

# The study of the principles and methods of architectural design in the protected context of Meymand Historic Village

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## *The study of the principles and methods of architectural design in the protected context of Meymand Historic Village*

In the present study, we have tried to introduce and study the architecture of Meymand historic rocky village in Iran, its relationship with the surrounding nature, and its design constraints. The research is fundamental, descriptive, and analytical. Data collection methods include the use of books and published articles, field visits to Meymand village, and interviews with the villagers. Since Meymand village has been registered on the UNESCO World Heritage Sites list, this paper seeks to study the rules and regulations set for this cultural heritage, the methods and constraints of construction in the region, as well as its core zone and triple zones, and the three different lifestyles of the dwellers. According to the previous studies, the application of the regulations prescribed by the Cultural Heritage Organization in Meymand has led to the creation of a preservative precinct in the village so that anything that would cause destruction or damage to the core zone (including damages to the visual features) is prohibited. The construction of new buildings and pathways in the core zone is prohibited, and permissible interventions are limited to restoration, revitalization, repair, change of use, change of interior spaces, and the removal of newly-established and non-native buildings (to maintain the native look of the village). Everything must be done in such a way that it does not undermine the natural environment of the zone. It is imperative to preserve the historic monuments and cultural landscape within the core zone. The construction of new buildings is forbidden in zones 1 and 2, but infrastructure, welfare, and tourism services can be established, aiming to preserve the cultural, historical, and natural values of the region. Saraghol area in zone 3 is the only area where the construction of new buildings is allowed. In any case, any new construction should be in harmony with the surrounding environment. Therefore, the design should be indigenous and limited to the surface of the earth, and the height must not disturb the skyline of the area. Besides, to preserve the cultural landscape, the indigenous construction methods have priority over the modern ones.

Key words: Historic Village of Meymand, Protected Texture, Rocky Architecture, Iran

## 1. Introduction

In Meymand historic rocky village, houses have been dug in the mountains (Handcrafted architecture).<sup>1</sup> Iran Cultural Heritage, Handicrafts, and Tourism Organization (ICHTO) has introduced some regulations to protect historic monuments and sites like Meymand Village. Compliance with these regulations leads to better coordination between architecture in the present era and the surrounding nature. In this research, we first examine the three lifestyles of the local people, the architectural textures, the types of materials used, and the way the local people interact with nature. Afterwards, we will examine the regulations introduced by the Cultural Heritage Organization and the design constraints in the historic site of Meymand Village. Finally, we will propose the best solution for dealing with Meymand historic site in terms of architectural design. This solution must meet the needs of the region, be in compliance with the regulations, and prevent the distortion of Meymand cultural landscape.

There are seven registered world heritage historic sites in Kerman Province and Meymand Village is one of them. Unlike the thousands of historic sites that have either been semi-ruined or totally turned into dust, the three-thousand-year-old Meymand village is still alive and inhabited hence recognized as a world heritage site. It has also received the Mercury Prize. This village portrays particular architecture, history, traditions, and culture, as well as the way people interact with nature.<sup>2</sup>

## 2. Introduction to the village of Meymand

Meymand historic village is located 36 km northeast of Shahr-e Babak city, Kerman Province, Iran. It is bounded by Khatunabad plain in the south and Mount Khorin in the northwest. The village is located between the cities of Yazd, Kerman, and Shiraz, bounded in the north by Rafsanjan and in the southeast by Sirjan. The exploration and extraction operations in the region, especially those related to the copper mine, date back 6000 years. Based on the documentation of the discovered stone artifact images by a French group, this place has a history of about 12,000 years, and many believe that the village dates back to the Achaemenes period. The texture of this village is rocky and the dwellings are holes in the mountains<sup>3</sup>. Meymand climate is mild mountainous. It has cold and rainy winters and mild summers.<sup>4</sup>

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<sup>1</sup> LABAF Khaniaki, M. The Course of Cultural Change in Meymand, Kerman Province, Based on Historical Studies and Archaeological Findings. In: *Archaeological Studies*, No. 2 (Autumn and Winter 2017), p. 4.

<sup>2</sup> EBRAHIMI Meymand, Kobra. *Meymand Immortal Masterpiece*. Kerman : Kermanshah Center, 2007, p. 11.

<sup>3</sup> ATAEI Hamedani, M. – Niknafas, A. – Mofidi Shemirani, S. M. Physical Integration of Habitats without Ethnic Communication (Comparative Study of the Meymand Village of Kerman and Colorado). In: *Arman Shahr architecture and Urbanism Journal*, No. 11 (Autumn and Winter 2013), P. 113.

<sup>4</sup> MORADIAN, A. – Yousefi, S. J. Final Report of the Geological Survey plot of Maymand Region of Babak city. In: *Cultural Heritage and Tourism Organization*, 2005, p. 6



Fig. 1: The route from Shahr-e Babak city to the village of Meymand, Kerman Province, Iran.<sup>5</sup>

