performed in the City, and as a result agricultural activities abandonment, have caused rural properties potentially change to buildable areas. Specifically taking into account the proximity to the urban sprawl. This effect is clearly observed in Teotihuacan municipality, because its proximity to suburban area. Furthermore, San Martín de las Pirámides municipality still preserves its agricultural traditions, even though urban pressure is noted, mainly on the territories classified as Buildable Areas.

- **Projects for tourism development**
  - On the other hand, and favoring preservation of Cultural Heritage and Natural Heritage, tourism development policies have been suggested. As the State of Mexico where a Ecatepec-Teotihuacan-Nopaltepec, tourist belt on conceptual basis was created including the territory of seven municipalities (Ecatepec, Acolman, Teotihuacan, San Martín de las Pirámides, Otumba, Axapusco and Nopaltepec). Considering quality for Cultural Tourism and as attraction center to develop those activities the Ancient City of Teotihuacan.
In this regard, the State Party through INAH has established a Committee comprised of agencies of the Government of the State of Mexico and municipalities governments in order to all investment and development actions are directed and accordingly to protect and preserve World Heritage Patrimony.

- Projects of urban development
  - As of 2014, all projects for urban development Teotihuacan y San Martín de las Pirámides municipalities shall be examined by the above-mentioned Committee, in compliance with current regulations and principles of conservations of World Heritage Patrimony.

In Figure 95 is clearly showed the way in which urban sprawl has been increased around the Zone of Archeological Monuments of Teotihuacan. Urban grid concerning polygonal surrounding ZMAT is showed on Figure No. 96.
A consequence of work performed during the last years by INAH researchers and architects, other aspect retrieved is the Catalogue of Historic Monuments of the State of Mexico, which has been used to spatially locate XVI century to the beginning of XX century historic monuments, comprising the live historic-cultural heritage of the community where they are located. Specifically are churches, pantheon, bridges, reservoirs, and civil architecture. They comprise the historic life of contemporary population and are protected as historic monuments accordingly with the Federal Law for Archeological, Artistic and historic Monuments 26(Figure 97).

All these places have been catalogued into the INAH National Register for Historic Monuments, and for protection and preservation purposes are considered into Sub-directorate of Historic Monuments of INAH District Office of the State of Mexico.

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26 Federal Law on Monuments and Archeological, Artistic and Historical Zones, 1972
It was important to locate through performed tours, a set of real state classified as hydraulic infrastructure and collected into 3 categories: bridges, reservoirs and jagüeyes (land bank for water storage). As historic monument is only catalogued a minor percentage of them. However, most of bridges related to colonial roads (real roads) that required architectural infrastructure to allow carriage crossing. Jagüeyes are part, since the first half of XX century, for towns, hacienda and ranch water supply (Figure 98).
Hydraulic infrastructure only is devised as part of a region hydrological map (Figure 99), where temporal stream irrigate the Valley of Teotihuacan. It is important to mention that the superficial hydrological network is closely related to the Ancient City of Teotihuacan development. Only the relation among bridges, reservoirs and jagüeyes is showed in this Figure.

![Superficial hydrology and hydraulic infrastructure.](image)

Figure 99. Superficial hydrology and hydraulic infrastructure.

Government has to develop social services policies for education and culture, administrative services, recreation and sports, health and assistance, security, communications and tourism matter, due to historic-cultural complexity of Valley of Teotihuacan and the needs of current populations living in. In the following Figure, units which facilities are part of the above-mentioned categories, without considering specific services, commerce and tourism facilities, are showed based on the data provided from development plans of both municipalities (Figure 100).
It is important to point out that are 42 institutions in Education matter. 96% are basic, middle, and higher education, the other 4% sports and culture. (Figure 101)

Other elements considered into the assess of Federal regional infrastructure are: high and average voltage electric lines operated by Comisión Federal de Electricidad (The Federal Electricity Commission); gas pipelines that supply Mexico City and adjacent valleys consumption are managed by Petróleos Mexicanos (Mexican Petroleum) (PEMEX); and train lines that date from the end of XIX century are operated by concessions granted by a Federal
agency named Secretaría de Comunicaciones y Transportes (Ministry of Communications and Transportation) (SCT) (Figure 102).

