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Preservation of Natural and Historical Values in Sustainable Architecture of Creative Tourism Complex of Aab-Ask, Iran

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***Abstract*—**Studying literature theme in the fields of tourism and sustainable development and its importance in today world and their criteria in architecture, here in this article we will also study the area where the selected site is located; beside the Aab-Ask Village located in Larijan region in Mazandaran province on the way to Haraz – one of the tourism routes of Iran. After these studies by analyzing the site, its strong potentials – such as mineral water springs (hot springs), geothermal, landscapes and ideal climate - as a tourist attraction spot in the region, and considering sustainable development criteria – with regard to limits and available facilities – a plan was offered that could change the region to provide the needs of local people and in addition change it to a place where tourism services is offered to the visitors and make it an acceptable sample of stable building in Iran. Finally the reason to make design for this complex is recovery of natural and historical values of Aab-Ask area regarding development and sustainable architecture criteria in the form of a functional sample which can be a suitable place to fulfill this goal for having lots of strong points in attracting cultural and sustainable tourist.

***Keywords*—**Sustainable Architecture, Tourist Complex, Development, Landscape Preservation, Culture

I. Introduction

IN a general sense sustainable development refers to proper and efficient management and exploitation of basic sources, financial sources, natural sources and man power in order to reach desirable consumption pattern using technical facilities and suitable structure and managing organizations to finally constantly and desirably obviate the needs of today world and future generations.

Ab-Aask village and its mineral water is located in one of the most important connecting ways of Mazandaran province to Tehran – main road of Amol – Tehran (known as Hazar road) – which is the closest connecting road of this province to Tehran and passes through Aab-Ask, Plour and Imamzedeh Hashim. The exclusive nature of this area, landscapes and potentials of it brings up the need to construct a tourist spot and social complex beside its mineral water which leads to the use the heat energy of earth and the heating energy of hot springs and includes natural, historical and cultural values. [1]

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II. Geographical Situation of Aab-Ask Village

Ab-Ask, a village located 90 kilometer northeast from Tehran on Tehran – Amol road in 35˚ 52 latitude and eastern altitude of 52˚ 9 . With its wild and beautiful nature this village is situated in a corona of secrecy and mystery and its height from sea level is 1706. Aab-Ask has lots of springs and these springs have “Carbonic acids” and “bicarbonates of di-soda” in them which sediment while flowing in the air and produce iron layer. This form is observable in all part of village. Some of these springs have the call of “Gol Gol”. The surrounding mountains are calcareous and most of the houses are constructed on stone. The other sight which makes this village a particular place is verity of its springs.

Several sulphuric springs are located close to asphalted road where on its right side toward Amol the area of Aab-Ask called Aab-Ask is situated. These springs are called “Zananeh Osko” and “Mardaneh Osko”. In some spots on Aab-Ask hills sheet like calcareous sediments can be seen. Some mineral springs called “Hashti Kona”, “Golgolsar”, Zagh or Zoghal cheshmeh” and “ Aab-Nadali” are located in Aab-Ask village. Three kilometers from Aab-Ask in its south in a place named “Zardrou” there is a spring with the same name. “Golgolsar” spring is seen in higher territory of Aab-Ask which was living area of governors.

A. Natural Geography

Aab-Ask village is considered as a moderate cold area regarding weather condition. For its being placed 1706 meter higher than sea level and for its special location on southern hillside of Alborz Mountain and bottom of the valley, this village enjoys from cold and moderate summers and it has cold and snowy winters. Temperature reaches to more than 30 degree in summer days, but as Haraz River flows beside this village it has cool nights. The flow of river does not come down in winter and this makes the air moderate around village compared to high lands.

B. Tourism in Larijan

Although there are sulphuric springs in this village, the number of drinkable springs is countless. Water flows into Haraz River through narrow sides; there are such springs in almost all houses. Those with skin diseases go to the waters of Aab-Ask and those with rheumatiz go to Ab-Garm village.

