

A Study on Method of Public Urban Facilities Maintenance by Private Sector : Case of Road Maintenance in Gwangjin-Gu of Seoul, Korea

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A Study on Method of Public Urban Facilities Maintenance by Private Sector - Case of Road Maintenance in Gwangjin-Gu of Seoul, Korea -

by

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Abstract

An area around railway station where was developed a long time ago In Seoul, requires overall maintenance, which is executed via several urban planning systems, such as a restoration of deteriorating buildings, a road maintenance, and a securing of public urban space. As well as an urban maintenance is increasingly being undertaken road maintenance and improvements by private sector recently. Thus, the private sector plays an important role in urban renewal and maintenance in urban areas. However, with exception of an urban planning district, road maintenance and improvement projects face several challenges; thus, an overall management plan needs to be implemented, as well as the system of compensation for road maintenance undertaken by the private sector. This paper aims to identify these challenges and discuss the role of city administration in road maintenance, as well as to offer suggestions about the part that the private sector can play in the maintenance of public urban facilities. This study consists of data collection through a literature review, interviews with city administration staff, and a case study of Hanrim Tower in Gwangjin-Gu, Seoul. In conclusion, we suggest how urban maintenance can be managed according to proposals from citizens regarding road maintenance and improvements, and recommend that city administration to set up definite criteria to incentivize enterprises that are willing to carry out the work. A maintenance of public urban facilities by private sector is particularly focused on road maintenance and improvements, which suggests the need for overall improvements to the urban planning system and the system of incentives.

Keywords: Public urban facility, Road maintenance, Private sector, Contributed acceptance scheme, Resident suggestion, Hanrim Tower

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1. Introduction

Concern with urban space regeneration in Seoul, has been growing recently. In terms of reorganization of urban space, the priorities have been to secure areas where people can rest and relax, to repair pavements, to secure the roads for vehicle traffic, and to maintain existing roads. An area surrounding railway station, which is situated in the old city, has become a center for commercial business and thus plays a significant role in a city. Nevertheless, it is an area that requires maintenance to prevent building deterioration, to maintain roads, and to secure public urban space.

However, owing to a recent change in the urban maintenance methodology, city administration cannot afford to undertake all urban maintenance on its own. For this reason, private sector has stepped in to serve the public interest. Indeed, in the area surrounding a railway station, urban maintenance, including road maintenance and improvements, have been largely undertaken by the private sector.

2. Background and Purpose

Seoul is situated on both the northern and southern sides of the Han River valley. The northern part retains spatial layout of old walled city, and as the city center, serves many important functions. Specifically, the main railway station and the other railway stations in the old city sit amid a concentration of commercial and business facilities that have developed over centuries, and which play a key role in city's development.

The northern part of the city also retains the road patterns and types developed when city wall surrounded a castle, and is characterized by narrow roads. Seoul Metropolitan Government Office traditionally undertook the development and maintenance of an area surrounding railway station as part of its urban renewal responsibility. However, Seoul Metropolitan Government Office has responded to proposals from private sector to undertake maintenance projects of public urban facilities, such as establishment of privately owned pocket parks, open spaces, or squares, and repair and renewal of roads. Road maintenance is an integral part of urban project planning such that most maintenance schemes comprise whole road networks. There is therefore a need to ensure and implement sustainable, long-term planning.

There are various types of road maintenance, including the security of road maintenance, road installations, road resurfacing, and general improvement of road conditions. Seoul Metropolitan Government Office operates a contributed acceptance scheme⁽¹⁾, and each gu office⁽²⁾ may take responsibility for a planning and implementation of urban improvements depending on a scale or purpose of buildings and an extent of road repair required. However, except in an urban planning district, road maintenance and improvement projects face several challenges; thus, an overall management plan needs to be implemented, as well as a system of compensation for road maintenance undertaken by the private sector.

This paper aims to identify problems in the existing road maintenance system, to discuss a role of the city administration, and to suggest how a private sector can contribute to the maintenance of public urban facilities.

3. Review of Related Research

Several studies on road maintenance have been published in recent decades. Son¹⁾ presented guidelines for road maintenance in Seoul, with a specific focus on arterial and collector roads, and

analyzed maintenance types, principles, and methods in order to determine the best and most appropriate maintenance methods. Kim²⁾ presented a definition of a life road and discussed necessity of maintenance, road classification, and the problems involved. Choi, Kim, Eom, and Lee³⁾ reviewed the conditions for gratuitous conveyance (i.e., the rule for transfer free of charge) in regeneration infrastructures and suggested improvements to the gratuitous conveyance rule.

