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## **Investigation of factors which affect the formation of different types of Housing in old context of Gorgan\***

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### **Abstract**

Typology solution in architecture science seeks classifying constructions and spaces in terms of join features. Typology studies can be infrastructure of design in micro and minor levels. Therefore being oblivious of it in architecture and city planning can lead to state of chaos in urban aspect and makes heterogeneous urban textures. Current paper seeks to find factors influencing on formation of different housing types in old texture of Gorgan and to generalize them in contemporary designs. By influencing in all ratios from residential areas to alley and neighborhood it can make a texture to solve problems such as density and transportation. The research method is descriptive-analytical. Information were obtained and analyzed by a combination of documentation studies and deep interview with experts' views where some questions were asked in old texture of Gorgan. The research findings indicated that economy factor has an effective role in type of design of old residential texture of Gorgan along with two factors of climate and culture. Economic factor has had abundant influence in size of houses, their communication and climate left influence in formation of appearance of buildings and their yards and finally culture left effect on religious factors, social relations, security and so on) finally the results indicate old texture of Gorgan apply certain and systematic principles in design in which all sporadic sections look like a uniform.

**Key Words:** *Domicile type, Typology, Climate, Culture, Old texture of Gorgan.*

\*. Derived from Master of Architecture thesis entitled: (Design of residential complex derived from typology studies in Gorgan)

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## Introduction

The issue of typology regarding the urban context issues has addressed study on the causes and detection of factors affecting changes in house types. In recent years, the studies on typology have been recognized as the guide for the designers and architects who have sought to create the contexts consistent with environment. Definitely considering ty-pology issue puts a great effect on better rec-ognition of environment and ultimately suc-cessful design of a residential environment. In this regards, in the present research, a study has been conducted to examine factors affect-ing formation of various house types in old context of Gorgan.

## Problem statement

Design of house has been mentioned as the most immediate space related to the man; it constantly affects human and all aspects of human life, found of great importance in today's complex society. Definitely the envi-ronmental and cultural conditions at various regions should be taken into account in design of house which this is proposed in form of typology concept. Despite developed coun-tries, the typology studies are not considered in design of house in developing countries in-cluding Iran, so that it has remained in form of academic studies. Issue of typology by ex-aming the urban context has addressed the causes and reasons to formation, physical de-velopment, continuity and change in process of these developments, planning and design for future of city form. Indeed, the Iranian metropolises in the last half century has been transformed by unprecedented rate; however the principles and methods of modern plan-ning in Iranian urbanization system have been used at this period, the modern planning to envisaged rate in the plans has had less effect on how to conduct and regulatethenew settle-ments and the changes made in them. Land-scape of metropolis as a result of the failure to comply with modern planning has raised complex forms of spatial existences in it, stat-

ed that recognition of these complex forms has been examined (Saeid nia, 2008, p. 84). Therefore, design of house with environmen-tal and cultural conditions at each region leads to maximum satisfaction by the residents at that region, which this is felt in Gorgan which has living historical context and this context is constantly in contact with people due to being located in the center of the city's business activities. Therefore, the house typology stud-ies propose general plans based on historical context which can be used in today's designs, that is, all of these factors together have nec-essitated conducting the present research.

## Type and typology

The term "Typology" in Western culture has been originated from the Greek word "typos" which means carving out and writing. This word in the English language is the symbol for the terms such as model, sample, forms, category, and specificity. In Persian language, the term 'type' can be attributed to a specif-ic group with a certain feature or landmark. However, by any definition, concept of type is not innovative or designed, remained under-developed. Type emerges, grows and ultimate-ly broke down. Typology has been recognized as a science, the scientific description and classification of items in the collections that have the same characteristics (Pfeifer, 2008: 8, 9, v1). In the theoretical discussion on typol-ogy, it should say that attention to typology in old texts since two thousand years ago to date is witnessed in the works of the architec-ture writers and other scientists. Vitruvius, in his famous work entitled "Ten Books of Ar-chitecture since around 2,000 years ago" has grouped different types of Greek buildings including houses, temples and public build-ings (Memarian et al. 2013).