The distance between these two villages is around 20 kilometers. Ab-Gram is located in high lands near Rineh at the foot of Damavand Mountain and Aab-Ask is located in valley beside Haraz road. [2]

C. Mineral Water Springs of Aab-Ask

One of the main natural sights of Aab-Ask is the existence of several springs that adds to the importance of this village. In fact the primary reason to establish Aab-Ask is the existence of springs and each of the springs has their own special name. Water of each spring has spatial remedial characteristics and is good for curing different diseases. In summer and spring the springs are used for bathing. The altitude of Aab-Ask springs from sea level is around 1700 to 1750 meters. Some gasses which contain Carbonic acid and sulphuric acids come out of the origin of springs and make them look ebullient. Some of the springs of Aab-Ask are as follows:

1. Askou Spring

They are two big springs located in Askola area and in the right side of Haraz River. These two springs are used for bathing and in addition travelers use them as well.

2. Gol Gol Sar Spring

This spring is located in high level sector of Aab-Ask. It was used for washing dishes in the past, but circle shape cement with a cap is made around it lately.

3. Aab-Nadali Spring

This spring is located in the opening of Aab-Ask valley and is used for skin diseases. One of the indigenes said it is good for yellow bile disease cure and is used for curing scalds on skin.

Other springs are named as; Hashti Kona spring, Zagh Spring, Ghaei Ball spring, Sareh Spring (inhabitants of Aab-Ask village believe that the water of this spring flowed into petrol in the past and was used for lighting and making fire), Aab Faranghi or Ghermez Spring and Aab Homa Spring. Larijan mineral water is suitable for hydrotherapy and it is suggested.

TABLE I
WATER DEBBY OF SOME AAB-ASK SPRING AND SURROUNDING AREA

Spring Name	Water supply (Debby: liter per second)
Zagh Spring	2.5 – 3
Aab-Nadali Spring	1.5
Askou	24
Zardavar	18

D. Yearly Changes of Aab-Garm Spring of Larijan

The research conducted in last 10 years show the following results:

- The amplitude of examined earthquakes is between 2.9 to 4.3
- The core depth of number 1 event is estimated to be 18.3 kilometers.
- The examined earthquakes show relative accordance with Masha fault and or fault system of south of Damavand mountain
- Water of Ab Garm Spring of Larijan is of Calcic sulphate type.
- Underground water source of Ab-Garm Spring is fed mainly by surrounding Carbonate stones, while the underground water source of adjacent non-mineral spring is fed through hole in igneous stones of the area
- Since the temperature of geothermal source is more than 150 degree centigrade, there is a probability of sealing. This may lead to increase in debby and even blockage of water which flows out from the present source.
- Considerable changes in some parameters such as density of ions and temperature of geothermal source since 2000 can be due to changes in local activities of volcano; but we need to study more on this issue
- Regarding the importance of Damavand volcano and existing faults in the area and its being close to Tehran, executing quack and non- quack monitoring plan of central Alborz will provide valuable data in this field [3].

III. Domestic Architecture and Compatibility with Nature

To reach a desirable compatibility level, the architecture should be first compatible with its surrounding environment. Compatibility can be examined from different aspects: [4]

-Compatibility with nature and organism of the area
-Compatibility with weather of the area
-Compatibility with existing texture of the area
-Compatibility with culture of the people who live there

A. Characteristics of Indigenous Architecture in Aab-Ask Village

Building structure is divided into two groups: One is the old buildings which are constructed with mud and brick and a wooden roof on which a pitch is placed. The second group is new buildings which are built in two types of concrete and metal structure and a pitch with galvanized sheet with a wooden frame is placed on it.

Due to common slope of village from north to south, all buildings are facing south and they have a yard in south direction. The existence of a porch which faces yard and is one or two meters higher than the ground, is considerable in most plans of Aab-Ask houses.

B. Regional Considerations in Aab-Ask Village

-To control heat through shell of the building, building material with high heat capacity are used.

-To shape the building and determine its state of construction, the direction of dominant winds and the possibility of maximum use of sun light should be considered.

-To decrease heat waste of building, a half supported area such as balcony is improvised on external surface of the

building.

-To prevent moisture penetration into the building and to provide ventilation inside building shell, double walls are used.

-To minimize changes inside the building and as a result to prevent from penetration of cold inside the building and the run of its heat to outside, at least twofold doors are used as entrance doors of the building.

-To prevent from unwanted flow of air from in to out and vice versa, twofold windows are used.

-To keep snow on the roofs as a heat insulator, the roofs are constructed in flat shape.

