

## Improving the spatial structure components of Yazd historical texture according to the restoration and restructure of Daralshafa Historical Pathway

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Received: March 8, 2015

Accepted: May 10, 2015

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### ABSTRACT

The urban spaces are the most important components of urban architecture which are observed and understood due to the human direct presence. In this regard, the spatial structure of historical textures is created by linear-core growth of model through development of pathways and by creating the core concentration situation of elements and structures at intersections over time. The spatial-structure components are linked with each other in classification based on the public, semi-public, semi-private and private fields, and they have created the spatial structure of texture as a coherent totality with performance and social hierarchy by maintaining the spatial sequence. Meanwhile, the constructive elements of space in three dimensions of floor, wall and roofed space coverage directly affect the physical, functional and subjective-perceptual qualities of space; therefore, the importance of improving all of these elements is obvious in plans for restoration and restructure of historical textures. The aim of this paper is to investigate the spatial structure components, its constituent spatial elements and their affected spatial qualities. Therefore, we consider the way of improving and promoting these elements and provide the recommendations in this field by investigating an area of Yazd historical texture (Daralshafa) as a model in this regard. This study is conducted based on the field studies and analytical-descriptive and historical studies by taking the advantage of old texts and reports, and then the success of these studies is determined according to the case study of Yazd Daralshafa Pathway restoration.

**KEYWORDS:** Spatial structure components, urban space elements, spatial qualities, restoration of historical texture, Daralshafa Pathway, Yazd.

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### INTRODUCTION

In our previous urban architecture, the elements and buildings have organically created the main structure of texture in combination with each other in direction of main axes and around the cores which are usually located at the intersection of these linear axes. In the past, every district had centers where the public daily needs were fulfilled at the scale of pedestrian access. There were the small market, bathhouse, water storage, mosque, tekyeh, Hosseiniyeh, Lard, small workshops and ditch (for access to subterranean water) usually in these centers of districts and the motional and commercial axes of city often passed through these centers and these elements made up the integrated totality of local texture.

Yazd, as the city where has preserved the traditional texture during the evolution and in different historical periods until today, is particularly important as a unique sample of integrated historical texture. "Daralshafa" is one of the most historical districts of Yazd city. This districts, where is considered as a part of central area and market, is so important due to the proximity to Imam Khomeini Street (former Pahlavi street as one of the oldest and main urban roadway of Yazd city) and proximity to Ghiam street and historical structures such as the market and Amir Chakhmaq tekyeh as the most important attractions of Yazd city.

Since the motional axes are considered as the most important elements in historical texture of city in terms of their connecting role with other elements and allowing the access for environmental users and audiences to other structures, this research seeks to investigate the components of spatial structure, spatial elements of texture, and particularly the spatial qualities affected by these factors in studied area, "Daralshafa" and passing it.

Daralshafa pathway is the motional-trade axis of this district and according to a linear-core model, the pathway reaches the Great Mosque and ancient market of Yazd from one side and Khan Market and Ghiam Street from another side. There are the turning points such as the historical structures of Bagh Behesht mosque, marketplace, Fort mosque, Fort bathhouse, Zargar Yazdi House, Abudarda historical collection, Jews' bathhouse,

Molla Agha Baba Synagogue, Kamal Synagogue, Mehriz gateway, and main intersection of Al-e Mozaffari market remained from the past and the presence of these elements specifies the importance of this area.

#### Historical documents of Daralshafa district in Yazd

Daralshafa district is limited to Chahar Suq district from the north, the market and Kolehdooz'ha district from the south, Imam Khomeini Street and Pir Borj District from the east, and Lab-e Khandagh district from the west. Daralshafa is one of the charity and public welfare structures which was built by the order from Khwāja Shams-ud-Dīn Hāfez-e Shīrāzī by Khwāja Shams-ud-Dīn Muhammad Taziko in the seventh century, and its name remained on the district where this structure was located in that position. The name, "Daralshaye Sahebi", is mentioned in most of the historical texts of Yazd. According to the historical texts, Khwāja Shams-ud-Dīn Muhammad Hāfez-e Shīrāzī (who were the Abaqa Khan's Minister in Tabriz) ordered his deputy, Khwāja Shams-ud-Dīn Muhammad Taziko, to build a structure called Daralshafa in Yazd [1].

After construction of this structure, Khwāja Shams-ud-Dīn Muhammad Hāfez-e Shīrāzī found it too small, thus developed it and added a set of mosques, schools, pharmacy, mental hospital, spring house, Yakhchal (ice storer), windcatcher, Tanabi, and garden (from baked brick, plaster and tile) and put a large endowments for it after its completion in 666 AH and they are explained in Jame Mofidi book as follows: "... and one of them is Daralshafa Sehebi located in Daralebadeh of Yazd, and thus the superior physician from Daralshafa "healing the whole muslims" granted the main tasks of treating the patients to that wise physician and then he granted the task to Khwāja Shams-ud-Dīn Muhammad Taziko, who was minister in Yazd province and capable of important affairs and asked him to built a structure called Daralshafa, thus he constructed a building which is now located between two doors of Daralshafa and next to the market. As its design was seen by Khwāja Shams-ud-Dīn Muhammad Hāfez-e Shīrāzī, he said that you built it according to your effort and not based on my order. After this blame, Khwāja Shams-ud-Dīn Muhammad Taziko became worried and built the structures of Daralshafa, school, mosque, hospital, prison, spring house, Tanabi, and windcatcher all from bricks and stones in ten acres of land and decorated all of them with shaped colored tiles, and gold and built a garden next to it with several types of trees and Yakhchal (ice storer) and passed the water of Taft through the school garden".

Furthermore, for development of barbican in Muzaffarid era, the historical resources refer to Daralshafa Sahebi where was limited by Mubariz al-Din Muhammad. The historical sources also refer to Khaje Ghiaseddin Naghsband building in this district which was the reason for prosperity of textile and its design in Daralshafa during the Safavid era. It should be noted that the existence of buildings such as Fart Mosque (which was Alī ibn Musa al-Reza's resort in the second Hijri century according to the historical narrative, and also the presence of altar stone belonged to the sixth Hijri century in this place), Bagh Behesht mosque (With an inscription dated 1136 AH), Abudarda Monument (with decorations belonged to Muzaffarid era) in this district reflect its importance during the important historical eras [2].