Figure 102. Federal infraestructura, CFE, SCT, and PEMEX.

- The Federal Electricity Commission
- Mexican Petroleum
- Ministry of Communications and Transportation

To understand the historic and current complexity to preserve Heritage Property should be gathered each category of previous asses. The overall analysis has allowed performing a set of proposals that hereinafter be stated. The Figure below (Figure 103), even though hazy for direct interpretation purposes, shows diverse factors should be taken into account to set a proper correlation between current population dynamism and protection of World Heritage of Teotihuacan.
Finally, as of 1996, as above-mentioned, ZMAT Office for Archeological Rescue was created. Before this date and almost since the decade of 1980s, in order to recover archeological information or avoid destruction of ancient heritage, different INAH offices carried out archeological rescue works in the region. Based on researches performed by INAH until 1986 and for foreign institutions in 1960s, 1970s, and 1980s, enough information was obtained to a technical file be performed, through it a presidential decree set forth the Statement of Teotihuacan as Zone of Archeological Monuments. Features of each one of the three areas it was divided into, and regulations that shall be followed for research, conservation and protection of ZMAT are stated on said Statement.

First inclusion stage of obtained data, as part of Diagnosis 2013 works, was executed; it begins with Diagnosis 1996-1997, based on archeological research, rescue, and recovery projects, geographical references database. In this review and improvement planning stage of Management Plan of ZMAT was required to create for Teotihuacan a SIG (System of Geographic Information). Each research refers to one location with file number and year of execution. Protection and conservation work for decision making and actions to protect, preserve and conserve tangible and intangible archeological cultural properties of ZMAT are facilitated by this tool for access of daily generation archeological information (Figure 104).
In the next level, as tool of analysis with stages of information, archeological information suggested for the Ancient City was confirmed with information of other researchers executed at this zone (Figures 105 and 106).

During this Project season, database and entry of data was initiated. It has been considered that another season may allow 80% progress of review work of all files generated by ZMAT from the Valley of Teotihuacan.
The Ancient City of Teotihuacan proposal performed by Millon\textsuperscript{27} provided the basis of research of this settlement periphery of ceremonial area. This grid, each quadrant of 500x500m in dimension, was originated at the axis of the Avenue of Deaths and south boundary to La Ciudadela. Thus, La Ciudadela is N1E1 quadrant and Gran Conjunto is N1W1 quadrant. At the same time, with archeological information, quadrant by quadrant, images were generated, overlapped on the aerial photographs provided by Google Earth platform.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure106.png}
\caption{Basic analysis unit. Quadrants.}
\end{figure}

It is important to mention that for this diagnosis, ZMAT Buffer Zone has been considered as the adjacent area of surrounding polygonal presented on previous images. Whole Valley of Teotihuacan is part of the architectural area of the city, and considered as the landscape in which region history has been developed since more than 2000 years ago.

\textsuperscript{27} Millon, 1973
4. Conservation Guidelines

INAH, whose primary functions are research, conservation and widespread coverage of Mexico's paleontological, archaeological and historical heritage, has given top priority to its professional staff training as well as to the updating of its work current methodologies and techniques for archaeological research and its heritage conservation.

The archaeological monuments in Teotihuacan, some of them researched and exhibited since the late XIX century, are a sample of techniques development and the material used in conservation. As knowledge progresses, Teotihuacan tangible and intangible properties protection is applied.

In the 1990s, the National Office for Preservation and Restoration of Cultural Heritage (CNRCPC) established in a practical way the guidelines for intervention in archaeological monuments. Their implementation has led to changing the materials used to restore and maintain Teotihuacan's architecture and wall painting.