The present study differs from the existing research in that it investigates a method of maintenance using a type of contributed acceptance scheme in urban planning, considers road maintenance and improvement project process, and focuses on common road rankings. Moreover, a study includes a case study of the area surrounding Konkuk University Station in Gwangjin-Gu, Seoul, where a redevelopment project has been implemented.

4. Study Method

The paper consists of:

- Data collection through literature review of network of roads in Seoul, grading of roads, and laws on urban planning
- Analysis of public urban facility maintenance system and management plan
- Interviews with city administration staffs
- Case study of Hanrim Tower in Gwangjin-Gu, Seoul

5. Road Maintenance System

5.1 Road network of Seoul and maintenance plan

The northern section of Seoul retains the urban structure of old walled city whereas the southern section has experienced expansion through urban development, as shown in **Fig. 1**. Therefore, the northern and southern parts of the city are distinguishable by their urban structures. The northern part retains the original network of roads developed when it was a castle town although castle no longer exists.

Land use in present-day Seoul can be categorized as follows: green zone and open spaces represent 31.9%, housing areas 18.9%, residential and commercial areas 13.0%, areas for transportation facilities 10.5%, rivers and lakes 8.1%, commercial areas 5.9%, public areas 5.1%, and others 6.6%.⁽⁴⁾

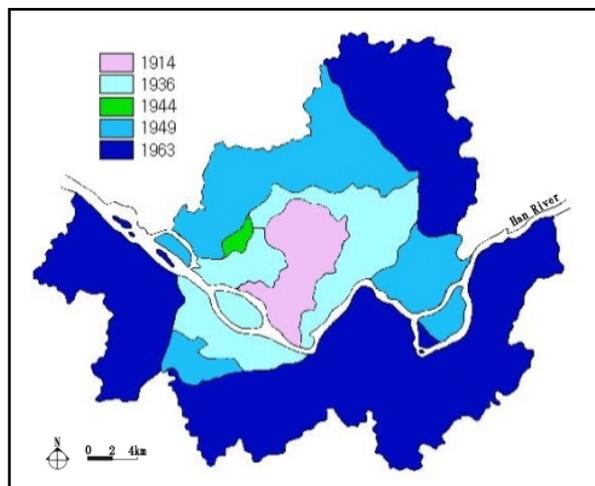


Fig. 1 Growth Process of Seoul, 1914-1963⁽³⁾.

Figure 2 shows a network of roads in Seoul, which is a mix of radial roads, cross-stripe roads, and ring-type roads, which developed as the city grew. In the 1930s, roads were built in some of the city outskirts, such as the Mapo⁽⁵⁾ and Yeongdeungpo⁽⁶⁾ areas, as well as inside Four Gates⁽⁷⁾, and a road network subsequently began to extend the north of Han River. The linking road network was developed south of Han River in 1970s, and improvements to trunk roads and expressways have been ongoing since 1990s.⁽⁸⁾

Table 1 shows the total length of roads in Seoul. Of 8,200 km road network, length of the expressways has not changed since 2006, and the general national roads have undergone little change since 1982. However, the number of special city roads has been steadily increasing.

The Ministry of Land has devised systematic road master plans for the mid- and long-term, including expressways, general national roads, and other roads supported by government. The plans are renewed every 10 years. The Secondary Road Improvement Plan 2011–2020 was recently published.

Table 1 Change in Road Length of Seoul⁽⁹⁾.
(Expressway, General National Road, Special City Road)
Unit: m

