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A CONSERVATION - RESTORATION STUDY ON THE OF HISTORIC
PREMISES TEFERI MEKONNEN OF SCHOOL, ADDIS ABEBA

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DECLARATION

I declare that, this research report entitled as, “A CONSERVATION - RESTORATION STUDY ON THE OF HISTORIC PREMISES TEFERI MEKONNEN OF SCHOOL, ADDIS ABEBA” is original work of my own, has not been presented for a degree at any other university and that all sources of material used for the thesis have been duly acknowledged.

Name of candidate: Eleni Zewdu

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Date: _____

DEDICATION

This thesis is dedicated to my family, friends and who were provide me support and encouragements during the graduate school.

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LIST OF GLOSSARY

Material such as sand or small stones used, when mixed with a binder and water, to form a mortar or concrete

ASHLAR

Cut stone worked to even faces and right-angled edges and laid in a regular pattern with fine joints

BED JOINT

The horizontal mortar joint between stone or brick courses

BLOCKING COURSE

The course of masonry erected above a cornice to anchor it both visually and structurally

CEMENT

A binding material mixed with aggregate and water to form a mortar or concrete. The term is usually taken to mean an artificial cement such as Ordinary Portland

CONSERVATION

All the processes of looking after a place so as to retain its cultural significance (from the 'Burra Charter')

CONSOLIDATION

The addition of new material into the fabric of a building, to ensure its continued survival

COPING

A capping or covering to the top of a wall to prevent water entering the core of the wall

COURSE

A horizontal layer of stones together with its bed joint

CRAMP

A metal strap or pin built into a wall to hold together elements such as adjacent blocks of stone

DAMP-PROOF COURSE OR DPC

An impervious layer built into a wall a little above ground level to prevent rising damp. A DPC can also be used below window sills, above lintels and beneath coping stones to prevent water penetration of the interior of the building

DRESSINGS

Molded masonry architectural features to a façade such as door and window architraves, string courses and quoins

FLASHING

A flat sheet of impervious material, usually lead, zinc or copper, covering the junction between materials or elements of a building to prevent water penetration

FOLDING WEDGES

Wedges are tapered pieces of timber used to secure joints. When used in pairs, with their tapered slopes opposing, they are called folding wedges and are used for levelling and easing temporary supports and formwork

TRENCH DRAIN

A trench filled with gravel or other loose material to collect ground water and deflect it away from a building

GABLE

The area of wall at the end of a pitched roof between the level of the eaves and the apex, usually triangular in shape

INDENTING

The process of replacing a damaged stone or part of a stone by inserting a piece of new matching stone

INTRADOS

The interior curve of an arch

JOINT

The mortar between two stones

LIME, HYDRAULIC

Hydraulic limes contain a percentage of clay which produces a pozzolanic effect in mortars, that is, the mortars set chemically assisted by the presence of water. Hydraulic limes can occur naturally, or can be artificially made

LIME MORTAR

A mortar made from lime, aggregate and water that carbonises and hardens on exposure to air

LIME, NON-HYDRAULIC

Non-hydraulic limes are pure, or almost pure, lime. Mortars made of non-hydraulic limes can only set through contact with air, a process known as carbonation

LIME PUTTY

A soft putty made from slaking quicklime in water. Used as a binder in most traditional mortars and renders prior to the invention of Portland cement

LIMEWASH

A form of thin lime putty used as a paint or protective coating. It differs from whitewash which is a mixture of chalk and water that does not carbonate

LINTEL

A small beam made of wood, stone or concrete which spans the top of an opening such as a door, window or fireplace and supports the wall above

MAINTENANCE

The continuous protective care of the fabric and setting of a place, and is to be distinguished from repair. Repair involves restoration or reconstruction (from the 'Burra Charter')

MITRE

Join at the corner of a molding, usually at a 45 degree angle, in order that the individual pieces may fit together

MORTAR

The mixture of a binder (such as lime or cement), aggregate and water to form a substance used to bind stones or bricks together in a masonry wall

PARAPET

The part of a wall that rises above a roof or terrace

PLINTH

The projecting base of a wall or column

POINTING

This term is used in two ways – to describe the application of facing mortar onto the bedding mortar, and to describe the actual material used

PORTLAND CEMENT

Artificial cement invented by Joseph Aspdin in 1824 and so called because of its perceived resemblance to Portland stone. It sets rapidly and is very hard when set.

POZZOLAN

A type of naturally-occurring volcanic ash, or any artificial substitute for it, added to a mortar to achieve a quick, strong hydraulic set

PRESERVATION

Maintaining the fabric of a place in its existing state and retarding deterioration (from the 'Burra Charter')

QUOIN

A dressed stone forming the corner of a building, often decorated or raised

RANDOM RUBBLE

Stones of irregular size and shape used for building purposes

RECONSTRUCTION

Returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric (from the 'Burra Charter')

RELIEVING ARCH

An arch built into the masonry above an opening to reduce the masonry's downward force upon the lintel

RENDER

A mixture of a binder (such as lime or cement), an aggregate and water to form a coarse plaster which is applied to the external surfaces of walls

RE-POINTING

The replacement of mortar in the face joints of brickwork following either the erosion of the original mortar or its removal through raking out

RESTORATION

Returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material (from the 'Burra Charter')

REVEALS

The sides of an opening for a door or window, between the frame and the face of the wall. If cut at an angle, it may be called a splayed reveal

REVERSIBILITY

The principle of carrying out works to a building in such a way that they may be undone at a future date without inflicting damage to the fabric of that building

RIBBON OR STRAP POINTING

Pointing which is not flush with the building surface but stands proud

ROMAN CEMENT

Cement derived from a hydraulic clay. Used as a substitute for stone carving and as a render

RUBBLE WALL

Stone wall built with undressed masonry

RUSTICATION

In Classical architecture, the treatment of a wall surface, or part thereof, with strong texture to give emphasis and/or an impression of strength

SOFT CAPPING

A method for protecting wall-tops by applying an earth layer such as sods over a mesh to

SPALLING

The gradual breaking away of small chips or flakes from the surface of individual stones

STRING COURSE

Decorative horizontal band of molding found on an external wall,

TRACERY

Ornamental intersecting timber or stone mullions and transoms in a window, panel or vault. Typical of buildings built in the Gothic or Gothic-Revival styles

VOUSSOIR

A wedge-shaped stone or brick forming part of an arch. The middle voussoir is called a keystone and is often carved and decorated

ABSTRACT

A conservation - restoration study has been conducted on the historic premises of Teferi Mekonnen school, founded in 1925, one of the historic heritages that is registered as a heritage site in Addis Ababa. This research was aim at to identify and document the causes and factors of deterioration that are observed on the heritage building and its premise and come out with a conservation- restoration proposal that will enable to preserve the authenticity and integrity of the heritage site.

This thesis used primary and secondary data collection methodologies, and applied architectural and qualitative data analysis methods to develop a conservation proposal and recommendation solutions.

This paper identified ad document the history and heritage values of the study heritage site and found out that school historic premises has not only historic value but also architectural aesthetic, social, cultural, and places values that needs preservation and protection

In this thesis the architectural design and techniques of construction of the historic building and its setting are described and analyzed. The causes and factors of the historic premises identified and analyzed. The thesis argued that due to lack of regular maintenance and conservation as well as improper past restoration and unplanned expansion the heritage building has been deteriorating and the historic landscape is disturbed. It also recommends measures that should be taken to protect the heritage from further damage and future management strategies.

CHAPTER 1 -INTRODUCTION

1.1 STATEMENT OF THE PROBLEM

Addis Ababa city was founded in 1886 and it had developed as an administrative, political, military and economic center of the Ethiopian empire up to the Italian invasion in 1935. This implied the culmination of the long history of the persistent change of the capital of the empire and established the appearance of some elements of modern urban center. The pre-Italian period was the most important period in the history and development of the city in all spheres including in the introduction of modern education to the country.

Education is a systematic powerful tool that any society will walk on to reach civilization and peak of modernization. Through many ways knowledge was acquired and knowing its values different governments have put a decree that their citizens should be in school until some age or level depending on their necessity. From traditional to modern school for many years knowledge has been transferred from one generation to the other. To most African countries Europeans are the one who introduced them to modern education. Unlike other African countries, however, Ethiopia had a long tradition of education that made the country to have its own language, script, and literature and schooling method. (Seid, 1983)

The first modern school in Ethiopia is Dagmawi Menelik School, which was constructed in 1908, followed by Teferi Mekonnen School (founded in 1925), St. George School (founded in 1828) and Kuskum Taitu Bitul School (founded in 1933). The School was founded by the Regent Teferi Mekonnen, the future Emperor Haileselassie designed to educate young Ethiopian in modern education. The school building was constructed by Negus Tefri's order with a cost of approximately 300,000 ETB at the time. The Teferi Mekonnen school building was one of the first public buildings in Addis Ababa in pre-Italian period, and its architectural style and construction techniques were also unique,

which was one of few its kinds in the city. Its historic function has not been interrupting until today. (Seid, 1983, 95 years book of TMS)

The Addis Ababa City administration has registered Tefri Mekonon School buildings and its settings as heritage since 1987 based on its architectural, historic and social significances. Nevertheless, the first buildings of the school and its historic settings have been modified and changes through time. Due to the past improper restorations and additions, the integrity of the original historic building has been deteriorating. It is also due to new building constructions and additions the historic landscape of the historic premises is disturbed. Thus, this thesis is aimed at to identify and document the cases and factors of conservation problems and come out with appropriate conservation solutions. This in turn will ensure the protection and preservation of the authenticity and integrity of the historic premises. (Seid, 1983, 95 years book of TMS)

1.2 SIGNIFICANCE OF THE RESEARCH

Urban heritage, such as Teferi Mekonnen School historic premise is extremely vulnerable. In many historic cities in the World and even in Ethiopia, a number of urban heritage or historic buildings have already been lost their important parts and most of the building traditions are becoming business for ethnographers or ethnologists and not always collected and documented. In most countries, in Africa and Asia with a rich heritage, urban heritage is neither protected nor considered worthy to be conserved and a negative meaning has been always attributed to “*vernacular*”, as “primitive” and consequently without value. (Adrian smith, 2010)

The first factor to be considered is that urban heritage with all its traditions is subjected to a continuing transformation process, depending on social and environmental factors. In many areas of Addis Ababa, for example, traditional settlements are related to urban decay and physical degradation. They are abandoned due to structural problems of economy, or house disadvantaged population and present endangered situations from the point of view of structures and services, but also for social security and economic conditions, with evident consequences on quality of life. (Erica Av rami, 1992)

Registration on heritage list alone could not guarantee the conservation and preservation of the historic buildings. Preserving the architectural and historical heritage means to protect a sense of identity, certainly to take care of the physical form and fabric of buildings, structures and spaces, always considering the ways in which they are used and understood, and the intangible associations which attach to them. Historic heritage can be considered a fundamental resource for the economic development: if the objectives of preservation and conservation are achieved, healthiness, safety and security will improve, with direct influences on physical and psychological well-being of the inhabitants.

Since Teferi Mekonnen school building was one of the first public buildings in Addis Ababa in pre-Italian period, and its architectural style and construction techniques were also unique, which was one of few its kinds in the city. Its historic function has not been changed until today. Thus, the historical, cultural, social, architectural and functional values of the historic premises are very high and worthy protection. (Seid, 1983, 95 years book of TMS)

1.3 OBJECTIVES OF THE RESERACH

General Objective

- The general objective of this conservation study was to identify and document the causes and factors of deteriorations of the historic buildings and its historic landscape and to recommend appropriate conservation solutions, which will, in turn, guarantee the protection of its fabric and form as well as its historic function and associated intangible value.

Specific objectives

- to study and analyze the history connected to the historic premise, and construct authentic history,
- to identify and preserve the historic, social, architectural, cultural and aesthetic values that have embedded on the heritage site
- to produce a conservation proposal with applicable recommendations

1.4 RESEARCH QUESTIONS

- I. Why and how the historic premises constructed?
- II. What are the values and significances of the heritage building and its settings?
- III. What are the causes and factors of damages and deteriorations on the historic building and its historic landscape and how can it to be conserved and restored?
- IV. What could be done to keep the building from further deteriorations?

1.5 HYPOTHESIS

In this research paper, it is hypothesized that Teferi Mekonnen School historic premises, particularly the first and main building and its setting have been modified and changed through time. Due to the past improper restorations and additions, the integrity of the original historic building has been diminishing. It is also due to new building constructions and additions the historic landscape of the historic premises is disturbed. Future conservation interventions on the historic building have to reinstate it to the original state by removing improper past restorations and additions. In addition, future interventions on the historic landscape should be guided. It is argued that the above recommended interventions are very important to protect and enhance the authenticity and integrity of the historic premises.

1.6 SCOPE OF THE STUDY

This research was undertaken in-depth and comprehensive historical and technical studies and analyses on the historical building of the Teferi Mekonnen School complex thereby documenting conservation issues, and produces a conservation-restoration proposal and plan for the historic premise on. The conservation study, however, focused on the first and main school building and the surrounding historic landscape.

1.7 LIMITATIONS

Due to time and budget limitations, I can only able to cover only one of the first and main buildings of the school. But the building was selected due to its unique architectural style, construction technique and materials.

1.8 CONTENT OF THE RESEARCH

The research paper explains about the history of School its relation and conservation proposal.

The first chapter explains the back ground of the research and how it is done. Chapter two explains about the theories standards and reviews literature around the subject matter. Chapter three consists of methodologies used to collect the data's important for the research.

Chapter four is composed of all the data collected and explained that the very important document required for the proposal of conservation is briefed. Chapter five is all about the conservation proposal that can be applied on the building. Chapter six concludes the whole research and puts recommendation to wards the research.

CHAPTER - 2 - THEOREICAL FRAMEWORK FOR CONSERVATION OF HISTORIC BUILDINGS

Cultural heritage, includes “monuments, groups of buildings and sites of cultural value”. IT includes the elements that contribute to the identity of at the society as a whole collectively and as an individual. Cultural heritages could be of tangible and intangible. Tangible cultural heritages include built heritages that are acknowledged by their society as a historical merit of the society, (UNESCO, 2003).

2.1 DEFINITION AND CONCEPT OF HERITAGE BUILDING

2.1.1 Heritage; The proclamation (ARCCH 209/2000) (defines 'Cultural Heritage'¹ as anything tangible or intangible which is the product of creativity and labor of man, in either pre-historic or historic times, that describes and witnesses to the evolution of nature and which has a major value in its scientific, historical, cultural, artistic and handicraft contents. According to this Proclamation, Cultural Heritage is divided into tangible and intangible and tangible further divided in to immovable and movable cultural heritage.

2.1.2 Tangible Heritage; *Tangible Heritage*² defines as: "cultural heritage that can be seen and felt and includes immovable or moveable historical and manmade cultural heritage" (ARCCH 2009, 2000).

Immovable Cultural Heritage - is defined as: "cultural heritage attached to the ground with a foundation and which can be moved only by dismantling and shall include: sites where cultural heritage have been discovered, paleontological historic and pre-historic archaeological places; buildings, memorial places, monuments and palaces; remains of

¹ The Oxford English Dictionary defines 'heritage' as 'property that is or may be inherited; an inheritance', ¹valuable things that are inherited from generation from generation that are worth of preservation. Heritages are reflection of our ancestors and the existing witness of the past. They are descriptive expressions of distinct values of a society. They could be of monuments, sites, buildings One thing they have in common is that they are in the past and are significant to present time (UNESCO 2003).

² Tangible heritage includes include buildings monuments or any physical structures that are inherited and past in generationally and have significance in architecture archaeology or any aspect of study. (UNESCO, 2003)

ancient towns, burial places, cave paintings, and inscriptions as well as church, monastery, mosque or any other places of worship" (ARCCH 209/2000).

2.1.3 Built Heritages; The built heritage of a society are reflection of the essences in culture, norm and way of living of a society. Built heritage is one of our most important cultural assets. It shows what it was like in a particular time, represents the historical layers of our built environment. It is the physical evidence of our cultural development. These public buildings are very important in the mind of the society and they describe the society descriptive way without any word. Built heritages are like poems; they do bring and flash the whole history, they describe the whole aspect of society in a very understandable way that will give a deep and clear image of the occupants and the neighborhood of the past centuries. Built heritages within our urban and regional neighborhoods are a key to the understanding of our shared history.³

They also describes our origins and informs our understandings of who we are today. The definition of a society is not the current states one can recognize, it is kept under the works and culture of the society. Society is a very complex organization of people who has lived together and share the same values. Built heritages define a sense of place, an identity for a community, how the community was handling certain issues in the past, reason for the present condition of the society and all the inputs they society had gotten influential or inspirational, good or bad, reward or punishments. Built heritage contribute to feelings of connectedness, and community pride and confidence acquired by specific society. It describes how people have been living and their past and states is left on the art of work they have left for their preceding ancestors. Heritage can excite curiosity about our past and enrich our daily lives. It also encompasses different level of the society it' is not just about beauty or significance of huge historic buildings but also includes small, vernacular buildings that reflect the social conditions of working families. Social seclusion makes a difference and the history can be prejudiced since writers point can't always bright. It encompass a wide range of historical marks that are important in

³ <http://www.environment.nsw.gov.au/Heritage/aboutheritage/builtheritage.htm>

creating and sustaining a strong sense of belonging and attachment in our society. Built heritages have a very wide definition of their respective owners and help us to understand where we have come from and who we are today (Reynolds, 1993).

2.1.4 Historical Building and Its Setting; the setting of a heritage structure is where the historic value is well experienced and expressed (See English Heritage, 2008). The historic building and the interaction with its environment reveals the true historic atmosphere of its historical significance. It is the extended part of the built heritage that contributes to the values of the heritage. The surrounding is the frame of the picture inside which is the historical building is figured (ICOMOS, 2005).

2.2 SIGNIFICANCE OF HISTORICAL BUILDING

“Understanding the significance of a historic building enables effective decision making about its future”. BS 7913: 2013 section 4 "Heritage Values and Significance"

The significance of heritage buildings can change over time as public values develop and change. The Community enhances and even adds values to the heritage sites. Nonetheless, this doesn't mean that any conservation intervention entails the heritage sites to be preserved only in their original condition or functions. It does mean that any alteration or improvement of the heritage sites for contemporary use and needs maintains its original heritage features and values. Thus, regular conservation interventions to protect and enhance may include preservation, restoration, reconstruction and adaptation. 4

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. (Burra charter 1999)

Cultural significance is in material form in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a series of values for diverse individuals or sets. The word cultural significance is one and the same with heritage significance and cultural heritage value. Conservation requires the

⁴ <https://www.khanacademy.org/humanities/art-history-basics/beginners-art-history/a/what-is-cultural-heritage>

preservation of a suitable visual setting and other Associations that underwrite to the cultural significance of the place. New construction, demolition, intrusions or other changes which would harmfully affect the scenery or interactions are not appropriate. (Burra charter 1999)

Aspects of the visual setting may include use, siting, bulk, form, scale, character, color, texture and materials. (Article 8 Burra charter 1999)

The physical location of a place is part of its cultural significance. A building, work or other component of a place should remain in its historical location. (Article 9 Burra charter 1999)

The significance of a historical building can be sub categorized and understood easily in the following heritage values:

2.2.1 Scientific/ research significance of built heritage ; Scientific or sometimes calls Research value mostly relates to archeological sites but also applies for built heritages as long as some scientific information that can be yield out from studying the historic building. It could be of construction method, material selection or any other scientific findings that can be uncover from in depth study of the building. (Burra charter, 1999)

2.2.2 Social Value; Social value is related with the affection of the communities with the built heritage and its surroundings. The built heritage could be of a residential building owned by a particular people or individuals; or could be of a public building which was serving the community that testifies the embodied memory of the society particular to the built heritage acquired sometime in the past (Burra charter, 1999).

2.2.3 Aesthetic Value; Aesthetic or artistic value embedded to the built heritage emanates from the superficial appreciation of built heritage external appearance. This refers to the special sense of significance of a heritage site, which could be in terms of architecture scale or even the designs perceived on the building and its setting Aesthetic value also includes the smells and sounds associated with the heritage building and its use (Burra charter, 1999)

2.2.4 Historical Value; The age and uniqueness of buildings play a key role in its significance. This demonstrates the period the heritage building went from the time it was built up until the present times. Historical value of a building could be attached to materials use, methods of

construction or influences of different styles or may be intrusion of different styles of the past (Burra charter, 1999).

2.2.5 Economic Value; It is economical to use built heritage rather than building a new one besides the historical significance of a built heritage. The economic advantage refers to the price assessment between conservation of the heritage and cost of demolition of the old building and erection of new complex. Thus, conservation and adoptive reuse intervention on a built heritage may a brave measure to enhance the economic value of the heritage site (Adrian smith, 2010).

2.2.6 Environmental Value; The traditional techniques and indigenous materials have a minor environmental impact on the historic buildings and the surrounding cultural landscape, and can be produced and used locally. Value is added through local labor and skill rather than transported capital intensive technological advanced machinery. Strategically considered, maintaining heritage buildings is a step forward to sustainability. (See also Adrian smith, 2010, Burra charter)

2.2.6 Place Value; Place value of a building is more associated with the area surrounding the historical building. This means that the built heritage is not the only one that should be recognized by its significances, but also the significances of the premise of the heritage site should be acknowledged as the built heritage itself (See also Adrian smith, 2010).

2.2.7 Architectural Value; Architectural value, sometimes used exchangeable with aesthetic value includes aspects of sensory perception such as, consideration of the form, scale, color, texture and material of the fabric. Architectural advancement and material selection with the method of construction contribute to the modern type of architectural styles. It illustrates the change of style through time which comprises tot the current trend used to design buildings (Adrian smith, 2010; Burra Charter, 1999).

