

# Merits and Demerits of the Inspection System introduced in Construction of City Planning Road: In Case of Crossing Road of the Aioiyama Green Area in Nagoya

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## Abstract

The Yatomi - Aioiyama line is a city-planning road that was notified in 1957 and subsequently prepared by land readjustments. Currently, approximately 900m of road pass in the inside of the Aioiyama green area has not been constructed.

The surveying briefing session for inhabitants was held in July 1992, the project was authorized by the Ministry of Land, Infrastructure and Transport in September 1993, and the project briefing session for inhabitants was held in September 1993. The site purchase has been completed. At the May 2000 briefing session, inhabitants of the area began voicing dissenting demanding the conservation of the natural environment of this green area.

The inspector system serves as the third party, independent of both the administration and the inhabitants. Before finalizing the geometric line form of the road to be constructed, some surveys of animals and plants found along the walking trails carried out intensively in the northern area, which is approximately 50 ha, of the Aioiyama green area. The natural environment inspector submitted a plan for changing the geometric line form of the road decided upon by city planning, and it was approved by the city planning council. If the shelter structure or the retaining wall structure is adopted at the location where large slope faces are produced by excavation or landfill, and if the bridge structure is adopted at the place where stream-lines and walking trails intersect, it leads to a reduction of approximately 40% in the areas for which change is planned. Furthermore, approximately 20% of the area to be changed is restored by returning soil to the roof of the shelter.

*Key Words : City Planning Road, Natural Environment, Inspection System, Inhabitants of Opposite Group, Japanese Small Firefly*

## I. INTRODUCTION

The Yatomi - Aioiyama line is a city-planning road that was notified in 1957; the construction site was subsequently prepared, mainly by land readjustments. Currently, approximately 900 m of road in the Aioi-

yama green area, which is a city planning green area, has not been constructed. Based on Japanese road structure law, the road is classified as Grade 2 of the four-category classification, as a supporting main road.

This road structure is planned based on the following requirements: the road width must be 16 m, the ideal speed is 50 km/h, the maximum traffic per

day is 10,000 vehicles, the pitch difference must be 40 m, and the maximum incline is 6 %. The administration procedures prior to beginning construction are as follows: the surveying briefing session for inhabitants was held in July 1992, the project was authorized by the Ministry of Land, Infrastructure and Transport in September 1993, and the project briefing session for inhabitants was held in September 1993. The site purchase, which is done in parallel with the administration procedures required to begin construction, is finished.

In September 2000, the Nagoya city authorities drew up a 'Nagoya new century plan 2010'. This was to be the master plan for the urban environmental improvement projects in Nagoya beginning in the 21st century. This is the third long-term comprehensive action plan formulated based on 'The fundamental design of Nagoya city' plan, which was drawn up 1977 and which the municipal administration considers the main concept to be followed in city design. The

implementation period of this plan is 11 years, from 2000 to 2010. The 'Nagoya new century plan 2010' promotes the construction of Yatomi - Aioiyama line as a road that will not damage the natural environment of the Aioiyama green area. This road is positioned as being the factor that promotes town formation, and the active exchange of inhabitants will be made possible by this plan through the creation of a road network (Figure 1).

A large amount of forest area remains in the area approximately 20 ha north of the Aioiyama green area: it was preserved by the citizens' participation movement, which began in 1995. The slogan, 'Maintenance and practical use of precious natural environments created by citizens' is the basic policy of forestry planning. The care of the trees in this area has been made possible by the independent participation and co-operation of citizens. This area is called 'The forest oasis of Aioiyama', and citizen groups carry out vegetation management activities such as thinning, weeding and brushing and maintain the traditional rural landscape of Japan. Once this crossing road project was authorised, citizen activities targeted at countering its harmful effects on the environment were begun: these were directed at preserving the natural environment of the green area.

This paper introduces the activities conducted by the inspector who functions as the professional society concerned with road preparation in consideration of the natural environment. The inspector system serves as the third party, which is independent of both the administration and inhabitants. The inspector presented the change plan: this plan took into consideration the activities of inhabitants targeted at countering the effects of the road plan that was finalized by city planning and authorized by the city planning council. The merits and demerits of this inspector system introduced in Nagoya city are examined.

