

# **An Alternative Approach to Land Compensation Process to Open Urban Arteries**

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**Key words:** Urban Arteries, Land Compensation, Road Planning, Land Readjustment.

## **SUMMARY**

The availability and quality of major urban roads have a great influence on the appropriate development of cities. To open required arteries are usually done by local government. Based on the master plan, opening artery process has been done in two phases. First, land which covers the planned road areas should be acquired, then construction works are began. So, land acquisition is the first and an important step of the entire procedure. Acquisition of land is generally done by land compensation method which is very expensive way for local government. In many cases, government can not effort this so that land development projects may delay. It is also an unfair approach for the landowners that after the land compensation they have to move away from their land. As a result they may not get benefits from the new road development effects but excluding landowners can get. However, the cost of opening new arteries should be reduced, and all road benefits with new environmental effects should be shared by whole landowners in the development area including the owners who's their lands have taken. In this paper, a different approach to land compensation process in road planning and development is modelled and discussed. Instead of the land compensation, land readjustment method is adopted to artery-land acquisition process. First, based on some development parameters, new route effecting area is determined, then land parcels in this particular area are re-planned in order to requirement of the master plan. The model has been tested on several accomplished projects and results were examined.

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## 1. INTRODUCTION

Road is a function of urban land use. At the same time, it is a dominant factor changing time-space matrix of cities. In addition, it is a tool for shaping, directing and growing of cities. Municipalities are responsible from construction of the roads in urban areas in Turkey. On the other hand, passing through the cities, ring roads are constructed by the state government. Construction of such ring roads is a financial burden for central government. Road construction procedures consist of two stages. The first stage is the expropriation needed for acquiring of the real estates located in road route. The other stage is construction of this road.

In this paper, it is aimed that modeling a different approach to reduce or remove expenses of the expropriation reaching almost 50% of the total construction expenses. Therefore, firstly reasons of the developing such an approach will be emphasized. Then, the theoretical bases of the proposed model will be expressed. Finally, the test results realized on different projects will be given.

## 2. ROAD - LAND USE RELATIONSHIP

Roads determine settlement pattern in construction of new settlement areas. Design and construction of roads in urban areas having development plan is realized by municipalities. On other hand, passing ways near urban areas, the highways, state roads and ring roads are constructed by central government. This structure is led to road grading as seen in Figure 1.