Period	Total Length	Expressway	General National Road	Special City Road
1979	6,556,800	18,400	117,000	6,421,400
1980	6,610,400	18,400	117,000	6,475,000
1981	6,684,300	20,300	180,400	6,483,600
1982	6,738,600	20,300	168,900	6,549,400
1983	6,777,300	18,000	168,900	6,590,400
1984	6,843,400	18,000	168,900	6,656,500
1985	6,974,800	12,500	168,900	6,793,400
1986	7,058,000	12,500	168,900	6,876,600
1987	7,322,000	16,000	169,000	7,137,000
1988	7,250,000	16,000	169,000	7,065,000
1989	7,323,000	16,000	169,000	7,138,000
1990	7,374,000	16,000	169,000	7,189,000
1991	7,426,700	17,900	168,800	7,240,000
1992	7,515,900	17,900	168,800	7,329,200
1993	7,561,429	17,920	168,880	7,374,629
1994	7,621,605	17,920	168,880	7,434,805
1995	7,674,674	23,080	168,880	7,482,714
1996	7,689,163	23,080	168,880	7,497,203
1997	7,737,101	23,080	168,880	7,545,141
1998	7,801,225	23,080	168,880	7,609,265
1999	7,842,567	23,080	1,093,110	6,726,377
2000	7,888,764	23,080	168,880	7,696,804
2001	7,935,089	28,980	168,880	7,737,229
2002	7,972,801	22,146	168,880	7,781,775
2003	7,988,060	22,890	168,880	7,796,290
2004	8,010,671	22,890	168,880	7,818,901
2005	8,045,932	22,890	168,880	7,854,162
2006	8,067,201	26,550	168,880	7,871,771
2007	8,078,293	26,550	168,880	7,882,863
2008	8,092,960	26,550	168,880	7,897,530
2009	8,101,593	26,550	168,880	7,906,163
2010	8,142,122	26,550	168,880	7,946,692
2011	8,147,579	26,550	168,880	7,952,149
2012	8,173,509	26,550	168,880	7,978,079

* In 1999, there had been changed some road type for use of road

Figure 3 shows that Seoul Metropolitan Government Office ranks roads, establishes road maintenance plans,

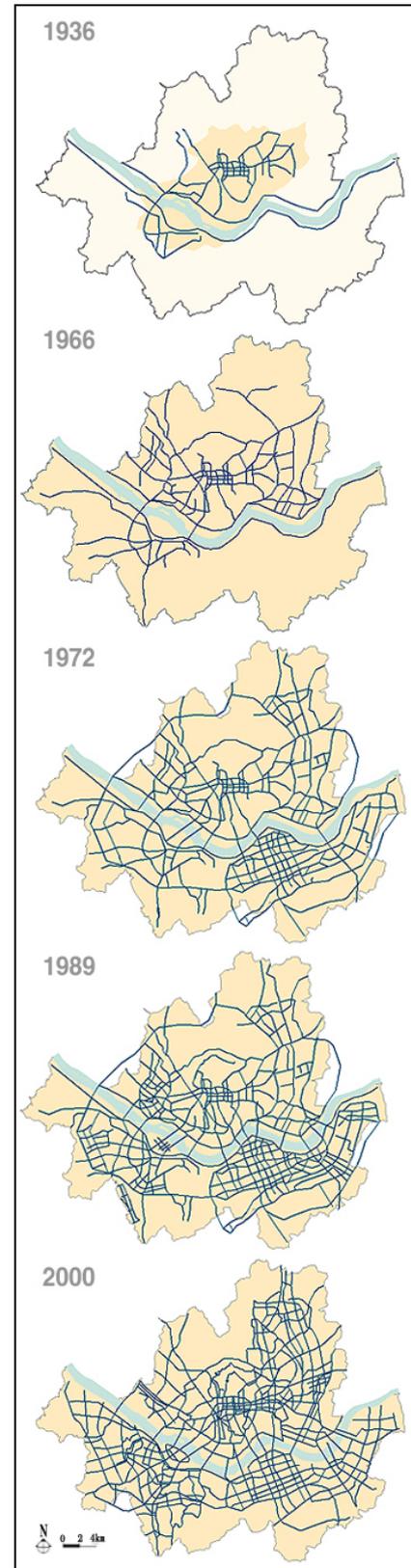


Fig. 2 Development of Road Network of Seoul, 1936-2000⁽¹⁰⁾.

and collects current road maintenance data from road surveys of all gu offices. In addition, **Fig. 4** shows that each gu office draws up annual road maintenance plans, and Seoul Metropolitan Government Office entrusts the road maintenance in its area to each gu office. Each gu office is responsible for maintenance of main roads, and each dong office is entrusted with maintenance of life roads ⁽¹¹⁾, minor roads ⁽¹¹⁾, and back streets of its area.

Traffic Improvement Project (TIP) for maintenance of life roads and back streets was implemented in the late 1990s, and was thereafter extended to include expressways and trunk roads. TIP is also responsible for traffic demand management policy.²⁾ Road maintenance projects by private sector

have been implemented as part of urban planning; however, this is quite complex and difficult to manage compared to urban planning of roads, trunk roads, and expressways.