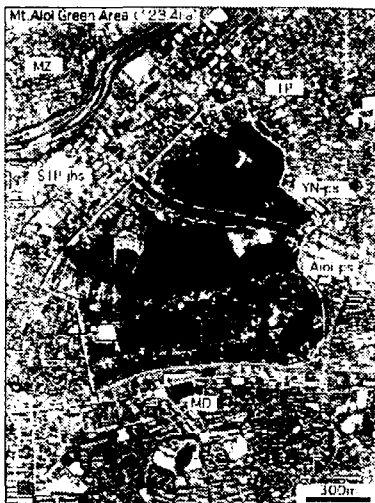


Figure 1. Location of the City-planning road Yatomi-Aioiyama line (red line)

\*Abbreviation: MZ (adjacent Mizuho ward) MD (adjacent Midori ward), TP (Tenpaku ward), STP-jhs, (South Tenpaku junior high school, YN-ps (Yamane primary school), and Aioi-ps (Aioi primary school)

## II. NATURAL ENVIRONMENT OF THE AIOYAMA GREEN AREA

Before deciding on the geometric line form of the road, intensive surveys of animals and plants found along the walking trails in approximately 50 ha of the northern portion of the Aioiyama green area were conducted. The surveys were conducted from August 1998 to March 1999. Amphibia, Reptilia, Mammalia, Insecta classes as well as vegetation. A large number of remains and sub-imagoes of the Western-Japanese Common Toad (*Bufo japonicus japonicus*) were identified in the Amphibia and Reptilia survey. In addition, three kinds of imagoes of the Japanese Grass Lizard (*Tachydromoides tachydromoides*), the Japanese Four-lined Ratsnake (*Elaphe quadrigata*), and the Japanese Ratsnake (*Elaphe climacophora*) were identified. In the Mammalia survey, some tunnels of the large Japanese mole (*Mogera wogura*) and a living body of the masked palm civet (*Paguma larvata*) of the small Indian civet race were identified. Raccoon dogs (*Nyctereutes procyonoides*) were also observed by inhabitants.

In the Insecta survey, 247 species of 109 families of 14 orders were identified. The Insecta species found were mainly those living in either forests or grasslands. The Graphic Flutterer (*Rhyothemis graphiptera*), a non-native tree cricket (*Calyptotrypus hibinonis*), the caraboid beetle (*Aptomopterus arrowianus*), and the Japanese jewel beetle (*Chrysochroa fulgidissima*) were nominated as the species chosen for conservation. On the other hand, the habitation period of the imagoes of the Japanese small firefly (*Hotaria parvula*) was limited to two or three weeks beginning from the last ten days of May, and it was not possible to identify it. It was reported, based on local information, that *Hotaria parvula* inhabited along the walking trails besides streamlines.

The vegetation survey identified 366 species of 108 families. These plants include the species distributed from the low-lands to the hills of the warm-temperate zone. The ratio of denizens is approximately 10%, and the constitution of the native species is maintained. Shore Juniper (*Juniperus conferta*), wild Aristolochia (*Asarum takaoi*), Mitsude Azalea (*Rhododendron reticulatum*), Coralberry (*Ardisia crenata*), the Riverstream Orchid (*Cymbidium goeringii*) and a Japanese wild orchid (*Liparis krameri*) were nominated as the species chosen for conservation.

## III. THE REASON FOR THE INTRODUCTION OF THE INSPECTOR SYSTEM IN NAGOYA CITY

In May 2000, a briefing session on the construction policy was held for the inhabitants of Nagoya city. The city authorities explained the necessity of traffic jam relaxation and the diversion of traffic onto this road during natural or other disasters. However, dissenting opinions appeared one after another; these were chiefly from the inhabitants who demanded the conservation of this green area. These opinions were that 'Traffic jam increases after road construction' and 'The Aioiyama green area is the valuable habitat of the Japanese small firefly'. The arguments demands of the inhabitants who opposed the administration saying 'We definitely object to the road construction' were not agreed to. In August 2001, the professional society was established, consisting of scholars with technical knowledge about road preparations and green area environments as well as natural observation instructors. This society functions as a neutral party, considering the opinions of opposing sides. Furthermore, new construction techniques as well as execution plans targeted at preserving the natural environments of this green area are

considered. The professional society consists of four members, one professional each from the fields of environmental planning, nature observation guidance, landscape planning and traffic planning. The conference system that is based on the inspector system followed in the UK has been introduced in Nagoya city.

In Japan, the construction of roads is usually planned by either the deliberative council system or the committee meeting system. However, there is much criticism of the conferences because they are held in private and because the discussion process is controlled by the administration. In the UK, the inspector considers the arguments of both the local government as well as protestors, and makes a recommendation as the third party.

