

## Urban legibility, analyzing urban elements

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### **Abstract**

Ambiguous, impersonal and meaningless buildings, idiosyncrasy and poverty, are the problems and imperfections in the way of today's Iranian rooted urbanization. The influence of modernist thinking and imprudential imitation of Western urbanization, the preference of imported patterns to traditional and indigenous patterns can be among the reasons for the ailing urban design in Iran. Improving spatial quality in the paths as one of the indicators of quality of life will play an important role in correcting the current monotonous and inefficient trend. In this paper, it is attempted to improve the quality of legibility in urban areas by designing urban signs. Urban elements enhance the legibility of the environment, form a clear and desirable mental image in the minds of citizens and subsequently enhance the quality of space. The present article aims to use locate and design the physical elements of urban elements in a meaningful, traditional and indigenous style, in a way that has a positive impact on increasing the legibility and quality of the environment. With the adaptation of the generative characteristics of urban elements meaningful urban elements that generate legibility and identity new design criteria have been developed. The results show that designing distinguished, distinct and interesting elements that induce a feeling of memory and belonging and are culturally and functionally compatible with the historical and literary background of Shirazcity and have a meaningful conjunction with the valuable works of the city can enhance the quality of space. Statues of poets and literary and historical characters, spring trees etc. not only create a sense of identity but also enhance legibility and have a traditional and native smell.

**Keywords:** Urbanism, Urban Space, Element, Readability, Quality

### **Introduction**

The need to pay more and at least enough attention to sign design and elements is because of increasing urban sprawl, uniformity and reduction of proper perception of urban spatial organization which consequently leads to less and less legibility for the citizens. Public spaces unlike local ones should be open to all members of Society and citizens should be able to easily find their road and do well in the process of receiving and understanding environmental factors. A street is where different people meet up and interact. No one should be rejected from this space unless they threaten its life balance. Urban signs act as special elements in an urban space, are formed based on styles and beliefs of people in a neighborhood and introduce the space to both local citizens and newcomers. The other purpose of elements is creating a lively, beautiful and cheerful atmosphere in the city. The installation of remarkable urban signs and beautifying them is a priority in developing a healthy and cheerful space for the citizens to have visual contacts and better identify and communicate with the design. Thus, the visual values are the most important part of environmental quality. Optimal visual quality is directly and constructively related to utility values and environmental quality of a place. Visual perception of the citizens depends on the introduction of visual quality which is perceived as desirable by citizens. Urban theorists have proposed previous findings and various studies in order to emphasize the concept of legibility and the role the elements play in enhancing it. This means that urban spaces should be easily spotted by designing efficient urban elements. The present study focuses on the hypothesis that we can

move towards a better urban spatial perception and create a positive mental image in citizens' minds if urban elements are designed based on efficiency and quality standards.

### **Research Methodology**

A descriptive-analytic method was employed in the present applied research. First the theoretical foundation was explored and then the factors affecting the urban elements design, enhancing legibility and aesthetics quality were identified. Finally, the conceptual framework was formed. Library documents, field studies, internet resources, a descriptive conceptual framework and interviews with Shiraz citizens were used as data collection methods. The sample population consisted of 30 people who were randomly selected. The questions on the questionnaire focused on the effectiveness of urban elements as signs in improving the quality of urban spaces and creating liveliness in citizens' minds. The questionnaire was drafted and its validity was approved by architecture and urban design university professors and under their supervision. The questionnaires were randomly distributed at different times during the day among citizens and interviews were randomly administered to be finally analyzed by SPSS software.

### **Review of literature**

#### ***Spatial legibility***

Lynch believes that the most important concept in spatial perception is legibility which means that urban spaces should be easily identified and that can be interrelated in mind. In fact, Lynch assumed a city to be a text that can be read or be made legible if cannot be read. Legibility should help citizens find themselves in spaces and feel safe and secure in them (Fakouhi, 2004).

#### ***The importance of legibility***

It is obvious that having a clear picture of the environment and space in mind can help an individual easily go from one place to another, be a reference for citizens, organize their activities, knowledge and beliefs or be a useful basis for boosting their mental strength. In general, legibility plays an important role in urban landscape since it has a social role as a clear scene that can provide the raw material for mutual memories, symbols and citizen congregations in one place (Madani Pour,

2005).Golkar believes that urban landscape is what makes legibility possible (Golkar, 2005).

#### ***Factors affecting legibility***

- a) Environmental factors: factors that affect the ease of perception of the environment.
- b) Human factors: factors that affect the perception of the environment itself.