At the same time in other places in Mexico, the same techniques and materials were used. During the first decade of this century, staff from the office above mentioned, with the benefit of work experience and the obtained results, created a document entitled Propuesta de lineamientos teórico prácticos de la Subdirección de Conservación Arqueológica de la Coordinación Nacional de Conservación del Patrimonio Cultura (Proposal for theory and practical guidelines from the Subdivision for Archaeological conservation of the National Office for Preservation and Restoration of Heritage).28

Based on such document and its governing body (CNCRPC), the ZMAT Conservation and Restoration Department currently works under such guidelines. A text summarizing the implementation of such regulations in Teotihuacan is presented below. The following lines are part of the fundamentals of the Conservation Project of Archaeological Monuments in Teotihuacan:

**INTERVENTION THEORY AND PRACTICAL GUIDELINES AND METHODOLOGY OF TEOTIHUACAN ARCHAEOLOGICAL MONUMENTS CONSERVATION PROJECT**

*Teotihuacan Archaeological Monuments Conservation Project (PCMAT) appears in 2009 because of the need to attend the sites more deteriorated architectural mounds.*

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28 Alonso y García, 2001
PCMAT operates under DCR ZMAT conservation guidelines in coordination with ZMAT Technical Direction and Sub-direction.

Such Guidelines are based on restoration theory and ethics, international documents that endorse the discipline, such as the 1931 Athens Charter, 1964 Venice Charter, 1972 Charter of Restoration, 1977 Cesare Brandi Restoration Theory (Brandi, 2008) and 1979 Burra Charter, updated in 1999.

The document regarded as the synthesis of theory and practical guidelines of archaeological conservation in Mexico was created in 2005 by the Subdirection of Archaeological Conservation of INAH National Office of Conservation of Cultural Heritage (Alonso y García, 2005). Some of the proposed lines of action and definitions in this document, which are applicable to ZMAT specificities, are shown below.

**Definitions.**

- **Archaeology conservation** is the responsible discipline to carry out all activities related to material study, recovery and preservation, as well as any of the information that can be gathered on the archaeological properties. Its practice should not be restricted to a single area, but it gets enriched as other branches get involved. The final aim of archaeological conservation is to achieve the preservation of the cultural data attributable to tangible properties, through actions that allow maintaining the physical and formal properties of the scope property.

- **The conservation exercise** consists of diverse tasks, including technical procedures applied on the assets for their materiality recovery and permanence, as well as their formal features. Such characteristics are related to the establishment of an articulation framework and enhancement that tend to guarantee its social acknowledgment within its national context. All this according to the historical, political and economic conditions that translate into specific laws for their protection; control, exploitation and usage programs, management plans for their study and appropriation.

- **The restoration** consists of an intervention that recovers some non-evident (not revealed) significant cultural aspects of the archaeological properties. Part of this intervention focuses on bringing all the components as an articulated whole, without discriminating its different historical and aesthetic instances (Brandi, 2008). Specifically, on being carriers of cultural evidence, the archaeological properties demand respect during the restoration stage to all their attributes, original and added, that allow determining all the cultural processes materialized in them.
**Theorical Practical Guidelines.**

- Direct conservation activities shall be carried out with the intention of maintaining the archaeological properties in the short, medium and long term and they should always be combined with protection, maintenance and monitoring complementary activities.

- The materials and procedures used in the conservation of archaeological properties should be chemically and physically related to the constituent materials, and should be prone to stabilizing the material conditions of the original remains. They should be more susceptible to deterioration or change than the constituent materials, and only reversible when they don't meet this condition and if they represent themselves a deterioration factor.

- The archaeological properties preservation shall avoid, as much as possible, the replacement and reproduction of information. No element shall be added, unless it clearly represents a material or information preservation measure.

- The used materials in the preservation shall not represent a risk to the appliers’ health in the short nor the long term, nor shall it damage the environment where they are utilized.

- All the preservation treatments shall imply differentiation means between the intervention and the original material, but their integration at the visual level.

- The preservation activities in the archaeological assets shall be carried out in the regular and permanent basis to guarantee their conservation.

- The preservation activities in the archaeological assets shall be carried out in the regular and permanent basis to guarantee their conservation.

- The preservation activities entailing the use of new procedures, materials or techniques, shall be the result of a previously structured and developed in a revised protocol, applied research.

- For all those projects whose archaeological preservation requires or demands staff training for their execution. A responsible curator shall always be available to make the technical decisions, as well as to supervise all the work being performed by trained staff.

- The intervention of direct archaeological preservation on archaeological properties shall be performed by specialists in this discipline. They should be widely knowledgeable on the topic and they shall be able to resolve specific problems through the relevant guidelines.

*Register.*
Before performing any sort of intervention on the archaeological assets, a comprehensive register of the archaeological material conditions as well as their context shall be carried out. The register shall be updated during the direct preservation tasks applied on field.