## Literature review

The typology in science of architecture is the classification of buildings and urban spaces based on common features and their analysis based on a certain criterion. This common feature can be spatial arrangement, how to

access the same applications, how to place next to each other, economy, religion, culture, climate and other factors which are common in one group of buildings; the classification of buildings causes better understanding of humans (Pfeifer, 2008: 11, v1). What is clear in the typology is the division of the mentioned issue to three major periods that has begun with mimic from nature, strived to represent the architecture as a science in the increasing academic progression process at the 18th with the start of typology.

Typology studies during the First World War and later due to essential need to mass production lost previous meanings, which the term "stereotype" has been given to type at this period. Yet this period did not remain stable, and failure in modern architecture and creation of soulless cities stimulated the individuals such as Muratori so as to engage in typology with a new approach and generalize the typology studies to design of buildings and urban contexts, thus the typology beyond a standard form found with a huge attention to structure and history of an environment. Typology has drawn numerous architects' attention. This approach confirms continuity of form and history against the discontinuity from the mechanical impression and causes formation of urban morphology schools in Italy, France and UK (Jamali, 2012, pp. 26-32).

According to table above, the most recent studies on house typology have been conducted by Pfeifer during recent years, thus his outlook to the issue of type is proposed in the present research. Pfeifer has divided the courtyard houses to various types of courtyard houses with garden and L-shaped houses, L-shaped group of houses and houses

with patio (Pfeifer, 2008, v1). In another definition for the courtyard residential buildings, these buildings with a variety of plans include various I-shaped, U-shaped, L-shaped, T-shaped, H-shaped, Z-shaped, crossed types as well as the linear yards. These buildings by placement next to each other in two-order and four-order form and placement next to car access and access routes for mounting and dismounting provide one-directional and/or two-directional urban contexts (Kambi et al. 2004, pp. 124-134). Pfeifer has divided the row houses to various types with and without stairway, with longitudinal stairway, with transverse stairway, longitudinal stairway at micro level, transverse stairway at micro level, Back to Back, back to forward and two-regional houses (Pfeifer, 2008, v2). From his point of view, independent houses are divided to various types of semi-separate, access with collective stairway, access to yard, combined type and tall type (Pfeifer, 2010). Separate from these partial divisions, a variety of houses regarding their physical composition can be classified in two major part of separate or independent houses and multipurpose houses or connected with three major types of small separate buildings with 2-8 units in 1-4 storeys and connected row buildings including several units in 1-4 storeys and the large separate buildings including a large number of units in many storeys (The metropolitan design center of USA, 2005). What seen in division for house types above lies on attention to house form, however, it has been criticized to the form-based attitude to type under this argument that inattention is paid to the time and place of buildings placement (Memarian, 2006, p. 104). Yet typology in the years before 2008 by considering the factors such as

Dowran	Quincy	Laugier
Production (Configuration based on the economic needs and requirements)	Type as the general form, structure or character to distinguish a certain type of objects	Suppose an early cottage as the basis for all forms of Architecture

▲ Table 1. The basis for the thinkers' views in the philosophy of Enlightenment; source: Jamali, 2012, p. 31.

climate, historical and social factors and even under influence of lease act and house policy has been examined caused creation of a variety of houses at national level. These policies cause creation of various dual and integrative lease systems that each can affect the housing residential districts and its quality (Hoekstra, 2008: 46-53). Concerning the climate factor, the climate outlook to the type under this attitude that the man is devaluated to a man in the earth which needs climate comfort, is rejected (Memarian, 2006, p. 52). The historical- evolutionary outlook started with Muratori's studies and Venice's urban context study. This outlook regarding learning from the history of architecture and three stages of selection of place, scale and typology process engages in the concept of type (Memarian et al. 2012, p. 250). Since it has been taken from the evolutionary assumption in biology and no attention has not been paid to spirit and meaning hidden in building in architecture and conscious versus unconscious mind has been considered for two persons, it has been undergone criticism which has failed to give a suitable response to them (Memarian, 2006, pp. 187-189). Social outlook to type which was proposed by the individuals such as Stedman, Hillier and Hanson is not confirmed by the all since it has not considered form in analyses and has not given a clear image of the functional realities, form and size of spaces, type of structure, materials and decorations (Memarian, 2003, p. 83). what formed concerning the typology studies in Europe was pursued in our country by Dr Memarian in different cities of Iran. Rest of his work can be found in the articles and theses of students who examined the typology in small and large cities of Iran.