**Table 1: Factors affecting legibility quality (Lynch, 1981)**

Environment al factors	Climate changes	Light changes due to various lighting during the day or on special occasions	Time changes, different seasons of a year, During the week, special occasions	
Human factors	Activities and events in a space	Memories and past experiences	The culture of urban society	Human senses used in the perception of a space or environment

*Legibility from different points of view***Table 2: Legibility from different points of view (Bentli et.al,2003), (Lynch,2002)**

Citizens' viewpoints	Physical form	Road ,sign, edge, node, field
	Activities pattern	Land use pattern, holding mourning ceremonies, public congregations and ...
Non-citizens' viewpoints	Creating a clear image of the environment in a non-citizen's' mind for the first time	Similarities and coordination with an existing image in the mind of the observer, Recognition and perception of an interesting building with distinctive architecture

Bentli believes that the physical form and activities pattern is as much important for non-citizens as they are for citizens for whom they make legibility possible and are in fact complementary (Bentli, 2003). On the other hand, it is probable that non-citizens use visible and bold signs for way-finding (Lynch,2002). Also, Mansouri explains that a city is nothing but a physical form for tourists that have no idea about signs or elements, but they represent history, events and memories to citizens and residents in that environment (Mansouri,2009). Therefore, tourists or citizens' perceptions are absolutely different and must be distinguished and considered.

*Theorists viewpoints regarding urban signs*

Signs are turning points in a city. They are elements that help a stranger or observer gain access to spaces that cannot be easily found otherwise. The most important features of a sign are uniqueness and clarity (Golledge,1999). Lynch believes that signs play 4 important roles in a city. They are distinguishable from their surrounding environment, provide stability in urban organization, are symbolic, boost memory, give identity to distances and increase urban legibility (Tavallai,2007). Lynch knows identity together with structure, clarity, compatibility and legibility to change the meaning of a place in an observer's mind. Identity he believes gives recognition and prediction power to human. That is why legibility is one of the most important functions of identity. Lynch was after designing appropriate urban signs to create visual uniformity among distinct urban elements aiming to enhance clear and integrated mental images in an observer's mind (Tavallai, 2007).

*The role of urban signs***Table 3: Urban signs features (Pour Jafar et al. . 2011) (Barthes. 1967)**

Uniqueness	The feature of sharp contrast with the environment makes the sign unique
Harmonizing the space	Designing places that do not have historical and famous identities
Significance	Certain buildings can be seen from multiple locations
Relevance with the subject, function and identity of the city	Signs and elements thematic relevance to local identity, strengthens the sense of place
Promotion of public awareness and introducing symbols and cultural values	Memorial elements and the signs attached to them can increase citizens' knowledge about cultural events
The definition of urban space and their identification	The extent to which one can distinguish a new place from other places.
Introduction of artistic styles and	Memorial elements bring art to people and thus can make

traditions	people familiar with old and new styles and add to their visual and artistic knowledge.
Relevance of the subject with the function and identity	Each city has an identity and function under the influence of its history, economics and other conditions. The elements relevance with function and identity is desirable and lack of relevance reduces the space quality

### *The role and functions of urban elements*

One of the most important dimensions of urban statues is their functional purposes since they are relevant with urban architecture and urban space. These objects can become useless and take up a lot of space (Chandler, 2007). A statue is identified and useful depending on the urban texture and function. Urban spaces for commercial or cultural purposes require various visual and artistic signs or elements. The most typical statue functions are memorial or symbolic, giving spirit to rough spaces, enhancing public taste and citizens' aesthetic level, creating a sense of playfulness and stimulating adults' inner child (Kelly,2001)The expected urban sign functions and their relationship with legibility is presented in the following table. Table 4 depicts the effective role of urban sings in improving legibility factors for citizen and non-citizen individuals as the theoretical framework of the study.

**Table 4: The final framework of productive factors for urban elements**

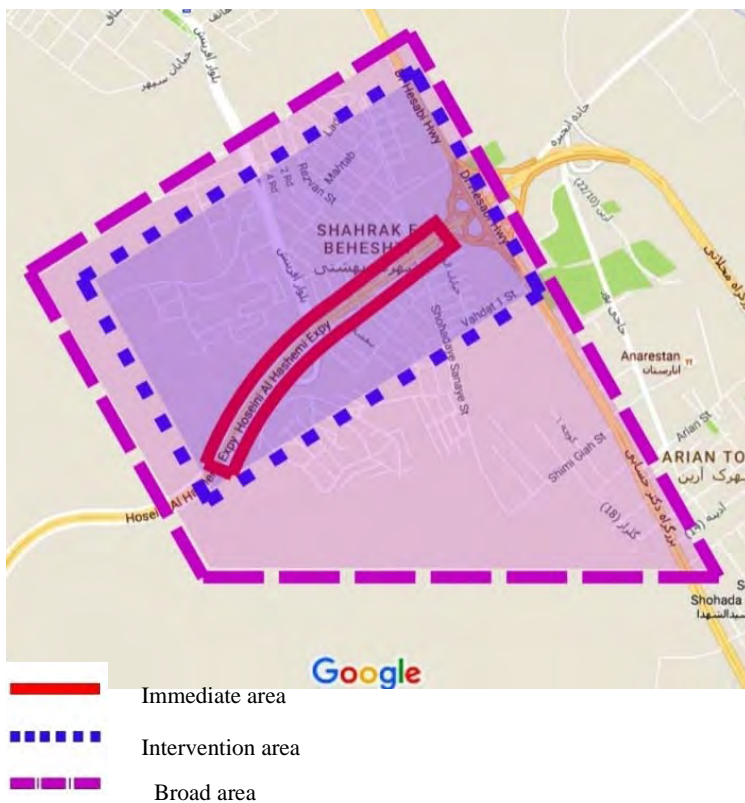
Urban elements principles	Measurement (Legibility quality)
Recognition and perception of different places	Using signs and elements
	Existing special functions
	Existing special activities
	Sequencing the spaces
Creating and enhancing a clear mental image	Using clear and inspiring elements
	Closeness and suitable height for emphasizing visual values of using ecologic elements
	suitable location
	Considering the proportions and volumetric composition
	The appropriateness of the location
Distinction	Considering Road ,sign, edge, node, field
	Considering the location and important urban spaces
	Considering the emphasis principle
	Considering clarity principle
Attraction	Proportions
	Considering suitable location
	Sequential views with different visual values of the on the axis
	Considering the emphasis principle
	Considering clarity principle
	Significance principle
	Appropriate Volumetric proportions
	Vegetation diversity
	User diversity