**Preventive conservation.**

- Preference shall be given to the control of environment and micro-environment conditions before a direct conservation action is performed on the archaeological properties.

**Methodology of Intervention:**

Register and conservation procedures are next listed and described in the order they are normally applied. Such order can nonetheless change, depending on the specific circumstances of each case.

**Removal of previous harmful interventions:**

- It is the removal of previous interventions that are harmful to the archaeological structures or their finishes. Mainly those made of concrete.

- All available means shall be used for this, prioritizing the tools with the fewer amounts of vibrations to the intervened assets and that can facilitate the cleaning and rescue of the most possible amount of original material. Electric tools will be chosen (spindle core drilling machine, rot hammer, concrete cutter or an ultrasound cleaner for treating plaster and pictorial layers) over the manual percussive tools (hammers and chisels).

**Biological control:**

- The application of biocides shall be carried out in such cases where it can be proven there is direct harm to the biological action on the archaeological property, and when the disposal doesn't turn out to be a further element of harm or risk.

- It is necessary to have a general knowledge of such harmful organisms, as well as the scale to which such harm is produced, in order to establish hierarchies for their removal or their conservation.

- Inhibiting resources more than eradicators shall be depleted in order to avoid harmful proliferations. Indirect control measures shall be used before opting to use biocide substances.

**Cleaning:**

- Any cleaning method implies that it should be just to the possible minimum standards in order to know and make visible the features and the condition of the constitutive material.
• Cleaning should be considered an irreversible method and it can be harmful if carried out in an indiscriminate and inadequate manner. It should be considered as a risk in the elimination of cultural data.

Consolidation and fixing:
• The fixing methods should be used to reverse and control the detachment phenomenon caused by the adherence in the layers, strata of superficial particles in relation to the substrate they are contained in.
• The consolidation methods shall be used to reverse and control a friability phenomenon, dispersion due to the loss of adhesion in the constituent matter.
• It should be taken into consideration that the consolidation methods and some fixing methods are irreversible, and therefore their application shall be comprehensively justified and it should only be carried out when the risk of loss or destruction is imminent, and if it cannot be prevented any other way.

Structural repairs:
• Structural repairs are understood to be the application of touches, adhesion pastes, joints, replacement of missing structural elements, replacement of filling or support layers and mechanical reinforcements. It is carried out before the diagnosis and the register of the structure or element being intervened.
• The structural repair works as a protection material, i.e., its constituent features are more susceptible to suffer the deteriorating agents action than the original material it intends to protect.
• PCMAT uses high purity lime, mineral loads like silica sand, tezontle (vesicular basalt) with different grain sizes and clay from the region; none of these aggregates contains water soluble salts. No cement is used for the intervention on murals, sculptures and other architectonic finishes; only in a very low portion in the protection floors, structural joints or other elements exposed to the weather elements.
• DCR ZMAT defines the mortars proportions that shall be used in the restoration interventions through preliminary tests.

Chromatic repairs:
• Chromatic repairs imply a visual integration and it is a condition of the structural repairs, as the introduction of a foreign material implies the use of texture, color and particular finishes through which visual integration is produced.
• The most austere level to integrate, in terms of color, texture and appearance, above all in regards to volume related problems, should be considered as vital.
• The chromatic repairs shall only be used in the aggregates or interventions, never in the original constituent material.
5. Drainage Systems and Protective Covers

Since the end of the XIX century to our days, the archaeological research in Teotihuacan, exploration and conservation techniques and materials in each period have changed. As it was mentioned in a previous section, the same technical knowledge for conservation changes every day. More than 120 years of continuous activity make the place a good example of research development and conservation world.

Each building, depending on the period it was researched, preserved and exhibited for public visits, offers a conservation complexity and different maintenance. For example, the covers, depending on the architecture solutions and the existing materials at the time, are considered the best solution. Therefore, covers are applied to preserving the monuments. The knowledge development and the gained experience through the years in the site maintenance, have allowed the implementation of minimum parameters to present monuments to the public.