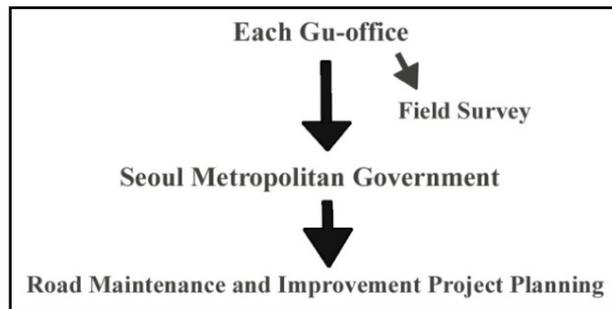


Fig. 3 Road Maintenance Planning of Seoul ⁽¹²⁾.

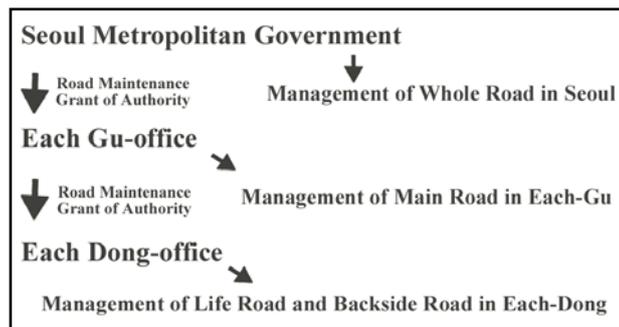


Fig. 4 Road Maintenance Process of Seoul ⁽¹³⁾.

5.2 Road maintenance process

To promote whole area planning, an urban planning district normally issues guidelines and legal recommendations for urban development and maintenance, which are applicable to both the private and public sector.

Outside an urban planning district, city administration has often required the private sector to take responsibility for road maintenance, although private sector has also initiated its own projects in this regard.

5.2.1 Residents' suggestions for road maintenance

Road maintenance by private sector has generally originated from residents' suggestions ⁽¹⁵⁾.

Figure 5 shows the relationship between city administration and private sector for road maintenance.

Private sector does not need to follow administration's suggestions regarding maintenance of public urban facilities, but when their

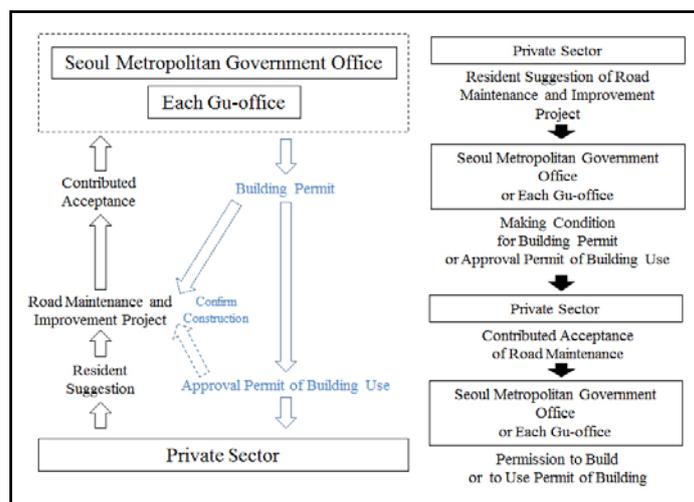


Fig. 5 Process of Resident Suggestion by Private Sector ⁽¹⁴⁾.

schemes arise from residents’ suggestions, they must obtain “building permission” and a permit for “approval of a building’s use.” To obtain these permissions, they should undertake a maintenance of relevant public urban facilities, and Seoul Metropolitan Government Office normally tends to recognize “building permission” and a permit for “approval of a building’s use” as one of the incentives.

5.2.2 Contributed acceptance scheme and relationship with residents’ suggestions

Contributed acceptance scheme plays an important role in public urban facilities maintenance. **Figure 6** shows process and relationship between city administration (or local government) and private sector (business operators or developers). City administration accepts private property free of charge in this scheme, while private sector is able to receive incentives, such as mitigation of capacity in development

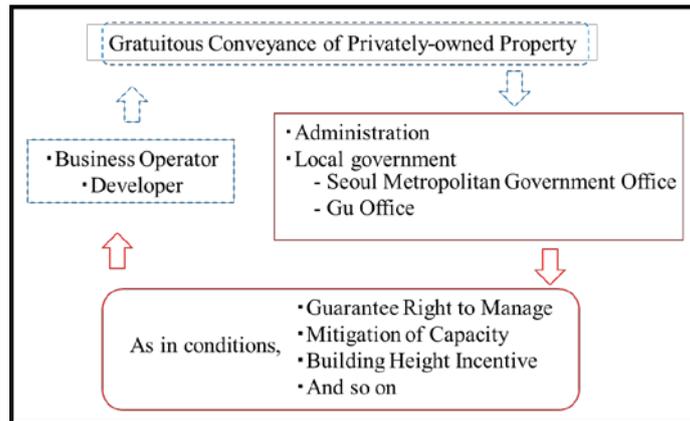


Fig. 6 Fundamental Concept of Contributed Acceptance Scheme.

legislation related to relevant urban development projects from administration or gu office. These are enacted as provisions in contributed acceptance scheme.