### Case study

#### *The Study Area Introduction*

Hosseini Alhashemi expressway in the north and the southern development expressway are the two new residential and touristy roads under construction in Shiraz that will play a substantial role in Shiraz development in the near future. It has 6 fast lanes and 4 slow lanes and is situated in western Shiraz connecting to Vahdat Boulevard, Shirazi Boulevard, shahidRagaee Boulevard and

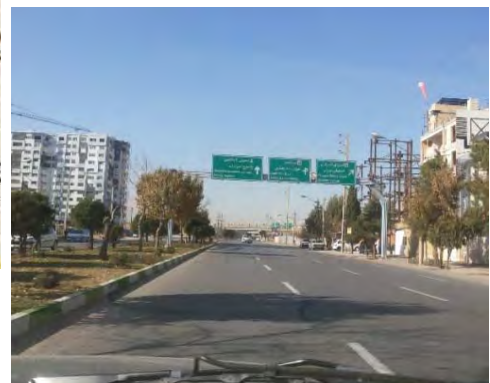
ShahidBeheshti town in the best climatic region of Shiraz. For that reason, many mega projects are being carried out in this area.



**Map 1- Functional areas**



**Figure 1- The expressway**



**Figure 2- The expressway**

As can be seen on the map, the general function of this side of the expressway is largely residential, gardens and private green spaces. Although other functions like educational, cultural, official, commercial and military are also available but they look insignificant next to the residential areas which indicated the proper location of functions on a local, urban and regional scale. The residential areas are properly laid out and have suitable access and appropriate form as well.



**Map 2- Current land uses**

**Table 5: The current constructed projects in the vicinity**

Court 27 storey Complex	North west of Shiraz at the foot of Derak Mountain
Reyhane Residential Complex	Rehyahne residential complex in Barf Foroshan town
Reyhane Residential Complex	120 storey Residential Complex in North west of Shiraz at the foot of Derak Mountain
Fajr Residential Complex	Residential Complex including 2 blocks at the junction of Afarinesh and HosseiniAlhashemi expressway
Hafez Residential Complex	Hafez Residential Complex at the junction of Afarinesh and HosseiniAlhashemi expressway
Shiraz Hotel	North west of Shiraz, HosseiniAlhashemi expressway
Derak Amusement Park	At the foot of Derak Mountain, 120 Meter Merry-go-round

***The linear landscape of the expressway***

The expressway route has become a main passageway for its special and important location and features and most people are familiar with it. It covers a large area of the city belt and connects to Vahdat Boulevard, Shirazi Boulevard, shahidRagaei Boulevard and ShahidBeheshti town.

**Movement and sequential view of the urban landscape**

No specific attraction is found in the sequences and we cannot reach a special sign on the way. No visual attractions or catchy elements are seen along the way.



**Figure 3:View of Hashemi Expressway**



**Figure 4:View of Hashemi Expressway**



**Figure 5:View of Hashemi Expressway**



**Figure 6:View of Hashemi Expressway**



**Map 3- The location of sequential views on the Expressway**



**Figure 7:View of Hashemi Expressway**

***The goal and scope of the study***

The micro goals of the study focusing on legibility improvement of HosseiniAlhashemi expressway using urban signs and elements are presented in the following section. Determining the importance of urban elements in improving urban legibility and proper location of them in squares or other spaces is a priority. It should be mentioned that SPSS was used in addition to SWOT to achieve the second goal of the study. Only 2 out of 4 criterions are investigated on the SWOT table based on the theoretical framework of the study.