It is still now crowded due to a main thoroughfare (Daralshafa pathway) and its proximity to Yazd major market and Great Mosque of Yazd and existence of major intersection of Al Mozaffari market in pathway of this district and changing the application of historical houses (such as Zargar Yazdi House which is now utilized as a hotel) as well as holding the religious ceremonies and processions of mourning in Rismanian and Haj Ali Akbari houses located in this district. Furthermore, the Jews' residence and existence of several synagogues for Jews' religious ceremonies are also the characteristics of this district. The main elements of this district are as follows: 1- Kamal synagogue, 2- Molla Agha Baba synagogue, 3- Jews' bathhouse, 4- Abudarra historical collection, 5- Bagh Behesht mosque, 6- Zargari Yazdi House, 7- Fart bathhouse, 8- Fart mosque, and 9- Mehriz gateway [3].

Figure 1 shows the position of main elements (Bagh Behesht mosque and Daralshafa district market) at the intersection of Daralshafa pathway with Neshastehgaran alley at the beginning of this pathway. Figure 2 also shows the milestone position of Daralshafa district (Fart Mosque and intersection of market) at the end of this pathway.



**Figure.1.** A view of Bagh Behesht Mosque and Market at the beginning of pathway (Source: Author)



**Figure 2.** A view of Fart Mosque and Market intersection at the end of pathway (Source: Author)

### **Introduction and recognition of pathway**

The pathways have created the coordinates based on which any part of city is coordinated. The pathways have always created the regular and organized communication between different spaces and communication network because the way of forming the urban spaces and elements along the pathways has always been influenced by the public behavioral models and their culture. The historic towns have been created in accordance with public material and spiritual needs by a gradual development and are in fact the physical and tangible reflection of social, economic and cultural relations in them. The changes are created in the texture and direction of pathways and districts in order to develop the pathways, and they are extended along with the social changes and current needs of society and in fact apply forces on the body of old texture and make it according to the current needs of society[4].

The pathways are functionally classified into two groups: First, the pathways which pass through the districts and some architectural and urban spaces, and they provide access to the residential units and have the motional function; these pathways are called the passages and there are different names for it: Alley, lane, way, pathway, etc. The passages have different types as follows: The main passages, sub passages, dead-end passages, and alley gardens. The second group refers to the pathways which have the motional function in addition to their economic importance and are considered as the socio-economic centers of city; and most of the economic and social spaces are built next to them; these types of pathways were called the market. These pathways have different types as follows: Permanent markets, urban marketplaces, and small markets [5].

A variety of pathways are connected to each other based on a spatial sequence and have made the centers at the intersections by small and large openings based on which all urban and architectural elements are organized around this core-linear structure. Creating a hierarchy, this model is extended from the most public places in urban centers to the most private spaces in the context of texture and has created an integrated set with different impact of components. This spatial sequence is investigated in details.

### **Passages (local roads and pathways)**

#### **Urban streets**

In today's urbanization, the streets are the main elements in creating the infrastructure of city, and since they often have the pre-thought scheme, they follow a certain geometric order. The system of shaping the streets is checkered in most of the cases and they have direct pathways. The spatial proportions of such these passages are often designed in accordance with car standard. Therefore, they are not considered only as an urban space. However, since the gradual transfer of different activities to the body of streets has made them as the vibrant and lively places at different times of day, a special kind of urban space is created with adaption to the human current life; so that it may be considered as the most important modern urban space in current cities of Iran including Yazd city [4].

However, it should be noted that before the main pathways and markets were put at the highest degree of hierarchical system of old cities before the emergence of urban streets. The urban street is a relatively new element entered into the traditional cities and it cannot be considered as a genuine element in hierarchical structure of city in a sample like Yazd.

### **Main pathway**

The pathways have played the special roles in linking the urban spaces and elements in old district of city. The main pathway reaches the gateway of city from one side, and the other main pathways and center of city from other side through the neighborhood spaces and elements. Outside the old city and behind the fortress walls, the main pathway leads to rural communities as a passage. The main pathways for urban traffic have been for pedestrian and transportation. These pathways connect the urban districts and areas and pass the centers of neighborhoods on their ways, or in other words, the centers of districts are on the way or at the intersection of main pathways. Some cities of Iran have still retained this spatial feature. Several main passages, which create the spatial connection of these districts, lead to the set of market in the city center of Yazd. Yuzdaran main pathway in the oldest district of Yazd city leads to the main gateway of city (Kusheno gateway belonging to the Kakuyids in the fifth century AH). There were a set of Kusheno district centers, several big houses and the family-owned collections belonging to the city business men and governors and rulers and some of them exist now.

The main pathway as a connecting space was different from the typical alleys and pathways, and since it passes various districts, had different names in some cases and its name was constant throughout the path. The main pathway could be understood and identified, while the by alleys had less signs and symptoms. The main pathway was wider than the normal pathway and had legible and clear visual information.

It can be argued that the main pathways of some streets are still the main directing elements in ancient cities of Iran especially in towns of desert margin. Furthermore, the main pathways and generally all urban spaces in desert cities of Iran have special dimensions due to the urban security and climate issues such as the creation of shadows.

### **Local pathways**

Due to the gradual growth of districts in the past, the passages have gradually created with a fully organic form among the building masses. Because of the development of communities and increased built mass, the main pathway of district was almost created near the geometric center of district. Therefore, this name does not refer only to the importance of community as the location in the district and its centralized and square-shaped form, but refers to the main part of district and its turning point as the public and service units of district were created to meet the residents' daily and weekly needs around and this usually led to the wider part of pathway compared to other parts.

### **Centers of districts**

Gradually and over time, the centers of districts have taken into account as the effective and important parts in overall structure of district, and the social functions of this space have expanded as an urban space on the scale of districts. The creation of gathering places for elders to perform daily meetings or solving the local problems, creating a meeting place for young people and sometimes a place for children's play have raised this space as an urban and active multifunctional space.

The spatial establishment of district centers on the road or crossing the main pathways has made these centers as the special spatial and directive symbols. Therefore, the characteristics of connection and spatial link of elements with each other in the centers of district and the centers of districts with each other and with center of city should be taken into account in urban design of district centers. On the other hand, the set of district center should be equipped and completed according to the residents' needs and the area where they utilize.