Specificities, solutions and maintenance and work programs to solve the problems in these two areas are next presented

5.1 Drainage Systems

Diagnosis 2011

The drainage system of rain water in the exhibited structures and sites in the ceremony area of the Old City responds to the distribution of original spaces, mainly in the big open spaces like the Avenue of the Dead, Squares and surrounding corridors. Nonetheless, the history of archaeological research in each space has resulted in the implementation of specific measures to solve the drainage of rain water from the absorption wells.

Such spaces with residential character, streets, small patios and/or patios and rooms, surrounded by structures, and which base levels stop the drainage outwardly or towards an existing drainage, lead the rain water towards absorption well.

Such wells are originally archaeological test pits that reach the bed rock or a sterile level. Instead of being filled with removed material from the site, they are prepared on their sides with dry wall and in their interiors with tezontle (vesicular basalt) and soil. Humidity absorption is made easy towards a prepared matrix and it helps in the assimilation of humidity in a natural way towards the nearby deposits which contributes to feed the water table.
During the development of Assessment 2011, problems were detected in the drainage system, in the surrounding canal of the Pyramid of the Sun, in El Sol site, Plaza Oeste site, Superimposed Structures, Southeast site of the Avenue of the Dead, Río San Jun Northeast site, Grupo Vikingo and Structure 12 in the Plaza of the Moon. The implemented solutions are the following:

- **Surrounding canal of the Pyramid of the Sun.** This canal received rain water from all the surface of this base. It practically surrounds the whole structure, except for the attached platforms in the western side. Since pre-Hispanic times, the canal worked as a rain drainage with a slope of approximately 2 meters between the western and the eastern side of the structure. This way, the waters recognize a slope created towards the SE corner and drain out of the "U" shape Platform. The canal surface is the natural rock on top of which the Pyramid of the Sun is seating, so containing water does not cause any problems for the zone stability.

- **Structure 12, Plaza of Moon.** In this zone due to the plaza SE corner slope towards its on corner, water concentrates. Filtering is very slow due to the lack of a drainage system. In this particular site, the zone specialists are looking for a better solution and location of one or several absorption or collecting wells that help concentrating the water in this area.

- **The set of structures where humidity problems were detected in 2011 were El Sol Site, Plaza Oeste, Superimposed Structures, SW site of the Avenue of the Dead, Río San Juan North east Site and Grupo Vikingo.** In all these there is absorption or collecting wells that catch rain water and drain the water towards the water table. The observed abnormalities refer to water concentrations after the rain and the function of the absorption well is that of turning into a rain drainage. The Diagnosis (2011 and 2013) allowed the identification of areas where maintenance to the wells in the short term is required. It will be in 2014 when the ZMAT Sub-direction of Investigation will elaborate a yearly maintenance program of all the drainage systems of the sites and architectonic structures exhibited in Teotihuacan.

**Diagnosis 2013**

In 2013, the residential sites condition reports assisted in establishing that there were not problems of flooding in them. Small concentrations of water, in available spaces, particularly in floors where the loss of plane caused the appearance of counter flow slopes in relation to the original incline towards the drain were detected.

For such concentrations of water, the superimposition of lime/soil based filling surfaces able to reestablish all the slopes towards all the existing drainage in all the areas is proposed.
It is worth mentioning that during the archaeological research in Teotihuacan, and considering that the site is subject to be exposed to the public; drainage is always taken into account to prevent flooding. One of the made proposals during the Diagnosis 2013 was the development of a continuous and periodical maintenance program of the absorption wells as well as the checkup of the drainage systems.

5.2 Protection covers

Generally speaking, the covers in architecture spaces, manufacturing date and materials respond to the times when archaeological research was carried out. The existence of different types of structures and materials respond to the time they were open to the public. The progress in terms of maintenance, change and renovation of covers is next presented. The covers reviewed in the Diagnosis 2011 and the Diagnosis 2013 are considered in this paragraph. The covers reviewed in 2013 relate to the same types and problems and without any change to the ones described in 2011. The development of the covers maintenance program 2014-2018 will be submitted for consideration to INAH different technical and administrative areas for their approval and execution. All the scheduled works for 2014 have been assessed by the Consejo de Arqueología (Archeology Council) and have been technically evaluated by INAH Coordinación Nacional de Arqueología (National Coordination of Archeology) and the Coordinación Nacional de Obras (National Coordination of Civil works).