**Figure 8: The entrance element of the expressway, Husseini Alhashemi statue**



**Figure 9: A visual sign at the beginning of the axis**



**Figure 10: View of Hashemi Expressway**



**Figure 12: View of Hashemi Expressway**



**Figure 11: View of Hashemi Expressway**



**Figure 15: View of Hashemi Expressway**



**Figure 14: View of Hashemi Expressway**



**Figure 13: View of Hashemi Expressway**

**Table 6: SWOT analytic table, legible elements**

Recognition and perception of different places Signs and elements Special functions existing in the space Special activities and sequencing the space	
Strength (S)	Weakness (W)
<ul style="list-style-type: none"> <li>• Special topography of the region and the heights and slopes</li> <li>• Shiraz dried river passes through a part of the site</li> <li>• The expressway is not straight and many sequences are formed along the route</li> <li>• There are some elements on the sides of the expressway</li> <li>• The expressway is divided into three parts, ShahidBeheshti Town, cross-section with the dried river and Derak region</li> </ul>	<ul style="list-style-type: none"> <li>• No significant signs along the way</li> <li>• Lack of special functions along the expressway</li> <li>• No special activities can be done along the route due to high speeds</li> <li>• Lack of attention to outstanding architecture for residential buildings that cannot be seen from the expressway</li> <li>• There are barren lands without any particular land use along the road for kilometers</li> <li>• Lack of identity and legibility along the way</li> <li>• The urban ground of the expressway is unclear so it might be taken as Tehran or</li> </ul>



	<p>Mashhad road</p> <ul style="list-style-type: none"> <li>• Lack of any urban design</li> </ul> <p>There are merely a few weak sequences along the way</p>
<b>Opportunity (O)</b>	<b>Threat (T)</b>
<ul style="list-style-type: none"> <li>• The existing topography can become remarkable by adding particular slopes</li> <li>• The existing barren lands are excellent opportunity for stakeholders and planners to plan for multiple functions</li> <li>• The existing barren lands are excellent opportunity for stakeholders and planners to create appropriate signs and elements</li> <li>• The non-linearity of the road is good for designing sequences</li> <li>• Creating elements and signs in the intervention and non-intervention areas can be the starting point of the design</li> </ul>	<ul style="list-style-type: none"> <li>• The architecture, façade and the materials that are used in buildings on the sides of the expressway should be used on all the buildings along the way</li> <li>• If the barren lands are not planned for and used in a proper way, they will become a landmark for Shiraz which is a catastrophe</li> <li>• Lack of attention will decrease the legibility even further</li> <li>• Lack of attention to sign scales will reduce the expressway design quality even further</li> </ul>

**Table 7: SWOT analytic table, legible elements**

<p>Creating and enhancing a clear mental image</p> <ul style="list-style-type: none"> <li>• Using clear and inspiring elements</li> <li>• Closeness and suitable height for emphasizing visual values of using ecologic elements</li> <li>• suitable location</li> <li>• Considering the proportions and volumetric composition</li> <li>• The appropriateness of the location</li> </ul>	
<b>Strength (S)</b>	<b>Weakness (W)</b>
<ul style="list-style-type: none"> <li>• The existence of natural elements such as mountains and the special topography</li> <li>• Adjacency with the dried river</li> <li>• Green spaces</li> <li>• Alhashemi connects two important sides of the city and has a strategic location</li> </ul>	<ul style="list-style-type: none"> <li>• The expressway safety is weak</li> <li>• The expressway does not have any boundaries in many parts</li> <li>• The expressway lacks a sense of space and place</li> <li>• Lack of any remarkable signs or elements</li> <li>• No attention is paid to urban design in designing the adjacent buildings so the created urban spaces are lost</li> <li>• The existing elements are designed regardless of the expressway scale</li> <li>• The existing elements have not been located in the space</li> <li>• The river floor, topography and the ground slope are ignored in designing urban space</li> <li>• At some points, the view of the mountains (as an ecologic landmark ) has been ignored</li> </ul>

Opportunity (O)	Threat (T)
<ul style="list-style-type: none"> <li>Alhashemi connects two important sides of the city and can be inspired by the signs and elements in both regions</li> <li>Shiraaz is a historical city and the new elements and signs can be inspired by old local signs</li> <li>Natural visual landmarks and signs can be created regarding the strong topography of the region</li> <li>Lack of boundaries is a chance for designers to design the best Routledge for the expressway</li> <li>The existing barren lands give the designer the opportunity to locate the elements wherever is appropriate</li> <li>Using a consistent plan can help designers define boundaries and openness at different points and wherever is needed</li> </ul>	<ul style="list-style-type: none"> <li>Lack of a remarkable element can be bad for the future of Alhashemi and reduce legibility</li> <li>Lack of boundaries reduces the sense of space and legibility</li> <li>Barren lands can increase crime in the neighborhood and make citizens pessimistic about the expressway</li> <li>The barren lands are under the government supervision and it makes it hard to control bureaucracy for doing projects</li> </ul>

#### ***Recommended strategies***

A strategy is proposed for each of the criteria on the theoretical framework. Since the Alhashemi expressway legibility, identity and elements is weak, a defensive and adaptive strategy is selected.