Table 3. Typology of residential architecture; Source: authors, based on familiarity with Iranian residential architect/ introverted and extroverted typology.

Typology of Iranian residential architecture (from point of view of architects)  
introverted extroverted  
Bushehr, Shiraz, Yazd, Zavareh  
Gilan, Masouleh, Abyaneh plain

Since the studies by Dr Memarian address the vernacular architecture at the mentioned regions, they are of great importance, but what is obvious is the change in house type in our contemporary architecture, mentioned that such changes began at the age of Reza Shah. Emergence of wide streets at this age together with the developments in the context of installations, equipment, structure and construction technology and arrival of a variety of modern life means caused major changes in physical form of houses as well as how to organize space of houses, and northern, southern, eastern and western house types gradually became common. If these developments appear as the criterion for classification of development stages of these houses to date, it can refer to three house models. The houses with central hall, houses with two distinct day and night parts and houses with open plan and open kitchen (Sadegh, P. 2011, pp. 64-66). What mentioned above indicates that if we intend to find type of a specific house at a region, both type of indigenous housing and the common type which is prevailing today should be addressed.

Question and goals of research

Understanding the most important factors affecting formation of various house types in old context of Gorgan is the most important question that is given response in the present research. Detection of urban context of Gorgan and detection of factors affecting formation of various house types in old context of Gorgan and their difference with types of other regions using the view of experts at the area of architecture science are the major goals of the present research. With another outlook, due to practicability of research results, the approaches for future designs will be



Vitruvius		Grouping Greek buildings such as houses, temples and public buildings; Grouping the houses to two sub-groups with and without yard and/or based on their placement in city or village
Marc- Antoine Laugier	1713-96	The assumption under a natural foundation for architecture which is found in the early cottage model
Quatremere de Quincy	1755-1849	Formulation of an idea for typology architecture as the result of asking lack of architecture against social and technical inventions; Type as the general form, structure or character differentiates a certain type or group of objects. De Quincy argues about the certain mother tongue
J.N.L Durand	1760-1834	-Interpret the type in a way between form and program; -Classify the buildings based on form of their plan; -History of an important reference architecture for design and better understanding of architecture; -formulate a work similar to the typology Atlas for architecture
School, Bayeux	19th century	Interpret the type as a style-orientation means
modern age		-pause continuity of typology application as the result of rejecting what is in search of history till 1970; -express the term "stereotype"; -incomprehensibility of construction methods in terms of typology and their understanding in terms of mass production; -type has grounded on changing social structure and needing to mass production before the world war
Saverio muratori	the 1940s	-type implies formal structural of a building
Giulio carlo argan		-design process starts with detection of type and includes the upper problem
Ernesto Rogers		-design process starts with detection of type and includes the upper problem
Aldo Rossi	during the 1970s	-separation of concept of type from function; -a type of a specific architecture knowledge; -an entrance hall can be considered as a major type which has not been defined through its relation with other elements but defined as an interconnected element; -publish the city architecture book
Rob Krier	the 1970s	-embed typology aspects at various urban outlooks; -propose urban ideas in a combined form of image, text, drawings and table; -morphological classification of urban spaces based on three major shapes of circle, triangle and square; -publish the book 'urban space' and addressing two important urban elements 'square' and 'street' and comparing them with two architectural elements 'room' and 'corridor'; -publish book 'architecture composition' with form outlook

Steadman, Bill Hillier & Julian Hanson	Early of 1970s	-emphasis on architectural linguistic term consisted of syntactic and semantic part and emphasis on the syntactic part with the aim of perceiving the social relationships in space such as creation of privacy, public and private degree of spaces; -open a new topic of morphology in architecture; -publish the morphology book by Steadman; -publish the important social logic book of space by University of Cambridge at Space Syntax method the 1980s aiming at proposing the theoretical background
Greg Lynn	1998	-under influence of the biologists named Thomson; -Focus on topics including the relationship between geometry and appropriate organism models; - His writings to argue a theory that proposes an appropriate mix of the architecture despite severe formal disagreements
Christopher C.M.Lee & Sam Jacoby	2007	- study typological organization; Aim: return to city as a clear site which is required for architecture and architectural thinking; -use the typology for a variety of renewable buildings which enable to exchange idea with position of cities
Pfeiffer	2008	-in architecture, type is a capacity for knowledge which is displayed through its interior logic, harmonic form, content and meaning at various levels

given to the architects and designers of residential buildings.