2.3 CAUSES FOR DETERIORATION OF HISTORICAL BUILDINGS

Defects on a heritage building are meant to happen through time. But the severity depend on the age of the building, construction methodology, causes of deterioration, use of the building and measures of conservation throughout the course of the building life time. The followings are major causes for the deteriorations of historic buildings: (Jersey, 2015)

Biological causes; this are mosses, fungus, algae and insects that affect the historic fabric of a heritage building. . (Hoda Zeayter, 2017)

Moisture; Through the amount may vary but moisture always exists in the air as the temperature changes the amount of moisture in the air might decrease and increase due to this the consolidation and vaporization dampness occurs on heritage buildings. . (Hoda Zeayter, 2017)

Ground water; the amount of ground water in heritage building can put the building as much as a risk of failure. Ground water ca cause instability in the foundation which leads to settlement and cause structural damage. . (Hoda Zeayter, 2017)

Wind storm'; Windstorms primary causes of mechanical deterioration of historical buildings. Most of the time strong wind destroys roof coverings, roof decorations and gutters. (Hoda Zeayter, 2017)

Air pollution; Air pollution could be caused from the infusion of toxic chemicals in the air. The toxic substance in the air which later cause's acidic rain destroys the exterior of the historical building. . (Hoda Zeayter, 2017)⁵

Solar radiation ; This is the most likely deterioration any building shares the radiation that comes from the sun affects the building and changes the original color of the building and the building color fades through time. . (Hoda Zeayter, 2017)

Temperature change; The level of temperature needed expansion and contraction varies and As the temperature changes the materials expand and contract at a different level which causes minor cracks in historical buildings. . (Hoda Zeayter, 2017)

Vibration; the earth has vibrational movement though it can be noticed or not. Technological advancements also cause vibration on standing structure which could be caused from cars, rails and intentional causes like bombs .vibration through time can make structures to lose their strength and show cracks on the walls. Vibration could also be caused by users of the structure. (Hoda Zeayter, 2017)

⁵ www.ihbe.org.uk

Inhabitant's intrusion; the occupants of historical building are the one that cause deterioration on the structures. Though there seems to be a connection between humans and their dwellings it can't be explained scientifically. Some would agree that the occupants are one factor for deterioration of structure but others argue that the occupants are the one that keep a building livable. (Ass. Prof. Fasil Giorgis)

2.4 CONSERVATION OF HISTORICAL BUILDINGS

Conservation involves a continuing process of conceding between protecting the originality and integrity of the heritage building while at the same time improving it in order to fulfil a genuine present day standards that satisfied the public safety and comfort (Adrian smith, 2010).

The first step to conserve a heritage is to study its history and document all the data that are relevant for the conservation. Conservation of a heritage site should be based on an understanding and appreciation of all aspects of its values. Its significance should be studied intensively. The purpose of conservation is to care for cultural heritage value, which are the reflections of the society. Conservation is maintaining of the values of a heritage and its purpose is to retain and reveal such values, and to support the ongoing meanings and functions of places of cultural heritage value, in the interests of present and future age bands. Documentation of the historical value and its aspects are very important to the conservation of heritage sites. This should be followed by the documentation and analyze of all-embracing history of the heritage. In depth assessment of its history and values are the first step in conservation of heritage. (Burra charter, 1999)

2.4.1. Heritage Conservation: Concept and Theory ; Theories and different ideologies have been raised on conservation of cultural heritages but for this specific case Cesar Brandi's theory is chosen as ideological frame work for this thesis.

' . . . What comes from the past should be fully reserved' Cesar Brandi (1920, history of architectural conservation)

This means that any intervention should be identified easily and respects the unity, the irreplaceable material forms and the character of the structure. Any restoration should not be obstacle for necessary future intervention (Hoda Zeaytera et al, 2017).

The theory states that every feature that is part of the history should be kept and any addition to maintain the structure should be identified not to prejudice the history. It may impossible to maintain without addition of structures but recording and making the addition identifiable will help future researchers to be aware of past restorations (Cesar Brandi, Eric Doehne and Clifford A. Price, 2010)

2.4.2. Principle of conservation; fundamentally the foremost principles of conservation, which are recognized and accepted internationally may include:

- The aim of conservation is to retain the cultural significance of a heritage site;
- Conservation should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the heritage site.;
- Conservation is based on a respect for the existing fabric, use, associations and meanings;
- Minimum intervention;
- Reversibility; (See Burra Charter, 1999; English Heritage 1994).

2.5 HERITAGE CONSERVATION IN ETHIOPIA

2.5.1 Constitution of the FDRE (1995); Ethiopia adopted its Constitution in 1995, which provides the basic and comprehensive principles and guidelines for heritage protection, and management in the country. The concept of management and Sustainable Development of Cultural Heritage are enshrined in Articles 43, 44 and 92 of the Constitution of FDRE. The Ethiopian government acknowledges that it has a constitutional duty to protect cultural heritage for the benefit of current and future generations of Ethiopia.

As the major binding document for all other derivative national and regional policies, by-laws and regulations, the Constitution of the Federal Democratic Republic of Ethiopia, Proclamation 1/1995, has several provisions which have direct policy, legal and institutional relevance for the appropriate implementation of cultural heritage protection and management to avoid, mitigate or manage adverse impacts of development actions including large scale development projects. The general government policy on the

preservation of cultural resources, set out in the Constitution (Article 91), states that that the state shall protect historic sites and objects on behalf of the people of Ethiopia.

2.5.2 Cultural Policy of Ethiopia (Amended in 2016); Based on the Constitution, the Council of Ministers of Ethiopia endorsed the Cultural Policy of Ethiopia in October 1997 and amended in 2016, one of its main objectives is to enable the languages, heritage, history, handicraft, fine arts, oral literature, traditional lore, beliefs and other cultural features of the various nations, nationalities and peoples of Ethiopia to receive equal recognition. In addition the Cultural Policy states their objective is to respect, preserve and conserve these and pass them over to future generations.

Federal Democratic Republic of Ethiopia Cultural Policy amended in 2016 and states strategic issues and strategies regarding the conservation and protection of heritage resources of the country.

Article 2 of the Policy under the title of “Development of Heritage Resources” state the following:

To systematically identify, develop, preserve and use the cultural, historical, and natural heritages of the peoples of Ethiopia, to sustainably apply them for economic, social and human development, and to facilitate their study, documentation, visibility and transfer to the next generation.

The following implementation strategies have been also devised:

The cultural, historical and natural heritages of Ethiopia’s nations, nationalities and peoples shall be studied scientifically in their respective fields, identified, registered, preserved and accorded official recognition.

The history of the country shall be studied, in a balanced manner that reflects the country’s values of national survival, unity, peace, and the harmonious co-existence, mutual respect, wellbeing, collective struggle and interest of its peoples, recorded and transferred to posterity.

A strategy of coordinated development planning and implementation shall be put in place to protect cultural heritages against any harm resulting from any program and activity of infrastructural development taking place in the country.

The country's heritages shall be protected and maintained in accordance with their cultural and historical values by devising and applying a heritage management system;

An international-standard database of statistical data on the country's cultural, historical and natural heritages and heritage sites shall be established at the national level and made accessible for use in development planning and research.

Ancient cave drawings, religious and secular paintings, records on parchment, traditional ways of preparing writing ink and parchment, book binding techniques and orthographic styles shall be studied, documented, and the results used widely for promoting the ancient civilization of the country.

Close relations shall be forged with communities and other partners to protect and manage the country's heritages.

2.5.3 Heritage conservation Proclamation (209/2000) ; Proclamation to provide for Research and Conservation of Cultural Heritage (No. 209/2000) has also established the Authority for Research and Conservation of Cultural Heritage (ARCCH) as a government institution with a juridical personality. The proclamation provides framework for research and conservation of cultural heritage.

2.5.4 ARCCH regulation on ownership and restoration of cultural heritage; the articles states about the regulations of restoration of cultural heritage and duties of any one who possesses a heritage site.

Registration of Cultural Heritage

1) any person who holds Cultural Heritage in ownership shall get registered same in accordance with the directives issued by the minister.

2) The Authority shall register Cultural Heritage using codes appropriate for their custody and preservation.

3) A certificate of registration shall be issued to the " person for the Cultural Heritage he has got registered.

4) Expenses incurred in connection with the registration of Cultural Heritage pursuant to this Article shall be borne by the Authority.

Art 18. Duties of Owners of Cultural Heritage Any person who possesses a Cultural Heritage shall have the following duties:

1) to preserve and protect properly the Cultural Heritage on his own expense;

2) To allow, upon the request of the Authority, the use of Cultural Heritage for exhibition or public display;

3) Respect the provisions of this proclamation dealing with the handling and use of the Cultural Heritage and of the regulations and directives issued pursuant to same proclamation. (PROCLAMTION209/2000)

Conservation and Restoration of Cultural Heritage

1) any conservation and restoration work on Cultural Heritage shall be carried out with the prior approval of the Authority.

2) Where the expenses required for the conservation and restoration are beyond the means of the owner, the government may grant the necessary assistance to cover part of such expenses.

20. Preservation of Cultural Heritage Situated on Land Given in Usufruct

Any person shall ensure the preservation of Cultural Heritage situated on land which is given to him in usufruct.

21. Removal of cultural Heritage

1) an immovable Cultural Heritage may not be removed from its original site without the prior written approval of the Authority.

2) Any person shall notify the Authority before removing registered movable Cultural Heritage from its original site. (PROCLAMTION209/2000)

2.5.5 Conservation Directive 2017; It stats what heritage means and rule and regulations of preservation of heritages and how one should get a license to restore heritages and the responsibilities of having a license. It states that having a license permitted by the authority will have consequential responsibilities one should be able to hold.

2.5.6 Heritage Conservation in Addis Ababa; Addis Ababa, the capital of Ethiopia, has now counted more than thirty-years of existence. In this span of time, it grows from a traditional Ethiopian town to one of Africa's metropolises. In the process of its growth it has come to acquire historically significant and unique architectural heritages. These heritages vividly reflect its history and the country's heterogeneous culture and traditions. (See AACTB Database, 2018).

In Addis Ababa, more than 400 architectural heritages have been registered and Incorporated in the new master plan of the city. These include historical churches, mosques, and public buildings, residences of former notable, monuments, status, caves and bridges (See AACTB Database, 2018).

Addis Ababa has a considerable number of heritage sites due to its built nature and its being a historical and political center (Mesaye Demessie *et al.*, 2009). Many of the buildings made of worked stone with wooden gables and balconies - buildings erected during the Menilek- Iyasu-Zawditu period¹ this period was particularly significant from the point of view of Addis Ababa's development and witnessed the emergence of new buildings, and the development of what historians and architects describe as the Menilek Zawditu style (Pankrust, 2008). These structures reflect the level of civilization (artistically and technologically) of the period. Some were residences of famous personalities that had a major role in Ethiopian history (Addis Ababa Culture and Tourism Bureau, 2010) and their architectural designs are very unique. There is in fact nothing exactly like it anywhere in the world (Pankhurst, 2008). These buildings, however, have not been properly preserved. They do not receive adequate attention from local authorities and the society consequently they lack proper maintenance and

attractiveness (Mesaye Demessie et al., 2009). Especially since Ethiopia became the seat of African Union in 1950's the city was expected to reflect a modern look. To this effect, the Emperor Haile Selassie used to advocate the modern look of Addis Ababa to reflect the idea that Ethiopia is a civilized state with a national vision. At that time it was necessary to express civilization and modernity with trendy physical structures (Fasil Giorgihis and Likuworkalemawet al., 2007) hence, except for several praiseworthy examples the idea of reflecting our cultural heritage or values was not given that much attention (Fasil Giorgis and Denis Gerada, 2007). Numerous examples can be cited to illustrate the alarming situation of built heritage. Historic buildings in

Use. In general, it can be said that heritage has not been given due attention by way of protection and renovation (Mesaye Demessie et al., 2009).

Among these architectural heritage, Teferi Mekonnen School building and its premises are one of the registered heritage sites in Addis Ababa.

Theories regarding heritage recognition standard and the significance of the heritage in relation with UNESCO standard and its significance in the history of school in Ethiopia shows that Teferi Mekonnen School is one of the heritages that should be kept and restored. All the values contained in the history of the building and the causes of damage are important inputs for restoration and further maintenance. Depending on the above theoretical review the building is studied in detail in reference to the UNESCO and ARCCH standard and cultural policy. This document states past restoration techniques and experiences and additional changes that occur during the past years and recommends technical measures.

1 www.capotaethiopia.com/index (viewed on Tuesday, February 08 2011)

CHAPTER 3- METHODOLOGY

3.1 TYPE OF DATA

This research has conducted on School and especially the first building constructed for the school. The school has been serving for School functions and has undergone changes through its journey. Since the changes with times has changed its look and appearance and the building needs to be restored and conserved keeping it as a heritage. Some part of the building has deteriorated and other parts are changed improper restoration treatment. . It has economical, historical and social values attached to it. Due to its significance in history it needs to be preserved and well kept. This research is done as a partial fulfillment of MSc program for conservation of urban and architectural heritage. This research is based on data collected from primary and secondary sources. primary sources includes observation of the site and looking at what is inside the compound and what can be seen on the building and observing the neighborhood of the compound and the building itself. Secondary data refers to inputs from indirect source.

3.2 TECHNIQUES OF DATA COLLECTION

Primary and secondary data are required for this research; primary data are data's that will be collected from first person or first hand and secondary data which will be collected from secondary sources.

Primary data were used such a field observation, measurement and photographic recording.

Actual observation of the site location, the compound and the specific building is very important part of investigation. The researcher has visited the site and observed all the deteriorations and investigated the building utilizing condition measurement and taken photograph.

Secondary data was obtained from literature and videos and audio recordings. The school is more than 95 years old which made it hard to find a former student of the school or someone firsthand information about the history from the beginning.

The building is one of the buildings which were built during the 1920's and so as to know the materials and method of construction the researcher also regarded through the construction of similar buildings built during the first two consecutive decades of the 20th century. Photographs taken by other parties for different purpose are used in the research.

Based on the data collected and literature review it can be easy to identify its main problems, the causes for the problems and on how the conservation proposal can be done. Through collecting the data the conditions of the building have been well identified and documented.

3.3 DATA ANALYSIS MECHANISM

Prime to conservation comes intensive documentation. All the data that are inputs for the conservation and analysis need to have proper inventory and documentation. All the conservation proposals should be compatible with theories and international conventions and charters which are guidelines for specific conservations. On this research all data are inspected and classified under categories for ease of documentation and construction so as to come up with proper conservation methodologies and proposal .The construction material with its construction methodology is studied to avoid misleading and further improper restoration. Case studies of similar buildings are taken to study its construction methodology. Using the help of other professionals, case studies and literatures on construction of historical stone masonry constructions, the researcher was able to figure out the construction methodology and specific construction materials. Using the aid of soft wares the building character and the causes of deteriorations are identified and analyzed the analyzed data were interpreted and discussed with conservation theories and conservation methodologies.

Chapter 4 -BACKGROUND TO THE HISTORY AND SIGNIFICANCE OF THE STUDY HERITAGE PREMESIS AND ITS ENVIROMENTS

4.1. FOUNDATION OF ADDIS ABEBA

The foundation of the present site of Addis Ababa was preferred in 1878. In 1870 Negus Menelik had set up the seat of the Shoan -state on Mount Entoto, a few miles north of the present Addis Ababa. Prior to this period, however, the rulers of Ethiopia had established their seats at various towns – Axum, , Lalibela, Gonder, Ankober, Debre Berhan, Harar,Mekele, Jibat and other places- where may still be found vestiges of ancient Ethiopian civilization that have survived the ravages of wars and time during Ethiopia’s long and glorious history (Bahiru zewde 1991)



Figure 1 early map of Addis Ababa - SOURCE MIRROR OF ADDIS ABEBA

The original name of the site of Addis Ababa was *Finfine* due to the hot springs found on the site. It was a thickly- wooded place with paths of cultivation here and there. When Negus Menelik on a visit was struck by its natural beauty and scenery, and decided to move his capitol from mount Entoto to this place. It is reliably known that empress Taitu influenced this decision of her imperial spouse, Negus Menelik as well as the in renaming in 1879 the place Addis Ababa, meaning new flower (Gebresilasse, 1889).



Figure 2 PICTURE OF OLD PARILAMENT SOURCE MIRROR OF ADDIS ABEBA

With reference to Finfine king Shale Silase had prophesied at this place my children's of children will reign. The construction of the city started apace immediately. Residential buildings for government officials were provided and land was allotted to the residents according to their needs. Near the river in the spot called Ginfillo was erected trinity church in 1878 the emperor laid the foundation stone of residential palace now commonly known as the old palace. Then a number of administrative offices were built in this locality and the capital began to take shape (Gebresilasse, 1889).

In the year 1896, the epoch making victory of Ethiopia against Italy at the battle of Adwa was celebrated as a new day in the city of new flower at St. George cathedral Since then several public buildings, such as hospitals, schools, roads, bridges and residential buildings have been constructed in the city, all of which have given the capital a worthy

significance.

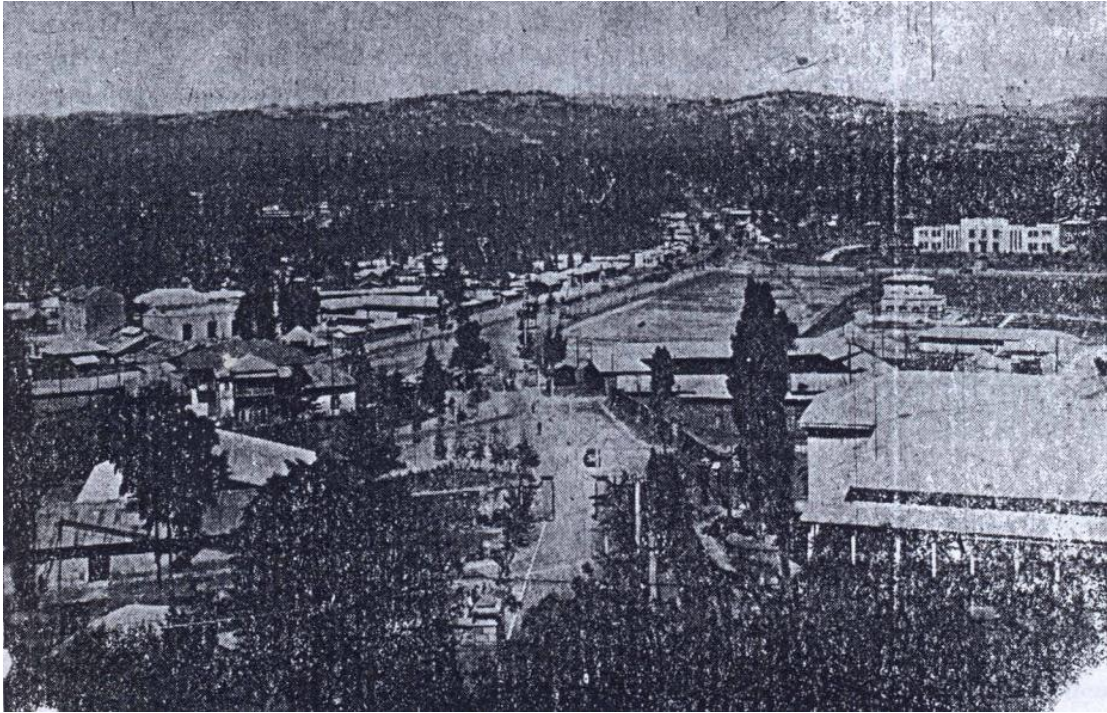


Figure 3. Old palace and parliament in front of the palace – source mirror of Addis Ababa

Surrounded by hills and mountains, Addis Ababa is situated high in the center of a bowl like plateau. A chain of healthy springs are found at the foot of the mountains serve the city dwellers in many useful ways. The city is otherwise well watered; through it flow a no of rivers attracting the view of passers by.in addition to profuse growth of trees which serve as excellent building timber as well as fuel there is a large variety of vegetables fruits and grain making Addis Ababa what some people so appropriately call garden city. (Gebresilasse, 1889).

4.2 EARLY ARCHITECTURE OF ADDIS ABABA

The foundation and development of Addis Ababa has been an abnormal process. From the beginning, the town occupied a large portion of territory, later filled by incorporations and overlying, often removing pre-existent buildings and urban fabric. (pankrust, 1964).

According to Gebre Sellasie (1889), the town was founded by Menelik around 1886, when he took the decision to settle down near the spa of Filoha. According to the Italian medical doctor De Castro, Menelik 'drove the first pole of his wooden tent into the ground where his imperial palace would be built (Chris Proutv, 1986). The first European visited the town described Addis Ababa that lay scattered on a vast and uneven area, more similar to a camp, than a town. Gleichen, who was in Ethiopia in 1897 with a British diplomatic mission to Menelik describe the town viewed from Entoto that *the town's landscape show clusters of huts surrounded by fences and, overall, a large number of white tents spread everywhere, particularly at the fringes*. This gave the town *'the appearance of a gigantic camp, and indeed this is actually what it is'*

The first urban unit of the town of Addis Ababa constituted of the Emperor's premises, Ghebbi and the commercial area, Arada. But later, the Rases of the Emperors were constructed their own residential buildings, surrounded by their respective Ghebbi, represent the starting-point for the development of the urban architectural fabric (Elyas Gabra-Egziabeher (1994; Bahiru Zewde, 1991). Some of the early buildings of Addis Ababa to a large extent followed traditional methods of construction, such as the oval houses still existing in the city. They were simple, essential or adorned only by a veranda around them. Others houses, made of wood, chikka or stone, reflected different styles and structures, in accordance with European, Indian and Arabic architectural models Elyas Gabra-Egziabeher (1994).

It would appear that the number of buildings increased after an official urban land market was introduced in 1907 and landowners began receiving formally registered titles. In the early 1920s, C.F. Rey pointed out that: *'Building is very costly, mainly owing to the extortionate price of all imported materials, and land commands an almost incredible value, costing from half a dollar to four dollars per metre'*.

After 1907, a number of extraordinary buildings were constructed in Addis Ababa. In 1912, according to De Castro, they were around 200, generally owned by Indian and Greek traders and characterized by 'the most disparate shapes'. (Angelo Del Boca, 1995). There were public buildings such as the Bank of Abyssinia — 'almost the only reasonable respectable building' — the Etegue Hotel and the foreign legations; the construction of the first masonry buildings in the Emperor's Ghebbi was completed; also, there were beautiful residences belonging to Rases or high-rank personalities like Nagadras, Afanegus and Abuna (Bahiru Zewde, 1991).

In 1914, Carlo Annaratone highlighted the buildings' chaotic identity and layout, but he also remarked that 'there are many houses built in the European style, covered with corrugated metal sheets and having beautiful windows and balconies, that, like in a dream, bring us a civilized town (see Harold G. Marcus, 1975; Bahiru, 19991).

4.3 PUBLIC BUILDINGS IN ADDIS ABEBAB

4.3.1. HISTORICAL BUILDINGS IN 1920'S AND 30'S

The 1920's s considered the beginning of modern architecture (European architecture) in the history of Ethiopian architecture. There were a number of foreigners in the city and the influence they brought on the construction and architecture of the city was tremendous. It was a transformational age from circular - oval to rectangular shaped architectures. During this period, stone was introduced as a principal building material and the combination of Ethiopian European, Indian and Armenian architecture were highly influenced the city buildings.. Since the Greeks came later their influence was not seen on the 1920's. The introduction of new building methodology and the introduction of new technologies and typologies have made the 1920's the turning point the history of the city's architecture (Gebresilasse, 1889.)



FIGURE 4 TEFERI MEKONNEN SCHOOL- SOURCE MIRROR OF ADDIS ABEBA

The materials used and method of construction of most of the buildings of the 1920's shared some similarities. This includes Teferi Mekonnen school building. Most of the buildings with stone masonry used Ignimbrite pyroclastic rocks and ashlar masonry technique of construction. This type of stone is a very hard which is durable and also expensive due to its quality for construction and durability.