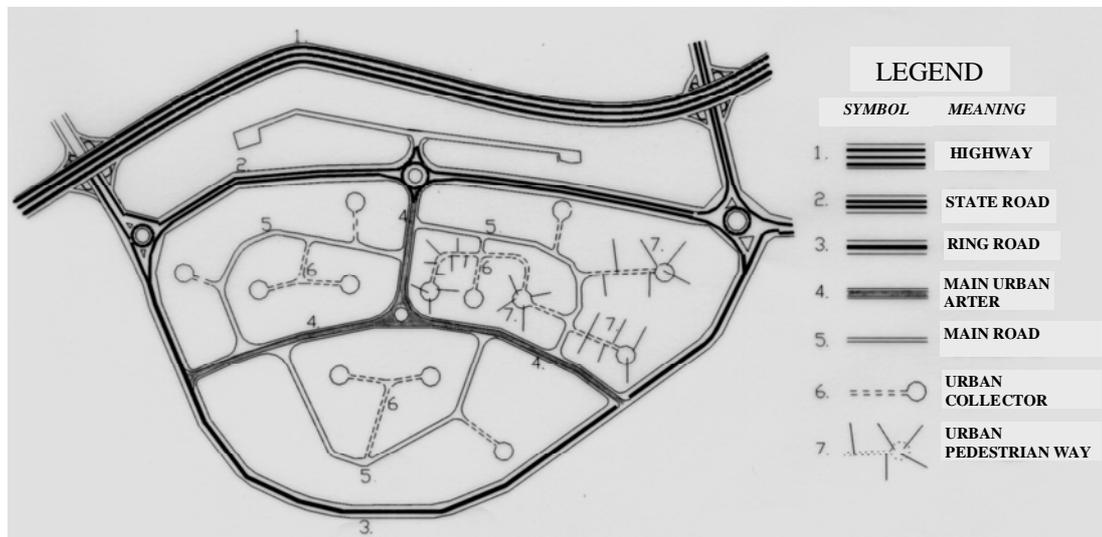


Figure 1. Schematic view of road grading

The ring roads focused on this paper pass from urban fringe and aim providing relationship between transit way and urban area. Ring roads are constructed with respect to a road project. There is no relationship between this project and developing plan. Ring roads, at first, were seen as a physical structure which independent from urban area. However, because these roads have been passed near the urban areas, growing of urban areas has been directed to these roads and their surroundings in timely. The main cause of this situation is the accessibility provided by these roads. As a result of this de facto situation, the idea that ring roads should not be projected in isolation from urban development plan has aroused. On the other hand, the real estates which are around the ring roads have value increase almost a hundred times. This increase arises in the process from investment decision to initial period of urbanization.

### 3. USING EXPROPRIATION METHOD IN ACQUIRING LAND

The land needed for construction of ring roads is acquired by expropriation in Turkey. As known, expropriation is a process that need long period of time. However, this process is a public interference that ends private land rights which is one of the most important human rights in democratic countries (Akyol et al., 1997). Besides, because expropriation is not a neutral process, it has some negative effects. Some of them are;

- Expropriation is a very difficult and costly method.
- Contradiction to becoming widespread property prescience, it does not secure property rights.
- Because aim of the expropriation is only to acquire relating area, it does not take into consideration geometry of the surrounding parcels. Therefore these parcels stay unsuitable for different purposes.
- The owners whose real estates have been expropriated can not benefit from value increase caused by road investment.

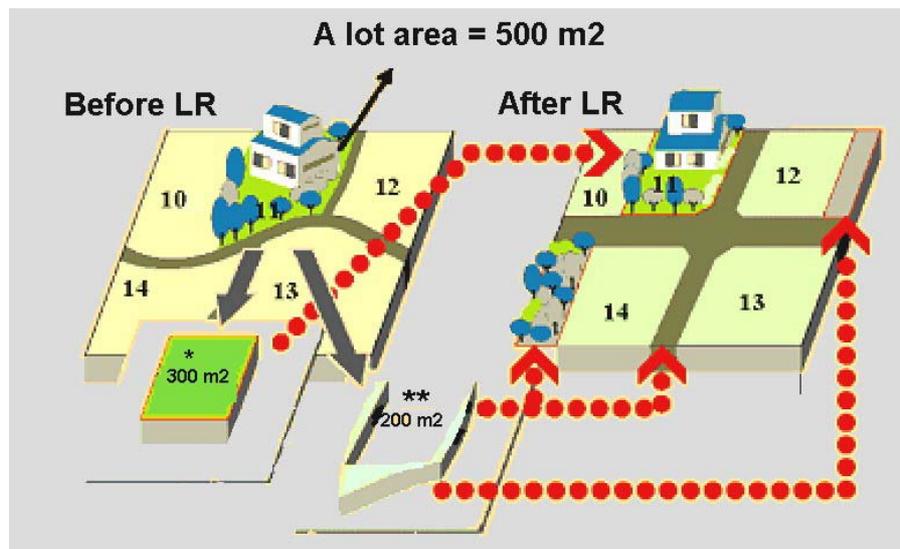
**Table 2:** Costs of road construction and expropriation for five different ring roads projects in Turkey (Uzun, 2000)

Project characteristics City name	Road Length (m)	Existing Housing Density	Road Construction Cost \$/m <sup>2</sup> (A)	Expropriation Cost \$/m <sup>2</sup> (B)	B/A (%)
Trabzon	1.519	High	11.042.857	10.905.178	98,8
Mersin	398	High	119.495	109.970	92,0
Nevşehir	5.175	Medium	1.553.737	664.979	43,0
Konya	1.200	Low	446.457	69.163	15,5
Hatay	3.535	Low	1.061.344	116.973	11,0

Meanwhile, an examination was realized to find out the rate of expropriation cost within total road construction expenses. When the data collected from five different cities is examined, it is seen that cost of expropriation is almost the same with cost of road construction (Table 2).