**Table 8: strategies for designing urban elements**

<b>Recognition and perception of different places</b>
<b>Adaptive strategies (WO)</b>
<ol style="list-style-type: none"> <li>Using topography for locating the elements</li> <li>Using barren lands for developing suitable functions with appropriate plans</li> <li>Using the lands for creating social nodes and public congregations</li> <li>Using topography for creating a good skyline in which the signs and elements are visible</li> <li>Using topography and slopes for creating various sequences</li> <li>Using The non-linearity of the road for designing sequences creatively</li> </ol>

**Table 9: strategies for designing urban elements**

<b>Creating and enhancing a clear mental image</b>
<b>Adaptive strategies (WO)</b>
<p>Using barren lands and the natural expressway ground for creating inspiring and remarkable elements</p> <p>Using barren lands and creating landmarks by getting inspirations from the common architecture of the city to design based on standard proportions</p> <p>Creating boundaries with different degrees regarding the location and the purpose of design in each sequence</p>

Creating boundaries with different degrees can be considered as a sign itself  
 Using the river as a design element regarding its cross-section with the expressway surrounding lands  
 Using the vegetation for creating various sequences which would be very effective in creating a mental image  
 Using the invisible and lost spaces and designing them with soft elements such as plants that can enhance the urban quality and create a positive mental image  
 Bringing urban designers to Use the barren lands potential for creating high quality urban spaces

The Alhashemi expressway is weak considering its architecture and combination of spaces and consequently this has decreased its legibility. The existing statues and elements have been poorly designed and located. The high speed of the drivers makes it impossible to define functions and activities. This can be corrected by appropriate sequencing, defining boundaries and suitable designing strategies which were extensively discussed in the above sections.

***Urban design at macro-level: defining strategic plans***  
*Micro and macro goals: designing strategies and policies*

**Table 10: strategies for designing urban elements**

Goal	Micro-goals	Strategy	Policy
<b>Improving identity and legibility</b>	Recognition and perception of different places	<ul style="list-style-type: none"> <li>• Creating stations for people to do their daily activities at some points</li> <li>• Defining various spatial sequences</li> <li>• Locating elements and physical signs along the Routledge</li> </ul>	<ul style="list-style-type: none"> <li>• Creating attractive markets at the beginning of the route</li> <li>• Using local trees like palm, sour orange and cypress for sequencing the space</li> <li>• Using memorable elements around the city</li> <li>• Installation of Professor Hesabi statue at professor Hesabi junction</li> </ul>
	Creating and enhancing a clear mental image	<ul style="list-style-type: none"> <li>• Properly locating the signs and elements</li> <li>• Defining boundaries and proportions</li> <li>• Using physical and comprehensible details for drivers</li> <li>• Using ecologic elements for enhancing visual values</li> <li>• Creating social nodes or traffic-social nodes</li> <li>• Locating functions and specific activity stations for creating an integrated mental image in citizens' minds</li> </ul>	<ul style="list-style-type: none"> <li>• Designing Professor Hesabi junction and installing his statue</li> <li>• Using topography for defining boundaries</li> <li>• Installation of suitable furniture at different points</li> <li>• Creating congregation spaces in complex areas</li> <li>• Locating important buildings with public functions such as bank, court,...</li> </ul>

### ***Urban design at intermediate level: defining urban design framework***

The suggested urban design framework will guarantee the balance and integration between different parts of the space and at the same time creates a bond between the space and its surrounding urban texture regarding physical, functional and visual dimensions. This makes the space unique and improves its quality to a high level at national and international scales.

Simultaneously, it is attempted to meet the needs and expectations of different spaces users and also adjust the design to the landscape of the initial scenario, functionality, practicality and economic aspects. The overall functional and activity pattern in the suggested framework is in a way the whole route is considered to be for drivers divided into three sequences with a point in each sequence to improve legibility as a sign with a pause in the space.

### **Design principles**

Hashemi Expressway as an urban space and a connecting axis between crowded points should be legible more than anything else. The space should be easily identified by any passerby helping them find their way and leaving a stable and clear image in their minds. The legibility principle proposes guidelines that create functional and distinct urban spaces in the city.

**Table 11: Urban elements design principles aiming to enhance legibility**

<b>Expectations</b>	<b>principles</b>	<b>Recommendations</b>	
<b>Legibility</b>	Road Clarity	Road design	The road should match the form of land Using coarse-grained elements around the road
		Order	Using rhythm in natural elements (Trees) or furniture Defining continuity or discontinuity of the road for drivers
		Lighting	Lighting of the roads at night Repeating remarkable signs at day and lighting and night Creating visual sequences by lighting along the way
		Physical Variety	Activities with certain form and dimension in sight Activities with certain functions to make the road remarkable Creating spatial boundaries by natural and unnatural elements Paying enough attention to scale of natural and unnatural elements
	safety	Non-uniformity of the road	Avoiding straight and boring lines Making urban signs visible along the road Creation of certain sequences along the road
		Proper directing of drivers	Planting trees in the external curve of any turn Main landscapes should be created along the axis of the expressway
	Sense of belonging		Being a part of citizens' memories Creation of special elements at the beginning or the end of the road

### **Study suggestions and strategies**

#### ***The movement and access system***

The suggested system recommends to put the driveway first as the main function of the road is expressway and drivers' comfort and safety is the main concern. Along with that, a fast lane is designed for driveway and a slow lane for access to facilities, convention centers and residential complexes. Also, the driveway width is reduced at the beginning of the expressway's main entrance.