FIGURE 5 BETESAYDA HOSPITAL - SOURCE MIRROR OF ADDIS ABEBA

The appearances of the buildings look similar though with recognizable differences. Among these buildings, such as, Matig korvacchoff historic residence was designed by Armenian architects, which illustrates the influence of Armenian and Indians, and later in the 1930's the influence of Greek architecture. Europeans also contributed to the

development of the city's architectural style and rectangular shaped courtyards of the buildings as well as symmetrical typologies. (Seid, 1983).

Buildings that have shared similar architectural and typological characteristics with Teferi Mekonnen School include: Haile Sellasie I hospital, Empress Mennen girl's school, Kuskum school, duke house and residence of Dejazmach Teferi, Karakachini house and Matig koverchoff_residence



Figure 6 DUKE HOUSE



Figure 7 MATIG KORVACHOFF

4.4 A HISTORY OF TEFERI

4.4.1 MEKONNEN SCHOOL HISTORIC PREMESIS

4.4.1.1 Location

Teferi Mekonnen school historic premises is located at the Junction between Omedla Street and General Mulugeta Street, next to Meskana Hizunan Church and School compound. The school is located adjacent to Algeria St. with local name of the road shiro meda.

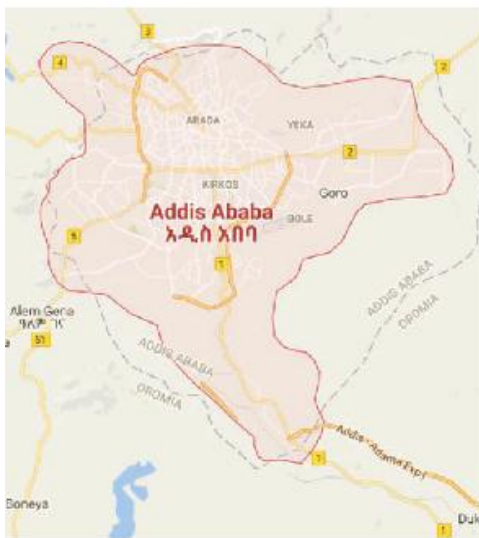
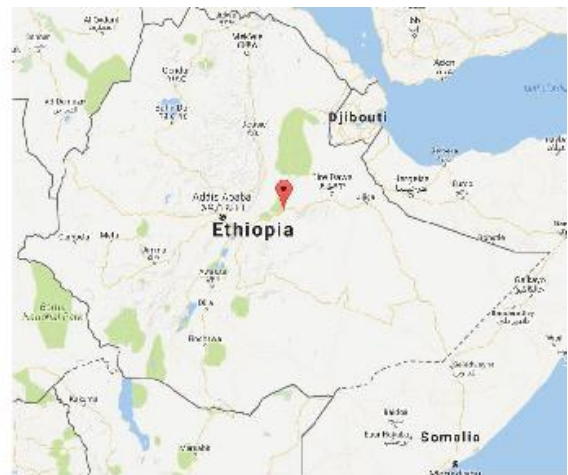


Figure 8 LOCATION MAP OF SCHOOL

4.4.2. FOUNDATION AND DEVELOPMENT 1923-1925

Emperor Haile Selassie who was still regent and haired to the throne, gave a great emphasis to modern education as an instrument to achieve his aim of centralization and strengthen of the government. The school he tried to construct was to produce a new class of educated Ethiopians whom he hoped would help him for centralization and to empower the government (seid, 1983).

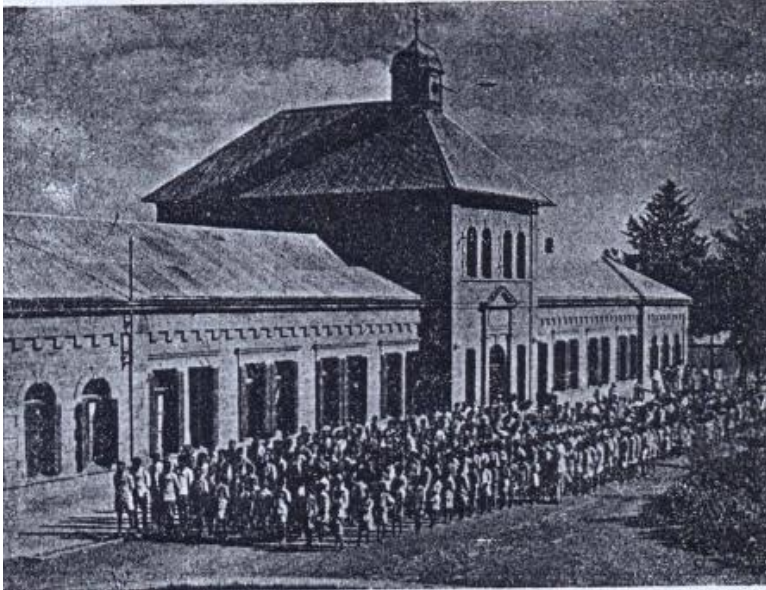


Figure 9 TEFRI MEKONNEN SCHOOL AND THE FIRST STUDENTS

The construction of School started before 1924. It was the second establishment located in the former palace ground of Ij Iyasu. The main building of the school was constructed at a cost of 300000 birr from his own treasury (90 years

of TMS, 2007). The construction of the school was the responsibility of Grazmatch Yohannes Wolde-ab and Fiawrari Gebra. When the prince regent went for tour to Europe in 1924, he delegated these two persons to complete the construction. Following this another huge building, which was three storied high, was constructed with the cost of 130000 birr within the premises. According to



Figure 4.8 TEFRI MEKONNE SCHOOL STUDENTS ACCEPTED IN 1925



Figure 10 LIST OF ACCEPTED STUDENTS 1925 (SOURCE SEID, 1983)

informative the architect of the building could be the same person who designed Menelik II mausoleum, Architect Carl Haertel.

This building was intended accommodating the borderer students. Moreover, the school compound, which comprises 25 hectares, was entirely fenced by a stone wall. The books and other necessary equipment that were necessary for the school were not deliver from Europe until 1925. The 53 articles of the school regulations was published and the Ras announced the school has started accepting interested students on Birhan ena selam magazine on April 01, 1925 (90 years of TMS ,2007). On April 27, 1925. Monday morning invited guests, diplomats, accepted students and former minsters gathered in the school around 4 o'clock and started visiting the building and Ras Teferi inaugurated the school. The emperor assigned Jean Guillon to be director of the school and Ethiopian Doctor Workneh Eshete, who was aboard for 30 years and pressured Menelik II to open a modern school, to be the administrator of the school. Many royal family members and invited guests contributed money and items to the school and it was almost 40,000birr (seid,1983)

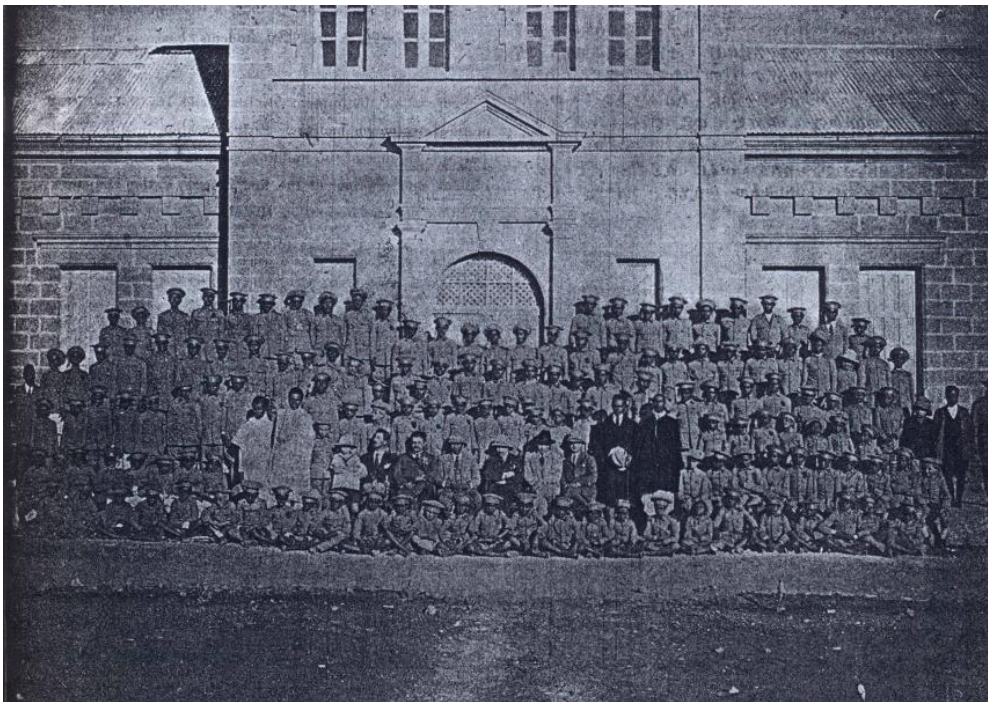


Figure 11SECOND ROUND ACCEPTED STUDENTS SOUCE 90 YEARS OF SCHOOL

The school started with four foreigners and seven Ethiopian teachers, with 30 boarding and 50 regular program students. The students were between the ages of 10-15 for students out of this age range they were requested to have a special acceptance paper from the emperor. The first subjects thought were Amharic, English, and French, Ge'ez, music and drawing. In 1926 no of applicants increased and due to that they accepted 18 students from Gojam, 3 students from Wolega besides students from Addis Ababa and started teaching 66 regular and 118 boarding students. As the no of students increased there was a need for additional class rooms, additional subjects, dining area and teachers residential were constructed_(Gebresilasse, 1889., seid, 1983).

4.4.3 DEVELOPMENTS FROM 1925-35

Starting from its foundation to that of the coming of Italians the school was developing and growing in many ways. The expansion of the school building and the increase of class rooms was the result of the students in turn led to the growth of the no of teachers every year.as a result six new houses were built as a residence for the teachers. Two other large buildings were erected for a handicraft department. Additional classes were also constructed alongside the main building of the school. A kitchen was installed in the school earlier food was prepared in the palace and sent to the students as a temporary measure and ended when kitchen was constructed in the compound. . In 1926 Electricity was also introduced which made the school to have electric light. From the beginning the school was to serve the dominant class of nobility. The regulation of the school the fees paid and others indicate that the school was available to those who had money. Some students also come from the province and were admitted to the schooling 1925 30boys from wollega 18 from Gojam were enrolled in the school. The government also gave allowances in cash and other forms to convince parents to send their children to the school. But as a whole the children of lower classes accepted by the school was very few. The most successful students were sent abroad to continue their studies at the expense of royal treasury. This was because there was no high school in the country at the time (Gebresilasse, 1889., seid, 1983)

4.4.4 THE SCHOOL DURING THE ITALIAN OCCUPATION 1933-41

The opening of Ethio Italian war 1935-6 had a significant effect on all schools in Ethiopia and on the progress of the School in particular. As the war became imminent most of the best students of the school were chosen to be trained as scouts in Genet military school in 1934 ((Gebresilasse, 1889. seid, 1983))

Italian army Led by general Bagadolia entered Addis Ababa under his order all the school that existed in Ethiopia were closed part of the student army the so called Alpine troops made their residence in the Teferi Mekonen school the remaining class room were converted in to barrack and the dormitories and the clinic became medical store used by the troops themselves. (seid, 1983)

For a colonial gov't, educating the natives and indoctrinating them to get acceptance by the young Ethiopian and make them loyal to the establishment of fascist government was an important objective. There for they found schools for the natives which vocational training and agricultural training was given. After the Italians troops evacuated Teferi Mekonen school however become a place where Italian children were educated the school was divided into two under the name of the Italian king and prime minister the first was" Licco-Ginasio Vittorio Emmanuel II" which had primary and secondary section. (seid, 1983)

4.4.5 TEFERRI MEKONEN SCHOOL 1941-1950

May 1942 that the definition Barracks and the buildings of the school occupied by the British troops were evacuated and the school was started to function. Mr. C.H Hennery started to accept students the number of students was about 700 which made it impossible to accommodate boarding school. As a result the whole school compound twined to class rooms. Owing this time the demand for education was very high. The politician problems of the time the British presence in Ethiopia and the continuation of the Second World War made it possible to change the whole situation into normal (seid, 1983))

An extensive restoration followed by of the school and it was to take the whole problem material reconstruction. 1945-Secondary section was introduced

1. Four new class rooms were built
2. Nearly is private houses were taken over the school for the boards as dormitories
3. A medical clinic which would accommodate nine patients was built
4. One dining room an 200seat assembly hall was created
5. A library and two laboratories
6. Four large playground where prepaid and leveled

In 1945 the school started to enroll students in half day shift and one hour of study after each shift for studying was included in the program. In 1948 the school started to enroll students for secondary school and it was conducted in French (year book of the school, 2007)

After a decade of reorganization the school celebrated its 25th anniversary on April 27, 1950 the Emperor and large number of people attended this ceremony. New building which was constructed at a cost of 883,862 the new building had a dormitory hall for 490 students and 500 seats dining. Again in 1962 the school entered in to a new phase of its development. This was mainly because of two important reason first the school opened a new commercial section and second girls were allowed to study in the school for the first time. According to the 1941 decree of the ministry of education Amharic became the language of instruction followed by English thus ending the prewar domination of French language. In 1960 due to political disputes in the country there was rebellion and people were destroying public Buildings School was one of the victim. In1960 the dropping of bombs destroyed more than two class rooms (Gebresilasse, 1889., seid, 1983). In1963, every building in the school was repaired and the two floors of the new building was divided in to two class rooms. (Gebresilasse, 1889., seid, 1983)

4.4.6 TEFERI MEKONNEN SCHOOL IN THE 1960'S AND AFTER

The different kinds of developments in the 1960's change the shape of the school. The Coup-de-tat of 1960 as it did to some institutions in Addis Ababa, made a great damage. In 1962 some attempts were made to solve the schools growing problems. It was in this year that the repairing of the damaged school buildings and the construction of new ones was under taken. In 1968 the students formed student council and they used to raise political issues and discuss on raised questions. In 1984 the school name was changed to Entoto academy and technical school. In in 2004 the school became college and its name was again changed to Entoto polytechnic college (seid, and 1983) the building is currently serving as office for the school compound and has reached to level of vocational college standard. The school has managed to serve the community despite major unsolved problems. The building and the compound are registered as a heritage in ARCCCH data base registered as one of the structures I planned to be restored.

4.5 SIGNIFICANCE OF SCHOOL HISTORIC PREMISES

A mentioned above, cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the *heritage* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related heritages* and *related objects*. Historic heritage may have a range of values for different individuals or groups (Burra Charter 1999).

4.5.1 Historical values; the historical value of a building is mainly measured by how far it has made its significance in the history of the country. The historical value of Teferi Mekoneen School is attached to the personality and rule of the Regent Teferi Mekonnen and later Emperor Hailesellasié and the foundation, growth and development of the school and its environs through time. The building is more than 95 years and most of the functions the building has not been changed and still the building preserve its originality. . The building was intended for construct for school purpose and its one of the oldest school and the second school in Addis Ababa, next to Menelik II School. Thus, the historic value the school is embedded on the historic personality, Emperor Hailesellasié who established the school; the age of the building, which counted more than 95 years;

the second school in the country and historic role for the introduction and development of modern education in Ethiopia and the growth and development of the city's architecture in general.

4.5.2 Social value; Historical buildings are more attached to the sense of the society and they have a relative attachment to the one who occupied them or known them. School, for past and current school communities - especially students and teachers of that school, is not just a historic building - just walls and doors, it has a sense and memory that attached to it. Each past and present student and teacher has his own unique experiences and memories attached with the school as individual and also as group. So the social value of the school not only for students and teachers who have passed through the school but also for all Ethiopian in general is very high.

4.5.3 Architectural/Aesthetic value; Architectural value, sometimes used exchangeable with aesthetic value includes aspects of sensory perception such as, consideration of the form, scale, color, texture and material of the fabric. Architectural advancement and material selection with the method of construction contribute to the modern type of architectural styles. It illustrates the change of style through time which comprises to the current trend used to design buildings.

Teferi Mekonnen school complex was entirely made of stone and is covered with corrugated iron. The elegant facade consists of a central two-story small body with a nice Indian style lantern above the roof. The body is between two symmetrical one-story wings, each of which has a series of eight rectangular windows followed by three quoined arched windows at the extremities. Noteworthy is also the park in which the complex is located. This is one of the architecturally unique and beautiful buildings of the period and its contribution to the architectural development of the city's building in the subsequent period was immense.

4.5.4 Place Value; Place value of a heritage can be interpreted as where the building was constructed and the relation of the building with its surrounding and other related environmental factors that could affect the historical significance of the building. The building could be used for any purpose and could be of common material but the place where it is constructed tells the history of the building and reasons behind all the building

construction and other socio economic value will be revealed due to its location a heritage. The historic premises is located in the old Lij Iyasu house, near Ras Mekonon Sefer, and Genete Leul Palace on the road to Entoto from the Imperial Palace at Arat Killo. Thus, its place value is very high and worth protection. 4.5.6 Scientific value; Scientific value of a building, a heritage building could be defined as the ability that it can be used for research purpose. The purposes of a building might be different but the material it is used a method of construction could be used for research propose to know about traditional method of construction. The construction method of a building could be studied for further knowledge. The building style and construction technique and material use of school building is unique and one of its kind for the time of construction that can be need further studies and research.

4.5.6 Environmental value; Environmental value of a historical value is far more important than just the history behind it. The environmental value depends on the use of a building and its current condition. The building must serve in a way that is not suspicious form the occupants to work in or live in as long as it is in a good condition. If the building is restored and continue its historic functions in a good quality it will have environmental value. Most people think of development as a way of leaving the past and just moving ahead not knowing what they are destroying to develop the present. Historical buildings are part of development. Demolition is more expensive that construction and after demolition there comes construction which will have an effect on the environment. The preservation and conservation of School will make the building from going through all this pressure and to be friendly with the environment.

4.6. PAST RESTORATION INTERVENTIONS ON TEFERI MMEKONON SCHOOL BUILDING

The opening of Ethio Italian war 1935-6 had a significant effect on all schools in Ethiopia and on the progress of the School in particular. Alpine troops (Italian army) made their residence in the Teferi Mekonen School the remaining class room were converted in to barrack and the dormitories and the clinic became medical store used by the troops themselves. In 1937 the Italians left and the class rooms were cleaned and used to teach

Italian students only. In 1942 the British in side he compound left the country and it started to accept additional Ethiopian students. (seid, 1983)

In 1960 due to political disputes in the country there was rebellion and people were destroying public Buildings School was one of the victim. In1960 the dropping of bombs destroyed more than two class rooms. Coup-de-etat of 1960 as it did to some institutions in Addis Ababa, made a great damage. In 1962 some attempts were made to solve the schools growing problems. It was in this year that the repairing of the damaged school buildings and the construction of new ones was under taken (seid, 1983, year book of the school, 2007)

Though the building was restored in the past several times with the building current status the building needs to be restored appropriately and it is one of the building registered as part of restoration plan in ARCCH.

CHAPTER 5-ARCHITECTURAL ANALYSIS OF SCHOOL

5.1 URBAN AND ARCHITECTURAL DATA ANALYSIS

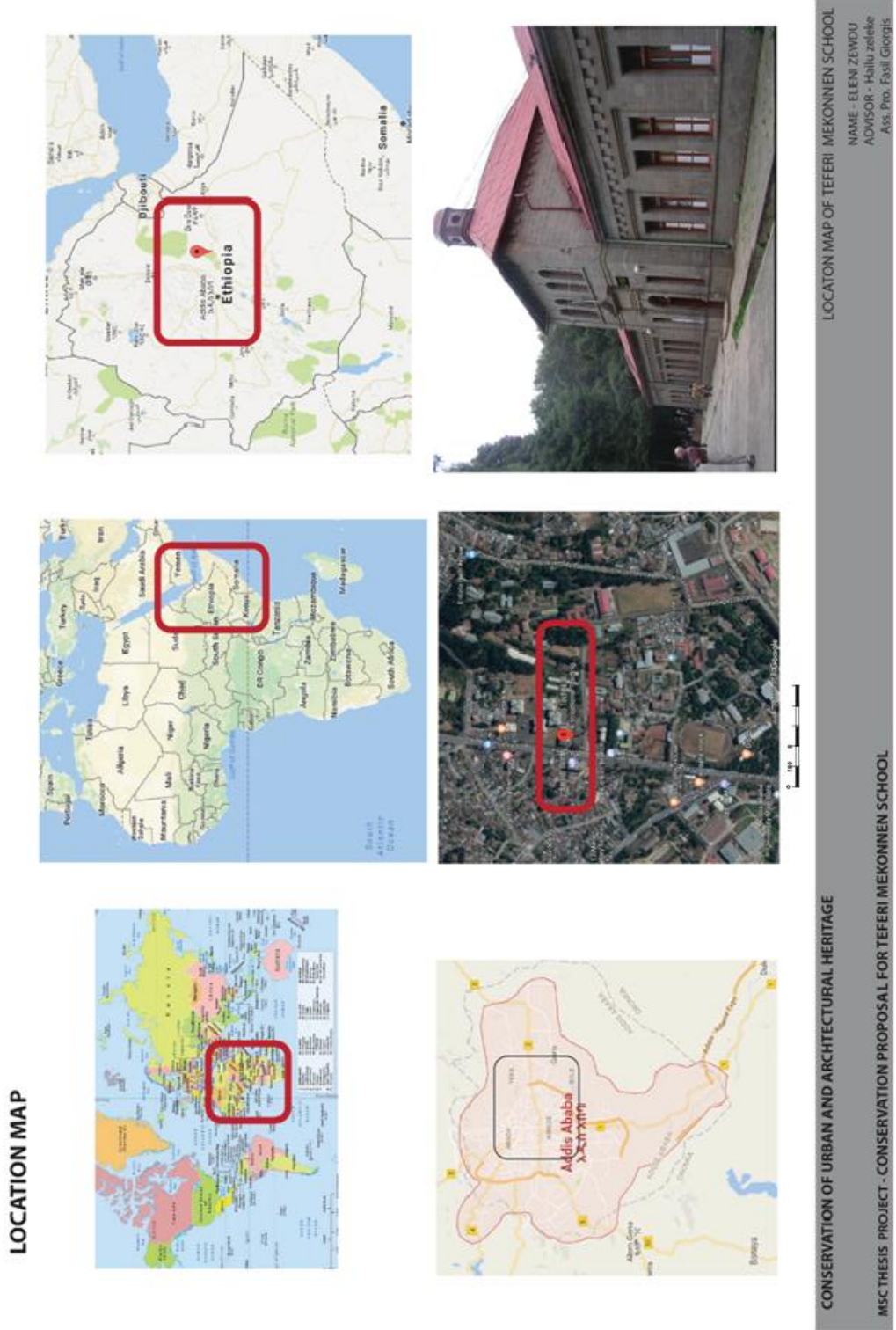
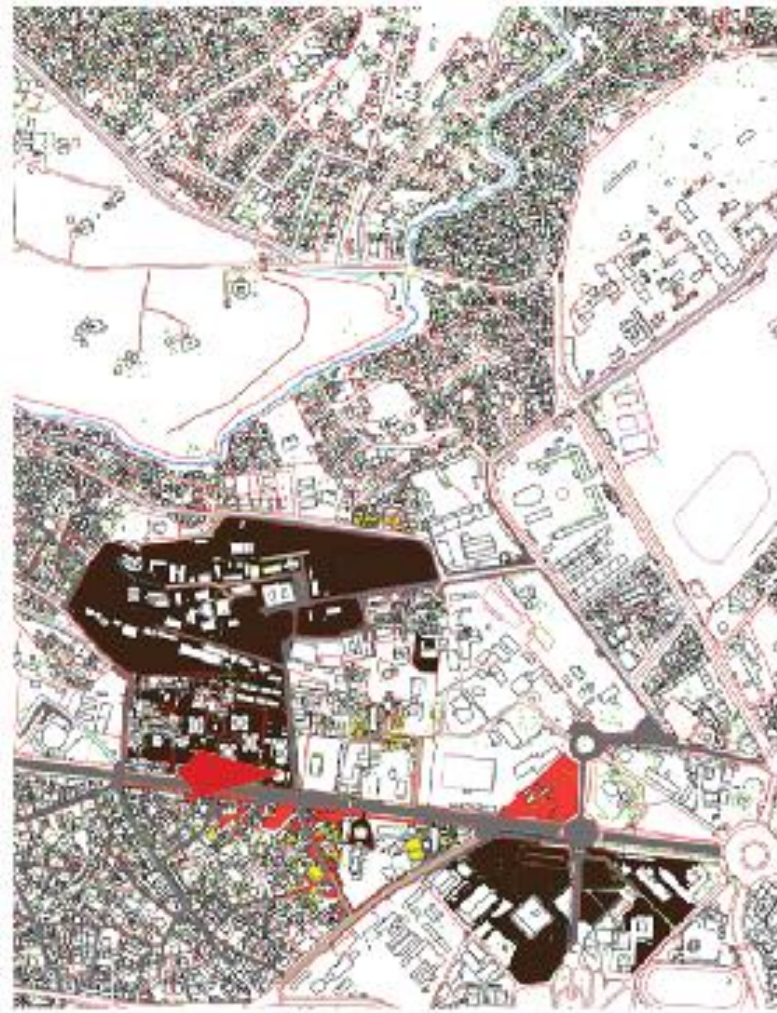