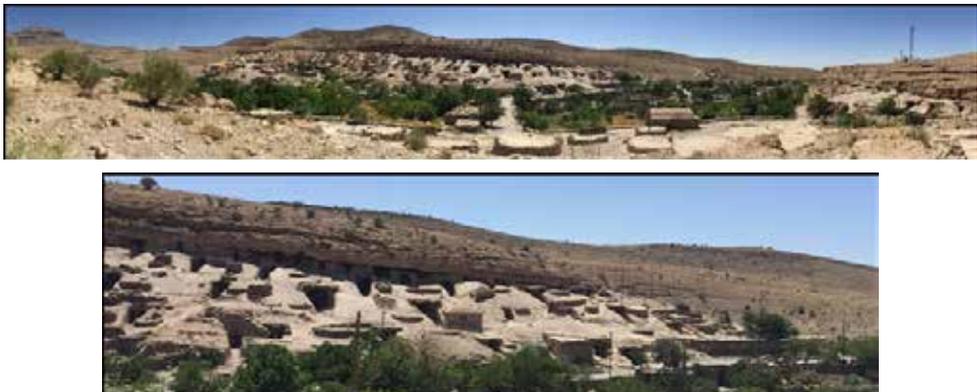


Fig. 2: A birds-eye view of Meymand Village, cages, and Pathbags<sup>6</sup>

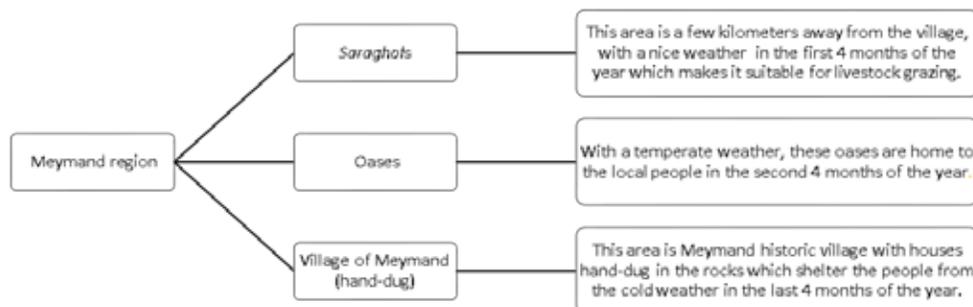
## 2. 1 The relationship between the natural context and living spaces in Meymand

Meymand region, with a 120-square-kilometer area, includes three types of settlements: *Saraghols* (corrals), oases, and Meymand Village (with a Hand-dug architecture) that have

<sup>5</sup> <https://maps.google.com>

<sup>6</sup> The vertical wall below the edges of the cliffs (arches) in the highest row of Meymand houses; there were some rooms there where people and their flocks lived. Today, they are abandoned; Authors, 2016

different architectural features, and the local people migrate to live in these three settlements in three phases.



**Chart 1:** The 3 types of settlements in Meymand region<sup>7</sup>

*2-1-1-Saraghol:* In the first four months of the year (mainly spring), the people live in the *Saraghol*. The *Saraghol* is a semi-underground structure, safe from the winds and heavy spring rainfalls of the plain.<sup>8</sup> In each *Saraghol*, there are several houses called “*Markhaneh*”<sup>9</sup>, with one-meter-thick bases made of stone, and walls and a conical roofs covered with branches, bushes, and soil. In the warm summers, they build a wooden chamber in front of *Markhaneh* and with a higher ceiling, which they call *Kepar*<sup>10</sup>. It is cool in the *Kepars* owing to the walls and ceilings covered with bushes. There are *Didons*<sup>11</sup> in the *Kepars* and the *Markhanehs*. Some people have white tents instead of the *Kepars*. Water is a major problem for *Saraghol* dwellers. In the past, they stored the river water in ponds and this water was not clean and healthy, but nowadays, water is supplied by tankers or plumbing systems, or from wells.<sup>12</sup> Other architectural elements of the *Saraghol* are: *Kuz*<sup>13</sup> and *Darkuz*<sup>14</sup>; *Korom*<sup>15</sup>; *Sul*<sup>16</sup>; *Talgard*<sup>17</sup>; *Zendan*<sup>18</sup>; water ponds, water supply tanks, a place for keeping animal food rations, and forage storage.

<sup>7</sup> Authors, 2017

<sup>8</sup> MEHRAN, M. *Maintenance and design charter in the context of the Meymand Historical Village*. Tehran : Faculty of Architecture (College of Fine Arts), 2006, p. 21.

<sup>9</sup> The human dwelling space dug in the earth in the *Saraghols*, built with inner wall of stone piles and conical ceilings made of tree branches.

<sup>10</sup> A vast and solid living area in the oases made of living plants or trunks and branches of trees and shrubs

<sup>11</sup> The fireplace; It is the place where most household activities are done. It is inside the *Kepar* and on the platform opposite it.

<sup>12</sup> EBRAHIMI, ref. 3, p. 11-117

<sup>13</sup> Pits with a structure like a *Markhaneh*, but smaller in size used for keeping *Khalmehs* (lambs or other young animals)

<sup>14</sup> The open and deep space in front of the *Kuz* and connected to it. It is used for keeping livestock. When people want to suckle *Khalmehs*, they take them to *Kuz* to be suckled by their mothers.

<sup>15</sup> It is like the *Kuz*, but much smaller. It is used for keeping *Khalmehs* that are only a few days old.

<sup>16</sup> Modern corrals with stone walls and vault ceilings, which used to be built with logs and mud covers for keeping sheep in the winter

<sup>17</sup> A circle or square space made with bushes. This space is for feeding and milking the livestock.

<sup>18</sup> If a sheep avoids suckling its lamb, villagers put both of them in a small 0.5-meter-deep pit (*Zendan*) so that it is forced to suckle the lamb and get used to it.