### Research method, instruments and the statistical population

The analytical-descriptive method has been used as the research method in the present research, in such a way that the factors affecting formation of house type in old neighborhoods of Gorgan have been detecting using the documentary studies as well as qualitative studies in form of a deep interview with the determined individuals. Further, in line with analytical aspect of the present research, the house type has been considered as the dependent variable and the policy, economy, religion, climate, culture, construction technology have been considered as the independent variables. The early studies in the present research have been conducted based on the library studies and translation of the foreign books. Other data collection instruments have been with open data and distributed among professors and experts at the area of architecture in the context of detection of factors

affecting house typology in Gorgan city and the views have been collected. In the present research, the statistical population consists of all the houses with old context of Gorgan, consisted of all the aristocratic and non-aristocratic houses as well as the public places including mosques and schools.

### Data analysis method

Data have been in two groups in the present research.

The first group consists of the information which has been obtained through the documentary studies in the context of the typology basis in the world and then Gorga and organized in form of tables. The second group consists of the data which has been obtained through the determined architects and experts, and the factors affecting formation of urban house type of Gorgan have been specified from point of view of scholars.

### Research findings

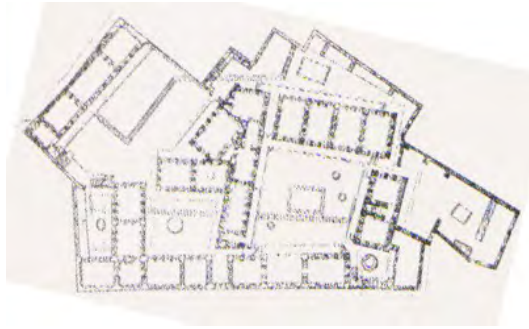
As mentioned, typology in architecture refers to the classification of buildings and urban spaces based on common criteria. Definitely

Effective factor	How to influence
Kinship	Separation of neighborhoods based on family ties
Social relations	Deadlock alley
Economy	Clear separation of public, private and service areas at Aristocratic houses such as Bagheri's House The yard meets various needs of residents in poorer families Aristocratic houses' access to multiple passages to meet access to private and service area Access by ordinary house to a corridor High ratio of spaces in Aristocratic houses to other houses
Climate	-2 floors of houses in the northern side and one floor on the south side and southwest side because of suitable ventilation in the summer (the dominant wind direction : South West-North East) -Placement of houses on the podium -use of roofs with a slope of 45 to 50 % due to rain
Security	Build high walls around the yard Entering the houses through the halls especially in Palang bagh and Shazdeh Ghasem neighborhoods
Immigration	large yards with an area of over 2,000 meters and water storage Creation of a space with a height of 1.8 and in some cases 2 under the stands as a place for storage and a place for drying tobacco, rice paddy or animal barn
Religion	Divide houses into two inner and outer 0parts A yard named Hoseinieh yard in some of houses

▲ Table 4. The summary on the factors affecting formation of various house types in old context of Gorgan; source: authors, 2014.

type of house at any place depends on the environmental and cultural conditions and various factors which definitely raise a specific type of house type. For instance, at each of hot, cold and/or moderate climates, we witness a specific type of house types. In addition to climate factor, culture plays role in form of the factors such as religion and ethnicity in formation of various house types. With regard to the general proposition concerning the functional-physical structure of residential architecture of Golestan province, it should say that the residential architecture in this province is divided into three parts of plain areas (Indigenous houses, Gomishan), foothill area (Indigenous houses, Gorgan) and Mountain areas (Indigenous houses, Alestan and Cheli-ye Sofla); (Soltan zadeh, Ghasemi

nia, 2011, pp. 4-8). Along with climate variability, this province enjoys high ethnic diversity. At each of the mentioned areas regarding their climate features, a specific form of residential spaces has emerged during long years of evolution of vernacular architecture. The detected architecture elements such as verandas, balconies, roofs, roof slope, etc. have been evolved to control climate phenomena and provide the comfort conditions at each of examined types. Along with these factors, each culture enjoys its specific house types, thus study on all house types throughout the province is difficult; hence since the statistical population in the present research is the old context of Gorgan city, basically the discussion is grounded on foothill; on the other hand, the individuals living in the mentioned