Figure 12 LOCATION MAP OF SCHOOL

ACTIVITY MAP



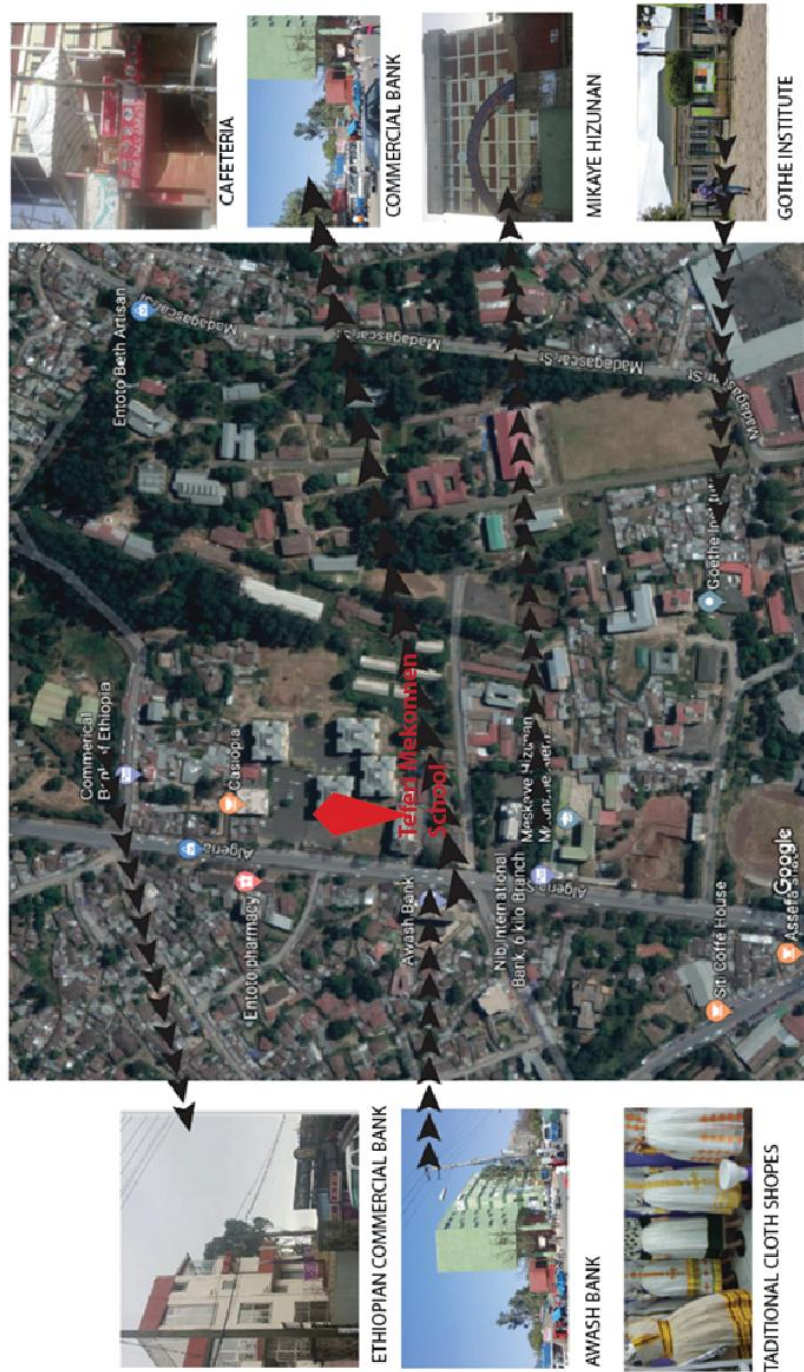
CONSERVATION OF URBAN AND ARCHITECTURAL HERITAGE

PSCHAB PROJECT - CONSERVATION PROPOSAL FOR TEFRI MEKONNEN SCHOOL

ACTIVITY MAP OF TEFRI MEKONNEN SCHOOL
 NAME: PSCHAB
 ACT/2020-21/2021
 20/10/2020

Figure 13 ACTIVITY MAP OF TEFRI MEKONNEN SCHOOL

NEIGHBOURHOOD MAP



NEIGHBOURHOODMAP OF TEFERI MEKONNEN SCHOOL
 NAME - ELEAN ZERDOU
 ADVISOR - Hablu zerhe
 Ass. Pro. Tsahi Gebregis

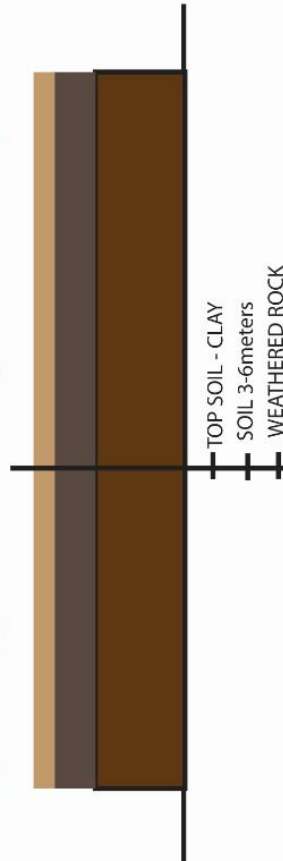
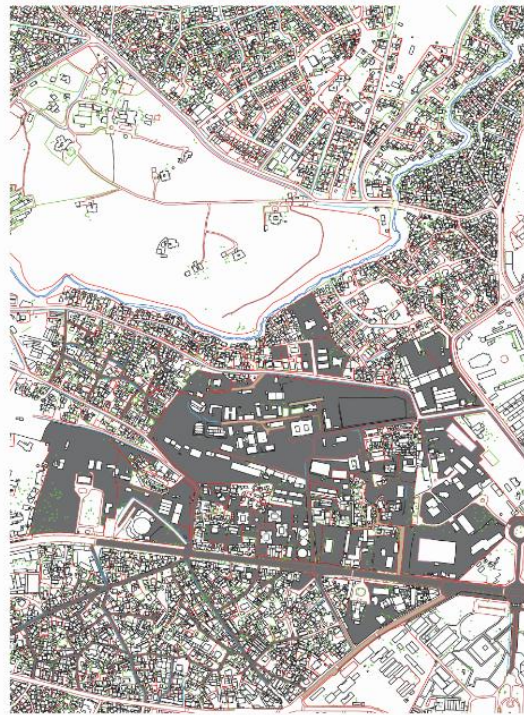
CONSERVATION OF URBAN AND ARCHITECTURAL HERITAGE
 MSC THESIS PROJECT - CONSERVATION PROPOSAL FOR TEFERI MEKONNEN SCHOOL

Neighborhood map

The site is surrounded by commercial activities and found in neighborhood. Originally the school was built away from any activities and the compound itself was a barrier between the surrounding and the school building but as the city expands some part of the compound was taken to be used for the church which is now located next to the school. (seid,1983)

Figure 14 NEIGHBORHOOD ANALYSIS MAP

TOPOGRAPHIC MAP



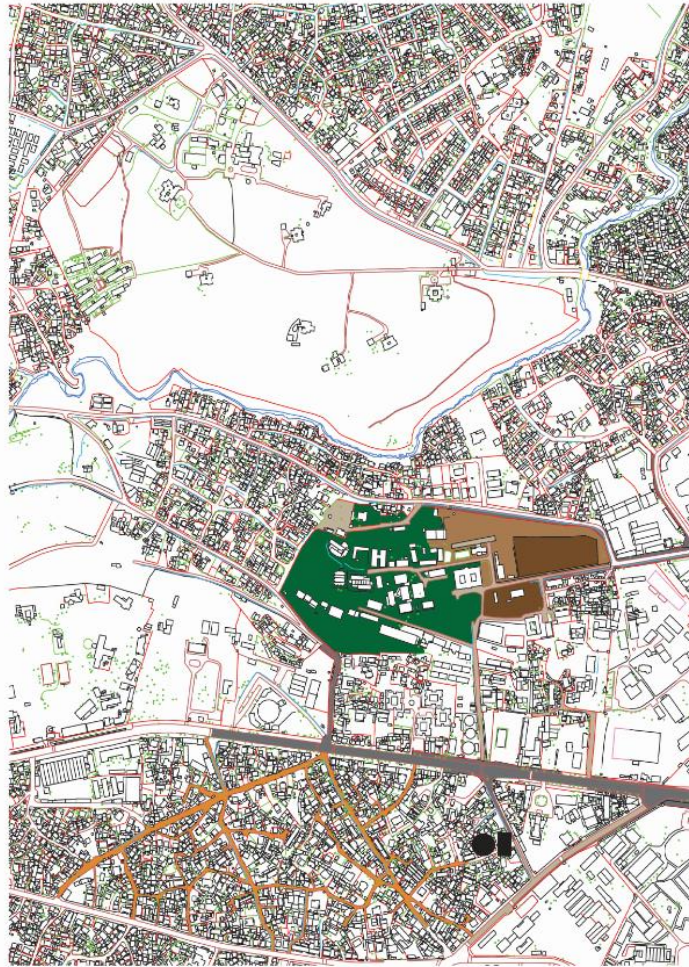
Topography

Map

Through observation and depending on soil test done for near the compound for different projects the type of soil has been identified to be clay and after 6m weather rock layered. Which is basically a good sign that the soil is content is good and damages related to settlement be easily fixed.

Figure 15 TOPOGRAPHIC MAP OF TEFRI MEKONNEN SCHOOL AREA

ACCESSABILITY MAP



PRIVATE TAXI

PUBLIC BUSES

PEDSTRINE WALK WAY

Figure 16 ACCESSABILITY MAP OF SCHOOL NEIGHBOURHOOD

ACCESABILITY MAP

The site is located along the main road which made it accessible with vehicles and pedestrians.

Accessibility is a very important matter in community shared institutes since it is meant to provide service for the society. Location value of the site mostly depends on how accessible a site is regarding its function and adds a great value to the site and indicates future development ideas of the site.

VEGETATION MAP

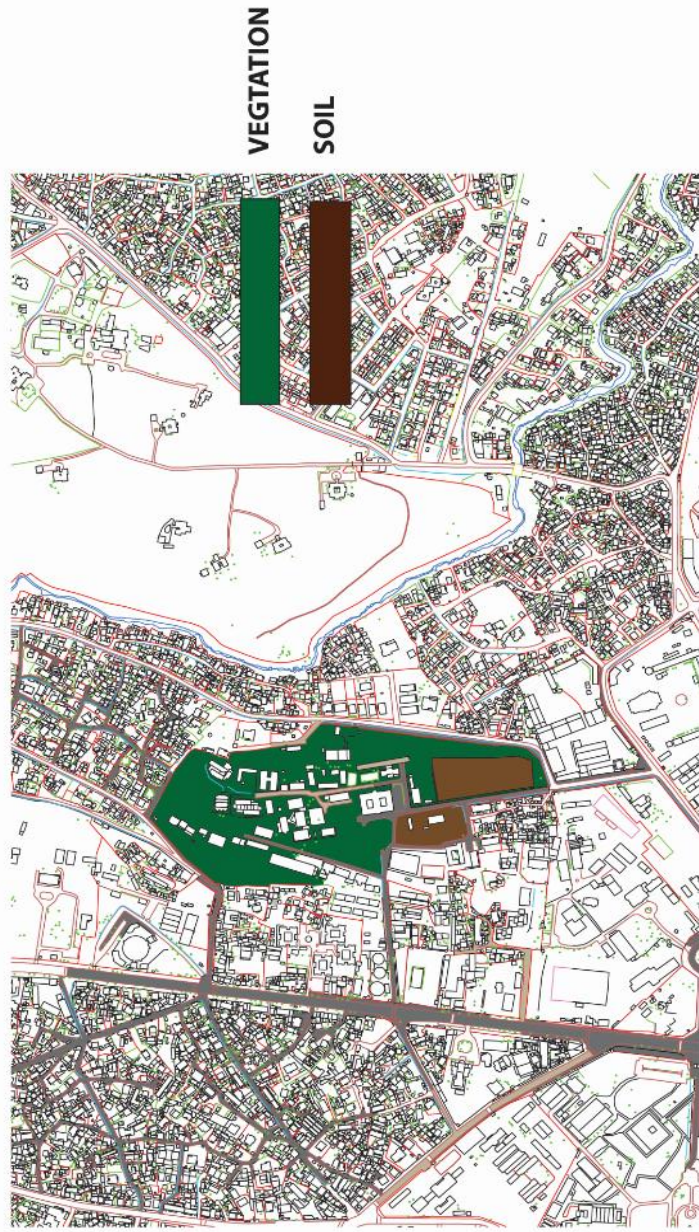
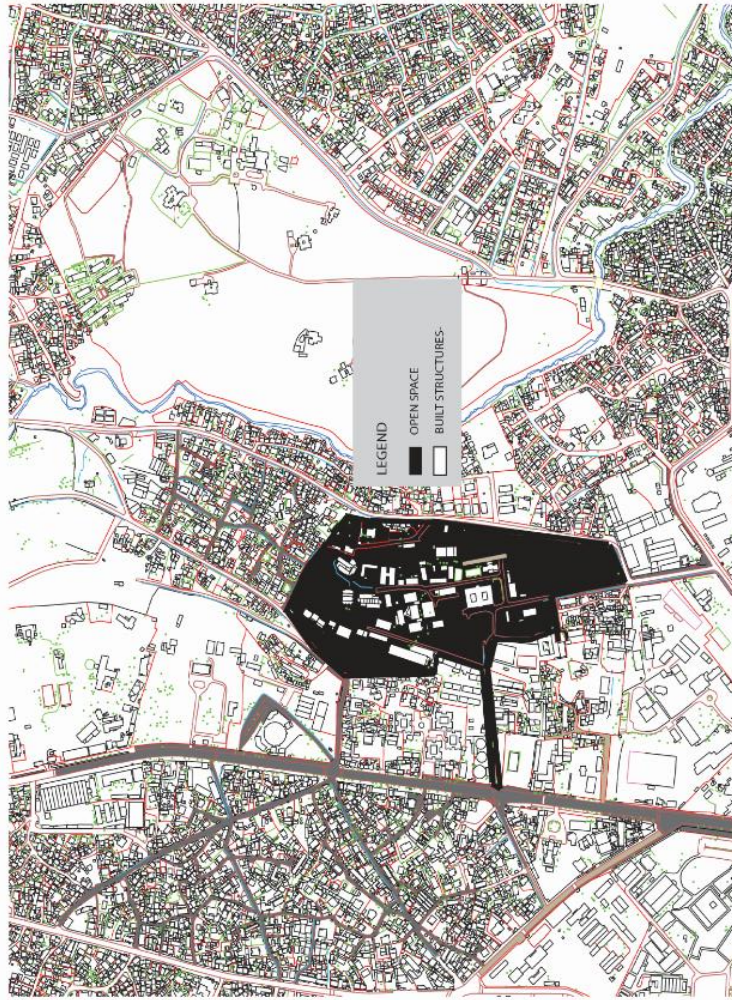