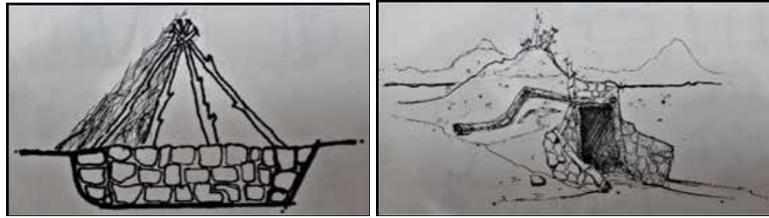


Fig. 3: Markbaneh: facade and in section<sup>19</sup>

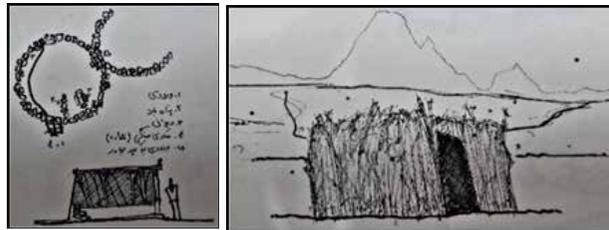


Fig. 4: Perspective, plan, and cross-section of a Kepar<sup>20</sup>

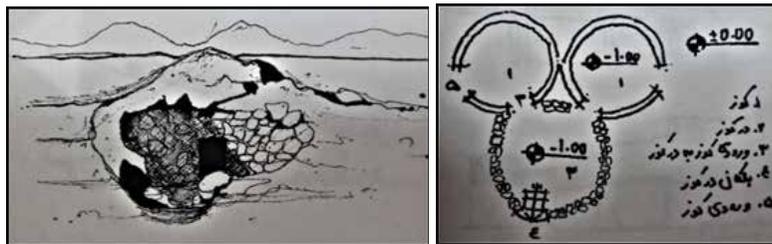


Fig. 5: Plans and spaces of aKuz and a Darkuz<sup>21</sup>



Fig. 6: Perspective, plan, and view of a SuF<sup>22</sup>



Fig. 7: Plan of SaragboF<sup>23</sup>

<sup>19</sup> Authors, 2016

<sup>20</sup> Authors, 2017

<sup>21</sup> Authors, 2017

<sup>22</sup> Authors, 2017

<sup>23</sup> Authors, 2017



Fig. 8: Saragbol.<sup>24</sup>

2-1-2-Oases (*gardens*): During the second 4 months of the year (summer), people stay in the oases. To avoid the summer heat, the structures are either very light (*Kepar*) or semi-light (*Gombe*<sup>25</sup>) with non-dense roof coverings, built in the vicinity of seasonal rivers around the oases and in the shade of trees to moderate the temperature. Rocky and non-cultivated parts are allocated to dwelling spaces while gardens are located on river banks.<sup>26</sup> There are 35 oases developed on the mountainside along mountainous paths, each home to 2 to 40 households. Water is obtained from the springs and the river. The river water is gathered in a pool and the spring water is led by a pipe to the *Chabarkhaneh*<sup>27</sup> area.<sup>28</sup> *Kepars* are among the architectural elements of the oases. They are structures with stone walls on which tree branches are placed to form the ceiling.<sup>29</sup> The *Kepar* has a *Didon*, a rocky niche, and a *Penabad*<sup>30</sup>.<sup>31</sup> Its other architectural elements are *Gombe*, *Telvareh*<sup>32</sup>, *Mashkadan*<sup>33</sup>, *Talgard*, livestock, *Kharman Kamar*<sup>34</sup> and *Parvarband*<sup>35</sup>.

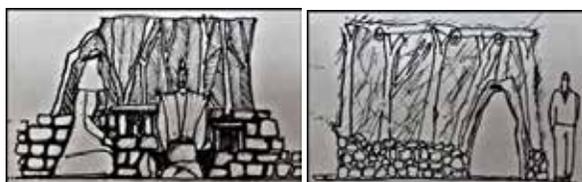


Fig. 9: The *Kepar* and its interior; the use of light plant-based building materials in an agro-ecosystem<sup>36</sup>

<sup>24</sup> Authors, 2016

<sup>25</sup> The human dwelling for the cold and rainy days of early fall, with stone walls and flat, sloping, or conical wooden roofs.

<sup>26</sup> MEHRAN, ref. 10, p.29

<sup>27</sup> The name of an area in Meymand Village. (Nejati Dolagh. M, Personal Interview, June, 5, 2016)

<sup>28</sup> SHAHSHAHANI, Soheila. *Meymand*. Kerman : Kermanshah Center, 2005, p. 105-107

<sup>29</sup> MEHRAN, ref. 10, p. 30 and 31

<sup>30</sup> A place in front of the Kicheh, as an open-air space protected against the wind. It has 1-meter-high walls of stone piles where people do some of their activities like sitting, cooking, heating milk etc.

<sup>31</sup> *Documents of Cultural Heritage, Handicrafts and Tourism Organization of the Historical Meymand Village* (ICHTO). 2010, p. 6

<sup>32</sup> A rocky platform built inside the Kaper and along its wall with a height of about half a meter to put household tools.

<sup>33</sup> A rocky platform in the middle of which branches from trees are placed to form a base where water-skins are kept.

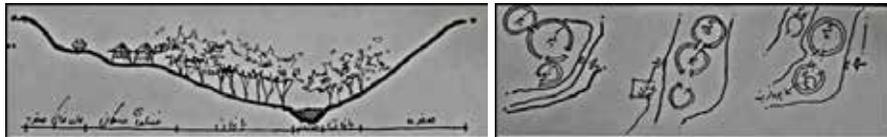
<sup>34</sup> Usually in the upper parts of the village, people cut and level the space in the middle of the mountains and use it as a place to expose their harvest to the air.

<sup>35</sup> A place like a corral made of wood and stone used for fattening sheep, whether for sale or for use of their meat in the winter.

<sup>36</sup> Authors, 2017



**Fig. 10:** Top: Gombe and its section  
Bottom: Types of Gombes; use of natural materials without industrial processing.<sup>37</sup>



**Fig. 11:** Left: development of oases in the vicinity of seasonal rivers  
Right: Plans of the constituent architectural elements of the oases<sup>38</sup>



**Fig. 12:** An Oasis<sup>39</sup>

*2-1-3-Meymand (Hand-dug):* Meymand is the winter settlement of the local people (from November until mid-March) with about 400 dwelling units (*Kichebs*<sup>40</sup>) and more than 2,500 rooms dug in the heart of the mountains.<sup>41</sup>

In Meymand, people make their houses by removing a mass of rock from the rocky hill. These houses may comprise one or more rooms and stalls. They dig holes in the walls of the rooms to make niches which they use to put their things in, like beddings, dishes, boxes, and lamps. Altogether, these parts make a *Kicheb*. The size and number of rooms in each *Kicheb* can be different from those of the others. *Kiches* are not arranged orderly. They have echelon patterns arranged in 5 step-like levels to avoid intersections and disturbances.