#### ***The physical form system***

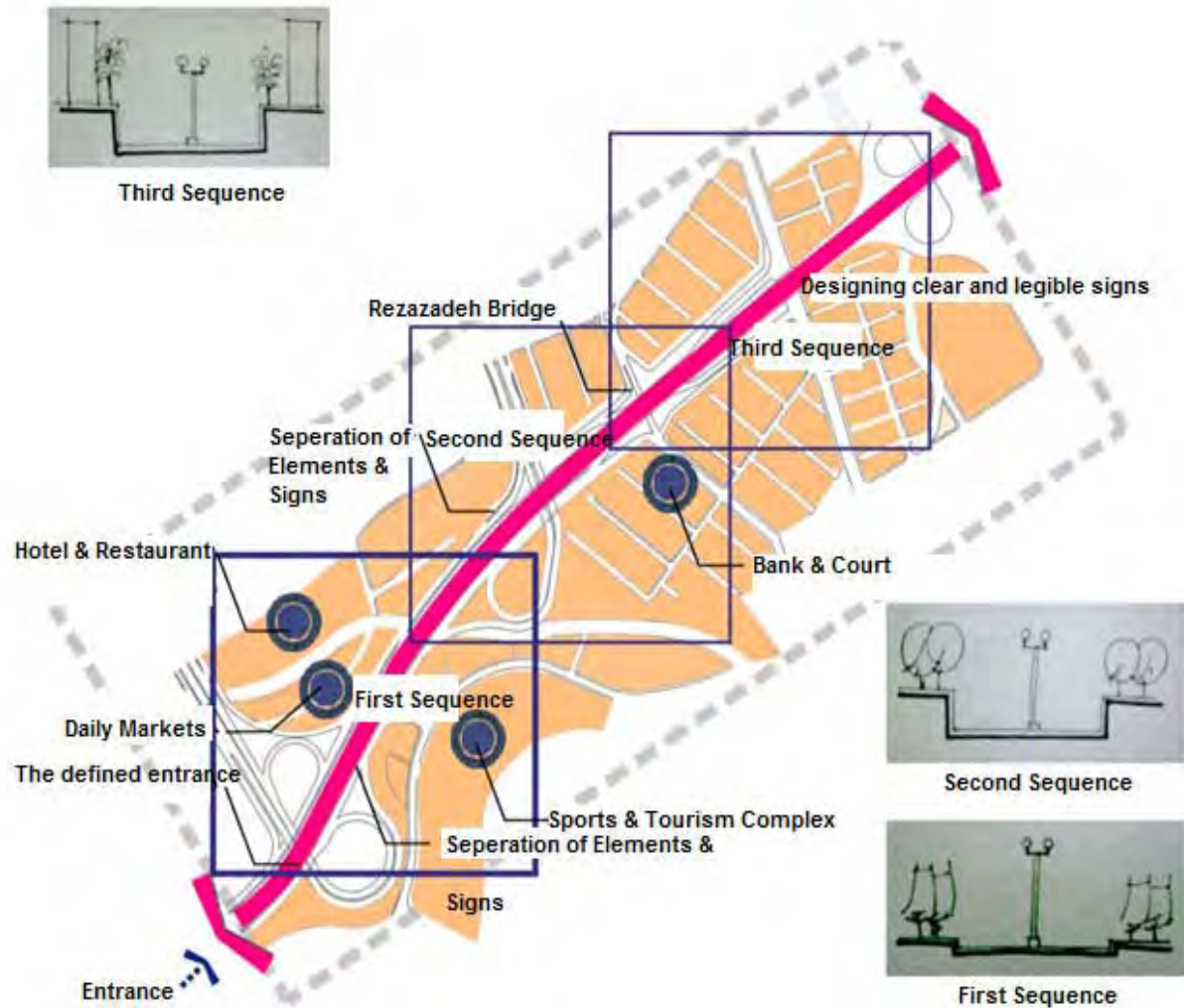
The physical form in the proposed design is inspired by the existing buildings and remarkable elements to create a sense of belonging and add to the identity of Alhashemi expressway.

#### ***The urban landscape system***

It is attempted to divide the axis into subsequent sequences and keep the integrity and continuity of the road in the urban landscape system emphasizing the visual capabilities of the signs. Furthermore, special attention is paid to creating spatial openness and a sense of acceptance at the entrance using suitable form and materials. The last but not the least, the sequencing of the axis together with boundaries specification has added to the spatial attractiveness and legibility. Construction of the sides helped with creating a sense of identity to the space.