#### 4. THE PROPOSED METHOD

The method is based on acquisition of the land needed for ring roads with changed land readjustment (LR) method. LR provides acquiring of these areas in return for value increase. In addition, this procedure transforms the parcels into appropriate building areas (Figure 2). The other aim with LR is to guarantee distribution of value increase between real estate owners (Doebele, 1982; Yomralioglu, 1993).



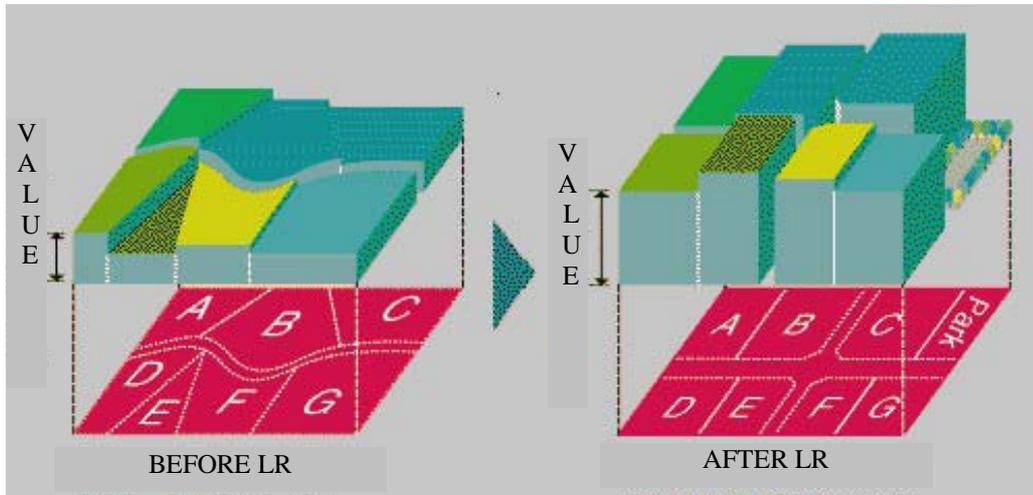
(\*) lot after land readjustment (replot)  
 (\*\*) the contributed portion of land

**Figure 2.** General mechanism of land readjustment (LR) (Uzun, 2000)

The main stages of proposed method are;

- Ring road projects and developing plans should be prepared at the same time. Developing rights for each land parcel should be given depending on cadastral parcel area.
- In LR projects, reduction rate from each cadastral parcel is maximum 40 percent. However, this rate is between 40-55 percent in ring road projects. Therefore, the approach does not take into consideration 40 percentage limit in proposed changed LR methods. Because, the main cause of this method is basing on development right equity. Likewise, each parcels' developing right is protected after 55% reduction.
- This method should be applied in the areas where cadastral parcels have almost the same land values. Because, the development rights of each cadastral parcel is not given with respect to parcel value.
- With respect to the theoretical relationship between land reduction and land values, each parcel values has to increase at least 122% for 55% land reduction (Yıldız, 1983).

study realized in city of Trabzon, Turkey, it is determined that the value increase has been between 238-327 percent (See Figure 3).



**Figure 3.** Value increase with LR (Uzun, 1992)

The development rights which are on the development land parcels produced around ring roads after LR is constitute as a structure that real estate owners can use development rights on theirs' finalized land parcels. The model was tested in the six different ring roads in different cities of Turkey. As a result of these tests, practicability of the model was seen. Then, providing of formalization of the method was proposed to the public authority.

## 5. CONCLUSION

With the proposed model, the real estates needed for construction of ring roads can be acquired without expropriation in return to the value increase originating from road construction. Therefore, public authorities have been rid of an important financial burden. On the other hand, the proposed model, as a tool for eliminating negative effects of expropriation in general, provides equity for real estate owners.

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