The Planning and Compensation Act (1991) of the Thatcher government enforced consideration to the natural environment, and this consideration became indispensable when drawing up a city planning master plan. With the involvement of the Minister of Environment in the local plans of cities, towns and villages, the roles of the inspector, which was of co-ordinating the objections to the plan, increased. The existence of the inspector system becomes an important element in the fair administration of city planning. In the UK system, the role of the inspector is to discuss the decision of re-examination of the local development plans and to judge the right or wrong of the development by public hearing. The inspector appointed is a person without any vested interests: the appointment is done according to the environment minister's guidelines with respect to the particular region. The plaintiffs, the project authorities and the persons concerned with the dispute participate in the public hearings and present their opinions. Even with topics wherein mutual distrust is considerably increased through discussion between the concerned persons and a consensus is not achieved, it

is said that a controlled argument is possible by through the presence of a third party professional who can be trusted to enable the two sides to meet midway (Taniguchi, 2000).

#### IV. INSPECTOR SYSTEM OF NAGOYA CITY

The Yatomi - Aioiyama line was positioned as needing road preparations that take into consideration both the natural environment and the ecosystem in the long-term plan, 'Nagoya new century project 2010'. During the development stage of the plan, the expert meeting was positioned as the meeting of the professional organization that would make technical judgments to this road project. The committees of the expert meeting were appointed along with the inspector. The expert meeting was held six times between September 2001 and May 2003, and the conference sites and its minutes are open to the public. The details of the meetings are as follows:

The participants in the first expert meeting (2001. 9. 17) were three inspectors (1 absent), 9 hearing people, 2 journalists and 20 members from the secretariat. The following points were discussed: the ecosystem, the water system, the Japanese small firefly, road structure, the quality of soil and stillness.

Three inspectors (1 absent), 7 hearing people, 1 journalist, and 19 members from the secretariat participated in the second meeting (2002. 3. 27). The projected route was divided into five zones based on the differences in topography, and the resulting problems were investigated. It was confirmed that the habitat of a large portion of the Japanese small firefly population was limited to the fourth zone facing the streamline of its valley part. Several problems are concentrated in the fourth zone because the project route meets the walking trails and divides two streamlines. The inspectors proposed an investi-

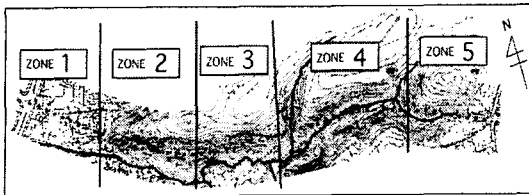


Figure 2. Environment (Env) and problems (Prb) in each zone.

\*Zone 1:(Env) It is utilized as farmland, (Prb) It becomes flow ends of road surface drainage in rain.

\*Zone 2:(Env) There is a spring. Comparatively steep slope. (Prb) Forest border retreat. The sub-surface and stream waters have to be preserved in good conditions.

\*Zone 3:(Env) Near to private houses. There are some houses using wells. Comparatively steep slope. (Prb) Forest border retreat. Subsurface and stream waters have to be preserved in good condition.

\*Zone 4:(Env) There are streamlines in valley part. (Prb) Habitations of Japanese small firefly are identified. Intersect of walk trail. Divide streamlines. New forest borders are formed.

\*Zone 5:(Env) It is a gentle slope, and there is reclaimed land in one part. (Prb), Habitation of a Japanese small firefly is identified. Intersect walk trail.

gation as well as an examination of the change in the route figure: they also proposed a habitation survey of the Japanese small firefly throughout the area (Figure 2).

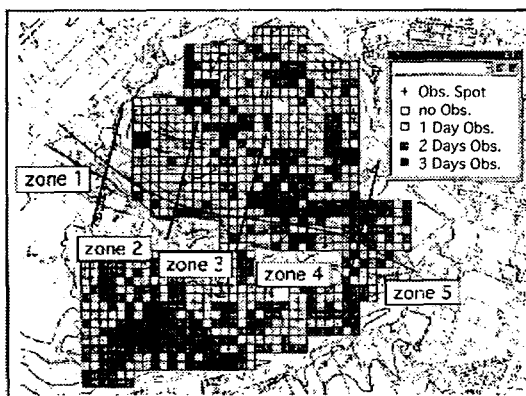


Figure 3. Distribution of Japanese small firefly.