**Teopancaxco.** Concrete Slab, with maintenance in 2010, 2011 and 2012. There are currently in good state of conservation and it does not represent any problems to the site, structure, walls and wall painting.

**La Ventilla Frente 1.** Metallic structure cover with galvanized sheet. Requires maintenance. Integrated in the covers maintenance program 2014-2018.

**La Ventilla Frente 2.** Metallic structure cover with lonarias. It requires side skirts. Integrated in the covers maintenance program 2014-2018.
La Ventilla Frente 4. Metal structure cover. Lonaria will be placed on it in the first quarter of 2014. The murals restoration in this view is currently being carried out. The information will be integrated in the next report to WHC.

Ciudadela, Structure 1B’. In the first semester of 2014, the metal structure with lonaria will be installed, which will replace the previous one. At the start of 2013, a temporary canvass cover was placed to protect the space.

Superomposed Buildings. During 2012 a temporary cover was placed, which in the first semester of 2014 will be placed in a metal structure with lonaria.

Zone 3, E16, Wall Painting El Puma. It currently has a wooden cover with sheet of asbestos. During 2014 a structure with lonaria will be put in place.

Zona 2, Palace of Quetzalpapalotl. The covers are concrete slabs and underwent maintenance in 2012-2013 (Water proofing).
6. Additional information concerning Technical and Legal Conservation and Protection

6.1. Work program

From the Diagnosis 2011, the attention to the exhibited structures in the ZMAT Monuments Central Areas, conservation work has featured from the elaboration of projects and their execution in the following way: Some conservation projects have previously started (Palace of Quetzalpapalo). In some cases they are linked to the same research projects (Project of the Pyramid of the Sun) There are other specific Conservation Projects (for example Conjunto Plaza Oeste and Ateleco). As previously mentioned, all projects have been or have to be assessed and approved by technical and finance areas in order to be executed.

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<tr>
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<th>PROBLEM</th>
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<td>SUPERIMPOSED BUILDINGS</td>
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<td>GROUP VIKING</td>
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<td>WESTERN SQUARE MOUND</td>
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<td>&quot;U&quot; SHAPE PLATFORM, PYRAMID OF THE SUN</td>
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<td>TEMPLE OF QUETZALPAPALOTL</td>
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It is quite important mentioning that Technical Management and Sub-direction, as well as ZMAT Department of Preservation and Restoration, besides attending their specific conservation projects, they also cover ad hoc needs that might occur throughout the year. As established in the Diagnosis 2011, a larger staff dedicated to the restoration, conservation and maintenance of the tangible properties exhibited in the Ancient City of Teotihuacan.

6.2. Development plans

In the last 10 years, INAH state delegation in Mexico State and ZMAT, have established a collaboration relationship with municipality and state authorities, which propose the municipal urban development. Such proposals are sent to state authorities in the matter and then to the local congress for their approval and official broadcast via the state government newspaper. This relationship has allowed the integration of development plans since 2004 and the most recent review of the legal basis of heritage protection in 2008, as well as the integration of polygon protection structures in the Zone of Archaeological Monument of Teotihuacan.

The implementation of the Management Plan has integrated the different government levels in work tables for the planning of public works and urban development, mainly with the Municipality of Teotihuacan de Arista.

In 2007, federal, Mexico State and Municipal government bodies enter into an agreement for the creation of a Tourism corridor Ecatepec-Teotihuacan-Nopaltepec The main objective is the strengthening of the corridor historic-cultural character and its positioning as a tourist destination close to Mexico City.

The State Party has also brought to the attention of the different government levels, the importance of the conservation of heritage properties and has signaled INAH as the governing body for the protection of tangible and intangible properties in this corridor. In the particular case of Teotihuacan, the close relationship with other government actors in 2013 resulted in the creation of an Inter-institutional Committee governed by INAH, which main objective is the protection of the World Heritage Site, as well as adequate urban and tourist development led by this principle.
7. Final considerations

The state of conservation shown by the properties exhibited of the Archaeological Monument Zones in Teotihuacan requires immediate attention, taking into account that the site has more than 120 years of archaeological research and consequently it has undergone years of exhibition, visits by the public, research methods and techniques, and materials conservation and restoration techniques.