### **Local-urban squares**

The urban squares in traditional cities are among the most important urban spaces. There are different samples in this regard. These squares have different functions in the city and district at different times and circumstances and create the citizens' collective memory, and are known for all people as the space of diverse events.

The transportation system and consequently the structure of cities were modified due to the development of modern thought following by the entry of cars into the cities of Iran and their spread in cities. Since the urban squares were often in important and crowded areas of city, the traffic of vehicles in these areas and their access to other parts of city were easier. Therefore, the roles of urban squares were slowly changing and became the traffic nodes or intersections to distribute the movement of vehicles.

For better implementation of this new role in the city, their forms were also designed gradually in accordance with the movement of vehicles. Afterwards, the urban squares, which were designed according to the human scale or proportional to the human presence in the space and often with rectangular forms, were changed to the circular form for facilitating the movement of vehicle and their proportions and scale were coordinated with proportions of vehicles. The pedestrian are put in the second priority in today's squares and the roles of social issues are gradually diminished in them [4].

### **Structure and spatial sequence in Daralshafa district**

The correlation between the elements of an urban space is among the important features in this space and the public spaces are resulted from the paths which are responsible for connecting the urban spaces and creating the form of consecutive spaces. These paths are created in the form of streets, sidewalks, the open linear spaces or other elements which connect different parts of city, so that the individual urban elements convert into an integrated skeleton in a hierarchical format and system. This definition refers to a system in which the

connection of spaces and elements is created and finally converts into a structure in which the performance and movement is taken into account and the activities are connected [6].

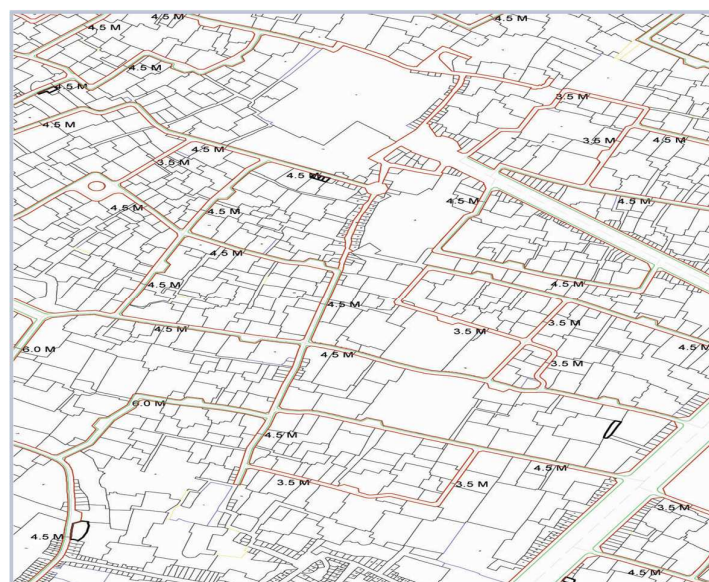
According to the spatial hierarchy of traditional cities in Iran, the system of access to different spaces of texture is in a way that the access from the urban streets to squares is done at the intersection of two streets (this is the current model of our cities) according to a repeated and interruption model at the overall (urban texture) and more detailed levels (local texture), so that the movement and commercial axes of city connect the districts and the urban elements [7]. The access to main passages is done after passing through the squares and highways at the lower scale, and there are the district squares and entrances at their intersection. There are the subsidiary passageways along with the main passage transverse to the main pathways. Furthermore, there are the dead ends and door gates along with some of the sub paths. According to the hierarchy system of these spaces, the application of each area is different and classified into the public, semi-public, semi-private and private categories and the physical, performance and subjective and visual qualities of space are also different based on these classification.

According to the above-mentioned cases and investigation of sample in Daralshafa pathway, the current access system reaches Imam Khomeini Street and Great Mosque Street from the East, and Ghiam Street from the West. This pathway reaches the square of Great Mosque and intersection of Shahi Bazaar (Al Mozaffari) at the intersection of Imam Khomeini Street and Great Mosque Street; it also reaches the intersection of Kolahdooz'ha district and Bazaar Khan as the urban cores from Ghiam Street (system of linear-core model).

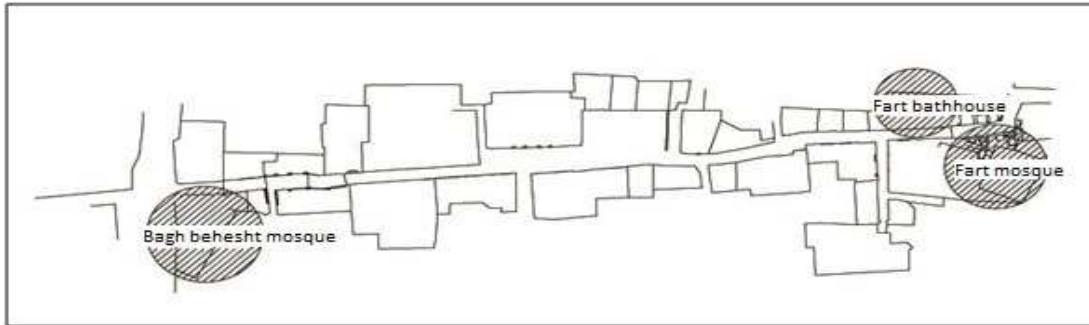
Bagh Behesht mosque is located at the intersection of Neshastegaran and Daralshafa pathways. The local market of Daralshafa is located along the pathway. After passing the local market along with the passage, there are Khorramian and Lab-e Khandagh Alleys as the sub passages crossing Daralshafa pathway. There is an entrance next to Khorramian Alley as a local traditional square which is now applied as a parking by restoration of this pathway; a piece of wasteland is also allocated in its vicinity to expand the dimensions of parking and spaces in order to vehicles turn around. There is a space for vehicle movement from the beginning of pathway at the intersection of Neshastehgaran Alley to the end of parking, and the rest of this space to the intersection of Bazaar Khan belongs to the pedestrian and it is impossible to widen and pass the cars. There are the dead end alleys and several door gates at the intersection of sub passages (Khorramian alley, Lab-e Khandagh, etc.). There are Fart bathhouses and historical mosque at the end of pathway as the core and local points of this historical passage; and the intersection of market connects the pathway to Bazaar Khan, Ghiam Street and the center of city. It is the local core and connects this pathway to Bazaar Khan and then to Ghiam Historical Street and the center of city. Figure 3 shows the situation of Daralshafa District in the aerial plan of Yazd in 2009 and displays its main surrounding elements [8].