**Fig. 13:** Arrangement of Kiches and rooms<sup>42</sup>

<sup>37</sup> Authors, 2017

<sup>38</sup> Authors, 2017

<sup>39</sup> Authors, 2016

<sup>40</sup> A hallway with a horizontal slope created on a mountain slope, to reach the appropriate depth for digging rooms.

<sup>41</sup> ICHTO, ref. 33, p.7

<sup>42</sup> Authors, 2017

Each dwelling unit in Meymand consists of these elements: a *Kicheh*, a porch, rooms, a port, a warehouse, a stable house, niches, a corridor, and a closet, and the entire house as a unit has one entrance. On the landing, there may be a corral on one side and a living room on the other. A piece of cloth is used to separate the closet from the room or to cover the niches. The houses do not have yards, docks, and gardens. There is an open area in front of each *Kicheh* that connects it to the next *Kicheh*. In the past, ovens used to be inside the rooms, and the smoke from the burning firewood darkened the rooms. Today, some have converted the store rooms next to the main rooms or their old stables to kitchens. The toilet is out of the *Kicheh* with a base slightly lower than the ground, and with sidewalls and ceiling made of stone and mud. The temperature of the rooms is about 5 degrees different from that of the outside.<sup>43</sup> The sizes of the rooms vary and they are typically about 3x4 meters each and with heights between 1.90 and 2.10 meter.<sup>44</sup> There are no roads in Meymand, but just horizontal paths that lead to the cave-like dwelling houses.<sup>45</sup> On each path, there are 3 or 4 rooms with no heaters, chimneys, or vents. The entrances are the only openings of these rooms.<sup>46</sup> Each path ends in an open space called *Dalan* that plays the role of a porch. The mountains are such stiffened sedimentary rocks that they can be dug and engraved without the fear that they would come tumbling down. *Kiches* have closets, niches, 3 doorways, and platforms and the bigger ones, like the baths and the mosques, have pillars.<sup>47</sup> These houses provide shelter from the outside heat, cold, and the erosion agents such as wind and rain, and strengthen the defense and security aspects. Heating and cooling take place naturally since there is little heat exchange with the surrounding environment.<sup>48</sup> Water resources of the village include springs, 2 qanats, and seasonal rivers. There are no permanent rivers.<sup>49</sup> Other elements of the village architecture are *Didon* (for cooking); *Toghol*<sup>50</sup>, terrace or *Mahtabi*<sup>51</sup>; *Barzenge*<sup>52</sup>; stable; *Othaghe bani*<sup>53</sup>, *Othaghe Ziri*<sup>54</sup>, *Balakhaneh*<sup>55</sup>; *Tagh*<sup>56</sup>; *Patagh*; *Sar-sofe*<sup>57</sup>; *Penabad/penabbad*.



Fig. 14: Placement of the houses on two slopes and the village being on a dead-end path<sup>58</sup>

<sup>43</sup> EBRAHIMI, ref. 3, p. 14 and 44

<sup>44</sup> ATAEI et al, ref. 3, p. 114

<sup>45</sup> GORJI Mahlabani, Y. – SANAEI, E. The Architecture Coordinated with the Climate of Kandovan Village. In: *Art and Architecture, Housing and Village Environment*, No. 129 (Spring 2010), p. 10-14.

<sup>46</sup> HOMAYOUN, G. Research on the Meymand Village. In: *Historical Review*, No. 6 (Winter 1973), p. 123.

<sup>47</sup> EBRAHIMI, ref. 3, p. 44 and 45

<sup>48</sup> MEHRAN, ref. 10, p.36

<sup>49</sup> ICHTO, ref. 33, p.7

<sup>50</sup> Toghol: Terrace or Mahtabi; the flat space opposite or next to the Kicheh leveled with stones, used as a sitting space or for spreading nuts to be sun-dried.

<sup>51</sup> A short wall of stone piles around the Kicheh that is made without grout.

<sup>52</sup> A stone-piled area behind the lavatory for collecting human and animal waste to be used as fertilizer.

<sup>53</sup> A room used as a storeroom.

<sup>54</sup> A cavity in the room floor that is used as a storeroom.

<sup>55</sup> Small storerooms built up in the rooms inside the rocks to put objects into, usually reachable with ladders.

<sup>56</sup> An arch protruding over the Kicheh.

<sup>57</sup> A wooden ceiling above the porch built to prevent rainfall and sunlight.

<sup>58</sup> Authors, 2017



Fig. 15: Meymand Village architecture; façade of a dwelling unit<sup>59</sup>

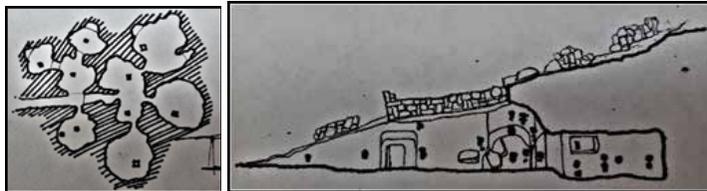


Fig. 16: A dwelling unit in Meymand Village; left: plan; right: section, low ceilings, niches dug in the walls, simplicity of the interiors, and priority of public life over private one<sup>60</sup>



Fig. 17: Plans and sections of Meymand fire temple; wherever necessary, walls are made of piles of stone<sup>61</sup>



Fig. 18: Meymand Village architecture.<sup>62</sup>

### 3. Iran Cultural Heritage Organization's regulations and construction constraints for Meymand Village

There are various dimensions to the protection of historic sites; one of them is to designate such areas as historic zones within which historic buildings, properties, or sites need to be protected. Table 1 presents the boundaries of the four zones of Meymand as determined by the Cultural Heritage Organization.

