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## Emerging Patterns in Roadside Landscape: A Case Study of Lahore Ring Road



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**Abstract:** Lahore is a conurbation that has experienced many vicissitudes throughout its existence. Streets and roads have given a route for transportation. This development has introduced new components like underpasses, overhead bridges and a periphery Ring Road. The current study has analyzed the landscape of Lahore Ring Road over a period of four years. The focus of the study is to comprehend the landscape design along the first segment of this road. In order to track the changes in the landscape at this time, visual surveys of the Lahore Ring Road were conducted at interval of four years. The field observations were compared to the digital data to draw comparisons between the two sets of visual evidence. There is already one Ring Road in Peshawar. Given that Rawalpindi is developing a Ring Road, which will eventually include landscape, this analysis assumes greater significance.

**Key Words:** Ring Road, Landscape, Highway, Vegetation

### Introduction

Lahore is well known as Pakistan's cultural hub. Like many large cities in Pakistan, Lahore also struggles with load shedding, traffic congestion and population growth. Despite the fact that majority of the drivers adhere to the law, traffic jams persist because any disruption in traffic flow is an invitation to the public to form an additional bottle neck, especially where traffic signals do not function properly. Expedious population growth is yet another issue and due to this escalation, Lahore is rapidly growing. Consequently, the issue

of constructing new roads and their upkeep emerges.

The Lahore Ring Road is a marvel of contemporary infrastructure that has completely modified the transit system of the city. A committed group of architects, engineers, urban planners and construction experts came together for the Lahore Ring Road Project and worked relentlessly to bring this dream to fruition. With less traffic congestion and greater connectivity than ever before, this enormous project has completely changed how people travel around the

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city. Their knowledge, expertise and unshakable dedication have led to the development of a top-notch road system that has changed the appearance of Lahore. The construction of this roadway has significantly changed Lahore's topography, aesthetic impression and possibly even personality. While it has enhanced connectivity and provided a host of advantages, the project has also encountered a number of difficulties and drawbacks. In this study, we have analyzed the Lahore Ring Road's landscape over the course of four years. We have endeavored to comprehend the landscape design created along the initial section of this road since it has a significant influence on the landscape being created along the newly constructed Southern Loop part of the Lahore Ring Road (LRR).

### Escalation of Ring Roads

Ring Roads are major initiatives with regional and national significance and the development of these roads should fall within the purview of the development agencies just like any other type of road infrastructure. Nonetheless, in Pakistan and other third-world nations, their construction is driven by political goals peculiarly those of the current world power that holds influence over our government at a given moment. The US ambassador officially inaugurated the Peshawar Ring Road which was funded by Government of Pakistan for "*ameliorating to the vital provincial route with the aim of enhancing security and bolstering economic development*" (U.S. Department of State, 2010). The Lahore Ring Road is a component of CPAC which is driven by Chinese influence. The Roadside Landscaping offers a variety of benefits e.g. the terrain on roadways contribute to glare reduction. The ambient temperatures are lowered because trees and vegetation shield people from the sweltering sun. The asphalted roads also help to absorb heat. The use of landscaping along roadsides reduces air pollution while providing an attractive backdrop. Moreover, it is utilized as an acoustical barrier, visual buffer and enhances the value of neighboring residential and commercial premises.

### User Perception

In the design of road landscapes, user perception and feedback are crucial. According to a survey of the landscape along the Faisalabad Canal, most of the people were in favor of planting big trees (Iftikhar, 2016). In any project of this nature, long term public backing is advantageous.

Thus, how the landscape is to be created is heavily influenced by public expectations. However, in the case of this high-speed route, it is not advised to use the green areas for public use. Nevertheless, the determined public especially the youth continue to visit these green spots despite the risk of losing a life or limb. The only way to keep them out is through high fences.