On the other hand, private sector normally develops the facilities they want and makes a donation to city administration or local government in order to receive incentives. In some cases, city administration or local government may demand that private sector develop specific facilities they want as city administration or local government is able to choose to accept contribution of

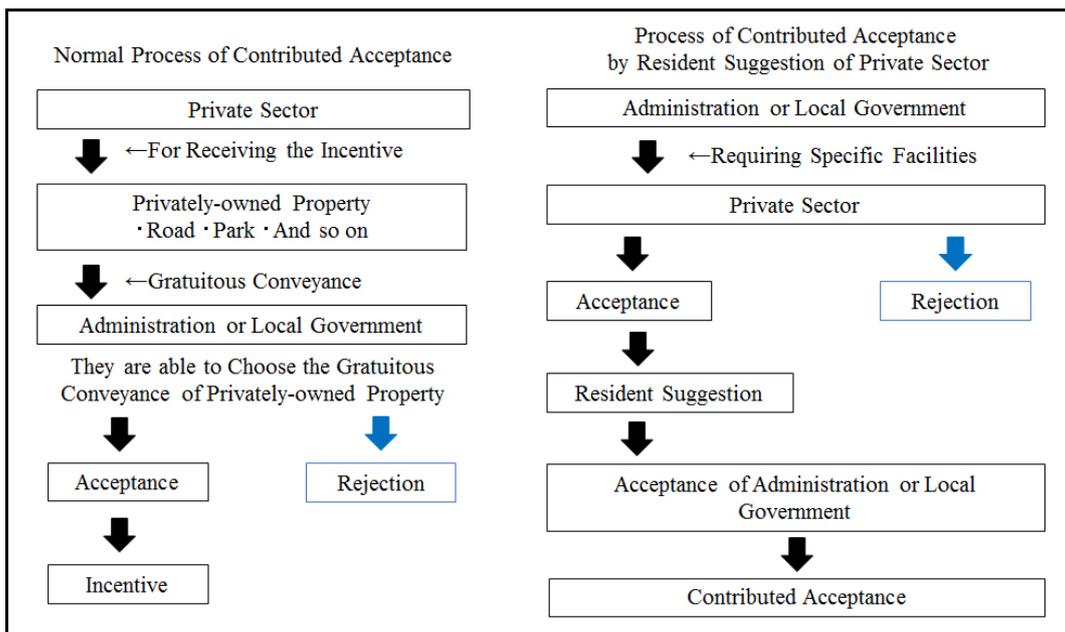


Fig. 7 Relation between Contributed Acceptance Scheme and Resident Suggestion.

private property as part of contributed acceptance scheme. In such instances, private sector is able to propose a development of facilities demanded by city administration or local government; hence residents' suggestions by private sector are generally used. **Figure 7** shows contributed acceptance scheme process of private sector residents' suggestions.

Meanwhile, use of public urban facilities depends on whether private sector or city administration manages them. With regard to privately owned public spaces, such as open spaces or rest spaces, private sector generally undertakes management of these facilities. In road maintenance, private sector also takes part in the contributed acceptance scheme and submits its proposals to Seoul Metropolitan Government Office or to an individual gu office. Therefore, many public urban facilities maintenance projects have been carried out by the private sector, including maintenance of several kinds of roads.

Normally, private companies are able to make residents' suggestions to Seoul Metropolitan Government Office or an individual gu office, and the administration grants a commission according to a scale and purpose of the building.

5.2.3 Civil affairs administration and the relationship with road maintenance

Civil affairs administration ⁽¹⁶⁾ is a system that handles city administration's administrative processes in response to proposals by civil petitioners who require specific actions. In case of road maintenance, city administration may submit a management plan for road maintenance to civil affairs administration, and this will take priority over its existing management plans for road maintenance. The number of civil affairs administration-approved plans is two or three times higher than the number of established management plans for road maintenance. In addition, initial administration management plans may change often as Seoul Metropolitan Government Office and each gu office separately accept a large number of civil affairs administration plans for road maintenance. Seoul Metropolitan Government Office or gu office may take control of the whole maintenance process, ensuring that private sector meets administration's conditions regarding acquisitions of "building permission" and permits for "approval of a building's use." In some cases, private company may make contributed acceptance scheme to Seoul Metropolitan Government Office, even though it is gu office that sets a conditions for buildings. This can create confusion and disrupt the management plans; therefore, plans must be able to respond to such changes.