<sup>59</sup> Authors, 2017

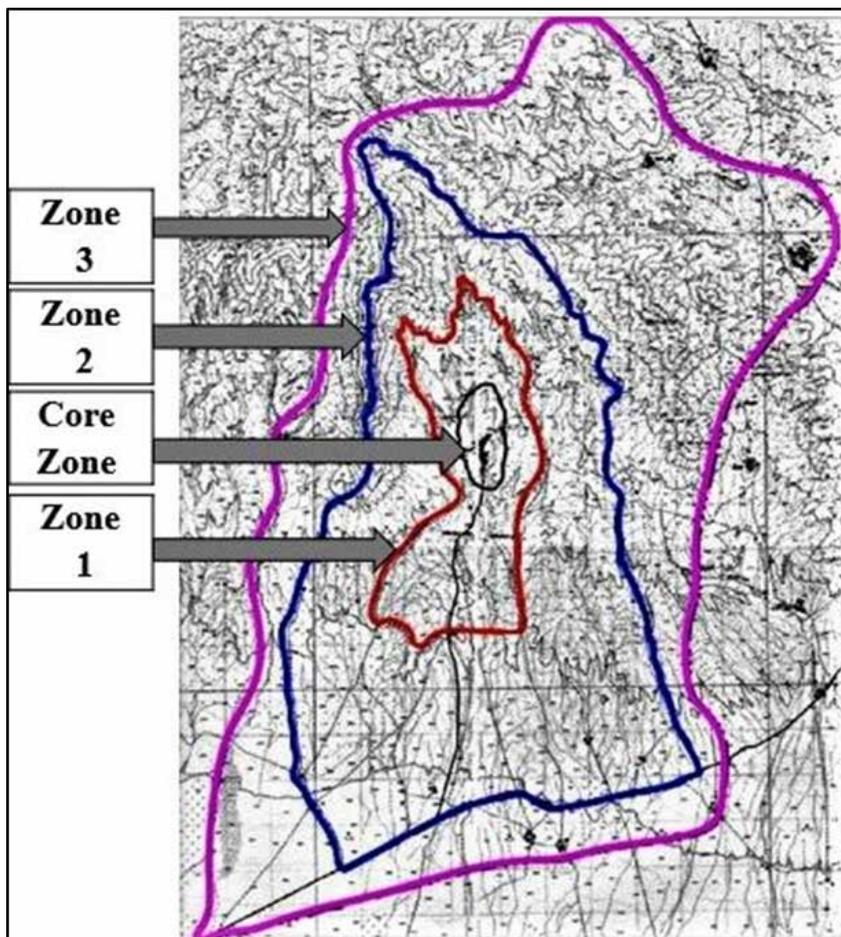
<sup>60</sup> Authors, 2017

<sup>61</sup> Authors, 2017

<sup>62</sup> Authors, 2016

**Table 1:** *Meymand Zones*<sup>63</sup>

Meymand Zones	Core Zone	This zone includes Meymand Village and the natural features around it like mountains, rivers, historic towers on top of the mountains, historic cemeteries; the area within the black circle. (Fig 19)
	Zone 1	This zone is wider and includes the natural environment, important elements and historic monuments like old ossuaries, towers, castles, mills, and other valuable elements related to the Core Zone; the area surrounded with the red line. (Fig 19).
	Zone 2	This zone starts from the ridges of the surrounding mountains and extends up to the Shahr-e Babak-Paghal'eh tarmac road and includes the vegetation and cultural landscape of Meymand Village; the area within the blue line. (Fig19)
	Zone 3	This zone includes the geographic, natural, and historical features around the village and <i>saragbols</i> , the area marked with the pink line. (Fig19)



**Fig. 19:** *Meymand zones as designated by Iran Cultural Heritage Organization*<sup>64</sup>

<sup>63</sup> Authors, 2017

<sup>64</sup> MEHRAN, ref. 10, p.161

## 1. Regulations of the Core Zone

- Anything that would lead to the destruction of or damage to the core zone is prohibited. Such damage includes that to the visual features of the landscape.
- It is forbidden to construct new buildings within the Core Zone. Any repair, widening, or renovation of the old pathways will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.
- Any developmental activity and organization in order to preserve the cultural and historical values of the village, including restoration, revitalization, development, repair, alteration, or change of functions in a part of or in the entire Core Zone will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval, and by strictly complying with the provisions of the approved plan.
- Exploitation of springs and rivers to supply water to the agricultural lands and gardens is permitted provided that the natural environment of the Core Zone is not damaged.
- Mining of stones and sand, carving and cutting through mountains, and leveling are prohibited in the Core Zone.
- Providing infrastructure services, facilities, and amenities such as water and electricity supply, sewage, gas, telephone line, etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.
- Public and heavy motor vehicles are not allowed into the village.
- Archeological and scientific research and the supervision of all such research plans and projects are exclusive to the ICHTO.
- Historic towers on top of the mountains and historic cemeteries within the Core Zone are elements of historical value that should be protected and preserved in their present conditions.
- The preservation of the cultural landscape in the Core Zone is mandatory and the cultural activities can go on the same way as before.
- It is emphasized that the new buildings like those of the Education Camp, Telecommunications Co., the new public bath, public sanitary facilities, the Health Center, and the newly-built school, and the inharmonious residential buildings in the Core Zone as well as all other buildings that cannot be localized should be either refurbished according to the prescribed criteria or removed.
- Conclusion: The cultural landscape and the antiquities in the Zone should be preserved; no new buildings can be constructed; and only the restoration, revitalization, repair, alteration, etc. of the existing buildings are allowed provided that they are done with the approval of the ICHTO; newly-built buildings should be removed.