Figure 17 VEGITTATION MAP OF SCHOOL COMPOUND

FIGURE GROUND MAP



CONSERVATION OF URBAN AND ARCHITECTURAL HERITAGE

MSC THESIS PROJECT - CONSERVATION PROPOSAL FOR TEFERI MEKONNEN SCHOOL

FIGURE GROUND MAP OF TEFERI MEKONNEN SCHOOL

NAME - ELENI ZEWDU
ADVISOR - Hailu zeleke
Ass. Pro. Fasil Giorgis

Figure 18 FIGURE GROUND MAP OF SCHOOL

ROAD NETWORK

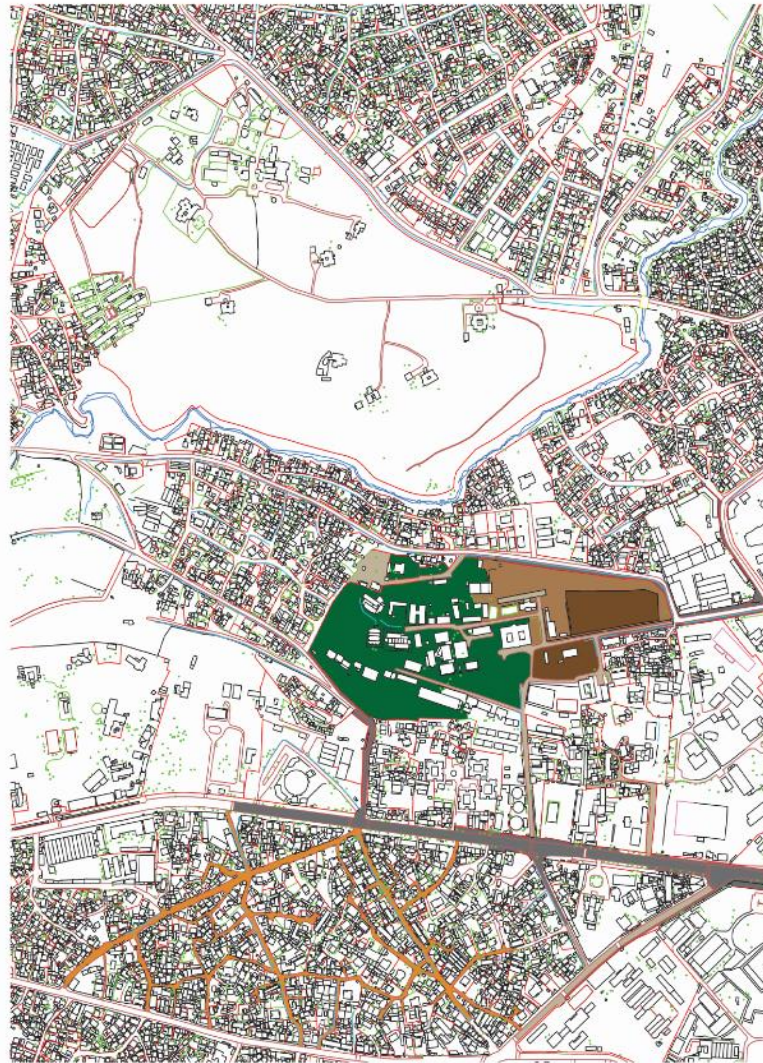


Figure 19 ROAD NETWORK MAP OF SCHOOL NEIGHBOURHOOD

NOISE ANALYSIS

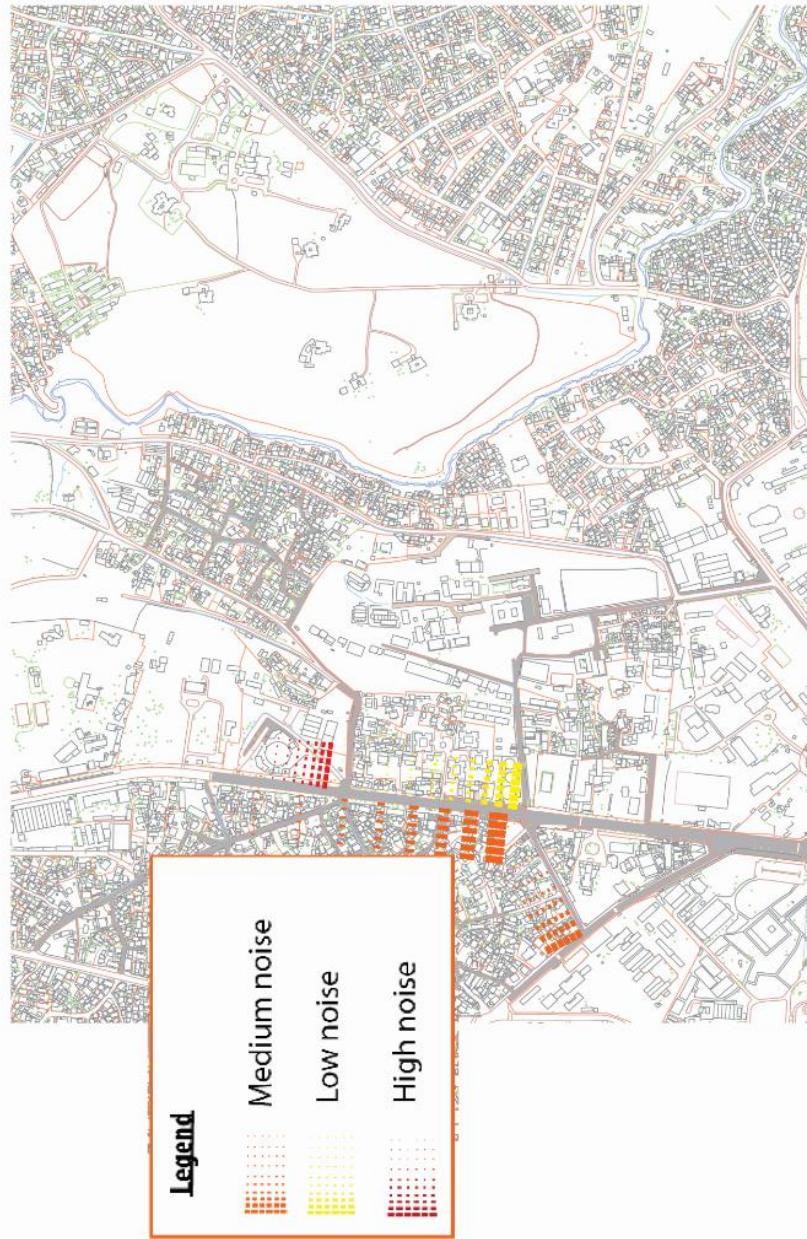


Figure 20 NOISE ANALYSIS OF SCHOOL NEIGHBOURHOOD

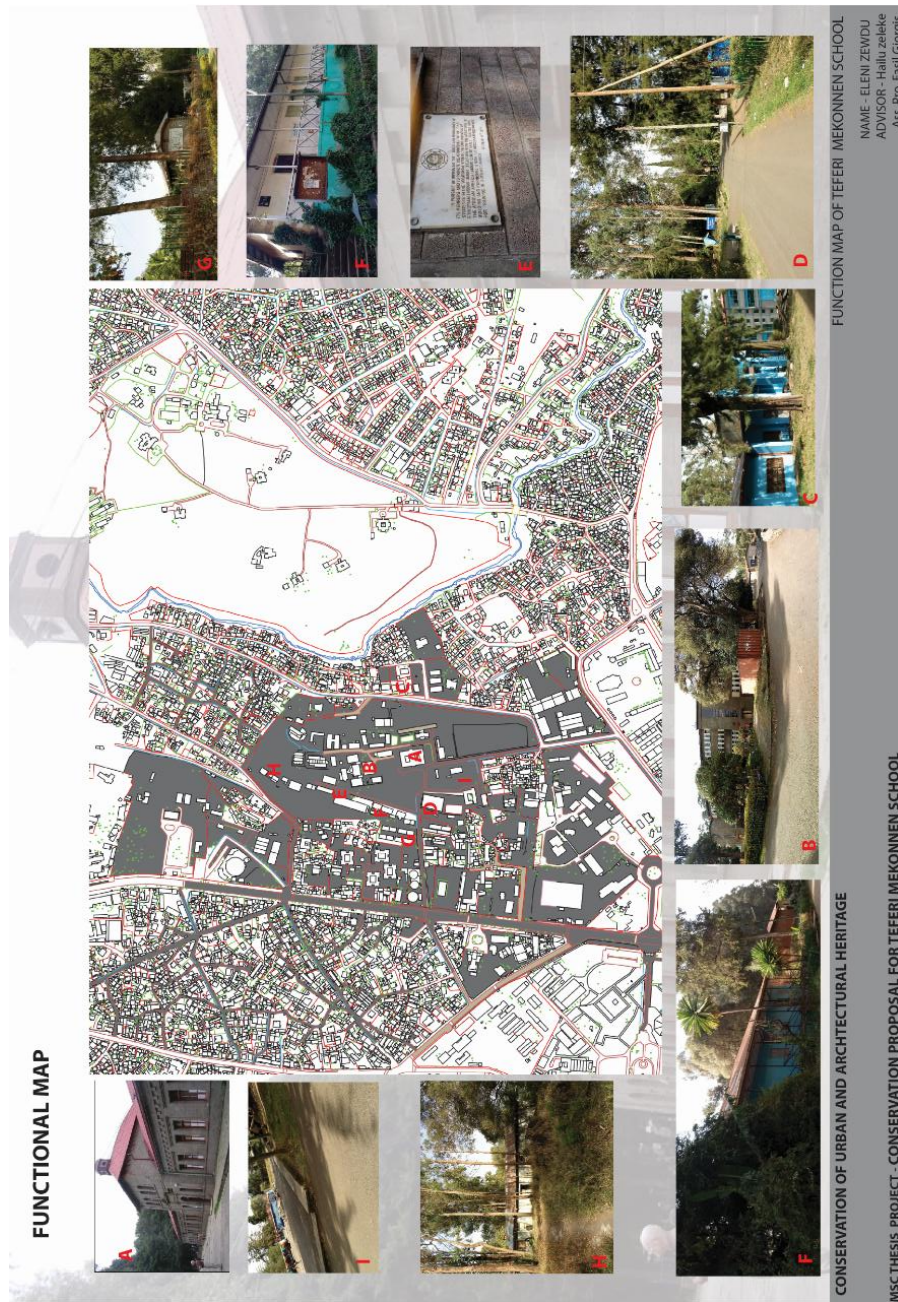


Figure 21 FUNCTIONAL MAP OF SCHOOL COMPUND

Summary of the maps

The above maps show different features of the compound and the surrounding which could be further used as an input for the research since this building and the compound is registered as a heritage in Ethiopia further investment and development with in the neighborhood should consider the integrity and authenticity of the heritage. Additional structures within and around the compound shouldn't be in paradox with the heritage value and it should determine the future LDP and land use of the area.

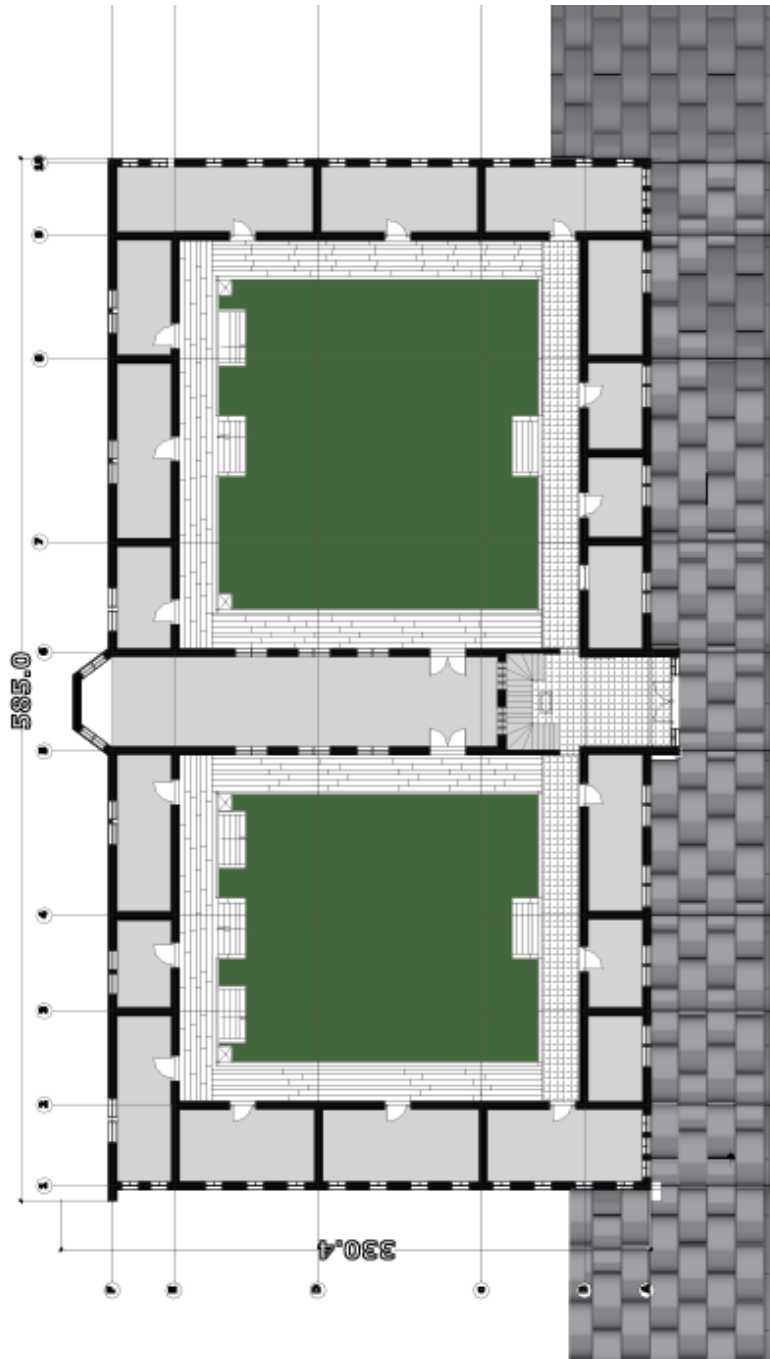


ARCHITECTURAL ANALYSIS

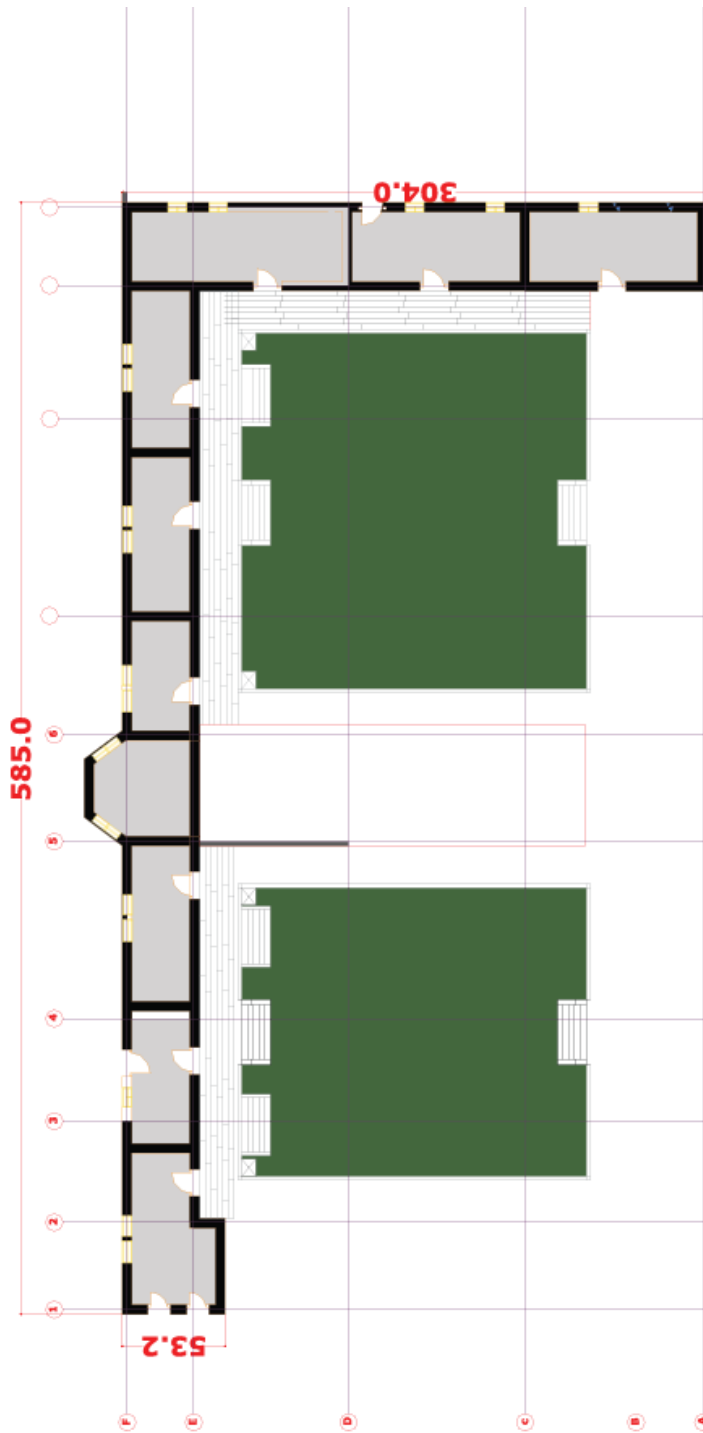
TEFERI MEKONNEN SCHOOL

Figure 22 PICTURES OF SCHOOL - EXISTING CONDITION 2018, SOURCE THE RESEARCHER

Figure 23 AS BUILT GROUND FLOOR PLAN OF TEFERI MEKONNE SCHOOL



Floor plan of the building shows that circulation was easy inside the building and a symmetric two courtyards are connected by datum block in the middle which is the entrance of the building. Having a semi basement and taking 1930.5 area of the compound. The semi basement and the first floor are accessed from the inside which made it suitable for students and staffs working in the building. The foyer right at the entrance gave the building a grace and is a conventional circulation area.



The rooms are placed one next to the other and the veranda inside the compound are guarded by wooden hand rails and a star high takes down to the basement. The doors are wide in size and are made of wood but after some time the doors are changed in to metal doors. The ceiling of the rooms are high which are good for ventilation and the floors of the veranda are made half with tile and the rest with wooden plank. The drainage water system is very systematic all the water goes to the manholes and there is no stagnant water inside the court yards.

When building a wall the ashlar blocks are laid in horizontal courses or layers the stones usually have smooth parallel faces and they fit together tightly with very little mortar a substance made of sand cement and water that fits the gap in between the blocks of stones. Because ashlar masonry stones fit tightly, resulting structures are strong and sturdy but it takes a long time to prepare the stones and build with them