5.3 Case study

Gwangjin-Gu is situated in the northeastern part of Seoul. It has a total area of only about 17 km², which is only 2.8% of total area of Seoul, but it is home to about 380,000 people. It is a transport hub of eastern Seoul, with three Metro lines passing through. It is also a site of East Seoul Bus Terminal. There are eight urban railway stations on Line 2, Line 5, and Line 7, which play an important role in the region. Gwangjin-Gu is Seoul's main commercial and business district (see **Fig. 8** and **Fig. 9** and **Photo 1**).

Gwangjin-Gu office creates a road maintenance plan annually with an allocated budget, and undertakes road widening and repair of roads and pavements, among other



Fig. 8 Location of Gwangjin-Gu in Seoul (Red Circle in Map).

projects. Gwangjin-Gu office also responds to residents' suggestions and works closely with civil affairs administration. In 2011, Gwangjin-Gu office planned to carry out maintenance at 141 sites and completed work at 44 sites. In 2012, it completed work at 78 sites out of a planned 199 sites. This was all done in accordance with the original plans of Road Division of Gwangjin-Gu office and civil affairs administration.⁽¹⁷⁾

Line 2 stations are elevated and require management, both of stations themselves and the surrounding areas as well. They have been designated as urban planning districts. Shops have been set up in the surrounding areas since 1995, and this is now one of the most important commercial areas in Seoul. Konkuk University Station (Photo 2), which was designated as an urban design district in 2002, is also a transfer station for Lines 2 and 7, and is used by approximately 106,000 people a day.

Hanrim Tower (Photo 3) near Konkuk University Station is residential and commercial building of 24,971m², consisting of 19 stories above ground and five underground levels. Once building permit was approved in 1997 by Gwangjin-Gu office, further conditions were imposed on construction company regarding public open spaces and rooftop landscaping, and line of the structure was limited (width 3 m). Contributed acceptance scheme was sought from Seoul Metropolitan Government Office. In addition, following the designation of an area as an urban design district in 2002, it was recommended that the construction company install urban railway entrance in Konkuk University Station of Line 2 as part of the plan. In 2006, it obtained permission to start construction, and Hanrim Tower now features passageways to station and station entrance within the building. Under the terms of contributed acceptance scheme, the company agreed to take responsibility for



Fig. 9 Condition of Urban Railway Stations in Gwangjin-Gu (Red Circle in Map).



Photo 1 Commercial Area around Konkuk Univ. Station⁽¹⁸⁾.



Photo 2 Line 2 Konkuk Univ. Station⁽¹⁹⁾.



Photo 3 Hanrim Tower⁽²⁰⁾.

road maintenance of 248.97m² of the eastern part of Seoul.

However, it took 10 years for developers of Hanrim Tower to reconstruct the building since they received the necessary permits from Seoul Metropolitan Government Office. A condition of contributed acceptance scheme was that rebuilding should not start until after road maintenance contract had been agreed.

Private sector has played a large part in road maintenance in Gwangjin-Gu but not in maintenance of overall road network.

Figure 10 shows locations of Hanrim Tower, Konkuk University Station, public urban space, and public urban facilities maintenance by Hanrim Tower developers.