## 2. Regulations of Zone 1

- No construction is allowed in Zone 1, except for special cases where the written permission of the ICHTO will be required.
- Any civil development activity such as mining of stones and sand, carving and cutting through the mountains, and installation of power and telecommunication

towers, satellite and television antennas, advertising billboards, etc. that would lead to the degradation of the landscape and the natural environment is prohibited.

- Any organization and landscaping project, and provision of amenity, recreational, and tourism services in Zone with the intention of preserving the cultural, historical, and natural values of the Zone will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval, and by strictly complying with the provisions of the approved plan.

- All historic monuments in the zone, including the ancient ossuaries, towers, forts, and cemeteries, mills, and other valuable elements are related to the Core Zone (the village) and should be protected, restored, and fixed to maintain their present status.

- The exploitation of rivers, springs, and other natural elements is permitted, provided that it does not alter the natural environment and damage the landscape.

- Maintaining the agricultural lands and gardens of the zone is mandatory.

- It is forbidden to change the land usage. It is obvious that maintaining the use of agricultural lands and gardens is mandatory.

- Conclusion: The construction of new buildings is forbidden in Zone 1, but the restrictions are less tight than those set for the Core Zone. Provision of amenity, recreational, and tourism services with the intention of preserving the cultural, historical, and natural values of the zone is permitted.

### 3. Regulations of Zone 2

- Any construction of buildings is prohibited in zone 2. In special cases, the written permission of the ICHTO will be required.

- The organization and establishment of any welfare services and facilities such as water, electricity, telephone, gas supply etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval and under the direct supervision of the ICHTO.

- All historic monuments in this zone, including the ancient ossuaries, towers, forts, cemeteries, mills, and other valuable elements are related to the core zone (the village), and should be protected, restored, and kept in their present conditions.

- Implementation of any proposed project of any nature, such as the widening or construction of roads and bridges, afforestation, dam building, watershed management, etc. will only be permissible after the submission of the relevant proposal to the ICHTO and obtaining its approval.

- It is suggested that study projects be carried out in cooperation with the relevant organizations (like the Ministry of Agriculture) in order to reinforce the plant and animal species in the region, and that the resulting solutions and plans be implemented after the final approval of the ICHTO.

- Animal husbandry and construction of corrals are permitted in Zone 2.

- In order to preserve the natural resources and features of the area, any manipulation of or damage to the natural environment of the area, such as the alteration of the slopes and topography of the lands, the soil, gardens, fields, river paths, qanats, springs, and vegetation is prohibited.<sup>65</sup>

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<sup>65</sup> ICHTO, ref. 33, p. 1-6

- Conclusion: It is forbidden to construct new buildings in Zone 2. The establishment of welfare and tourism services and facilities is allowed providing that the cultural, historical, and natural values of the region are maintained.

#### 4. Regulations of Zone 3

- The construction of buildings in zone 3 is permitted if done under the supervision of ICHTO.
- Establishment and organization of any welfare services and facilities such as water, electricity, telephone, and gas supply, road construction, etc. must be approved by ICHTO.
- All historic monuments and sites in this zone, including the cemeteries, forts, and other sites of historical value should be protected, restored, and sustained in their present conditions.
- Archaeological and scientific research is possible with the approval and under the supervision of the ICHTO.
- Animal husbandry and the construction of corrals are permitted in zone 3.<sup>66</sup>Conclusion: It is only in this zone that the construction of new buildings is permissible.

#### 4. SWOT Analysis of Meymand Village

The following SWOT tables are the outcome of the interviews with the employees of the ICHTO office at Meymand and Meymand villagers, the study of the resources (books and theses), and the researcher's analyses.

**Table 2:** *Strategic Planning Table*<sup>67</sup>

Architectural and space design issues	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
The entrance	In the south of the village	Being inviting	Not conspicuous	The positive role of entrance in attracting and inviting people	Limitations in making the entrance noticeable due to the site's harmony	Making the entrance noticeable using architectural or natural elements
Service spaces	Existence of guest houses and baths	Meeting some of the needs of tourists	Lack of all required service provision spaces	The potential of the site for designing service spaces	Reduced number of tourists due to the lack of all service spaces	Designing service spaces in the village
Resorts and pause spaces	Pauses and rest spaces in the village	Increase of interactions, holding ceremonies	Lack of trees and shade	Promoting social activities	Creating covered areas and increasing insecurity at night	Planting trees and creating fountains at pause spaces

<sup>66</sup> MEHRAN, ref. 10, p. 81 and 82

<sup>67</sup> Authors, 2017

Historic monuments: old schools, baths and etc.	Used as museums, Cultural Heritage Offices or its default use	Attraction of tourists and creating income	Demolition of the ceilings of the spaces due to the spaces not being used	Conversion of the unused spaces into usable ones	Mismatch between some spaces and their uses, and insufficient spaces	Repairing old buildings and saving them from destruction
Parking lot	In a small size at the entrance of the village	Not letting the cars into the village	Limited parking spaces	Possibility of creating a new parking lot	Developing the parking spaces and damaging the cultural landscape	Building a new parking lot

**Table 3:** *Strategic Planning Table*<sup>68</sup>

Executive issues	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Pavement	Asphalt, un-paved tracks, and stone	Matching the type of pavement with its use	Difficulty of movement due to pavement	Creating natural landscapes and attracting tourists	The possibility of injuries and damages while in traffic	Improving the traf-fic facilities by suitable pavement
Walls	Natural and man-made rocky and stone walls	Creating shelter from the wind and protecting the architectural spaces	Restricting the landscape views of architectural spaces	Protection against wind and sun	The possibility of the collapse of the walls and prevention of plant growth	Creating diversity with small gardens in the stone walls
Stairs and ramps	Stone stairs and ramps	Creating diversity and visual beauty	Difficulty in traffic	More ramps instead of stairs	Damage to the beauty of the spaces with the destruction of stairs	Designing ramps with appropriate slopes