And on the whole:

-To achieve a rational architectural plan which is in harmony with the region as well, in addition to paying attention to weather type of the region and considerations of temperature, we should consider humidity of the area in connection with bio climatic table of building, sun situation and the direction and speed of the winds of the area. [5]

IV. Design Process and Its Goals

A. Selecting Subject and Its Reasons

For its tourist attraction, Haraz road is one of the crowded roads of country and for its beautiful nature this road is a place for rest and pastime of travelers in most time of the year. At the same time for its several mineral water springs and good weather, this area attracts many domestic and foreign tourists every year.

Shortage of pastime facilities is considerable in this area. Aab-Ask village with its natural and geographical value and historical and cultural importance is a good bed for making such complex and considering its close distance to Tehran, this issue becomes more important.

Therefore, through creating a peaceful and calm place, using natural, historical potentials and considering culture of the indigenous people, a complex is designed which accords with sustainable development; in addition to creating a more suitable place for indigenous people, it benefits from natural, historical and cultural values and introduces them to visitors. [6]

B. Goals of Designing

At first level, to create such complex, the following goals are considered:

- creating calm and peaceful space and proper use of natural landscape
- proper use of potentials of the area
- considering historical and cultural values and valuing them
- creating rational and desirable relation between man and nature through creating suitable spaces in special regional condition and reconciliation of man with spirit of nature
- creating desirable relation between spatial design of complex and sort of the land
- creating maximum diverse spaces, compatible with different regional conditions regarding facilities and limits of the area
- creating some kind of attraction to attract tourists
- creating a place for pastime out of city in a way that all people could use it
- paying attention to potentials and weak points of area and making efforts to decrease weak points and create more welfare for indigenous people

C. Theoretical Bases of Architecture

- Since the site is placed in Haraz Road direction and for its having the potential of creating pastime space, designing a place for calmness and spending pastime is what we consider
- Organic and attention to present texture and its coincidence with environment is considered regarding both texture and material.
- paying attention to mineral water springs and its effect on volume of the designed space to create an element in site to determine the place of spring
- paying attention to landscape and sight of the site both from north highlands and south highlands and paying attention to sight from road
- paying attention to texture of the village and harmony of the design with it, regarding sustainable development discussions

D. Primary Idea of Design and Stages to Achieve Final Idea

The basics of ideology in this design is based on the coexistence and companionship of the present project with wild nature and form of seething and gurgle of springs in offered site; some factors such as springs, rivers and texture of the village has had effect on form of final design. [7]

To achieve this goal, designing was done regarding criteria such as; a) Compatibility with nature, b) situation of sight and landscape, c) calm place which is far from noises to stay in, d) designed space in harmony with nature for spending pastime.