▲ Image1. Bagheri house in Sarcheshmeh neighborhood of Gorgan with 7 yards, 42 rooms and infrastructure of 1555 square meter (source: Tirani et al. 2011, p. 31); Image 1. Plan of Bagheri house; source: Tirani et al. 2011, p. 30.

context speak Persian and have Shia religion. The information has been collected and the effective factors in formation of house types in old context of Gorgan have been detected based on views of the specialized individuals; in addition to skill, they have life experience in Golestan province and have complete dominance on the present issue from both scientific and indigenous perspectives. In this regards, with regard to the findings, it can perceive that the factors such as Kinship and sectarianism, economy and class status, security, climate, type of social relations and many other factors have affected formation of various house types in old context of Gorgan, which each of these factors are examined.

### Discussion on the major effective components

#### Kinship effects on typology

Historical context of Gorgan has been formed based on Kinship relationships, in such a way that all of the people in a neighborhood have had a kinship relationship with each other. According to Hedayat Mofidi, the residents in context of six large tribes in Gorgan have been Hedayat Mofidi, Mir Karim, Bagheri, Shirangi, Amir Latifi and Taghva that each had supremacy in one case. Hedayat Mofidi tribes have been owners, Mir Karim tribes have been Seyed, Bagheri tribes have been famous in business and Shirangi tribes have been pioneers in farm and trade. Neighborhoods at old context were not separated from each other ever and any one could go from

one neighborhood to another neighborhood. Effects of social relationships on typology The social relations have been regarded as the factors which put a huge effect on type of formation of old neighborhoods in Gorgan. Typically any neighborhood has enjoyed a specific intra-group social capital, led to more cohesion in neighborhoods. With regard to Maetoufi's sayings, professor at history, deadlock alleys are the tangible manifestation of intra-group social relationships. In deadlock alleys, there were members of family (sisters, brothers or first-degree relatives) to whom four or five yards were opened. All of these alleys had door, meant their privacy.

#### Economic effects on typology

Economy has been regarded as the major factor affected formation of old context houses in Gorgan city, such that the residential neighborhood and houses of individuals have been being specified with grade and job of homeowners. How to express the economic problems has lied on formation of public, private and service areas. From point of view of Imanian, in the houses with aristocratic dimension, separation of areas can be witnessed clearly. In the families with poorer economic status, just a yard has met various needs of residents. The economy factor has affected how to make relationship between yards and surrounding passages, such that the aristocratic houses have had access to multiple passages. Access to deadlock alleys have been usually made from the direction of private



and service area so as to provide the comfort and security for the residents. Further, from point of Akhavan Mahdi, historical context of Gorgan in the spaces with closed relations has been under influence; as seen, space with closed relations in aristocratic houses is higher than yards and these buildings have been built in two storeys.

#### **Effects of religion on typology**

With regard to Maetoufi, researcher at history, residents with Shia religion such as Saadat Marashi and Zeidi have been living even before Safavi age in Gorgan. Tangilabe effect of religion in houses divided them into two Introverted and extroverted parts. Conversion of spaces to interior and exterior parts and arrival to house through Hashti has rooted in people's religious beliefs provided that the women and girls at house should not be seen, because looking them is a deadly sin. Further, from point of view of Akhavan Mahdavi, another effect of religion relates to the yard of Hosseinieh, that is, a yard which has been being used for mourning dependent on the traditions of the family at Moharam and Safar.

#### **Effects of security on typology**

With regard to the point of view of Maetoufi, tall walls are the major feature of residential houses in old context of Gorgan, that the main cause of these walls is creation of security and preservation against others. With regard to point of view of Maetoufi, the security in houses with historical context caused existence of tall walls, led to avoidance of enemy's arrival to house, because Astarabad has been being always subjected to the attacks from other areas. Further, from point of view of Akhavan Mahdavi, how to arrive houses especially at the neighborhoods such as Shazdeh Ghasem, Meidan and Bagh Palang which have been in adjacency of city has been different from other regions. Arrival to houses has been through corridor. At these neighborhoods, deadlock alley has been being seen a lot, i.e. the alleys with door in which there

have existed many houses and the alleys that anyone had not the right to enter them.