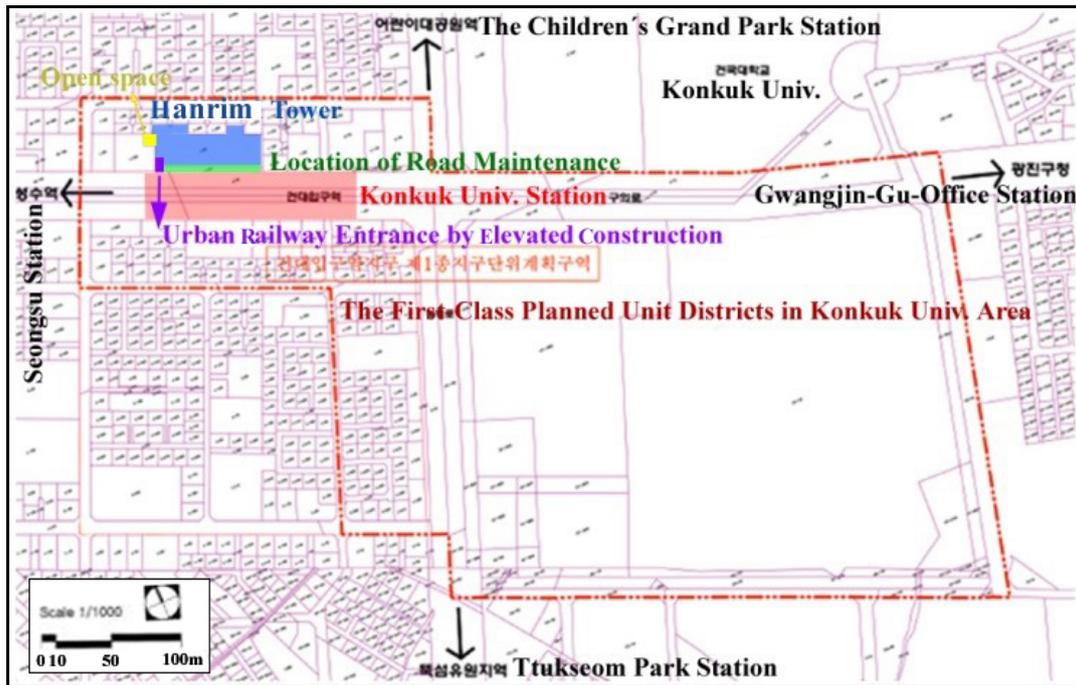


Fig. 10 Location of Hanrim Tower and Public Urban Maintenance by Hanrim Tower; Maintenance of Road, Open Space and Urban Railway Entrance⁽²¹⁾.

The yellow boxes in **Photos 4, 5,** and **6** indicate the location of road maintenance undertaken by Hanrim Tower developers. **Photos 7, 8,** and **9** show the road maintenance and the maintenance of urban railway entrance in detail.



Photo 4 ⁽²²⁾.



Photo 5 ⁽²³⁾.



Photo 6 ⁽²⁴⁾.

Photos 4, 5 and 6 Road Maintenance by Hanrim Tower.

Photo 7 ⁽²⁵⁾.Photo 8 ⁽²⁶⁾.Photo 9 ⁽²⁷⁾.

Photos 7, 8 and 9 Maintenance of Urban Railway Entrance by Elevated Construction by Hanrim Tower.

6. Recommendations

As an outcome of this study, three suggestions can be made. First, in relation to citizen proposals, incentive system needs to be improved to encourage voluntary participation by private sector, with city administration support. Second, whole system of planning for maintenance of road network needs to be improved; in particular, civil complaints must take priority regardless of administration's road maintenance program, and improvement planning needs to be reformed. Third, city administration needs to set up definite criteria for incentives, methods of application, and application extensions.

It is complicated to calculate appropriate incentive for each item of public urban facilities maintenance since these are often applied to just a single building, and building permits and operating licenses issued by administration are usually recognized as incentives. However, there are clearly cases in which the incentives do not fit or are not applied.

7. Conclusions

This study focused on method employed for the maintenance of public urban facilities by private sector in Seoul, Korea, with particular attention to road maintenance. The purpose of this study was to investigate road maintenance by private sector within legal system of urban planning, and to consider and discuss problems with whole road maintenance system.

This study organized research data for the road networks in Seoul and discussed laws pertaining to urban planning. A thorough examination of public urban facilities maintenance system and management planning was undertaken, as well as case study of Hanrim Tower.

As an outcome of this study, three suggestions were made. Public urban facilities maintenance by private sector is particularly directed toward road maintenance and improvements. However, an overall improvement in urban planning and incentive systems are required in order to enable the full and active involvement of private sector.