**Table 4:** *Strategic Planning Table*<sup>69</sup>

Equipment	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Furniture	Stone platforms to seat people and signs in The area	Creating rest spaces	Lack of sitting spaces, shade, and trees	Increasing inter-action	Damage to the village cultur-al landscape	Planting trees to create shade
Lighting	Power and light poles	Lighting of the area	Lack of adequate lighting at night, visual pollution	Livening up of the spaces at night with prop-er lighting	Damage to the village's cul-tural land-scape	Proper lighting, re-moving light poles, passing wires from under the ground
Drinking fountain	Stone fountains	Meeting the needs for water and fresh air	Lack of foun-tains	Building more fountains	Difficulty in collecting the wastewater	Increasing the num-ber of fountains, especially in pause places

<sup>68</sup> Authors, 2017

<sup>69</sup> Authors, 2017

**Table 5: Strategic Planning Table<sup>70</sup>**

Social, cultural, tourism and economic basis	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Social	The presence of tourists, residence in the village	The richness of the cultural, natural, and historical heritage, how people interact with the environment	Lack of information about features of the region, the density of tourists in some places and damage to the region	A proper place for experiencing the native life	Impossibility of proper preservation of the region due to low awareness of the regulations, like un-authorized construction...	Creating spaces for the settlement of tourists, informing them how to protect the region
Cultural	Residence in the region and introduction of its culture and architecture	Existence of ancient natural and historical works with several-thousands-year-old culture	Lack of space for cultural exchange between native people and tourists	Changing the uses of spaces to create the necessary spaces	Impossibility of construction of new spaces due to the rules set by ICHTO	Creating places for displaying handicrafts and introducing the local culture
Tourism	Tourism and tourist attraction	The scenery and ancient monuments, the historic Meymand Village and saraghols	Lack of places for tourist accommodations	Create recreational and tourism spaces	Reduced tourists due to lack of facilities	Building accommodations for tourists
Economic	Tourism, people's collecting of mountain stones for the ICHTO	Limited stay of tourists in the region and visits to the region	Income is only earned through gardening, animal husbandry, and handicrafts	Creating attractions and facilities for tourists	Depopulation due to reduction of sources of income	Creating places for employment and new sources of income

**Table 6: Strategic Planning Table<sup>71</sup>**

Access paths	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
First group	Asphalt road in the south	Convenient access, light traffic, no air and noise pollution	Passing livestock Closing the road	Stay in a calm environment and away from the noise	Lack of facilities	Changing livestock movement paths, creating welfare facilities (with no damage to the landscape)
Second group	Dirt road in the middle of the village	Access to the village	Creates dust along the route	Access to different parts of the village	Difficulty of transport on the road	Asphalting some parts of the route

<sup>70</sup> Authors, 2017

<sup>71</sup> Authors, 2017

**Table 7:** *Strategic Planning Table*<sup>72</sup>

Pollution of the area	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Air Pollution	Existence of a copper smelting factory near Meymand	Freshening the air with vegetation	The detrimental effect on live-stock	Possibility of planting and spreading native plants	Livestock loss, change of ecosystem	Planting trees, forcing the factory to reduce pollution
Water pollution	Existence of a factory near Meymand, human activities	Using qanat water through plumbing and portable containers	Pollution of drinking water	Optimal use of water	Loss of livestock	Using purified water
Soil contamination	Existence of a factory near Meymand	Vastness of the area in proportion to the amount of pollution	Pollution of soil and its destructive effects	Using less harmful materials	Loss of livestock and vegetation	Planting trees, forcing the factory to reduce pollution
Visual pollution	Power poles and wires	Supplying electricity	Distortion of natural and cultural landscape	Providing welfare facilities	Visual pollution and damaged natural landscape	Removing the poles and passing wires from under the ground
Noise Pollution	Sounds of live-stock and birds	Hearing natural sounds	No sound control	Relaxing and calming the soul	Disturbance when resting	Insulation of walls, doors, and windows

**Table 8:** *Strategic Planning Table*<sup>73</sup>

Vision and landscape	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
From the village to the surroundings	Seeing the scenery	Favorable view of the natural environment	Feeling of presence in a vast area, creating a sense of insecurity at night	Relaxing the soul by the charm of the landscapes	Lack of adequate light at night, the sense of fear	Create a proper lighting at night
From the surroundings to the village	Seeing the houses as small doors in the mountains	Preserving the primary cultural landscape of the village	Feeling of presence in a vast area, creating a sense of insecurity at night	Learning to interact with the nature	Lack of adequate light at night, the sense of fear	Create a proper lighting at night

<sup>72</sup> Authors, 2017

<sup>73</sup> Authors, 2017

**Table 9:** *Strategic Planning Table*<sup>74</sup>

Climate issues	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Wind	Storms	Protection against winds by trees and land	No use of wind in the interior spaces due to lack of win-dows	Use winds for cooling	Winds reduce the activities	Planting evergreen trees and creating shelters from the wind
Temperature	Cold winters and mild summers	Natural cool summers	Cold winters and reduction of activities	Reducing the fuel used to provide cooling and heating	Reduced winter activities	Use of trees and land for protection against heat and cold
				Disinfecting spaces by	No sunlight reaching distant areas and growth of ver-min insects	Planting evergreen trees in the east and west and planting broadleaved trees in the south of the site
		Sunlight	Angled sunlight close to the vertical line	Placing the spaces on the southern slope and the use of sunlight	Direct sunlight in the summer	sunlight entering the interiors
	Average monthly relative humidity: 34%	Desirable air in the summer	Increased moisture in the ground during the winter	Use of plants and ponds to increase moisture	Creating problems for indoor spaces by in-creasing moisture	Planting trees and creating ponds in the area for summer air moderation
						Humidity
					Reduced healthy water	Use of purified qanat and river water
	Groundwater, River/Qanat	Use plumbing systems to supply water	Using qanat water through plumbing and portable containers	Impossibility of using river water in dry seasons	Use of rich groundwater resources	resources
Water resources	River, well, atmospheric precipitation, underground waters and plumbing systems supply	Various sources of water supply, rich under-ground water reservoirs	Not all water resources contain healthy water	Using rich underground water reservoirs	Lack of water supply	Purification and use of existing water resources