Figure 24 AS BUILT SEMI BASMENT FLOOR PLAN OF TEFERI MEKONNE SCHOOL



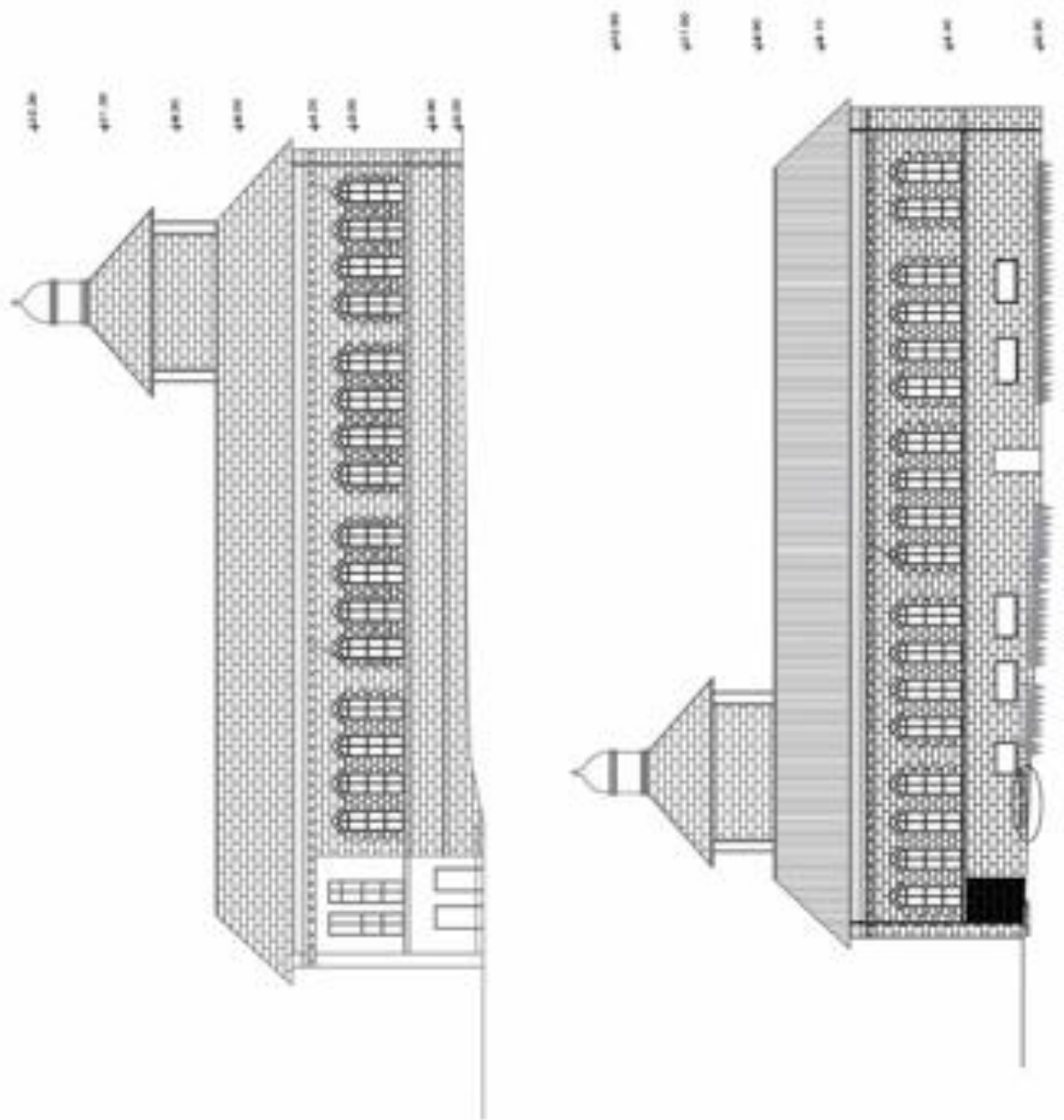


Figure 25 SIDE ELEVATIONS OF EXISTING TEFERRI MEKONNEN SCHOOL BUILDING

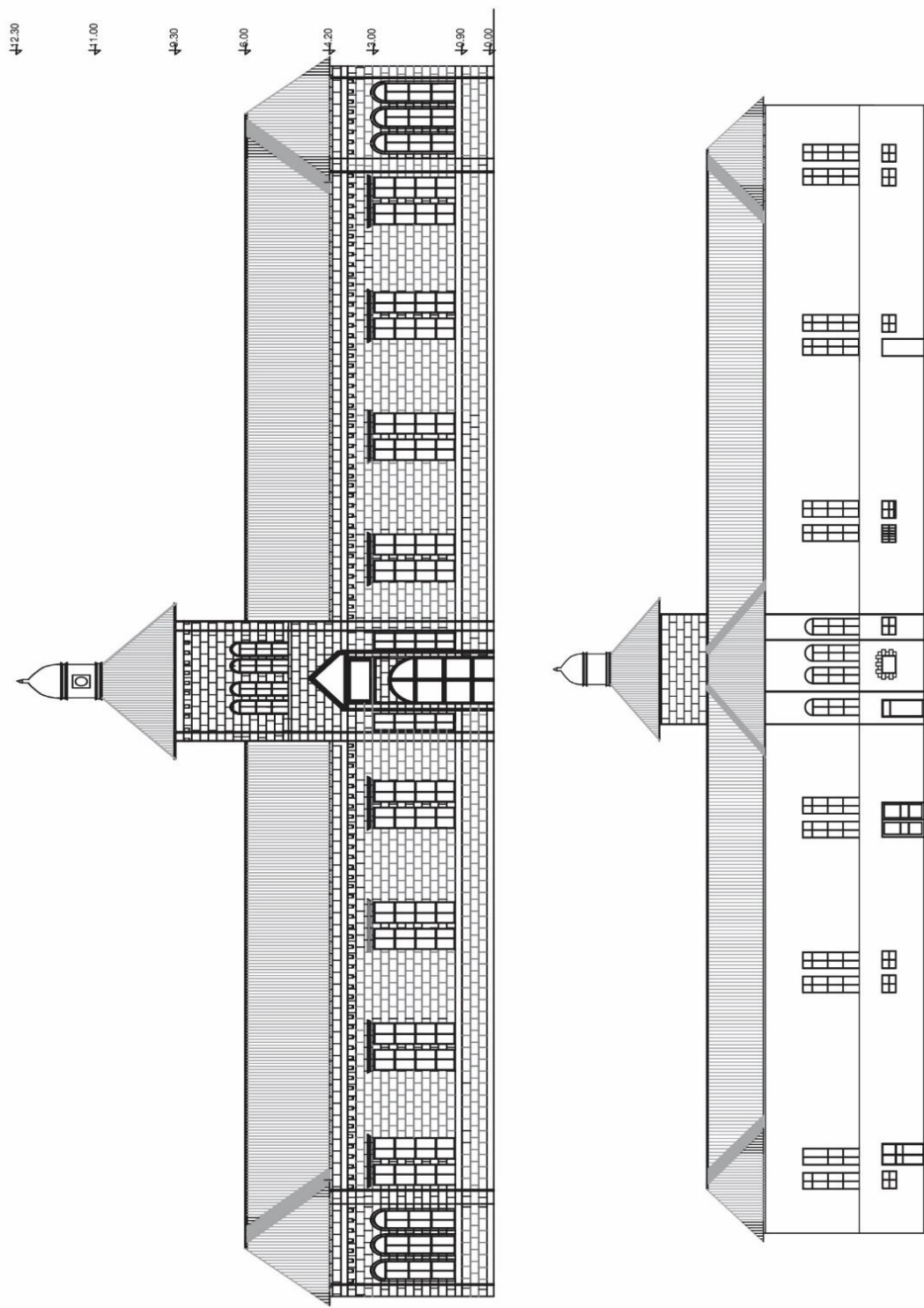


Figure 26 AS BUILT ELEVATIONS TEFERI MEKONNE SCHOOL

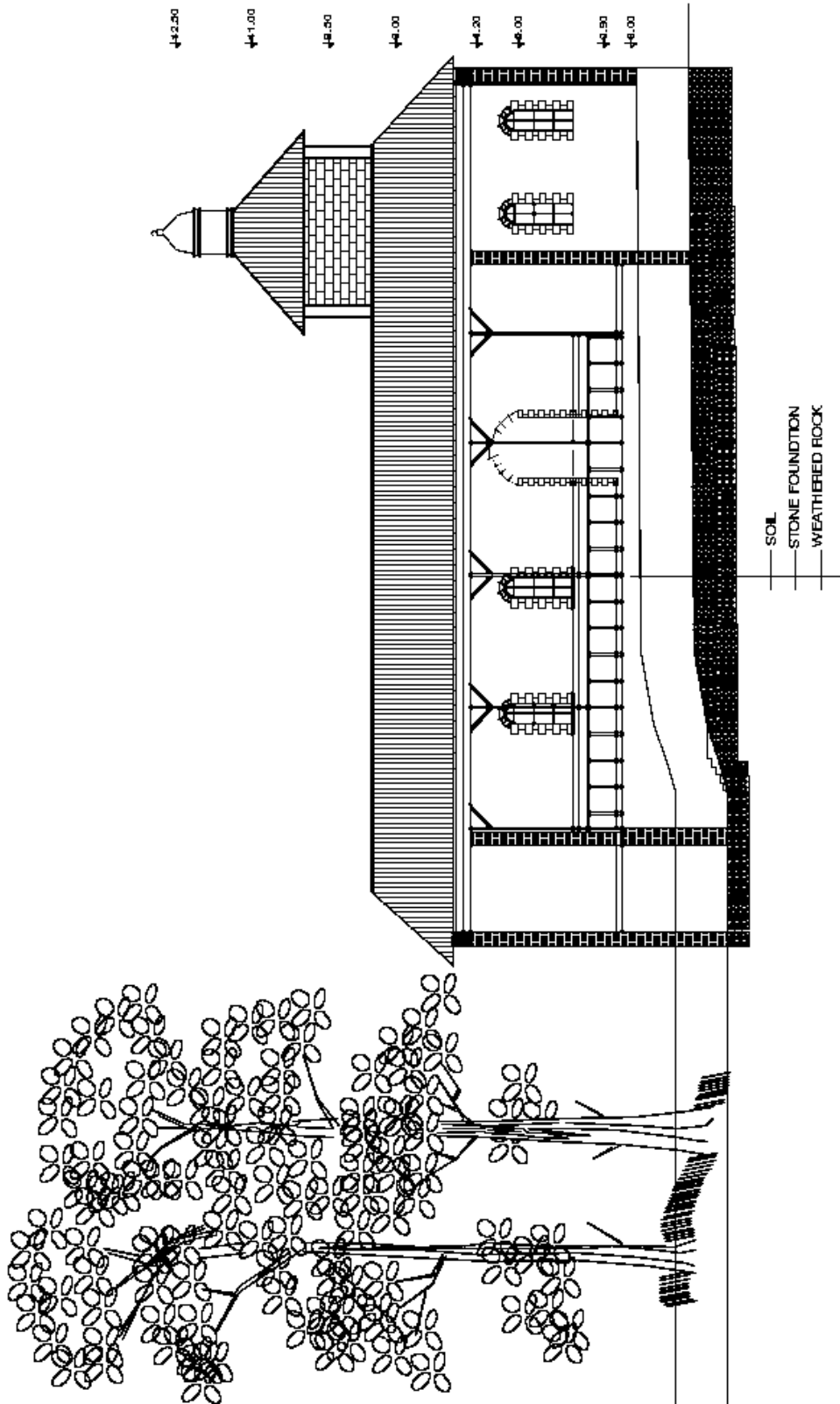
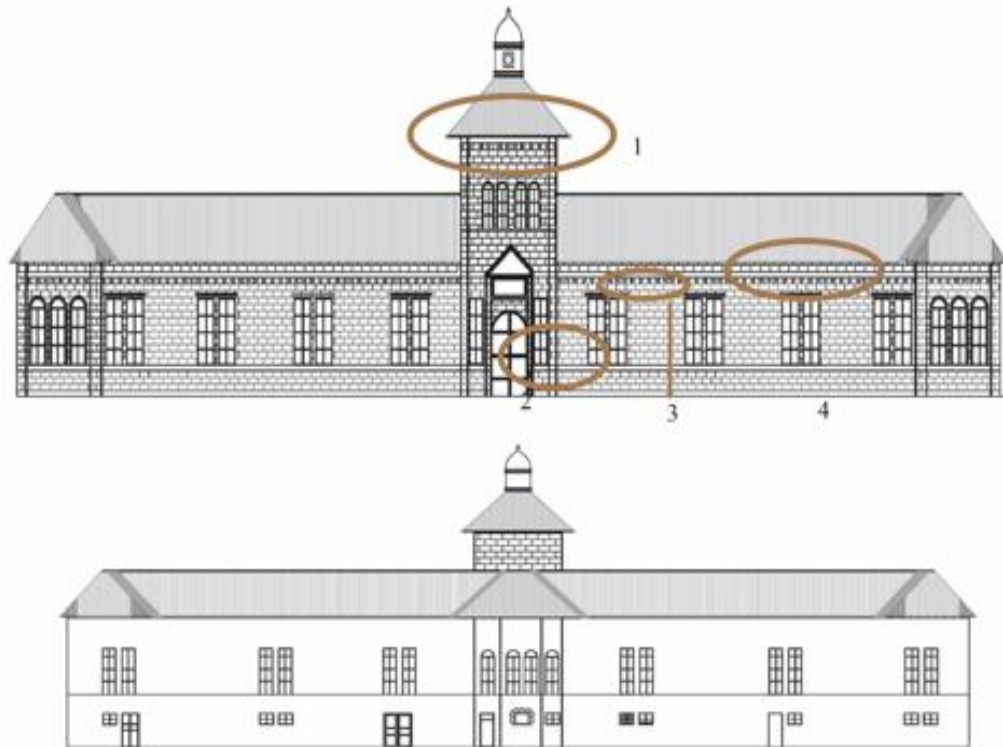


Figure 27 SECTION OF THE SCHOOL BUILDING



]



the height of the roof and a structure above the top of the first floor roof gave the building a taller appeal and the decorative cube stones above the windows have added a beauty to the building.

the decorative designs by stone for the windows are two types; one is arch and the other one is horizontal which are found on arch windows and rectangular windows respectively.

Figure 28 ARCHITECTURAL ANALYSIS 1



The windows are recessed and have built in arches on top of the window and the arch windows have three transoms which are made of wooden frames and glasses.

The quoins are made with similar type of stone with the wall and the stones are used to build the window sills too.



Figure 29 ARCHITECTURAL ANALYSIS 1



Use of ornaments on the door which are similar to European style buildings. The use of quoin at the corners and windows and doors show that the building is made with European style.

The construction method used for the walls is ashlar masonry. Which is a very expensive due to cost of material, cost of dressing stone and the wall thickness is 50 Cm which means it is double masonry since it is stone. Not only that the decorative chamfers of the wall also gives the building to have a nice appearance and the height of the structure made it appear high than-it already is and gave it a grace.

The architectural style used for this building specifically is known as neo-classical -European architecture.

5.2 STRUCTURAL DAMAGE ANALYSIS

This structural damage analysis are based on observation of the site by the researcher and conduct of well-experienced professionals. From experience and case studies the severity of a damage can be assumed depending on the physical damage shown specifically on the

structure. Damages on a structure depicts what could be the possible cause for the damage and in reference to the history of the building and its past restoration the cause of the damages can be identified.

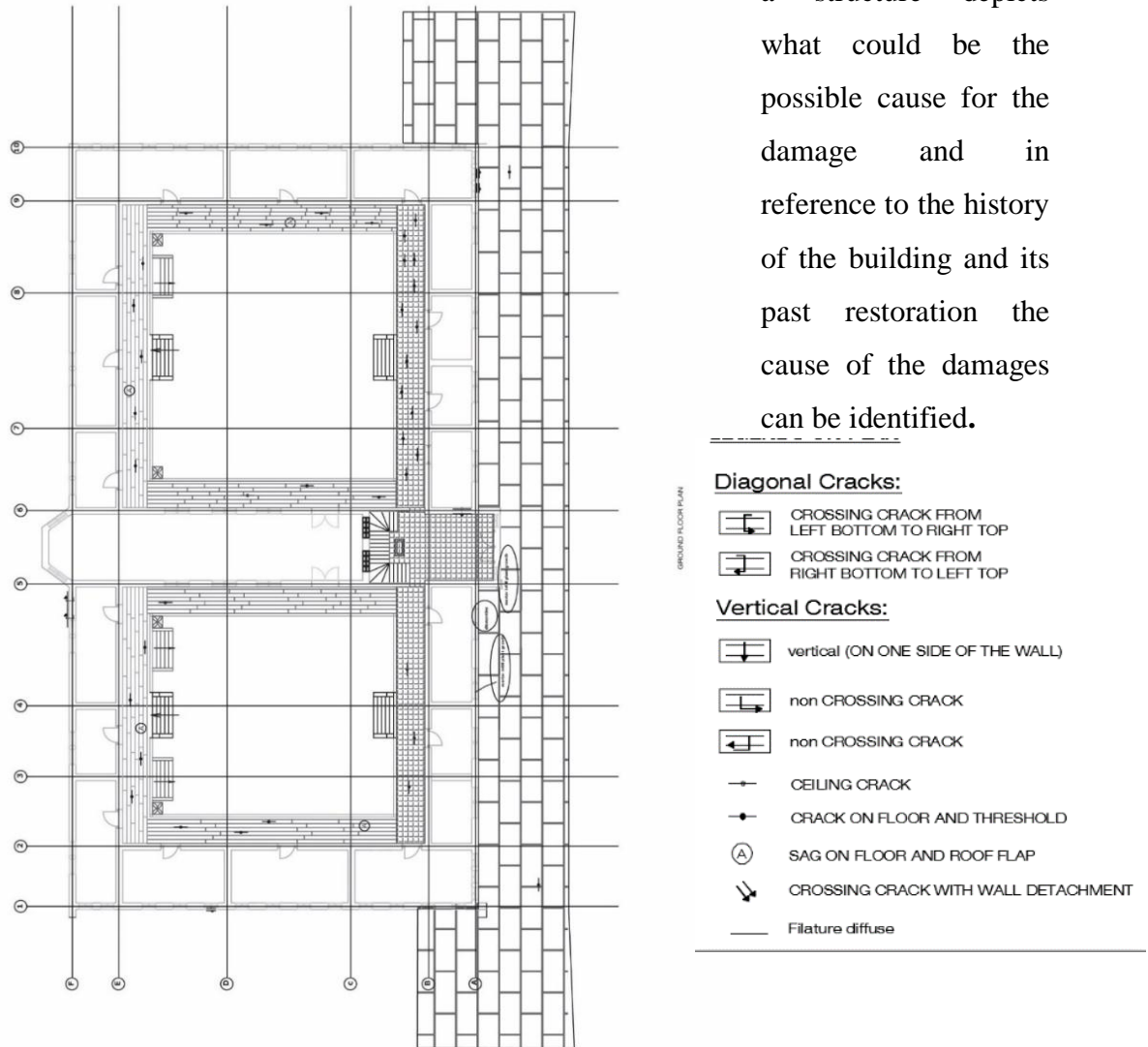
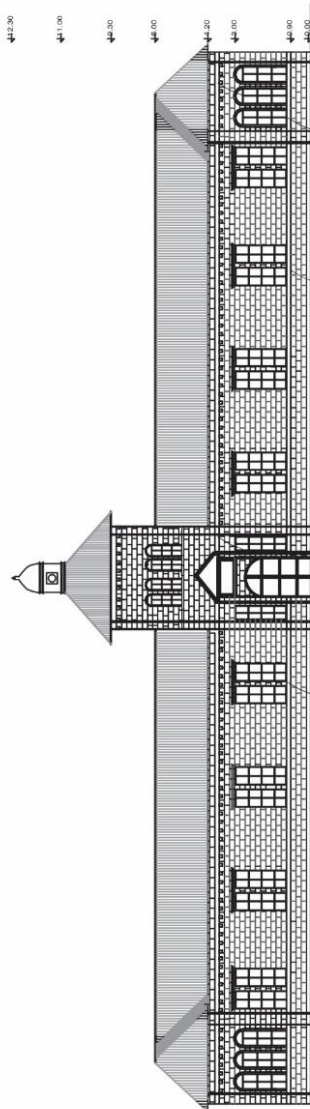


Figure 31 CRACK ANALYSIS OF GROUND FLOOR PLAN OF TEFERI MEKONNEN SCHOOL



LEGENDS ON ELEVATIONS AND SECTIONS

- LESIONE PASSANTE (con distacco muratura)
- LESIONE PASSANTE
- SPINNING OR LIGHT CRACK, LEGGERA, (su un solo lato del muro)

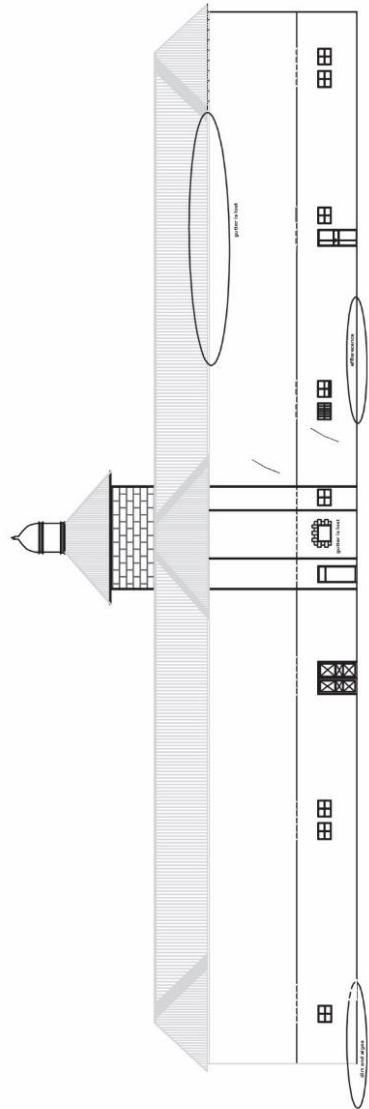


Figure 32DAMGE ANALYSIS ON ELEVATION

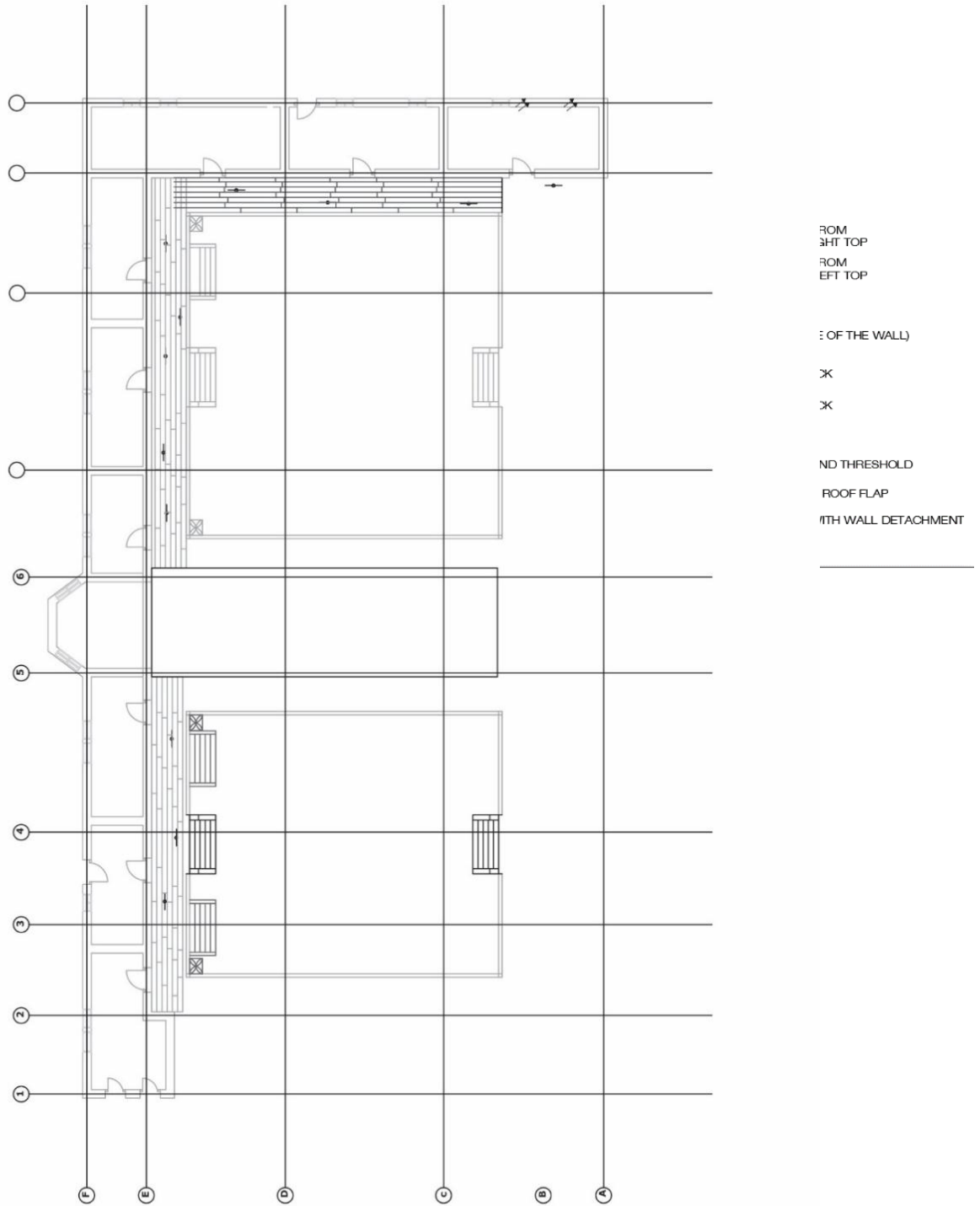


Figure 33 DAMAGE ANALYSIS ON SEMI BASMENT FLOOR



the walls on the rear of the building are plastered and painted but the original walls were stones which are hidden underneath due to wrong restoration practice. The stones which are used to build the building are ignimbrite stones which are non-porous and the plaster and paint on the wall made the walls of the painted part to have no point where the walls will let out vapour.

Location – front entrance left

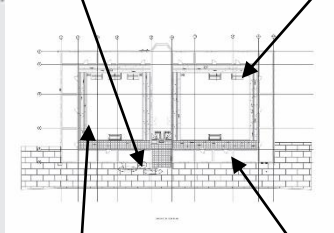


Location – right courtyard stair



biological decay - broken and disintegrated tiles

uncleaned stair



biological decay - broken and disintegrated down pipe

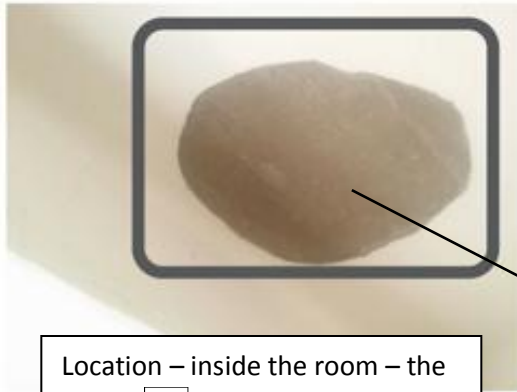
crack noticed on the stone due to settlement



Location – left side at the corner of the corner side 1

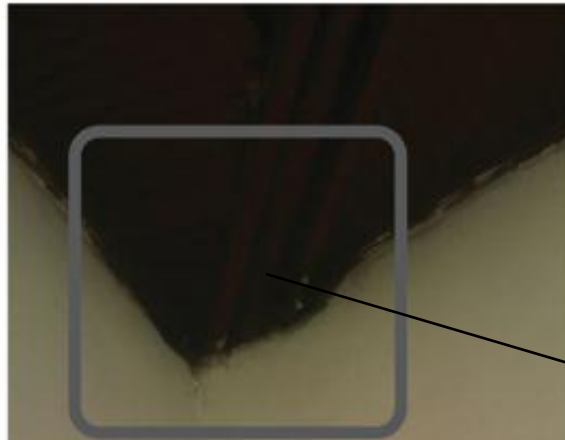
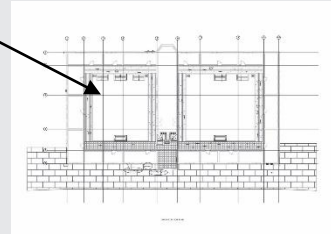
Location – front right side

Figure 35 DAMAGE ANALYSIS 5



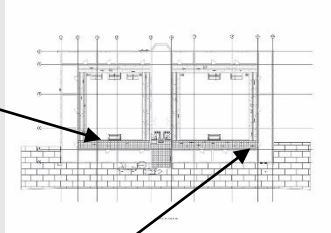
Location – inside the room – the ceiling 1

flacking of the plaster and the paint - due to ack of adhesive and vibrationa nd impropr construction.



Location – connection between the veranda and the room wall 1

improper joint between the roof and the wall and the plaster of the wall



Location – inside the right corner room on the right side of the courtyard

unleached ceiling and saging due to missed nails .

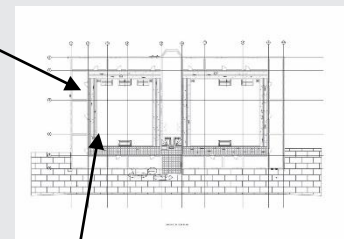
Figure 36 DAMAGE ANANLYSIS 6



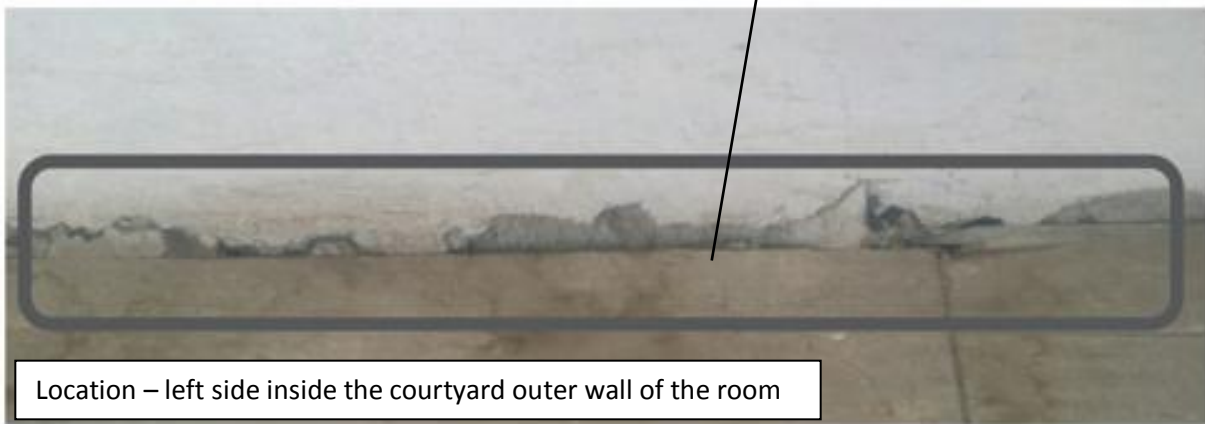
Location – left side - outside - stair

dirt - since the stair is not used and was not clead for a long time it has collected organic dust and plants are growing in between the mortars.