According to Naderi (2002), the landscape of a highway is distinct from the landscape of other open spaces because it is experienced at various scales by various users. Every user has a different experience with the road scene due to the diverse speeds at which it is perceived. If there are any pedestrians, they move by slowly in comparison to the fast-moving automobiles. The Ring Road is a unique form of highway with a cap on the number of motorcycles, chingqies, tongas, bicycles, etc. that can travel on it. In spite of that, the population especially in Bund Road region of Lahore continues to bring these vehicles on this high-speed road.

### Development of Design Guidelines

In addition to serving as thoroughfares, the roads and expressways also provide a shared urban open space. Evolution of design principles for landscape development alongside roadways, particularly highways, is crucial since the green areas are made of a series of vast and narrow open spaces (Naderi, 2002). In some countries, there are regulations for the growth and planting of trees alongside roadways. The type and kind of trees that should be planted are specified by the Ohio Department of Transportation. The distances from the road are determined by how fast the vehicles are travelling along it. According to Thomason's (2017) New Zealand Guidelines for Highway Landscaping, it is best to layer large and small trees, with the smaller ones coming first and being higher up. ASSHTO mandates the

creation of clear zones and forbids visual blockage in the form of a tree's canopy or mounds used for landscaping. Roadside trees and accidents are connected in Southern Australia. Another study has analyzed that the placement of the tree is influenced by the width of the trunk (Wolf, [2007](#)).

Urban locations close to interstates or ring roads are particularly susceptible to noise and vibration pollution. The type of landscape theme to be adopted may be determined by the geography and topography of the place. In a residential or commercial context, the landscape design may complement the surroundings. The scenery, however, could be in opposition to the environment in an industrial situation (Thomason, [2017](#)).

Research on a Ring Road in Greece advises using low-lying bushes, grasses and trees as a mix for noise attenuation (Samaraa, [2011](#)). Another study conducted in Uzbekistan found that the design of the landscape is influenced by the terrain over which it transverses. The strategy would be different in a hilly location than in an agricultural flatland. Walls and fences might also be incorporated into the design (Adilov, [2020](#)).

### **Development of Views**

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It is crucial to consider views from and towards the highway. The strategy differs depending on the kind of development along the road. The residences like to stay hidden whereas businesses and industries prefer to be seen since it stimulates economic activity (Transportation, 2017).

The Lahore Ring Road creates a physical barrier as well as a visual barrier between its two sides. Despite being at grade, just a few people choose not to cross in the area close to Bund Road because of the fast-moving traffic. This road is above grade in other places and provides unobstructed views of residential or military sites that were previously hidden. In order to provide respite or privacy to users of nearby regions, there is little to no vegetation present (Thomas, 2013).

### **Analyses of current landscape along the Lahore Ring Road**

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The context must be taken into consideration when converting roads to green (Naderi, [2002](#)). Accordingly, the landscaping needs to be pertinent to the neighborhood's needs and preferences. Additionally, it should benefit the environment. The open-space environment is increasingly incorporated into road design and implemented alongside. Each section along the Ring Road has a different amount of space available for landscaping. When compared to the new Lahore Airport, where a sizable median is available for landscaping, it is virtually nonexistent in the Saggian area.

In the vicinity of the Lahore Airport, as well as at numerous interchanges and bigger park-like areas, the soft landscape is rather thoughtfully designed. The approach, however, is quite difficult as the scenery is essentially nonexistent in low-income and urban neighborhoods. This is the place where its presence is significant and would be well appreciated by the public.





The landscaped areas along the Ring Road can be broadly categorized as follows in accordance with the nature and kind of green space provided.

### **Interchange Parks**

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The intersections are where roadways converge from various directions. To ensure a continuous flow of traffic, a grade separation separates the two routes. Depending on how many roads intersect, these interchanges may take the shape of a clover leaf or a ribbon bow. Keeping the turning radius in mind, they are often arranged in a circular configuration. A complicated network of entrance and exit ramps is present alongside this. These interchanges encompass a sizable amount of land and are planted with various geometrical designs made up of a variety of large and small, primarily attractive plants. For this, the plants' both in contrasting and complementary colors have been used. Out of the wide length of the road network, the Niazi Interchange near the River Ravi stands out as a cool eye-catching region in the aerial view.