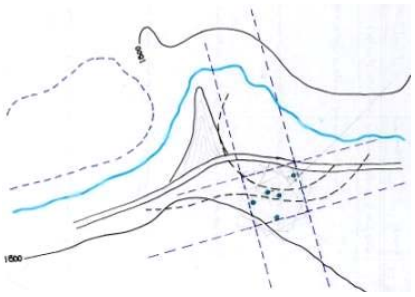

Fig. 1 Place of springs and north, south direction

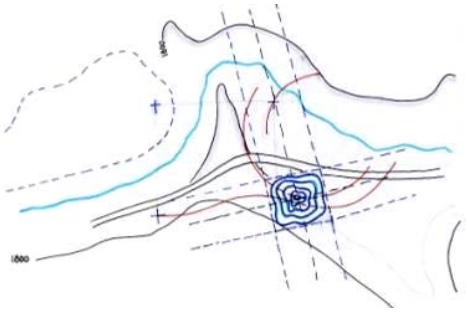

Fig. 2 Gurgle of Askola spring and its effect on environment

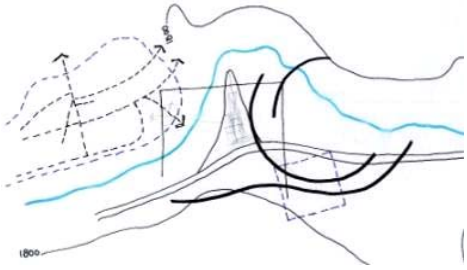

Fig. 3 Expantion lines of spring effect on site

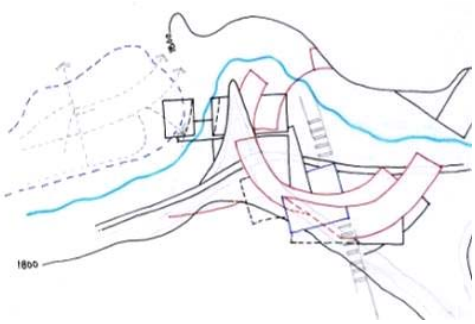

Fig. 4 Primary lines of volumes

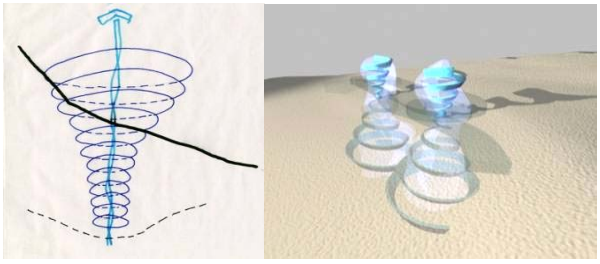

Fig. 5 Flow of spring water from deep places to the surface and its effect on volume

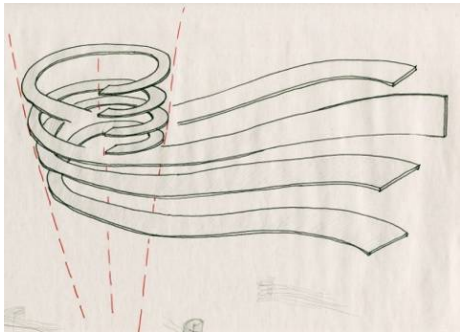

Fig. 6 Shoing the place of spring using circle sheets and their expansion in site

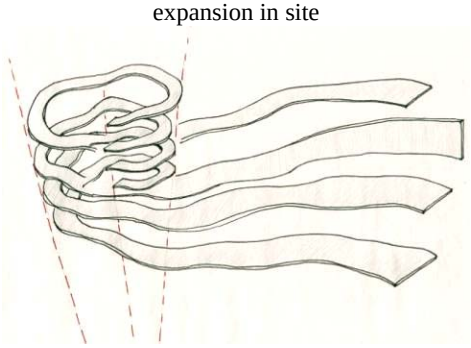

Fig. 7 Effect of spring on circle shape sheets

After the design idea is established, it is time to use it on site as volume; to reach desirable volume based on expectations and limits, some processes should be done which will be explained later in this article.