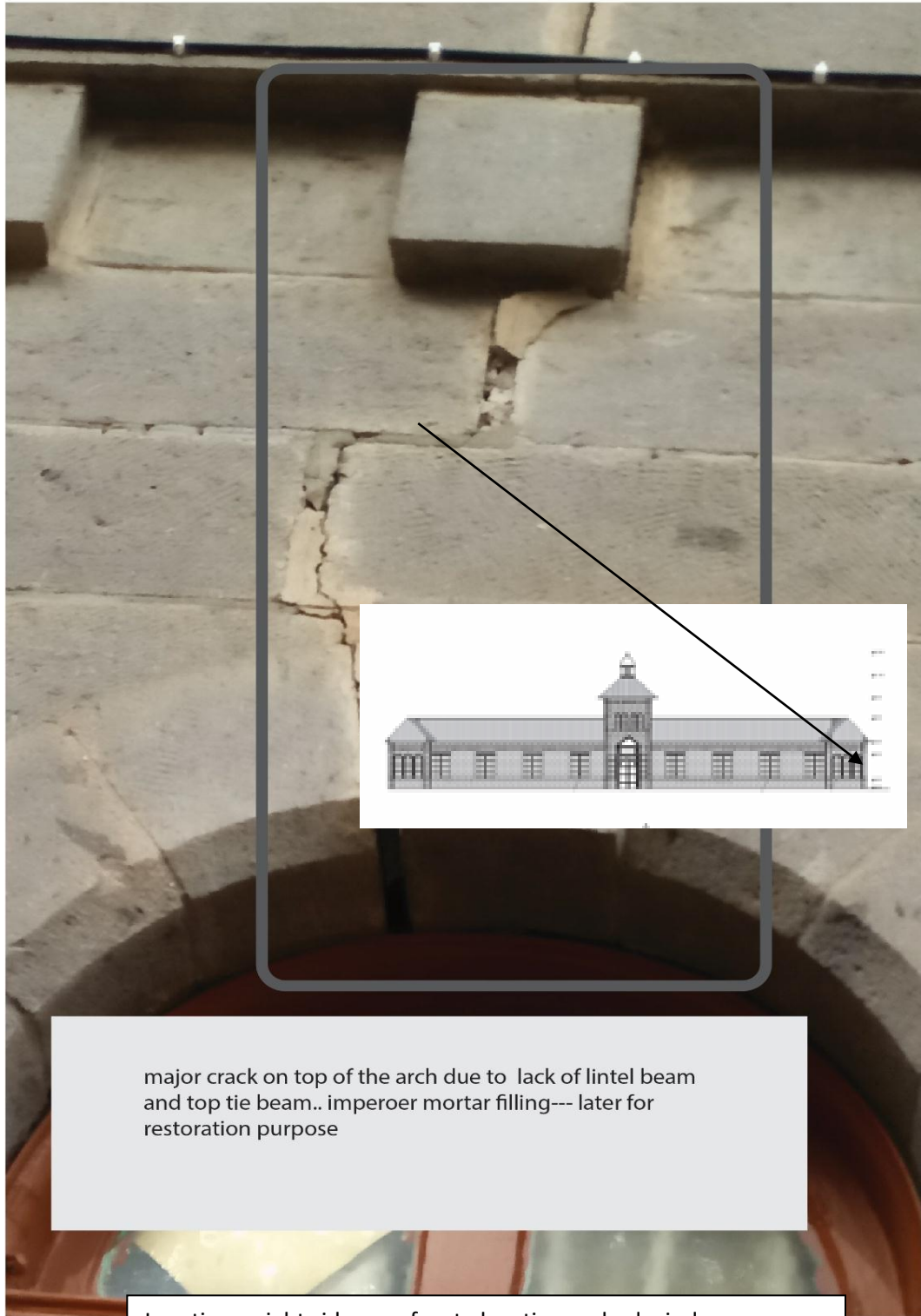
the water supply system which must have been installed later are on the way between the walls that guard the building verenda and the stairs along side the building.



lack of connection between the plaster and the wooden floor which is a result of improper restoration in the past trying to cove the stone with plaster on top of plater and since it is not well attached with the wall and the floor its a matter of time for two materials to stay part if there is no strong connection.



Location – left side inside the courtyard outer wall of the room



major crack on top of the arch due to lack of lintel beam and top tie beam.. impenetrable mortar filling--- later for restoration purpose

Location – right side – on front elevation arched window.



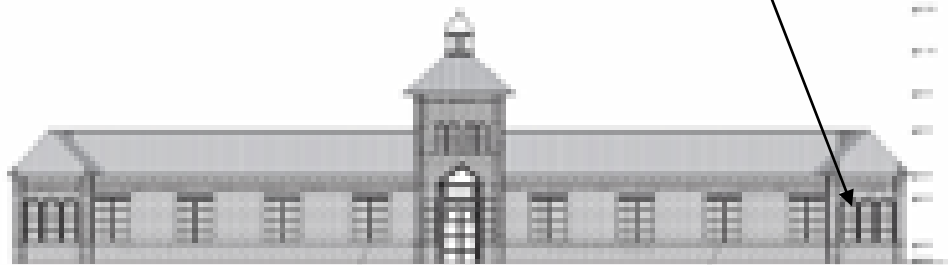
Location – right side –front elevation – above arched window

crack on top of the arch quoins made of stone and this is due to lack of tie beam and lintel beam which in turn put the stress on the mortar and on the arch. the stones are getting apart due to the stress.

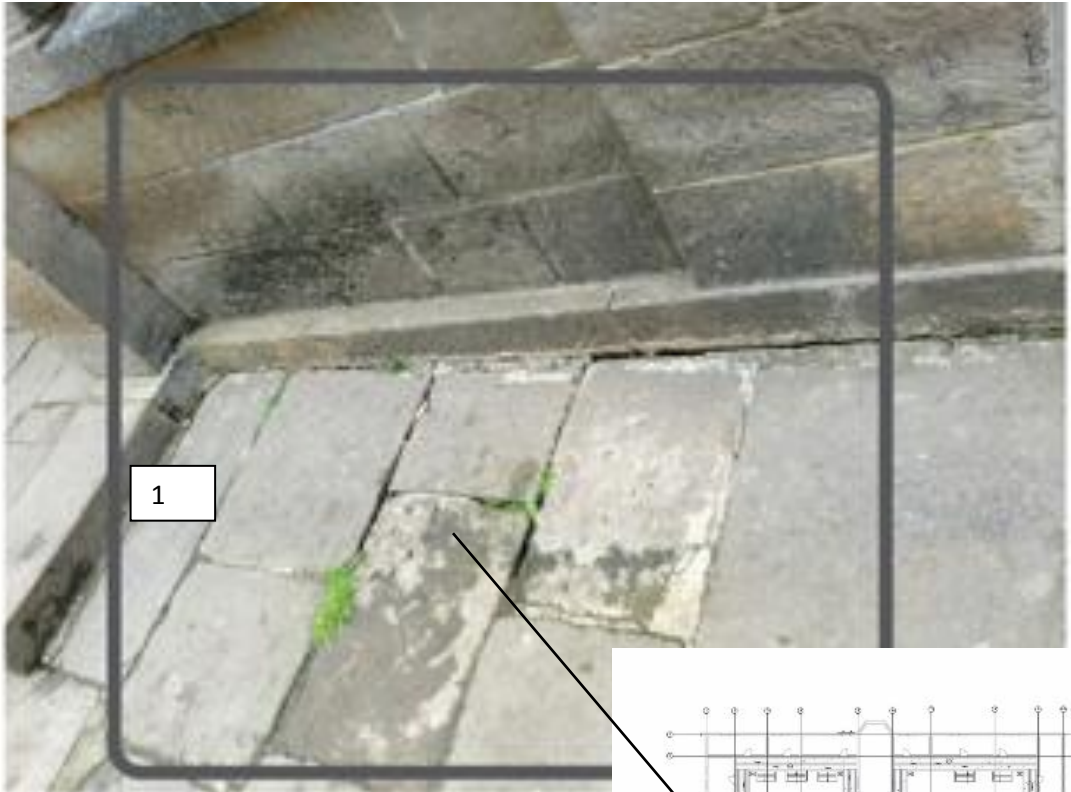
electrical wire system on the walls an improper installation of the wires outside on the exterior walls.



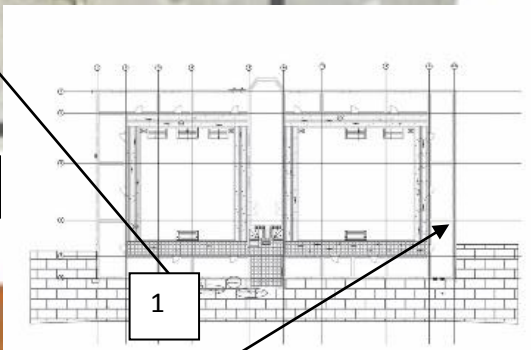
Location – right side –front elevation – above arched window



major crack on top of the arch due to lack of lintel beam and top tie beam.



Location – right side – walk way

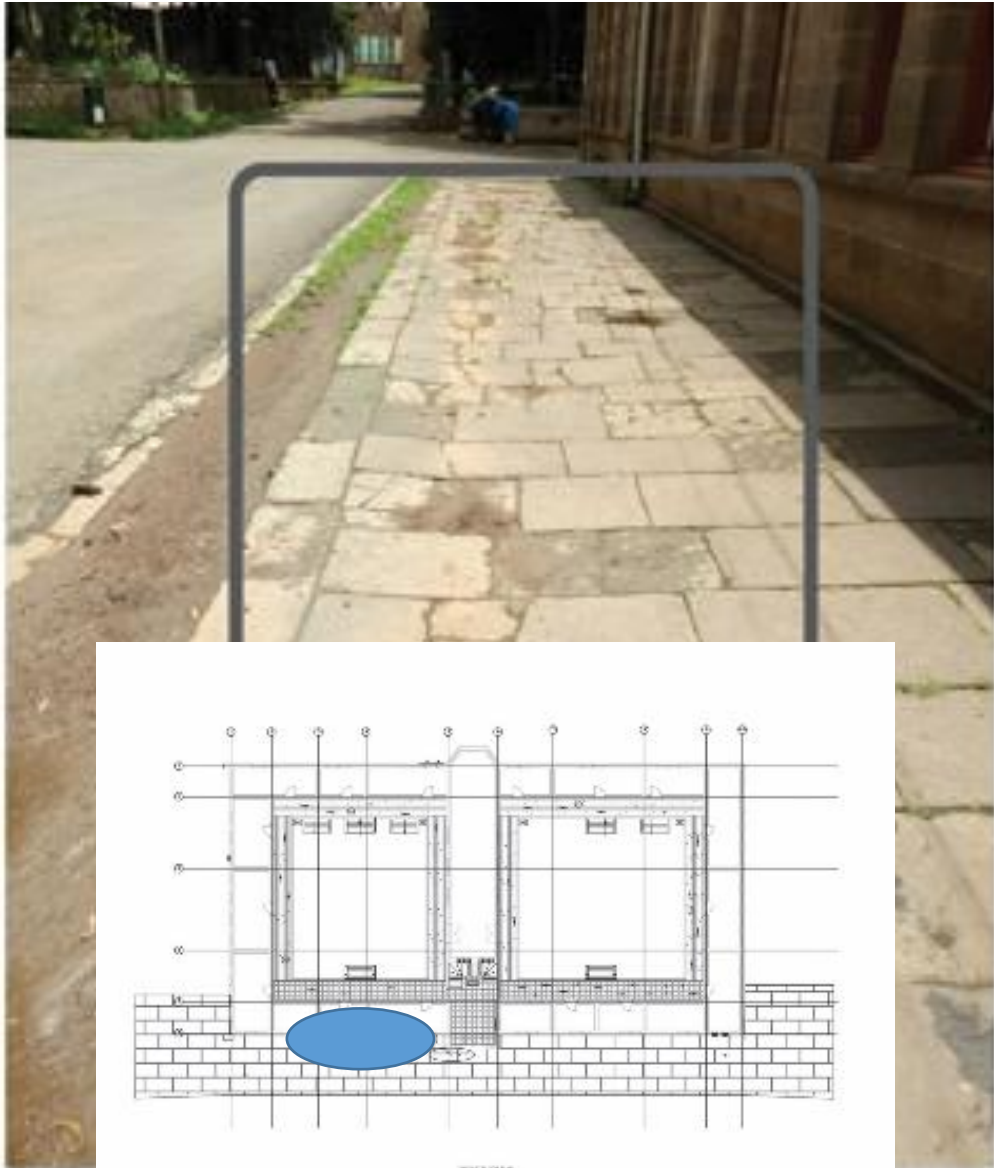


Location – right side – semi basement door

water an biological decay
destroying the wall and
changing the color .

discoloration of the wall
shows the wall was wex-
posed to water for a
longer time

the fractured slab is due to
usage and lack of anled
iron on the corner to
prevent the corner slab.



Location –front entrance - right side – walk

due to the material underneath the tiles the tiles are broken since there is no strong stable support.



Location – right side corner



Location – front elevation right above the rectangular window

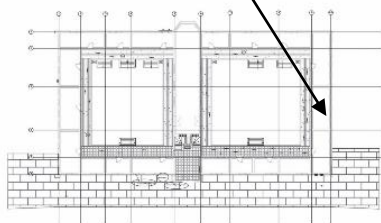


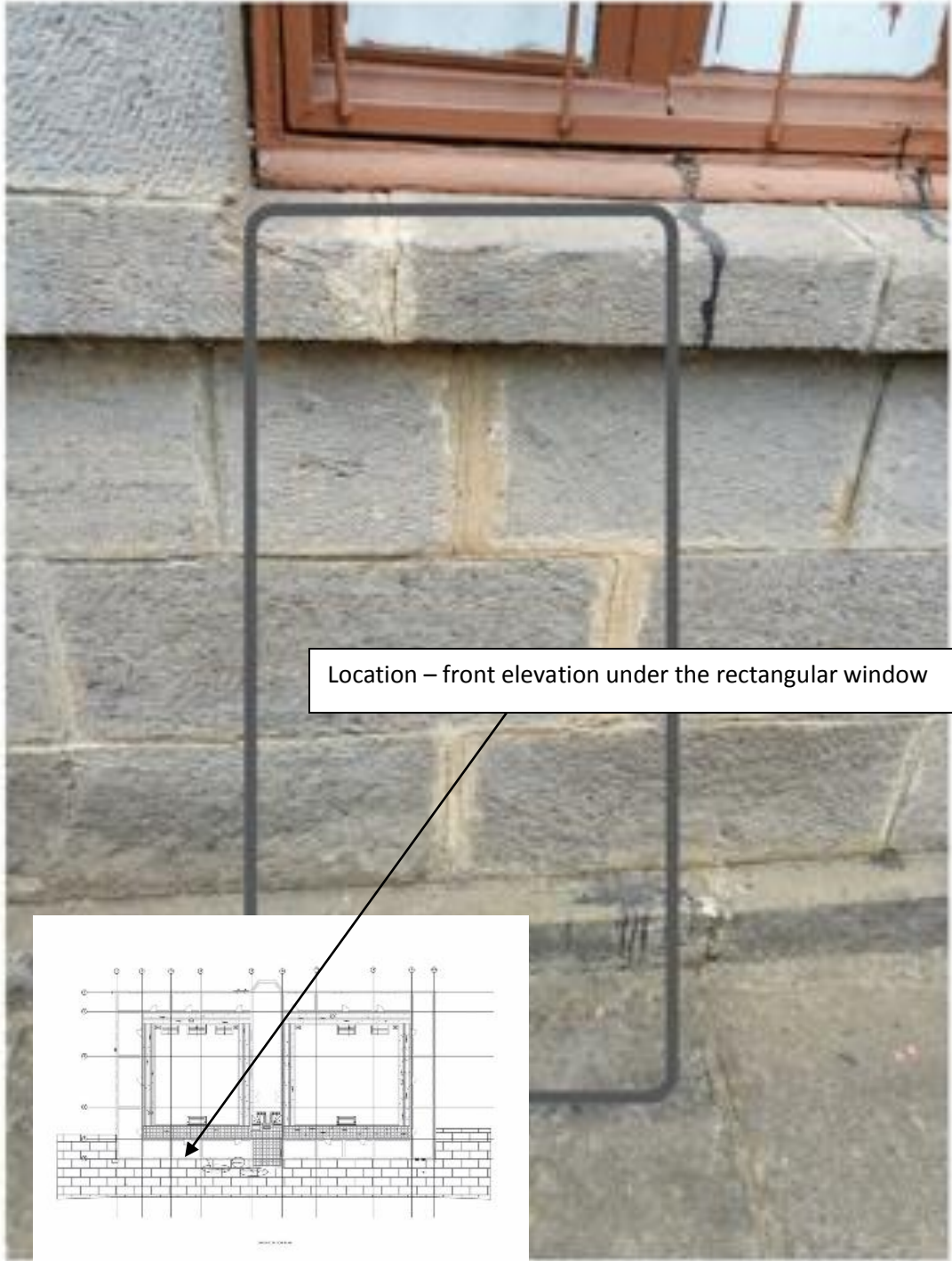
Location – inside the semi basement rooms

the first picture shows the imbalanced masonry structure which recalls for foundation settlement . due to ground water or unbalanced effect underneath in the foundation the masonry structure are disintegrating and it can cause a structural failure to the building.

pic 2
this is a crack which is noticed on two windows of the same type which shows the bearing instability of the lintel beams and lack of top tie beam

pic 3
unproper electrical wiring which is later added .





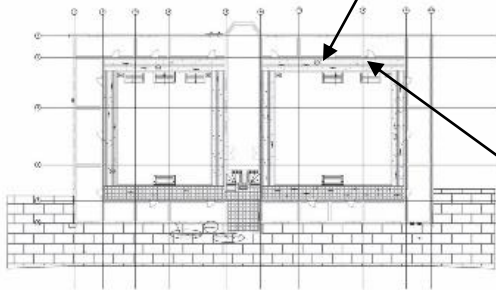
Location - front elevation under the rectangular window

improper fill of mortar and crack due to settlement along the dtone foundation underneath the ground



biological decay and vapor destroying the wall. the plaster on the wall hindering the wall to breath.

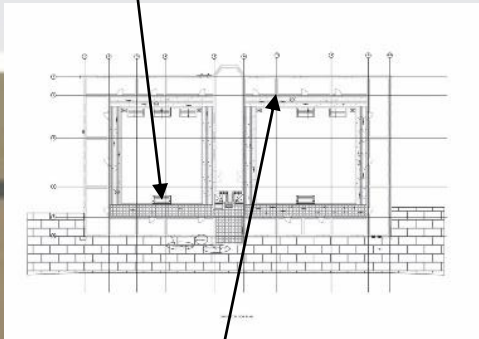
Location – back side on the walls





Location – stair inside the court yard

cracks on the floor due to vibration and difference in material and weak bond in between. the walls are originally constructed with stone but the plaster on top of the walls is flaking mainly due to vapor and the walls are not given a point of let out .



Location – wall inside the room



windows with wooden frames are destroyed and the color of the woods are of a different paint since they have started to flake and there are no layers.

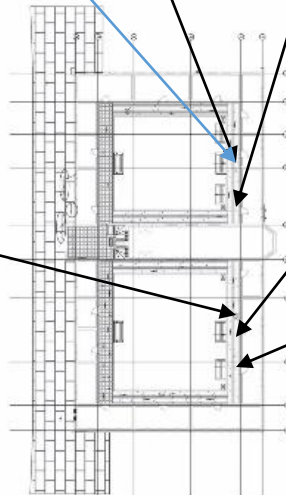
lack of glass on the windows and broken windows.

window sill uncleaned for a long time and exposed to rain and sun radiation.



Location – all are windows at the back side

Improper restoration of the door. unplanned restoration of the door and additional elements on the door which are not similar to the frame work and biological decay destroying the plaster on the wall and the floor.



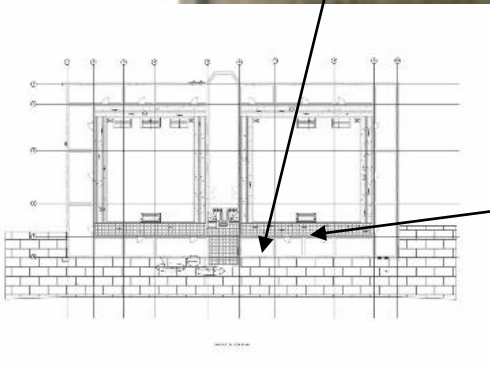
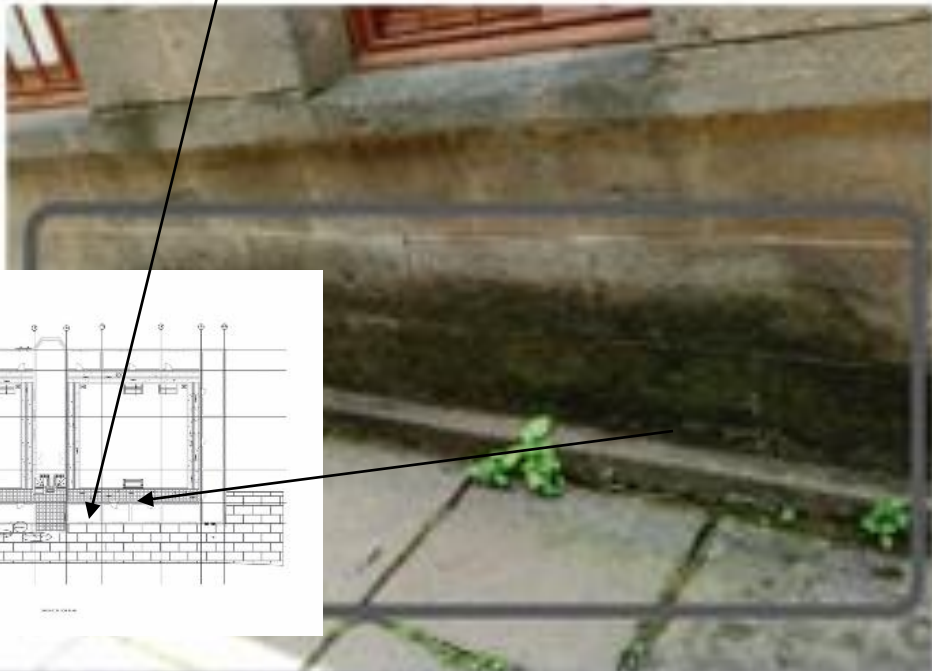


the building is having diagonal cracks on one side of the wall but two cracks which indicates for settlement of the foundation. the plaster has covered the stones but if investigation is done under the plaster most probably the stones have crack too.

Location – front side connection between the wall and walk way



biological decay which is a result of humidity due to under ground water or water from the rain there is no metal grating for the water to pass during rain which affects the connection between the exterior wall and the ground. the material cover for the ground walk way is a means of problem since it is uncomfortable for some plants to grow and the plants keep moisture for their sake which in turn damages the walls





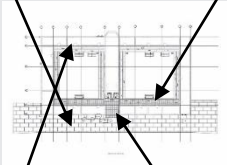
Location – front walkway crack



Location – front side on the wall

crack on the stone slates of the verendah

biological decay , broken stones and exposure to water from the



broken plaster on the walls

biological decay , broken stones and exposure to water from the



Location – back side door



Location – front side at the main entrance of the bu



major crack on top of the window and improper mortar fill

Location – front side - on the wall

broken tiles

broken window frames



Location – inside the lobby as entered from the front entrance of the building



Location – window on the front side

CHAPTER 6. TECHNICAL CONSERVATION RESTORATION PLANS

6.1 STRUCTURAL

6.1.1 FOUNDATION

Procedure: foundation consolidation

- Clear the traffic in the building, relocate the residents
- Excavate the soil around the foundation carefully
- Provide 40cm working space at the bottom which widens to 100cm at the top
- Reinforce the foundation by providing concrete jacket
- Tie the concrete jacket at every meter distance
- Refill the excavated soil

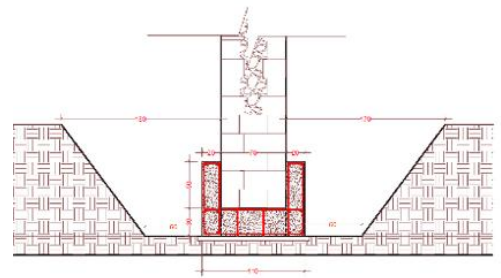


Figure 37 FOUNDATION RESTORATION

- The cause of these cracks is buildings movement due to lateral load.
- Aging and weak bonding around the corner of doors and windows also have contribution for the crack.