Figure 4 shows the skeleton of pathway texture and the spatial position of spatial areas such as Bagh Behesh mosques at the beginning of way and Fart historical bathhouse and Fart mosque at the end of Daralshafa pathway. Figure 5 also shows a longitudinal view of market pathway and the architectural elements along it in the western side.

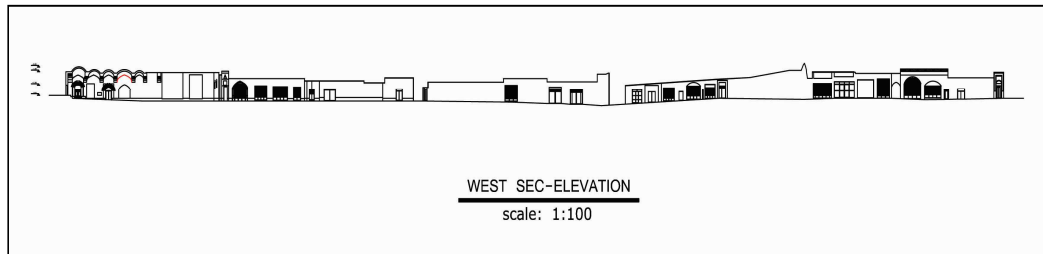
Figure 6 shows the three-dimensional model of pathway network and local spaces such as the intersection of market and local parking lots. The layout of side passages, alleys and dead-ends are shows in line with the main passage and at the intersection with it, and the main applications are determined along with the pathway.



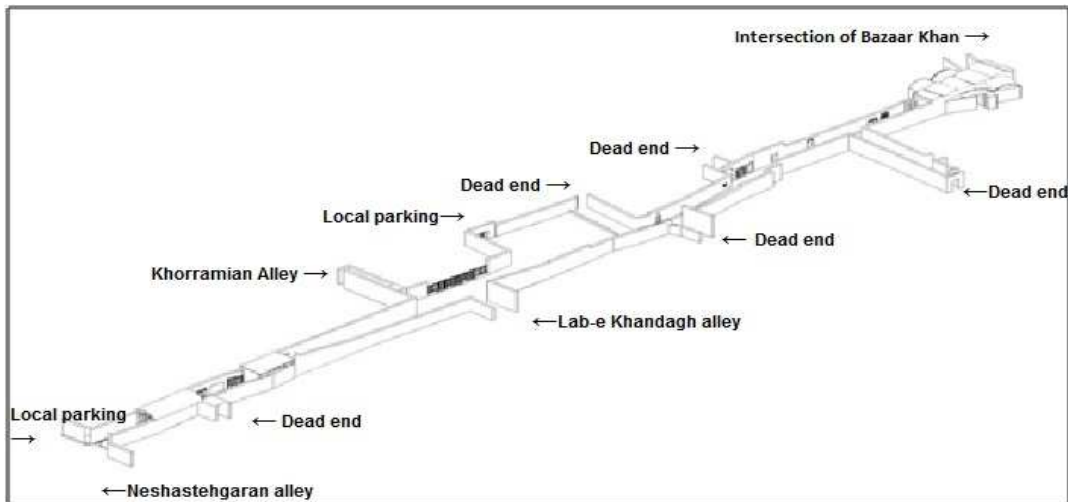
**Figure 3.** The situation of Daralshafa pathway in aerial plan  
(Source: The archive of Cultural Heritage Center in Yazd historical city)



**Figure. 4.** Determining the main elements of Daralshafa pathway  
Source: Author



**Figure. 5.** View- A longitudinal section of western side of pathway (Source: Author)



**Figure. 6.**3D model of pathways and local spaces  
Source: Author

### Spatial elements of texture

The spatial elements of historical texture structure can be classified into three spatial dimensions as the elements of floor, walls (view of body) and covered elements of space and they have direct impact on the spatial qualities of texture. Each of these components is individually investigated and the strategies are provided for improving and promoting the quality of urban architectural spaces in this section.

### 1. Elements of floor architecture

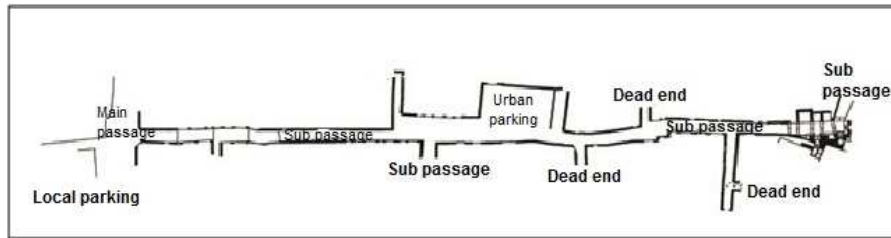
#### 1,1. Reformation and widening the passages

The creation of pathways and passages was organic in the past, and since the space users were pedestrians or those who passed through the alleys and pathways with their animals, the pathways with the widths of less than approximately 1 to 4 meters were created according to the conditions of that time. The floors of passages were usually made from the soil except for the important areas, but now, due to the restoration of historical textures in accordance with the conditions of society and the public needs, the main pathways are widened, if possible, in places where the static form of old buildings and its structure supporting by side walls are not damaged, for passage of cars and other vehicles. This is usually done by removing the low-valuable elements such as the

dilapidated buildings, and allocation of partial area on both sides to passage. Furthermore, the wider spaces are considered for car parking and turning in the possible areas.

Despite the fact that the presence of vehicle in historical textures destroys the original and untouched historical texture and also reduces the durability and strength of body, it is inevitable due to the modernity in today's life and the application of parking and widening the passages for movement of vehicles should be considered in the plan for updating and restoring the historical texture in the areas where there is a low possibility of damage to the body.