Fig. 8 First form for volume

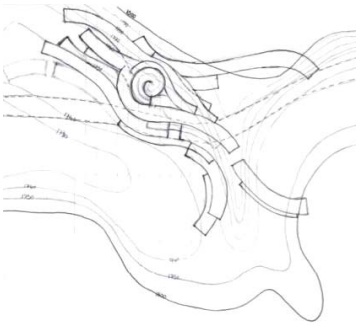

Fig. 9 Site of joined plan with topography in first form

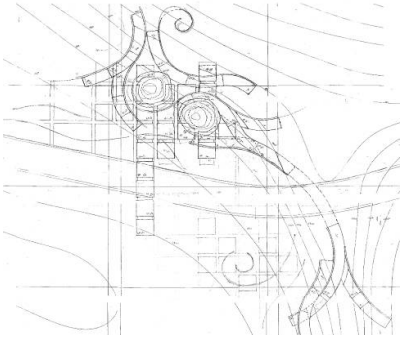

Fig. 10 Second form for volume

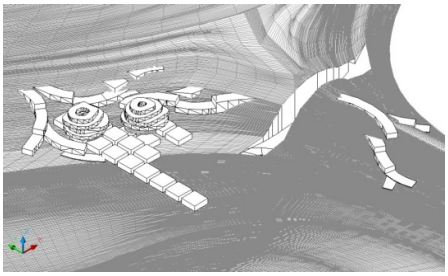

Fig. 11 Image perspective of second form and its join with topography

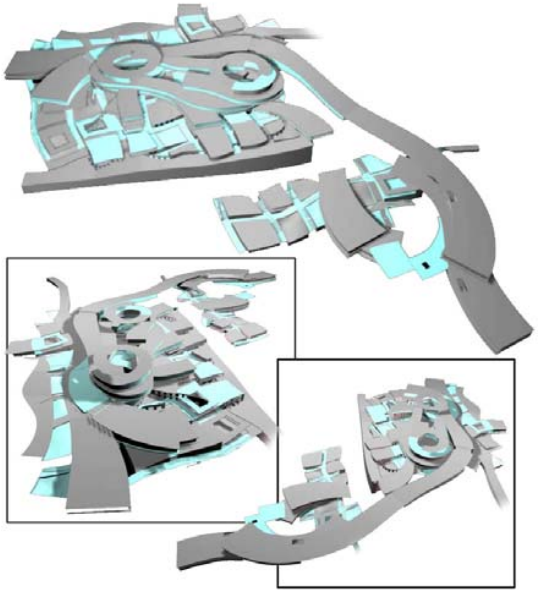

Fig. 11 Third form for volume

V. Analysis

A. Role of Water and Plant Cover in Designing

As an active and dynamic element, water has important role in designing sites and its effect is even seen on form of buildings and their moving direction. Plant cover and topography are merged in site complex and has created an organic bed in site.

B. Analysis of Designed Site

1. Present Functions in Site

Present functions of the site are separately discussed based on public, cultural and entertaining services.

1.1. Public Services

Public Services include residential places and complexes, bank, post office, telecommunication center, immunity police, weather station, seismographic station, environment center, trading center and shops, mountain rescue team.

- Physical plan: Physical plan of important spaces of public services of complex is as follows: One residential places and complexes. After examining similar residential places such as Dizin number 1 and 2 hotels and examining statistics and number of visitors; the capacity of accommodation in this complex is estimated to be more than 350 people. Around three forth of guests which counts as 260 people will stay in planned residential places and the remaining ones will stay in tents. Considering that we would accommodate one person in one-bed room and two people in two-bed room and four people in a suite, we will have: Cultural services including; gathering saloons, library, permanent exhibitions, mosque; and entertaining services including; sport complexes, public green spaces, playing parks and surrounding environment, restaurants, and public buffets, fishing waterfront and mineral water pools.

Fig. 13 Spotting public, cultural and entertaining spaces in site (blue: public services, green: cultural services, orange: complexes)

1.2. Based on Age Limit of Site Users

Age limit of users and residents is divided into three group: young and single, old and aged and group and family visitors.

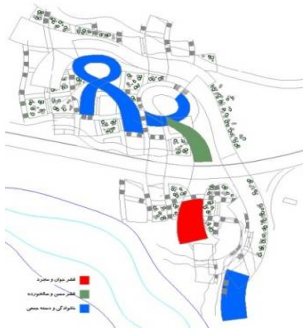

Fig. 14 Spotting residential places based on age groups (blue: public services, green: cultural services, orange: complexes)

2. Availability in Complex

Availabilities for those with car (driving) include: a)foundations and present availabilities in region and studied site and b)proposed availabilities in complex .

Passerby availabilities include: present availabilities in site (made and planned)

Fig. 15 Present and planned roadways in site

Fig. 16 Passerby ways in site

Fig. 17 Planned parking places in site

3. Structure

To study and design the structural system of residential places of the site; based on the needs, technical and economical justification studies are carried out and the results are shown below:

-Maximum use of available materials

-Possibility of execution by Iranian contractor and use of region capacity and indigenous man power

-Minimum consumption of financial budget

-Harmony and compatibility of structure with architectural plan and environmental condition

-Preferred structure based on total costs

-Increasing ratio of useful spaces to limited spaces occupied by structure members

In this connection, one of the very important issues is desired harmony with architectural and building plans and supplying ease of action. Regarding the above mentioned criteria and factors, engineering studies are carried out using common and rational systems for big international complexes. The results are shown after examining and analyzing several options. And finally the optimum option is selected.

VI. Conclusion

This complex which is located in a unique landscape with the potential of hot water streams of Aab Aask is a suitable space for tourists and indigenous people to efficiently use the natural and recyclable properties of the area and remove the problems and limits of the site as well. Regarding its being close to Aab-Ask village, these two complexes can move away each other's deficiencies emphasizing on their capacities and potentials and will create an attractive environment for sustainable tourism through regaining natural and historical value of Aab-Ask region.

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