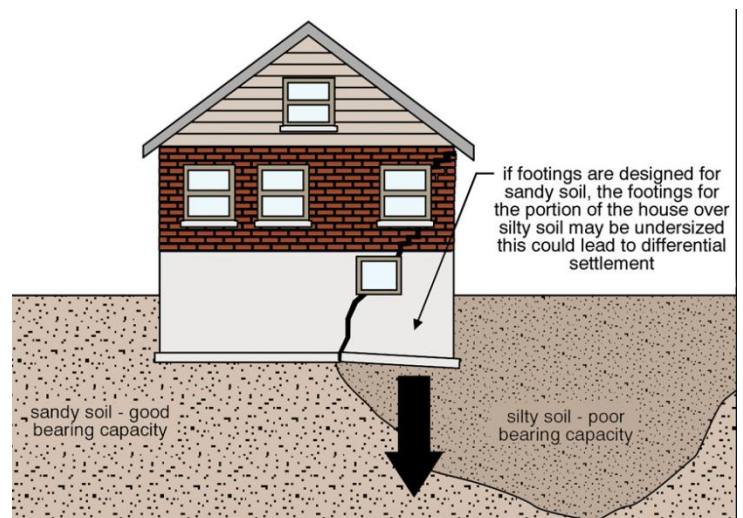


Figure 38 FOUNDATION SETTLEMENT ANALYSIS

6.1.2 TOP TIE BEAM INTRUSION

- Dismantle two layers of masonry (the top stone masonry and the next top stone masonry)
- Substitute the removed masonry with reinforced concrete top tie beam and light weight mass concrete which is reinforced with wire mesh
- Crack on the lintel over the Arch



Figure 39 CRACK ON TOP OF THE ARCH OF WINDOW

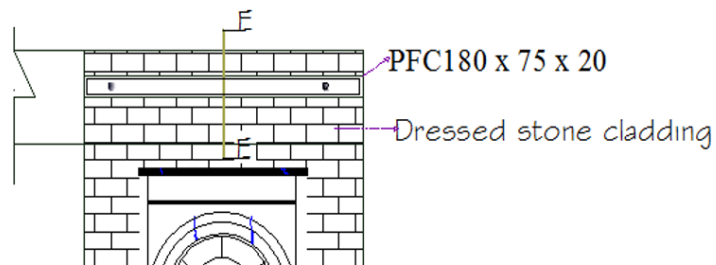


Figure 40 RESTORATION OF CRACK AND INSERTION OF STEEL BEAM

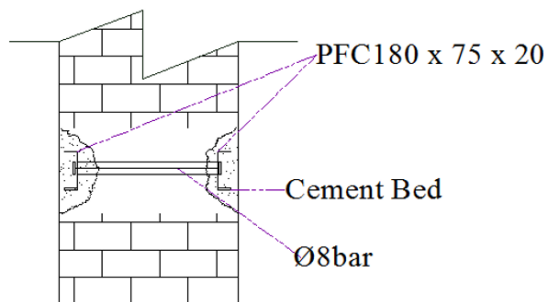


Figure 41 RESTORATION OF CRACK AND INSERTION OF STEEL BEAM

- Substitute the removed masonry with reinforced concrete top tie beam and light weight mass concrete which is reinforced with wire mesh
- Plaster the beam and paint with lime
- Fill the cracked space with low shrinkage lime mortar using hand system
- Provide top tie beam all around the building so that the top of the wall will be tied.
- Fill the gap with non-shrinking lime mortar



Figure 42 HAND REPOINTING

6.2 NONSTRUCTURAL DAMAGES

6.2.1 EXTERNAL DEFECT

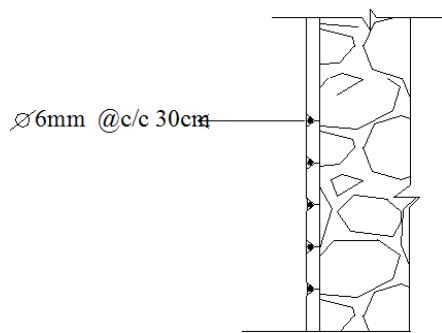
- After cleaning the surface apply water repellent treatment
- remove the spalling plaster and patched areas of the wall manually using hammer or chisel to obtain a sound

Hydro-cleaning the surface using a bar hydro-cleaner

- Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI) using trowel.

6.2.2 DETERIORATED JOINT:

- In preserving deteriorated joints in stone cladding we must start by cutting the deteriorated joint manually using hammer or chisel to obtain a sound, compact substrate with no crumbling or unstable areas and no saline efflorescence, dust or mildew without compromising the integrity of the face of the wall.
- Clean it in low pressure hydro cleaning the surface to remove dust, traces of efflorescence and, soluble salts, micro-organisms and saturating the surface before
- Applying mortar, to improve its grip and prevent substrate drawing water from the mortar and compromising the final performance characteristics of the mortar.
- Reinforce the joint lines with Φ 6 mm bar
- Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI).



Wall section

Figure 43 MORTAR REPOINTING AND RESTORATION

6.2.3 Gutter and downspouts:

- Remove detached and displaced gutters and downpipes as well as the roof cover. And substitute all gutters and downpipes with a new same material.
- Anchor all the gutters and downpipes with fastener fixed by bolts.

- Substitute the roof cover with similar high quality CIS.
- Avoid climbers and lichens around the downspouts.
- Substitute all damaged gutters and down spouts with new iron sheet gutters and downspouts.
- Clean the roof regularly at least twice a year or before every rainy season

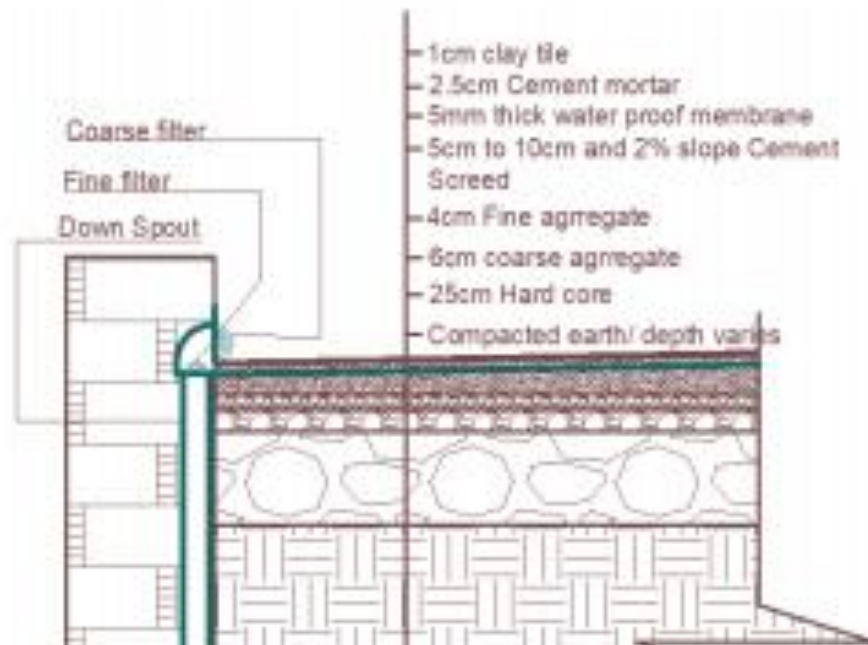


Figure 44DOWN PIPE AND SANITARY SYSYTEM RESTORATION

6.2.4 Window and door metal frames

It should be replaced with new frames of similar decorative style and if possible similar wood type.

- Apply varnish on top of the door frames so protect them for future.



Figure 45SKETCH OF WINDOW

6.2.5 BALCONY HANDRAIL

- First clean the handrail surface using hard paper
- Treat with water resistant paint
- APPLY VARNISH

6.2.6 ROOF COVER

- Restore highly deteriorated corrugated iron sheet by new same sheet covering.
- Fix the uplifted covers due to wind fatigue
- **Internal walls:**
 - **Plaster spalling and crack:** the same as the intervention for external defects.
 - **Ceiling:** the deteriorated canvas ceiling due to accumulation of moisture leaking from above should be restored by the same material.
 - Apply water sealant above the ceiling to protect the wetness brought from the roof.
 - Provide a wall vent that allows the condensation to escape out and even not appear.



Figure 46 PICTURE OF THE INTERANCE LOBBY

Avoid the dampness/ leakage of water from the top – sealant between timbers

Polish the wooden beam and slab and paint with linseed oil.

1. Seal the holes and cracks and any passage of water leakage.
2. Polish the whole slab and beam with sand paper and paint with raw and boiled or raw linseed coat phase by phase respectively.
3. Apply the paint every year to decrease the woods deterioration

➤ **Metal articulation**

- Cleaning architectural metals, when appropriate, to remove corrosion prior to repainting or applying other appropriate protective coatings.
- Replacing historic metal features instead of repairing or replacing only the deteriorated metal.

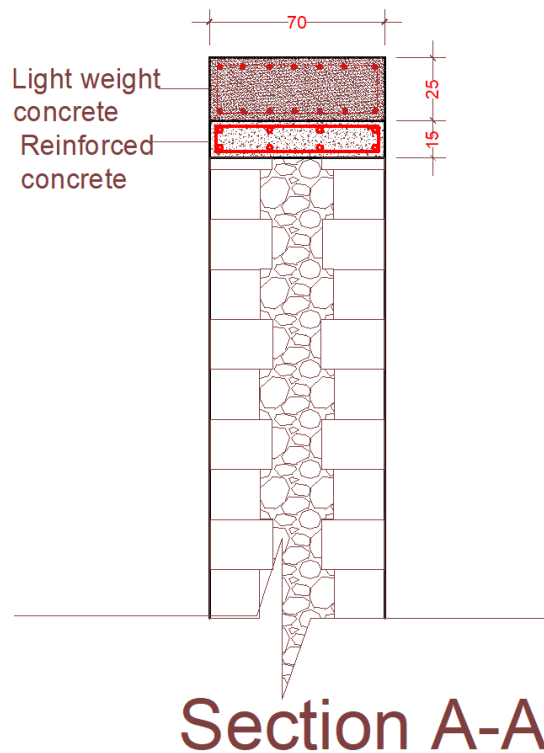
6.2.7 Deterioration on dressed stone cladding

Moisture and Leakage of rainwater from gutter

Clean and disinfecting the surface infested by bio-deteriorating organisms by applying a wide spectrum, water-based, anti-mold biocide solutions with a brush, roller or spray (such as Silan color Cleaner Plus produced by MAPEI)

❖ **Elimination of bio deteriorating organisms**

- Disinfestation and cleaning of masonry and wood works infested with bio-deteriorating organisms
- Applying a wide-spectrum, water-based, anti-mold and anti-mildew biocide solution with a brush, roller or spray
- Flaking of surface plaster interior
- Apply fiber glass mesh and Non-shrinkage cement



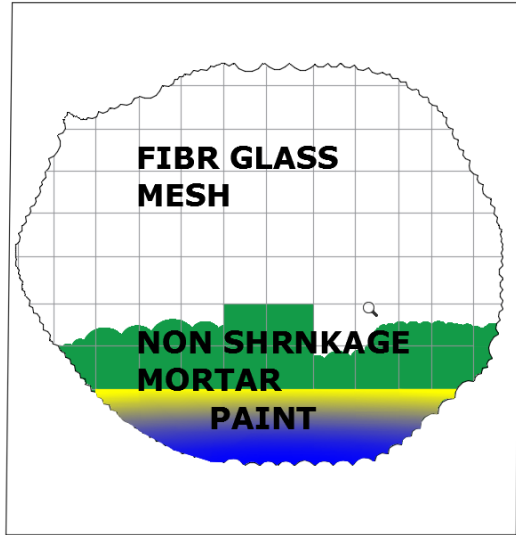


Figure 47 RESTORATION OF THE PLASTER ON THE WALL

6.2.8 FLOOR TILES

The wooden floor finishes should be completely changed with one only keeping the wooden beams

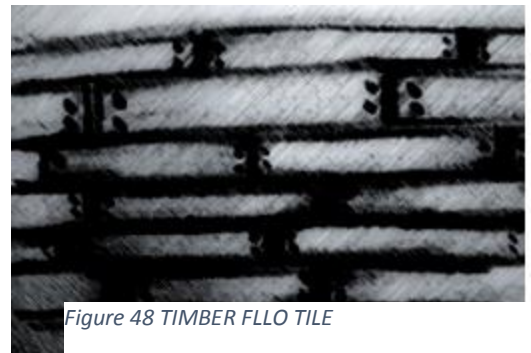


Figure 48 TIMBER FLOOR TILE

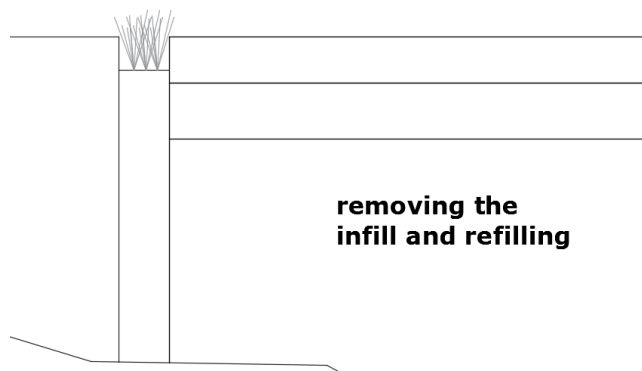


Figure 49 RESTORATION OF TILES

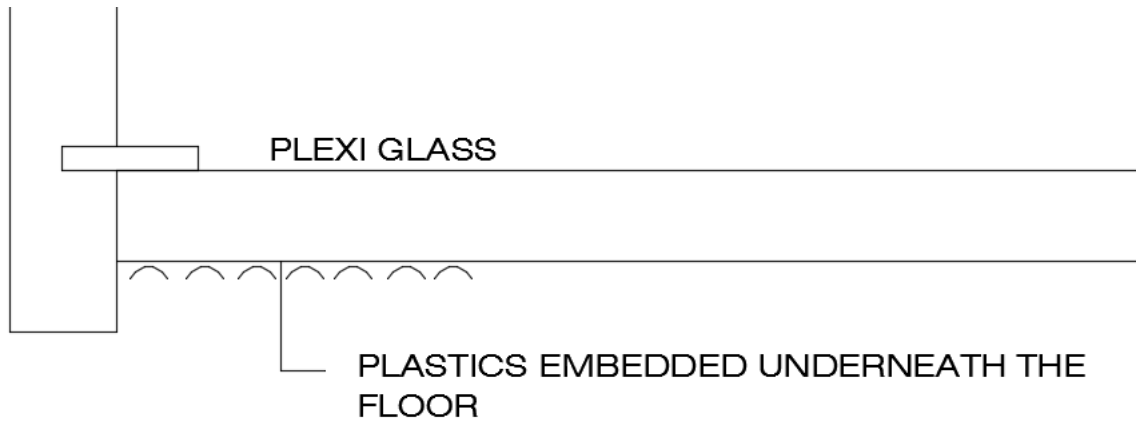


Figure 50 FLOOR TILE DAMPNESS CORRECTION

6.2.9 FOUNDATION WALLS

There needs additional perforate pipe installed in between the earth and the masonry wall to avoid further foundation damage



Figure 51 FOUNDATION WALLS UNDERNEATH

SUMMARY OF DEFECT, CAUSE & PRESERVATION

Defect	Cause	Preservation
EXTERNAL DEFECT		
1. External wall		
a) Damp patches on dressed stone cladding	Leakage of rainwater from gutter & downspouts	Clean and disinfecting the surface infested by bio-deteriorating organisms by applying a wide spectrum, water-based, anti-mould biocide solutions with a brush , roller or spray(such as Silancolor Cleaner Plus produced by MAPEI)
b) Plaster spalling and crack	Leakage of rainwater from gutter & molding surface	Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI).
c) Deteriorated joint	Due to surface water striking to the lower part of wall	<ul style="list-style-type: none"> ➤ Remove all the deteriorated mortar of joints ➤ Clean and brush the surface ➤ Reinforce the joint lines with Φ 6 mm bar <p>Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI).</p>

d) Detached mold	Due to movement of the structure, ivy roots penetrating the mold	<ul style="list-style-type: none"> ➤ Clean and brush the surface to avoid salt and organic materials on it. ➤ prepare precast stone mold to insert by pins <p style="text-align: center;">Fix the stone mold using pins in grout</p>
2. Gutter and downspouts	Due to dusts accumulated within and loose of fixing elements	<ul style="list-style-type: none"> ➤ Remove detached and displaced gutters and downpipes and substitute all gutters and downpipes with a new same material.
3. Windows and doors metal fraes	Water leakage from above	<ul style="list-style-type: none"> ➤ treat with anti-corrosion paint ➤ apply color paint coat
4. Balcony handrail	Moisture raise from dusty balcony which grew up ivy	<ul style="list-style-type: none"> ➤ treat with anti-corrosion paint ➤ apply color paint coat
5. Roof cover	Wind drift fatigue and long life service	<ul style="list-style-type: none"> ➤ Restore highly deteriorated corrugated iron sheet by new same sheet covering. ➤ Fix the uplifted covers due to wind fatigue
INTERNAL DEFECT	Wind drift fatigue and long life service	<ul style="list-style-type: none"> ➤ Restore highly deteriorated corrugated iron sheet by new same sheet covering. ➤ Fix the uplifted covers due to wind fatigue
1. Internal wall		

a) Causes for plastering cracks:	Shrinkage due to improper mix of mortar	Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI).
b) Spalling plaster and damp patches	Poor joint (connection) between the roofs with different slope and elevation.	Apply natural hydraulic lime and Eco Pozzolan masonry mortar with natural sand, special additives and micro fibers (such as Mape-Antique Allettamento produced by MAPEI) using trowel.
c) Damp patches on ceiling	Poor joint (connection) between the roofs with different slope and elevation.	Restored by the same material.

CHAPTER 7-CONCLUSION AND RECOMMENDATION

7.1 CONCLUSION

School main building is one of the historical buildings in Addis Ababa Ethiopia, which is the first boarding school and the second modern school. Its significance in the society made it worth of preservation and to be categorized as a heritage. The school is almost hundred years old and its historical, scientific architectural social political, aesthetics,.....values which are very essential essences of the building besides that it has been serving since the beginning and still used for nearly for a century made the building to be important for the society and has a significance in the lives of the students. The school has been used for different activities and have been exposed for different causes of deterioration biological, manmade, improper restoration, environmental and technical. This by far has made the building to have different look and structural stability. Though it has been tried in the past to restore the building but the historical significance and value assessment was not done extensively which has made the previous restoration to be improper and destructive rather than constructive.

Due to the change in use the building have suffered from additional room compartments and fix the compartments took some changes which cause damage on the floor tiles. Not only that the building has deteriorated due to several factors. The damages differ in type and severity. After an explicit study of its history, the buildings function history gave a clear information about the causes of damage and deteriorations, significance of the building and major restorations in the past. Getting these inputs are the basic data for the restoration proposal of this research.

This paper finally, conclude that cleaning past restoration and maintain the original building is necessary to protect and conserve the values that are embedded on this heritage site.t also recommended that the establishment of guidelines that will protect the historic landscape by restricting new development and expansion towards the heritage building, in collaboration and in consultation with all stake holders.

7.2 RECOMMENDATION

The building has been used for several decades and the damages and majors taken to adjust the damages which put the building in a very precarious position. So as to preserve the building and pass to the next generation the building needs an extensive restoration and every step should be taken wisely. The buildings construction material and its construction methodologies are the main reasons the building has survived all these years and still serving the community. But as time goes by the building has shown some signs of major deteriorations which put its structural integrity at risk. ARCCH should look after its function and the building should be restored as soon as possible before a major damage and all the precautions should be followed when restoring.

The school needs to have a proper guidelines concerning the new buildings that are going to be constructed in side in the future since the visual integrity of the historical buildings shouldn't be hidden. The compound size has decreased by half from its original possession and as the city develops some portion of it might be taken away for different institutions which will make the building and the compound to lose one of the main identity they acquire as a heritage. There needs to be an external document which has obligate owners of heritage buildings to have a responsibility to maintain the buildings and restore them every certain years decided by the government or ARCCH and to restore the statues of the heritages. The government has to come up with plan of tax incentive for owners of heritage buildings and sites so that they will fill responsibility about the heritages and be more concerned to follow rules and regulations about possessing heritage building or site.

Annex

no	Name of donors(February, 1925)	birr	mehalek	Gold & other
1	<i>Prince weizero Menen</i>	1333		
2	Fetawrari habte forgis	300		
3	Dajazmatch Getachew Abebe	392	15	
4	Dajazmatch Birru Wolde Gabriel			10 weket gold
5	Dajazmatch Habtemariam G.Ezigiabiher			200weket gold
6	Dajazmatch Aba Wuakw	300		
7	Kegnazmatch Amde H.selassie	100		
8	Muse Lebski	50		
	March 14,1926	20		
9	Leul Ras Hailu	5000		
10	Ras Kebede Mengesha	500		
11	Dejazmatch Mulugeta	150		
12	Fetawrari Made II.sellassi	60		
13	Colonel Sanford	1 globe=60		
14	Musse Paulos Kordos	100		100 kg sugar 200 aluminium cups 12 tins of tea
15	Ato Assefa Gugsu Abate	50		
16	Leul Ras Gugsu Araya	500		
	June 14,1927			
17	Duke Deze Abruzi	1000		
18	Dejazmatch H.Mariam H. Ezgiabher	200		
19	Dajazmatch Birru Wolde Gabriel	10		10 weket gold

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SCHOOL IN THE SOCIETY

Starting from its foundation Tms was expected to change the whole traditional life of the people in to a modern way of life. That is why from the start it faced opposition from conservative and traditional people of the society. Tms in its long years of existence contributed greatly to the society as a whole. It was the second modern school to be established at the government level. First the government encouraged its growth and expansion mainly to produce educated work men staff for the growing administrative institution of the country. The great effort of the school greatly contributed in producing well educated young men. TMS students also benefited very much from the education performance of the school. One of the most important benefit was in the field of employment. Due to the good reputation of the school whether the students was lazy or not, he had better opportunity to get employed. The old graduates of the school became the best military officer's, administrators senior and junior government officials and hard workers in different fields. Not only in the past years but biography of Emmanuelle Abraham explains about the experience of the students in the school. The students were chosen by bablates (higher authoritarian) and Ato Emmanuel was chosen to study in school in place of another student whom his mom couldn't let him to attend school from wollega. As ato Emmanuel Abraham recalled the school was a modern building at the time and food used to be prepare at the palace and brought to the students. Empress Menen used to come and visit the student and she used to bring something to eat to the students. Since there was no class after the fifth grade thy used to read books from library and attend previous classes. Ato Emmanuel Abraham became one of the teacher later and he also worked in Asebe as a teacher and assistance of Dr workneh Eshete who was the former administrator of the. (Ato Emmanuel Abraham)