Figure 1



		The Ariel view of the Niazi Interchange at the River Ravi, draws attention from the vast expanse of road network and jumps out as a cool eye-catching area.
The Niazi Interchange at the River Ravi (before 2017)		
		The basic layout in 2021 is still the same, except with the reduction of contrast. The few trees planted have matured; rest of the area is almost tree less, leading one to question the judgment of using ornamental plants at such a great expense.
Google Image of the Niazi chowk (2000)	Google Image of the Niazi Interchange in 2021 (Feb., 2021)	

The Google Image of the region before the interchange was built displays a plethora of trees, which are strangely lacking in the subsequent images. The suggested design strikingly lacks regard for and sensitivity to the preexisting order.

Retaining as many trees as possible would have been a better strategy. This would have reduced the negative effects of this road development to a minimum. The interchanges at

Guggmata and Raiwind Roads can be seen in the pictures below, which demonstrate how the former agricultural land was transformed into these interchanges. In Guggmata, it appears that a building has been preserved. This park-like space, which also has a design pattern carved on it and is surrounded by a complicated road network at Raiwind Road, is arranged with decorative plants to create a pleasing perspective. (Figure 2).

Figure 2

		This interchange was built upon previously agricultural land. The agricultural area has nearly vanished, depleting our food supply sources further.
Guggmata (2004)	Interchange at Guggmata (2021)	



		The fertile agricultural land with its beneficial cropping pattern at Raiwind Road was sacrificed for the construction of this road.
Raiwind Road (2005)	Interchange at Raiwind Road (2021)	
		The fairly recent photographs show that the trend of planting ornamental plants and palms is still going strongly. The real value of shade giving local trees has yet to be recognized.
Plantation (2017)	Plantation (2021)	
		
A fenced off green area along LRR (2021)	The ornamental plants trimmed to give a sculptural look, alternating with palms and low height plants.	The rigid order of the sculptural topiary visible among the sparsely spaced tree canopies.
		
The shade less vegetation theme, Southern Loop (2021)	Foreign ideals of landscaping take precedence upon the functional aspect in the Southern loop (2021)	A geometrically decorated roundabout in Raiwind, part of the Southern loop (2021)

### Road Median and Edge Plantation




In densely populated places, the road medians and margins are merely concrete barriers. In areas where there is space, green pockets have been


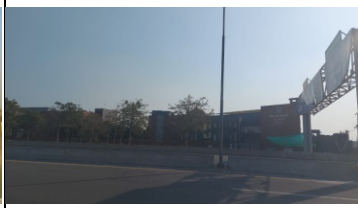

added. However, we believe that space might have been added in these areas as well when the land was purchased for roadways; an additional, slender strip could have been set aside for the

planting of an avenue of evenly spaced, shady trees. Without any distinction, they would provide relief from the sweltering summer heat to everyone who needed it. Along with reducing the

aspect of the adjacent development, these trees would also provide a visual barrier and protect the angular walls from the road. (Figure 3)

**Figure 3**

		
View of a side road in Saggain area. There are no trees in sight. (2017)	Other views of the same area showing scattered trees, which survived the savage development around them. (2017)	
		
Old tree in front of a building (2017)	A line of low height trees, seem to be a welcome sight. (2017)	A high wall to protect the high-speed road from the local population (2017)
		
Exotic Palms planted on median (2021)	Unkempt weeds along LRR Southern Loop (2021)	Dusty median (2021)
		
Area waiting to be developed. Southern Loop (2021)	Lush Green raised median near the Lahore Airport (2021)	

		
Landscape of a side road in Guggarpura area. The strip of the road along the development is pointedly treeless. (2017)	Evenly spaced trees along the Southern Loop of the LRR (2021)	Another median in the southern loop, with weeds and dry grass. Trees along the road edge are visible in the background.