Accordingly, these above-mentioned measures are adopted in restoration of Daralshafa pathway, and according to Figure 7 the entrance, where was as a place for gathering the people, doing the social activities and an air conditioning space in the texture, is now applied as a local parking, and a ruined building next to it is added to parking space. Furthermore, the pathway widening is done at the intersection of Daralshafa pathway with main passage (Neshastehgaran alley) as the car crowded space by destroying a few deserted buildings and thus a parking lot is built in this area. The vehicles can pass the intersection of Neshastehgaran passage and Daralshafa pathway to local parking, but there is no possibility of widening from the next area until Bazaar Khan Intersection because valuable historical buildings and importance of this way and it is only for pedestrians. Figure 8 shows the local parking located at the intersection of Neshastehgaran passage and Daralshafa pathway, and Figure 9 shows the local parking of Daralshafa pathway.



**Figure.7.** Plan of determining the passages and available access in project region (Source: Author)



**Figure. 8.** Local parking of Neshastehgaran pathway (Source: Author)



**Figure 9.** Local parking of Daralshafa pathway (Source: Author)

### 2.1. Modification of infrastructure and land slope

Destroying the floor in old areas and creating the appropriate infrastructure and slope for re-implementation of flooring are among the stages of restoring the urban texture. Before re-implementation of flooring, the slope directs towards the embedded wells in order to direct the water flowing in the street floor with a gentle slope towards these wells by leveling the floors and foundations in accordance with it (the concrete is poured usually up to a certain level) and then appropriate sloping to facilitate the disposal of surface water. This helps to store the groundwater in addition to prevention of accumulation of rain and snow water on the floor of passages. Figure 10 shows the sloping plan of pathway and the project for disposal of surface water along this path.

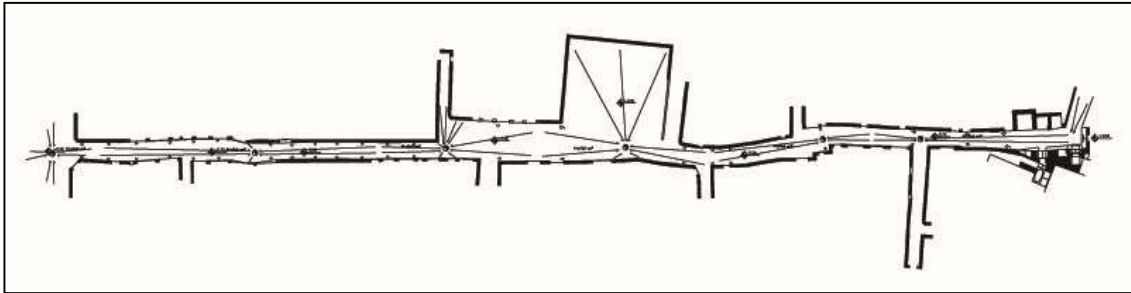


Figure 10. Sloping plan and disposal of surface water (Source: Author)

### 3.1. Modification of flooring status

Since the space users were often pedestrians in the past and according to the climatic conditions of central cities in Iran as well as the local materials of that era, flooring the main pathways was done usually by cobblestone or brick and the floor of less-important passages was made of soil. Nowadays, the updated samples can be implemented in order to restore the passage flooring in important historical areas according to the regional climate, the presence of vehicle in people life, and available and cost-effective materials by utilization of past models. Therefore, the current status of flooring along the passage should be initially identified and investigated, and then the uncoordinated elements dismantled along the pathway and take the advantage of integrated and similar materials throughout the flooring path (the low durable materials in enclosed and roofed where are less exposed to sun, rain and snow and the more durable materials resistant to atmospheric factors and tension and pressure in open spaces wherein the vehicles drive). Since the passages are the most crowded urban spaces, there is a special attention to the quality and durability of flooring materials and also its shape in terms of visual-perceptual qualities and thus the materials such as the cobblestone, rubble, slate, artificial stones, stone-like mosaics are applied on the floor of historical pathways and passages.

The shape and design of flooring is also chosen with regard to the flexibility of pathway and the alignment and implementation capabilities of materials in this format and often by utilization of repetitive geometric and mold models. The surfaces next to each other can be implemented with various materials (for instance, the slate in a frame and rubble in an adjacent frame) or the surrounding separating boundaries of frames can be paved with different materials for diversity of plan. According to the Figures 6 and 7, a geometric plan with repeated model with its defined frames with 10-cm brick bonds, and also the 20-cm brick bonds in both sides of passage is considered in restoration of Daralshafa pathway and it is a sample of flooring according to the traditional models. Furthermore, the brick floor allows the floor air passing and disposal of enclosed humidity and prevents the moisture and corrosion of elements and parts of body and floor architecture.

It should be noted that the shape and model of flooring and the type of applied materials on the floor of spaces should be coordinated to the body view, plinths, arches, and shelters. Different shape and design of flooring and applied materials should be considered for intersections, and then the main and subsidiary passages and dead-ends depending on their importance and the number of spatial users. Flooring in spot points such as the intersections and beneath them has the complex and diverse geometry, more durable materials and coordinated with flooring the passages and its geometry and gradually becomes simple within the hierarchy by reaching the more specialized areas such as the dead ends and door gates. Figure 11 shows an example of proposed plan for flooring at the beginning of Daralshafa pathway and this plan is implemented by a simple geometry, Figure 12 provides another proposed sample for flooring in front of an office building in the region of pathway and it has more complex geometry in terms of its importance and public application.