Note

- (1) Contributed acceptance scheme is a system in which city administration or local government accepts private property free of charge. Contributions by private sector to city administration or local government means bestowal of civil property, while donation means that city administration or local government is able to select contributions from the private sector. In addition, property received through contributed acceptance scheme becomes property of administration.
- (2) Seoul has 25 gus (administrative districts), which are subdivided into smaller districts called

- dongs, in which there are 522.
- (3) Information from History of Seoul, kept by Seoul Metropolitan Government Office.
 - (4) Thematic Maps of Seoul (2007), p. 108.
 - (5) • (6) An area of Seoul: Mapo area is in the northwestern part of Seoul, and Yeongdeungpo is in the southwestern part of Seoul.
 - (7) Seoul has four major gates from the time when it was a castle city.
 - (8) Adapted from Thematic Maps of Seoul (2007), p. 136.
 - (9) Source: Korea National Statistical Office.
 - (10) Adapted from Thematic Maps of Seoul (2007), p. 136.
 - (11) A life road is not defined in Road Act of Korea, but generally, a life road can be recognized as most of local roads in urban areas, except for main trunk roads or section roads. A life road is similar to a living street or home zone in the UK, a woonerf in the Netherlands, or a shared zone in Australia and New Zealand. In case of Japan, it is a community road as well. ²⁾
 - (12) • (13) Interview with Seoul Metropolitan Government Office.
 - (14) Adapted from data obtained from Seoul Metropolitan Government Office.
 - (15) Residents in areas may have opinions regarding the improvement of their surroundings. They can participate in planning, make suggestions to city administration, and undertake maintenance to the urban system themselves.
 - (16) Civil affairs administration is a system that handles city administration's administrative processes in response to proposals by civil petitioners (individuals, corporations, groups, etc.) that require specific actions. Civil complaints by civil petitioners submitted to city administration may require: 1) various permits and registration applications, 2) proof or verification of certain facts, 3) for raising of an objection: the petition, the proposal, and an inquiry in respect of the act of disposal of an administrative agency, 4) a report of citizen inconvenience related to the administration, and 5) a requisition of dissolution.
 - (17) Adapted from confidential data held at Gwangjin-Gu office.
 - (18) • (19) • (20) Photographs taken by author.
 - (21) Drawing location of Hanrim Tower and the public urban maintenance undertaken by Hanrim Tower. The scheme drawing was sourced from Gwangjin-Gu office; First Class Planned Unit Districts in Konkuk University Area.
 - (22) • (23) • (24) • (25) • (26) • (27) Photographs taken by author.

References

- 1) B. Son, A Preliminary Study for Establishing a Policy on Geometric Design of Urban Streets - Minor Arterial and Collector Roads in Seoul -, Seoul Development Institute, 138p (1998) [In Korean with English concrete].
- 2) D. Kim.; Special; definition of life road and necessity of maintenance. Korean Society of Road Engineers, Road Vol.14, No.4, pp.5-12 (2012) [In Korean with English concrete].
- 3) J. Choi, K. Kim, S. Eom, M. Lee.; A Study on the Contribution System of Road included in Infrastructure - Focused on the Contribution standard of Seoul -, Korea Planners Association, Vol.45, No.5, pp.41-51 (2010) [In Korean with English concrete].
- 4) K. Lee.; It is necessary of doing Road Maintenance and Improvement in Network Level, Urban Problem, Vol.44, No.486, pp.20-23 (2009) [In Korean with English concrete].

- 5) Seoul Metropolis, Seoul Metropolis District Unit Plan Guideline, Seoul Metropolis, 271p (2010) [In Korean with English concrete].
- 6) S. Lee, W. Um, A handbook for urban public space in daily life, Architecture and Urban Research Institute, 164p (2011) [In Korean with English concrete].
- 7) M. Jung, Thematic maps of Seoul 2007, Bobmunsa, 229p (2008) [In Korean with English concrete].
- 8) K. Kang, et al, A study on Arterial Road Network Improvement based on Networking Analysis, The Korea Transport Institute, 145p (2011) [In Korean with English concrete].
- 9) H. Kim, J. Lee.; Connection of Life Road Maintenance and urban regeneration projects, Urban Problem, Vol.42, No.468, pp.12-23 (2007) [In Korean with English concrete].
- 10) The Ministry of Land, Transport and Maritime Affairs of Korea, Road Improvement Plan (1998-2011), The Ministry of Land, Transport and Maritime Affairs of Korea, 68p (1998) [In Korean with English concrete].
- 11) The Ministry of Land, Transport and Maritime Affairs of Korea, The Second Road Improvement Plan (2011-2020), The Ministry of Land, Transport and Maritime Affairs of Korea, 74p (2011) [In Korean with English concrete].
- 12) Y. Lee, S. Kim, Y. Jang, Strategies for the Efficient Provision of Public Facilities in Urban Development, The Ministry of Construction and Transportation of Korea, 258p (2000) [In Korean with English concrete].
- 13) S. Kim, N. An, Improvement Method of Act on Restitution of Development Gains in Seoul, Seoul Development Institute, 20p (2012) [In Korean with English concrete].