\*Observation day: May 17, 21, and 24, 2002

\*Observation time: 22pm-24pm\*Number of observation spot: 246

Four inspectors, 10 hearing people, 1 journalist and 20 members from the secretariat participated in the third meeting (2002. 7. 26). Two matters were investigate - the first was the results of the distribution survey of the Japanese small firefly in a region of about 40 ha including the projected road area: the second was the influence of the three kinds of geometric line forms of the original project plan, the north detour plan and the south detour plan on the environment of the fourth zone. The following problems were identified. The first problem is with reference to the original project, which was planned to pass through the Hinoki cypress (*Chamaecyparis obtuse*) forest: specially, there is a very small Japanese small firefly population observed, but there are points of overlap with the streamlines. The north detour plan passes the oak (*Quercus serrata*) forest, and there are several intersections with the walking trails. It passed through regions that have witnessed considerable growth in the Japanese small firefly population. The south detour plan passes through both the bamboo grove and the oak forest but passes by the area with a large Japanese small firefly population. As there is a comparatively small Japanese small firefly population observed in the Hinoki cypress forest and the bamboo grove, the new route figure near the original project plan was suggested. The newly suggested route, however, has little influence on the Japanese small firefly (Figure 3).

Four inspectors, 14 hearing people, 2 journalist, and 22 members from the secretariat participated in the fourth meeting (2002. 11. 7). Even if the route figure that has less of an influence on the firefly is selected, the road has to intersect the streamlines and the walking trails, where large slope faces are formed by excavation. The construction of a bridge to prevent crossings and that of a shelter to cover the large slopes were suggested.

Four inspectors, 13 hearing people, 4 journalists, and

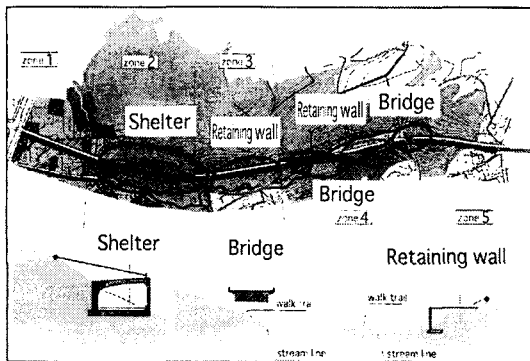


Figure 4. Distribution plan of road structures

24 members from the secretariat participated in the fifth meeting (2002. 12. 12). If the shelter structure or the retaining wall structure is adopted at the location where large slope faces are produced by excavation or landfill, and if the bridge is constructed at the place where the streamlines and walking trails intersect, an approximate 40% decrease in the area where change is planned is achieved. Furthermore, approximately 20% of change-planned areas is restored by the adoption of the shelter structure (Figure 4).

The participants in the sixth meeting (2003. 5. 20) were 5 inspectors (an increase of 1), 20 hearing people, 1 journalist, and 24 members from the secretariat. The executive working group added inspectors from among landowners, inhabitants and citizens by openly inviting participation in administration and construction. The group was founded in order to advance the project to the detailed execution design stage. The opinions of the inspectors were to be reflected in the discussions of the executive working group.

## V. MERITS AND DEMERITS OF THE INSPECTOR SYSTEM OF NAGOYA CITY

The most difficult problem is that of the discrepancies of opinions among the many subjects in the process of developing projects. It is especially difficult to resolve the differences of opinions between administrations on the one hand and companies, landowners or citizens on the other. The role of the inspector as the third party is that of arbitrator rather than a mediator or a wirepuller (Takamizawa, 1998). The open and equal arguments bring out the differences in the understanding of each side. Therefore, the inspectors are able to lead a project with fairness and enhance its quality.

The Yatomi - Aioiyama line of the road that is part of the city plan crosses the green area where the precious natural environment has been left intact in the town area. There are several inhabitants who support the road project because it will shorten the arrival time of urgent vehicles in addition to relaxing the traffic jam resulting from vehicles passing through. The inspector system was introduced in Nagoya city for the purpose of road preparation in consideration of the natural environment. The work of the inspector includes drafting professional proposals that are technical in nature. The role of the inspector is different from what it is in the UK, where the inspector does not propose, but rather mediates differences in opinion between of the administration and the inhabitants, based on public inquiry. On the other hand, the opinions of the inhabitants of opposite groups reflect the tendency of easily become emotional, which is detrimental to the development of road projects in Nagoya. In addition, the administration side has not the system reexamining to the decided and authorized project by the city planning and the city project, respectively.

The executive working group consists of landowners, local inhabitants, volunteer citizens, administrators, and constructors (consultants and execution traders). Instead of a social situation wherein the

public authority is not entrusted to the inspectors, the inspector party does not currently include all special professional fields concerned with the green area and the road. Inspectors participate in the work toward this project as mediators and enable co-operation among the parties involved. In the working executive, it is possible that the method of solving problems by discussions will be effective.

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