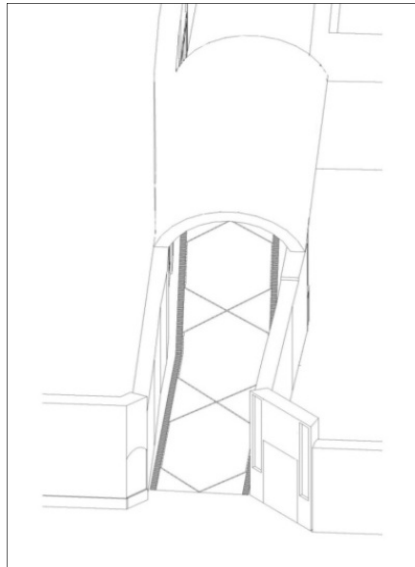


Figure 11. A sample of proposed plan for flooring the passage (Source: Author)

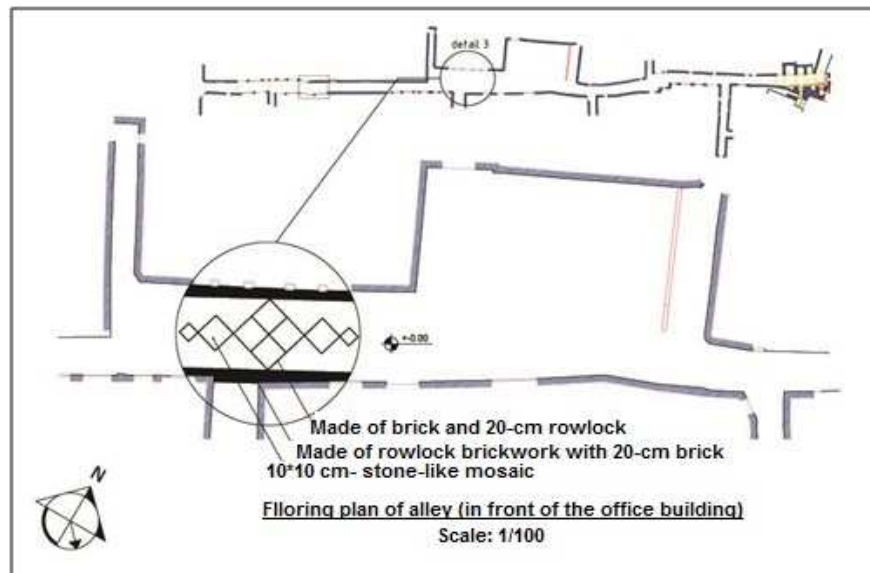


Figure 12. A sample of proposed plan for flooring the passage (Source: Author)

## 2. Walls

### 1,2. Modification of body view

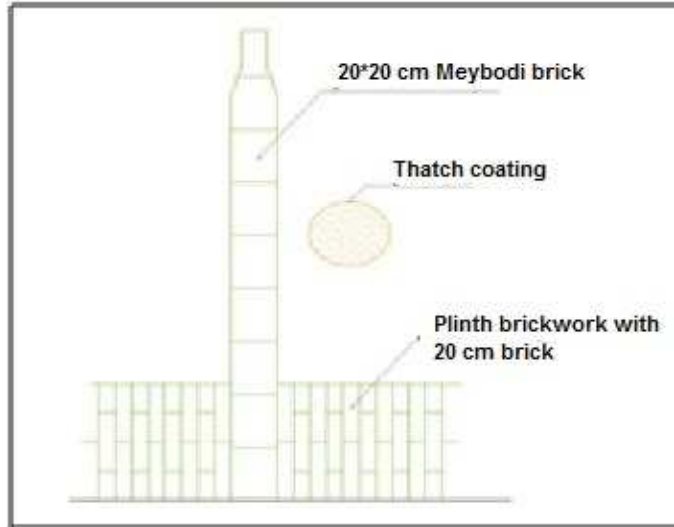
The body view of passages in this texture was according to the local climatic conditions and materials of central regions and usually from brick and thatch. The whole body view in this pathway was made of thatch and also from brick in main spots such as the entrance and forecourt of buildings. The body view is restored during the repair operation on pathways by erasing the worn, cracked or destroyed tracks and putting the thatch cover as top and bottom coating. The worn brick facade is dismantled and rebuilt in some areas and also a mixture of plaster and white thatch is utilized for restoration of walls in some covered regions.

The plinths at the bottom of wall at the heights of about 40 to 60 cm are usually made of brick and applied in traditional designs to protect the wall bottom against the moisture and erosion and also create the diversity in view of body. Nowadays, for restoring the walls of pathways and in locations with cracks and corrosion due to the lack of brick plinth at the bottom of walls, the coating at the bottom of wall is erased at the certain height and the brick plinth applied, and also the worn materials dismantled and re-implement with new materials in areas where need to be repaired and their materials replaced.

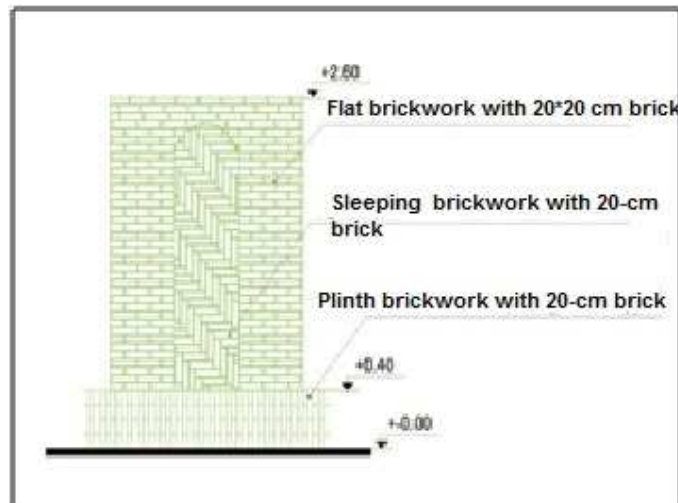
Across the whole view of body in passages, the store openings and other uses are made of steel or wood with forms including the zigzag, circular or flat arches. To repair the body of pathway, the uncoordinated or worn

elements in terms of materials, shape and form of openings are collected and the new openings re-installed in accordance with the traditional models.

The gutters and waterways, which are built from the roofs to the floor of passages as a vertical line on the façade, are among the other spatial elements which are embedded on the facade. These waterways are usually made of brick and transfer the snow and rain water from the roof to the floor of passage and thence to surface water disposal wells. These brick waterways are built during the restoration of historical texture in places where the rain water is directly flew on the mud wall, and the block place opens up and the destroyed and damaged parts re-implemented in places where the hole of water disposal is destroyed or damaged. Figure 13 shows the details of an example of these waterways (gutter).