<sup>74</sup> Authors, 2017

**Table 10:** *Strategic Planning Table*<sup>75</sup>

Environmental issues	Current status	Strengths	Weaknesses	Opportunities	Threats	Ideas
Vegetation	Foothill steppe, short shrubs and forest trees	Preserving water in the ground	Limited vegetation in proportion to the vastness of the area	Air purification, protection against winter winds and summer sunlight	Destruction of plants due to contamination and reduction of water resources	Use of vegetation and improving the spaces by creating shade
Natural disasters, faults/ earthquakes	Existence of 18 active faults in the province; the closest fault to the site is Shahr-e Babak city fault	No major fault within the site	Risks due to the relief facilities being remote	Low population and light traffic, being located in an open area	Difficulty of fast transport in emergency due to unpaved roads	Paving the road to speed up traffic, establishment of facilities in the area of Meymand Village
Slope and topography	Slope of the area from the north (steep) to the south (gentle); (6-12%)	Possibility of creating architectural spaces within the rocks	Difficulty in traveling	Play with the site and creation of diverse spaces	Difficulty of traffic and relief in emergencies	Creating routes along slopes in the form of ramps for disabled people
Land	Rocky; made of pyroclastic materials	Robustness of the rocks for excavation and rock digging	Impossibility of creating an opening (other than the entrance)	Preserving the cultural landscape by observing the regulations of the ICHTO	Impossibility of creating new buildings due to the regulations of the ICHTO	Using modern equipment in the construction of rocky spaces

## 5. Conclusion

The aim of this paper was to study the rules and regulations set by Iran Cultural Heritage Organization and the construction methods in Meymand region as a globally-recognized site, and to study the core zone and the triple zones of Meymand region and the three different lifestyles there. In the surrounding zones of Meymand village, any action that would result in the destruction of or damage to the core zone (including damage to the landscape views) is prohibited. The construction of a new building in the core zone is prohibited and permissible interventions are limited to the restoration, revitalization, repair, change of use, change of interior spaces, as well as removal of newly-established and non-indigenous buildings (which damage the village's landscape). All actions must be such that the natural environment of the site is not undermined. It is imperative to preserve historic monuments in the core zone and the cultural landscape as well. New buildings should be removed. In the first and second zones, construction of buildings is forbidden and only facility, welfare, and tourism services can be established with the intention of preserving the cultural, historical, and natural values of the region. Only in the third zone, the construction of new buildings is permitted. Compliance

<sup>75</sup> Authors, 2017

with these rules in Meymand must be taken seriously in order for the coexistence of nature, architecture, tradition, history, culture, and the way people live.

Regarding the triple lifestyles of the people in Meymand Village, the people have interacted with the surroundings by building their required spaces in the rocks in the village, under the ground in *Saraghols*, and with appropriate light materials in the oases. So, they have used the environment to meet their needs with the least manipulation of and damage to it. In Meymand Village, priority is given to preserving the cultural landscape and the indigenous actions and the native inhabitants of the region. This means that, at first, the required spaces should be created by restoring or altering the use of the existing structures via indigenous methods. Then, in case of insufficiency, modern technologies and solutions are used to create the required new spaces which should be in harmony with the cultural landscape of the region. There are some threats to the life of Meymand Village. These threats include reduced number of inhabitants in the village, lack of utilization of the *Kichebs* leading to their gradual loss and destruction, reduction of water resources, pollution of air, water, and soil. If these threats are ignored, the cultural landscape of Meymand Village will be gradually destroyed. Therefore, by changing the usage and repairing the rocky spaces, creating the required spaces in the third zone in accordance with the needs of the village, it is possible to create new jobs and return the population and life to the village and prevent *Kichebs* from being destroyed. The return of the population to the region makes the area more famous, and it will draw more attention to the village, and will lead to attempts to create appropriate facilities. For example, modern and environment-friendly buildings can be created. The old school can be converted to the Cultural Heritage Office. Building new sanitary services inspired by the *Gombe* architecture for the Cultural Heritage Center in the part of the village where sewage disposal is possible is another example. Finally, to sum up, the general architectural features in *Saraghols*, the oases, and the Village of Meymand (hand-dug) are as follows:

- *Saraghok*: 1. Use of light materials (mostly wood, soil, and stone) in the construction of architectural elements 2. Integrated small spaces without internal divisions 3. Use of local materials including plant wastes and residual branches of pruned trees without industrial processing, to cover architectural elements 4. Digging holes in the ground and building architectural elements, using the thermal balance of the ground, and reducing connection between inside and outside air.

- Oases: 1. Use of light materials and structures (mostly wood, soil, and stone) in the construction of architectural elements 2. Construction of houses in the vicinity of seasonal rivers and under the shades of trees 3. Use of local materials, including plant wastes or residual branches of pruned trees without industrial processing to cover architectural elements.

- Village of Meymand (hand-dug): 1. Openings and skylights are limited to entrances of the dwelling units 2. Creation of external access between the different functions of a dwelling unit 3. Creation of a simple space in the form of a room and the overall composition by putting several such units together 4. Trying to minimize Man-made walls 5. Dense rural texture 6. Digging under a volcanic hard layer as the main cover of the setting which makes it resistant and firm so that it would not collapse while digging 7. Use of materials with high thermal capacity in the parts that walls need to be built 8. Following the natural stratum of the environment 9. Use of man-made rocky walls alongside natural bases and walls 10. Creating spaces inside the

rocks and benefitting from their thermal insulation characteristics which reduce the need for heaters and coolers. 11. Minimum manipulation of the natural environment in creating the required spaces.

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