**Map 4: Land Use of the suggested Lands**



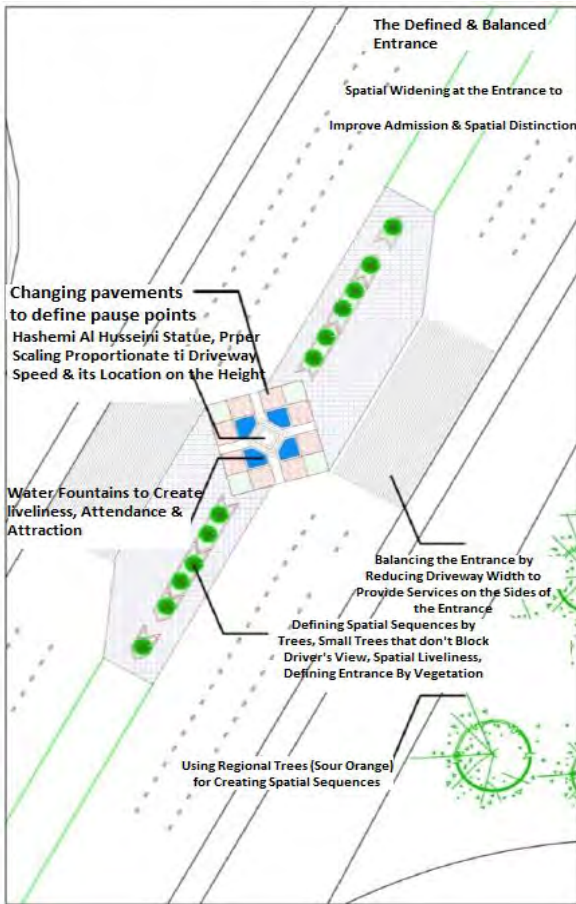
Map 5: The suggested design sequencing



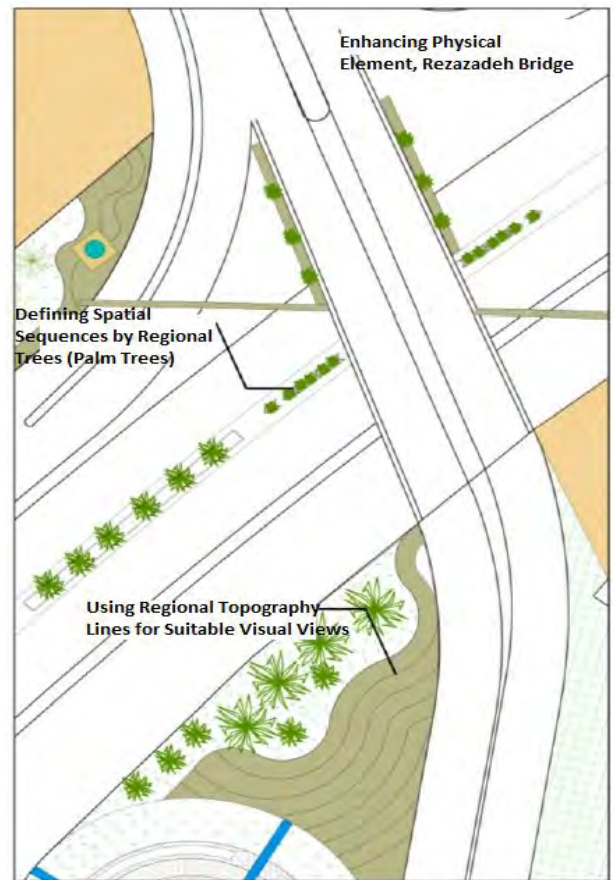
Figure 16: A Bird's view



Figure 17: The Statu's Perspective



**Map 6: Entrance Definition**



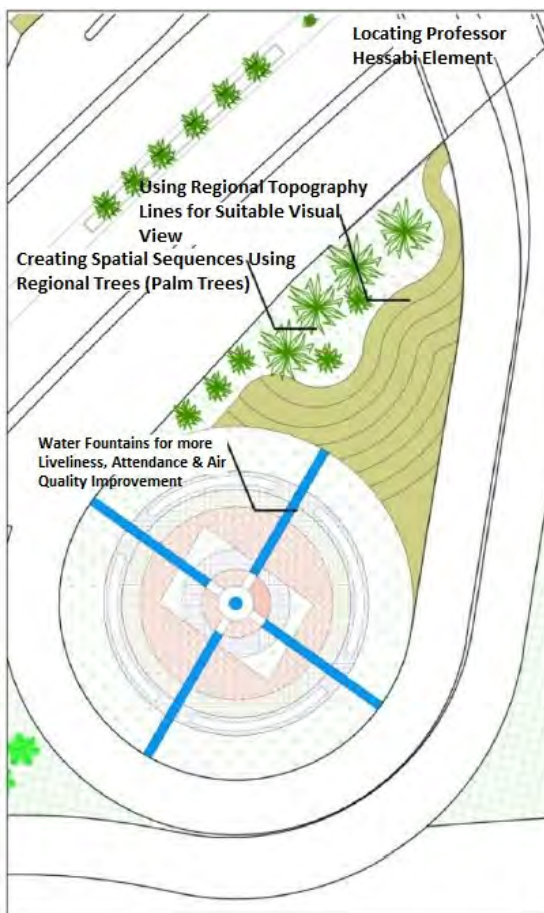
**Map 7: Enhancing the physical Element, Rezazadeh Bridge**