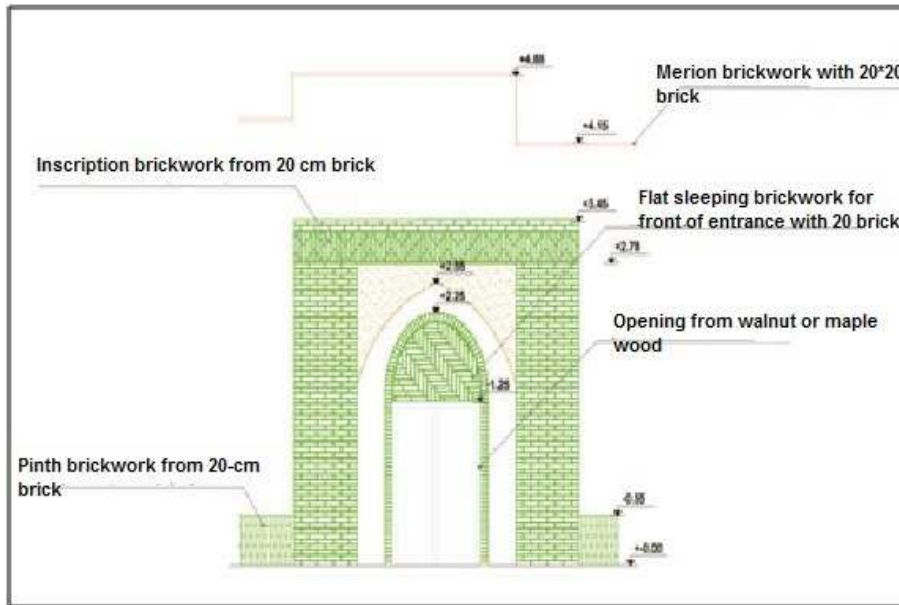


**Figure 13.** Details of brick gutter in wall body (Source: Author)

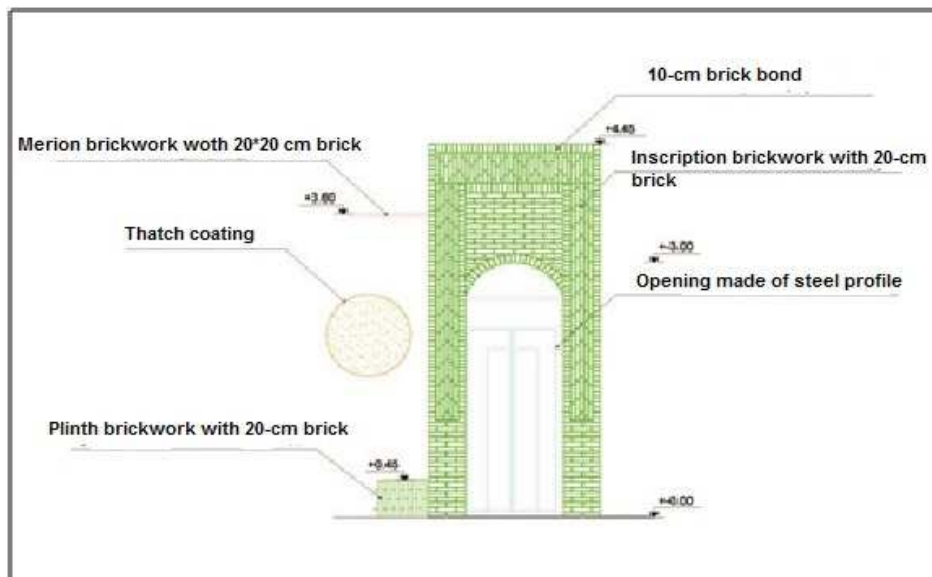


**Figure 14.** Restoration of body view- view of brick water cooler (Source: Author)

The entrance, forecourt of houses, forecourt of schools, mosques and other main applications are among the visible elements in body of facade and create the diversity in view of pathway body due to the diversity in the skyline, creating the forecourt on the surfaces of body and multiplicity of applied materials. Figure 16 shows a sample of restored view for forecourt of a house in Daralshafa pathway market and Figure 17 displays a plan for Bagh Behesht mosque façade at the beginning of pathway entrance and it shows the samples of restored plans on the wall of historical texture.



**Figure 15.** Proposed plan for restoring the wall-entrance (Source: Author)



**Figure 16.** Proposed plan for restoring the wall-entrance of Bagh Behesht mosque (Source: Author)

In areas, wherein the junction of openings to the wall is destructed, the worn and damaged parts can be erased and the 10-20 cm brick bonds can be embedded around the edge of openings to restore the damage of body façade in addition to increasing the diversity and beauty of view.

They increased the diversity and beauty of body in addition to the specific applications such as the water dispenser and candle-burning niches (people burn candle on these niches to achieve their wishes in the past) which were commonly used in the past as the elements which reminded the originality and culture. They created the diversity and beauty on the view of body. The shape and form of these elements were usually in accordance with the traditional elements and its materials were made of brick, tile or a combination of tile-brick. Several samples of these elements are restored in accordance with the traditional models in Daralshafa pathway and Figure 14 shows a sample of these cases.

Other elements of body view include the stone, brick, and tile inscription, or a combination of these materials which play the decorative roles and create diversity on the walls in addition to the role of defining and guiding the space users.

The Cymatium (the water dropper embedded on the edge of roof for preventing the penetration of snow and rain water into the body of walls) installed on the edge of the roof (or Cymatium) is another element on the view

of historical texture. The Cymatium is usually made of plain or patterned brick which is placed on the edge of roof and prevents the direct influence of rain and snow on the edge of roof and walls. During the restoration of bodies on broken or unattached Cymatium from the roof, the damaged samples are picked up and then the water droppers with new materials are re-placed according to its linear model.

All architectural elements used in walls have higher diversity and legibility according to the spatial hierarchy in milestones such as the market intersection, street crossing and in entrance in terms of using the materials, form and geometry of volumes, and they are implemented simply in less important areas.

### 3. Roofed and enclosed spaces

#### Restoration of arch and awning

In the third dimension, the elements of spatial structure include the roofed and covered spaces where are usually available in important places of urban spaces such as the crossing, market intersections, entrance of market and in front of openings in important sites or as the supportive and sunshade places along the alleys and passages. These architectural elements include a variety of arches and awnings and the spaces with specific applications are built over some of these areas. These arches and awnings are usually made of two-layer brick under the arch and roof, the thatch mortar, the crushed soil between them as the filler, and the wooden or metal beams as a fulcrum in arches with large openings and they are built according to the dimensions of opening and height of arch in a variety of ogee and barrel arches (feathery). During the repair operations of arches in cases which can be restored, the damaged parts are repaired, and the arch is destroyed in cases which cannot be repaired and there is a possibility of downfall due to the serious damages, and then a sample is re-built in accordance in accordance with its traditional model.