### Slopes and Earth Retaining Structures

The ring road has grade separation in some locations, particularly at intersections and places where it crosses roads, thus it was inevitable that

big concrete pillars, beams, and earth retaining structures would develop. In order to distract from the enormous construction, landscaping has been added to the area below the raised road. (Figure 4)

Figure 4

		
Patterned earth retaining structures softened by plantation (2017)	Erosion preventing strip (2017)	Underpass connection and pedestrian area (2017)
		
The Ring Road side road's green strip has been adapted and vernacularised at Guggarpura (2017)	Vegetation softening the large solid slope behind it. 2017 view of the Northern loop from the side road.	The other side road at nearly the same location. No trees for the lesser humans (2017)
		
Concrete columns and beams dominate the city of Lahore (2021)	The slope is softened by a plantation cover (2021)	Vegetation softens the impact of the LRR above (2021)



## Methodology

In order to track the changes in the landscape throughout this time, visual surveys of the Lahore Ring Road were conducted at intervals of almost four years. The constructed environment evolves and undergoes changes throughout time as a result of exposure to the elements. The soft portion of the landscape, however, is not simply adaptable; in fact, it thrives under the correct circumstances since it is not immobile in time. The smaller plants and shrubs take a little bit longer to grow fully, but trees take much longer to mature. With the right attention and upkeep, trees and plants can grow and thrive or wither and disappear. We have compared the visual evidence gathered on the ground with the digital information that is accessible online for observing similarities.

## Conclusion

Landscape grows and prospers in the natural setting where it is constantly exposed to the forces of nature. However, it needs frequent maintenance and proper care. However, using climatically appropriate plants can make the landscape self-sufficient, requiring little weeding, pruning, watering, etc.

The shape, size, texture, and color of fully established trees and plants should be considered when developing the plantation theme. The placement of the vegetation will determine what kind of foliage is preferable. The variety of cover options keeps the overall design interesting. However, "Deciduous trees with high, spreading crowns are planted to shade," and they are effective in most circumstances, with the exception of those in which the falling leaves necessitate extensive maintenance, which may not always be possible.

It is important to establish measures to improve the amount of green space in our metropolitan areas. This will result in urban renewal and greening. The development of climatic change resilience will benefit immensely from this.

It is impossible to dispute the ecological and environmental advantages of soft landscaping, particularly trees. The bigger regions might serve as bird and insect sanctuaries. The utilization of both maintained and unmaintained plantations

would be the appropriate combination to create the appearance of a forest. Water can permeate through soil and trees while also being filtered in the process. It aids in rehydrating the aquifer of water. However, rainwater that falls on highways and other impermeable surfaces is wasted unless a positive drainage slope is maintained. One of vegetation's most crucial roles is preventing soil erosion, which has significant aesthetic advantages as well as health advantages. Noise and air pollution are minimized by them.

Designing green spaces should be done with the intention of adding value. They might function as a linear park with portions set aside for fruit orchards, butterfly gardens, pollination gardens, etc., given the enormous, nearly continuous green spaces that are available.

The different institutions where the study of landscape architecture has been introduced may serve as a stepping stone and aid in the creation of these spaces (Varney, 2020). The design of the landscape and the positioning of trees must take into account the safety of the motorists using the transport corridor.

The Ring Road serves as a unifying factor. With careful planning and the placement of markers, views and vistas can be created along it. An enclosure of space may be created by a row of trees in the choreography of perspectives. It is possible to forego the formality of planting in geometric patterns in favor of creating landscapes that look natural and use plants for their unique characteristics and contributions to the overall theme. Native plants should be prioritized above non-native, costly imported plants that may only be utilized occasionally.

According to Rose (2007), road design must take into account the preexisting dynamics and blend in with the surroundings. It shouldn't trample on "the conservation and development" requirements of a region. The goal of landscape design must be to provide coherent, well-organized spaces that are visually appealing and have a dynamic stability. It would be wise to research various landscape design scenarios before beginning the process of planting new roadways. The creation of appropriate bylaws is urgently required to ensure that the landscape design meets the requirements of the city in which it is located.



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