**Figure 18: A bird's view of the flyover**



**Figure 19: Perspective of the suggested Element**



**Map 8: Professor Hesabi Element**



**Figure 20: A suggested Element**



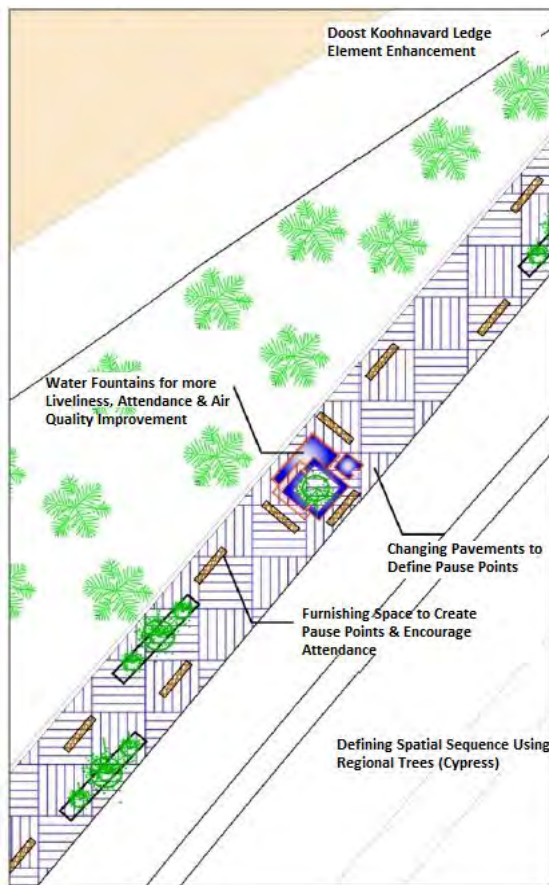
**Figure 21: A suggested Element**

### **Conclusion and results**

Since Shiraz is a historical city with plenty of signs and elements in the physical form and legibility requires the meaning of signs and elements besides their form to create a sense of belonging and a clear image in their minds, the natural elements of the city itself such as sour orange, palm and cypress trees or forms that remind individuals of the monuments should be used to enhance its legibility. Every individual in the present study considers a place or element in mind to remember a road or expressway that had better have a meaningful value and add to the city identity.

The elements should be located in a way to carry a sense of sequence. A series of buildings and signs can be considered as elements that have harmony and represent a unity meanwhile they may be different from each other to increase the legibility of the road. The findings of the study indicated that HosseiniAlhashemi expressway can be considered as the connecting point between the other two parts on the condition that an individual does not feel a lack of integrity or harmony when passing through the road from one point to another. In other words, each of the axes can have their specific elements but they should be in harmony with others at the same time to keep the integrity.





**Map 9: Dust Kuhnavard Element Enhancement**



**Figure 22: A suggested Element**

### References

- Bentli, Ian et al.(2003). Responsive Environments. Translated by MostafaBehzadfar. Iran Science and Industry University. Tehran.
- Barthes, R.(1967).Elements of Semiology(Trans. Annette Lavers & Colin Smith).London. Jonathan Cap.
- Chandler, Daniel. (2007). Semiotics: The Basics Routledge. London.
- Fakouhi, Naser.(2004). Urban Anthropology. Ney Press. Tehran.
- Golledge, R.G. .(1999). Human Wayfinding and Cognitive Maps, in: R.G. Golledge (Ed.) Wayfinding.
- Golkar, Koorosh.(2005). Urban Design Quality Components.Sofeh Magazine, 38, 15-21.
- Kelly, A.(2001). Building Legible Cities, Bristol: Bristol Cultural Development Partnership.
- Lynch,kevin.(2002).Urban Landscape.Translated byManouchehrMozayani. Tehran University Press.Tehran.
- Lynch,kevin.(1981). A Theory of Good City Form. MIT Press.
- Mansouri, S.A.(2009).Urban landscape comprehensive narrative of city. Manzar Journal, 3,9-11.
- Madanipour, Ali.(2005). Urban Space Design: Analyzing the Social and Spatial Processes. Translated by Farhad Mortezaei. Urban Planning Firm. Tehran.
- Pour jafar,M. et al.(2010). City Signs.Tahaan Press.Tehran.
- Tavallai, Novin.(2007). The integrated City Form. Amirkabir Press. Tehran.

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