The aesthetic and structural issues of space in terms of using the materials, shape, form and manner of implementing the architectural elements are taken into more account in building the roofed and covered spatial elements which are constructed in concentrated and crowded places. According to Figure 18, the arch coverage of Daralshafa pathway market is repaired as a sample of restoration plan on the components of spatial structure (covered) by brick, compacted soil and thatch based on the ogee arch and in accordance with its traditional model.

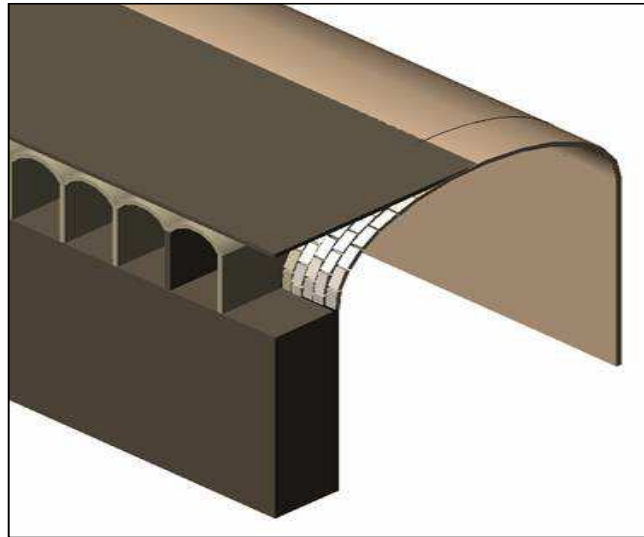


Figure 17. 3d plan of opening coverage (Source: Archive of Yazd Cultural Heritage Organization)

#### Spatial qualities of historic texture

The existence of a diverse hierarchical system in spatial structure of historical textures and application of architectural spatial elements based on this sequence in terms of function create different activities in texture, and the current behavior is directed and controlled through this hierarchical system [9]. With respect to the importance of different areas and in terms of performance quality of space depending on the application and performance, the specified applications with more users such as the mosque, market and bathhouses are located in important sites and central cores of this structure according to the linear-core model, and the less important applications are considered for more private fields and in the center of texture, respectively. Therefore, the functional quality of space is achieved according to the importance of each field.

It should be noted that the physical structure of spaces is more affected by both climate and culture based on which the spatial structure is created. For instance, inducing the sense of security and compliance of being Mahram by building the dense physical structure with low width passages, and high walls and application of cauterization model are among the examples of introverted culture in creating the urban physical structure such

as Yazd. Furthermore, any type of activity and performance is defined according to the size, shape and nature of proportions and specific dimensions for any urban space. On the basis of this structure and according to the diversity of spatial hierarchy in more important areas, the structures with more important applications and more popular should be constructed in addition to consideration of structural body. The more complex and dominant volumes are built in important areas in terms of applying the materials, geometry and volume of structures, and generally the spatial physics. Furthermore, the diversity is made in these areas in the skyline and walls and also the more visibility is created in texture body by building the forecourt in front of these buildings in order to attract more users. Therefore, the more simple volumes, uniform skyline, and less forward-coming is applied in more private areas.

The functions are created based on the type of spatial hierarchy in spatial structure of texture. In this structure, the passages are less utilized as the places for walking and are more considered for pedestrian walking and they are now less considered as the places for pausing. The squares and openings were usually the places for people walking and gathering and they are now considered as the parking space by changing their functions. The alleys and dead ends were the places for children and women and they are now more applied for committing the crime in traditional texture and have become the places for low-income and low culture classes of people due to the changed culture and current conditions.

The cohesion in urban dominant spaces of Iranian historical textures creates the sense of cohesion and continuation in visitor and it can be understood by visiting the texture. In terms of providing the perceptual-subjective qualities, the organized spatial structure is created through the visual values in a combination of activities based on which different cultural, social, administrative and commercial applications are created. More important structures are built at the intersection of directions and turning points because they are more viewed and considered by space audiences and users. Therefore, based on their importance in terms of presence in public to private arenas, these elements are embedded and they are different in accordance with this qualitative system of geometry, volume and applied materials in these areas. The small and large openings along the passages are also effective on this basis on the diversification of subjective-perceptual qualities of space. Furthermore, different proportions of length, width and height in designing different spatial fields help this diversification.

Respecting for the human scale in two dimensions of movement and activity, and considering the proportions of length, width and height in designing the spatial elements of passages and also the application of materials and diversification of shape, volume and color are more effective in promoting the qualities of spatial structure in texture. Finally, it can be argued that this qualitative hierarchy in different areas of historical texture creates the diversification and attractions in addition to the coordination and has retained its value and reputation during different periods [8].

## CONCLUSIONS

As the summary and conclusion of this research, it should be noted that the past passages are significantly important according to the urban view of historical texture as the coordination axes of city and the main elements of texture with which the people are directly and daily faced. In accordance with the constructive planning and policies of government in restoration plans on the historic textures, the highest focus is on the main pathways of texture because these elements connect the spaces, and most of the applications are created along the passages and pathways since the past. The spatial structure components of historic texture are in a spatial hierarchy, and its spatial elements defined the space and its qualities in three dimensions of flooring, walls and roofed and enclosed spaces. Therefore, it will be helpful to investigate the details of repair and promotion of these elements during the restoration based on a sample of these passages in Yazd historical texture as the only city where has retained its historical texture as the coherent totality during the historical hierarchy in order to restore the urban textures.

In this regard, the promotion of social welfare for residents in historical textures, calling for dynamics and activity in these textures, enabling the urban economic centers such as the malls and handicraft centers, building the more historical attractions, and inviting more tourists to cities are among the most important goals of restoring the historical textures. In this study, we consider the restoration of valuable pathways through the physical reconstruction or creation of specific applications, and repairing the worn and old applications in line with preserving the old texture as a national capital, and retrieving the original and local identity of historical pathways as the main objectives of governmental plans and policies during the restoration of historical textures. This research summarily investigates the details of a sample in historical texture of Yazd City.

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