It would be impossible to establish from a current perspective the work performed in the decades 1960 and 1980. It is important to recognize that it is not until the 1990s that common guidelines for archaeological sites in Mexico were implemented. Such guidelines are based in a critical analysis of techniques and materials previously used and the achievement of the first more organic material results which are closer to the original ones with the archaeological assets in the same decade.

The obtained data from both diagnoses (2011-2013) allow aiming the efforts to specific points and direct the conservation works in ZMAT.

The Diagnosis 2011 aimed the conservation activities towards specific areas. The Diagnosis 2013 information integration expands the scenery and will allow to redirect the efforts towards the conservation in the urgent, short, medium and long terms. During the first quarter of 2014 inter-disciplinary meetings will take place for the implementation of the conservation program for the 2014-2018 period, which will allow to attend the conservation needs in terms of architecture, wall painting, drainage systems and covers.

From the implementation of the Management Plan in Teotihuacan, the Diagnosis 2011 and the Diagnosis 2013, the State Party, through the National Institute of Anthropology and History has established that conservation will be one of the priority action lines for this site during the upcoming years.

In terms of conservation of the Old City of Teotihuacan, it is important to highlight the work being carried out by the federal government through INAH, for the integration. The work has consisted in purchasing or expropriating land with high archaeological potential. Such work follows a process and its aimed to the integration of the northeast and south of the core area.

On the other hand, the Management Plan review and suitability for 2015 is being prepared through the Direction of Sites Operation of the Archeology National Coordination. The plan
aims to integrate the analysis results, with specific proposals on the site management and the strengthening of inter-institutional relations.

It is important to mention that established tools will still be used in 2011 and 2013 to follow up the research and conservation works of Teotihuacan.

GENERAL ANALYSIS OF THE STATE OF CONSERVATION OF DIAGNOSED MOUNDS

based on the performed diagnosis on field during the Management Plan project 2013, the next step is assessing the general state of conservation of the different sites that have been studied during this period.

The architecture as well as the coating are highly deteriorated. The main causes are summarized in:

- Lack of covers that protect each one of the mounds, which results in serious humidity problems created by rain water that permeates the walls and then gathers in the floors. Such permeation creates puddling being capillary absorbed through constituent materials of walls and coatings. This problem increases during the rainy season, which create the growth of superior and inferior plants (including moss), lichen and the reactivation of microorganism that create dark spots in walls and plaster casting and increase the accumulation of water in the structures. It is not infrequent to find draining marks in the upper part due to the same reason.
- Inefficiency in the existing covers as they show leaks, badly planned inclines, lack of side skirts or poorly conceived materials as the water concentrates in sheets and beams, which produces a continuous dripping that creates abrasion marks in the Teotihuacan floors.
- Serious problems of release of humidity in the structures. The sites show consolidations and concrete patching from previous times that not allow water evaporations, which saturates walls and floors during rainy season. It is then that such humidity finds its drying view through the Teotihuacan plaster coating. The cement also gives water soluble salts that migrate outwardly via the same exit. This creates bloom and sub-bloom in the Teotihuacan plaster, which disperses the materials and detaches the different stratum, besides causing surface whitening, which is another probable factor that makes reading the preserved Teotihuacan designs difficult.
- Lack of maintenance in the zone. Vegetation deliberate growth is observed in the floors as well as the structures, which implies the growth of roots that disperse the constituent materials, cause serious detachments and favor water accumulation and
biological attack. It is not infrequent to find dens that cause loss of materials and internal galleries, which is a risk to the structures stability. It is worth highlighting some neglect in regards to maintenance work and the tourism related activities in the area, such as curtains placement, visitors restricted access to informative sites. The aim of such sites was the zone preservation and promotion without taking into account the anchoring system, which in most cases was carried out on the original structures, causing irreversible losses to the material, and the consequential vibrations at the moment of being installed. The cleaning and maintenance work is not always carried out with the care the zone deserves. Such work is done without the proper tools or the staff adequate training.

Based on the above, priority shall be given to all the factors that represent a serious inconvenience to the zone preservation, as well as a bigger staff involvement as it is up all of them that Teotihuacan can be known by future generations.
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