#### **Effects of immigration on typology**

With regard to point of view of Maetoufi, Astarabad due to its geopolitical position and climate conditions has always welcomed the immigrants from various tribes. Since Safavid and Pahlavi age, different ethnicities including Gorji, Ghezelbash and Sistani tribes have immigrated to Golestan province. According to his point of view, the issue of immigration failed to affect architecture of Astarabad context because the immigrants have been among poor people who had ricks made their body with clay and straw. Immigrant groups were marginalized into towns and villages, e.g. Chegini tribes have settled in margin of Darvazeh Shahr- Astarabad and Godar tribes have settled in margin of city. With regard to point of view of Akhavan Mahdavi, there is an exception about the issue of immigration which is Bagh Palang and Shazeh Ghasem neighborhoods under influence of rural architecture that the rich from villages adjacent to south of Astarabad brought with themselves. The platforms with the empty space beneath them used as underground with the height of 1.8 meter to 2 meter and few hundred meters (yards) have been the major house difference in Shazeh Ghasem neighborhoods. With regard to factors above regarding point of view of Imanian, the executive official at context renovation, what separates specific house type of Gorgan from other regions is the equality in significance of interior and exterior spaces, so that all the decorations which are seen inside the spaces have been used outside the spaces, e.g. the heads applied at the edge of roof of interior yards to avoid rain blow have been also applied at the edge of roof at alley and passage and those decorations and inscriptions have been also applied on the interior furring. Therefore, the same degree of significance has been given to inside and outside of houses in old context of Gorgan.

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▲ Image 3. Bagheri house, Gorgan; build platform and head (source: Tirani et al. 2011, p. 33); Image 4. A house in Shazeh Ghasem neighborhood; roof protrusions, use of terrace (source: authors, 2014)

### Effects of climate on typology

Other important factors affected formation of house types in old context of Gorgan include climate. With regard to point of view of Imanian, expert at Cultural heritage, houses in old context have been under influence of climate, and wind direction of Goran is in southwest and northeast direction, and the north side of houses has been built in two stores and the south and southwest sides have been built in one storey to place the Tabestan neshin spaces in it and have a suitable ventilation in summer. In houses with old context, the major spaces have been built at northern and southern side and the spaces with less degree of importance and Mahtabi has been built in east and west sides.

### Conclusion

Results indicate that factors contributed in formation of house type are various regarding viewpoints of the individuals such as Algije with climate outlook, Stedman, Hillier and Hanson with social outlook, Muratory with form outlook and so forth; each of factors can appear more prominent than others at each place and affect other factors. The results from the present research indicate that the economy factor has been the most important factor in addition to the climate and cultural factors in formation of old context house. It is obvious that the economic status of the homeowner has a deterministic role to select the house type for construction, but the interesting point in old context of Gorgan is its different point with other regions with the same climate. Use of heads, sloping roof and

so forth are the architecture elements which have formed in response to climate and applied as decorative elements in houses of the rich. On the other hand, social relationships have affected formation of neighborhoods with center of the neighborhoods with identity. The neighborhoods and center of neighborhoods have been found successful by the elements such as plantain, use of the same symbols and following the same elements such as doors, windows and common materials in creation of a common sense in the entire context. Since population growth and excessive and unsystematic constructions have damaged to old contexts and cultural frameworks of various regions regarding the present research which has been conducted in the old context of Gorgan, the design approaches at urban and architectural scale taken from typology principles are proposed so as to be a starting point for private organs such as engineering system and governmental organs such as urbanization. It is hoped that these organs enable to organize the irregularities in the contexts adjacent to historical context of Gorgan by use of these approaches as the rule.

### The proposed approaches

a- concerning the urban context; use of the main passages with northern-southern direction and minor passages with eastern-western direction, creation of center of neighborhood, two storey buildings, access of houses to multiple passages, separation of mounted and dismantled routes

b- Concerning the single building; Plan: western-eastern extension, creation of terrace

with sufficient area and proper view, creation of opposite windows for ventilation

View: use of uniform materials, addressing the interior and exterior views with the same degree of importance, use of openings and shubbak for ventilation and beauty at proper areas (Masoudi et al. 2013, p. 53), use of windows and doors with the same module. Use of basic materials in decorations, use of decorations for suitable lighting;

Section: use of seat with the height of 0.5 to 1 meter to avoid moisture, use of slopping roof with protrusion of 1 to 1.5 meter.

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