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An experimental study on vandalism: Trabzon Parks

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Vandalism is an action with social, psychological, spatial and economical aspects that have negative impacts on the environment. Although it seems impossible to eliminate vandalism completely, it is thought that it may be alleviated by some spatial measures. This study is aimed at paradigm of presence and impacts of act of vandalism in open public spaces in the cities and interrogation of the measures that can be taken against this action. In this study, act of Vandalism is examined based on equipment type-action type relation, color factor, material factor and previous damage-repetition factor. A field study was conducted within this study based on such 4 factors. The case area is taken as the urban parks located at three different locations in Trabzon-Turkey: Ahmet Şener Park, Adnan Kahveci Park and 100. Yıl Park. The measures designed to be taken, considering the urban equipment, are discussed based on the results of this study conducted using an observation method.

Key words: Vandalism, open public spaces, equipment, color, material.

INTRODUCTION

A city is a living organism together with its residents and the physical elements forming the city. The quality of all kinds of spaces provided to the users in the urban areas is important in terms of utilization and survival of the city.

In order to enhance the quality of life in the cities, it is important to offer various active and passive recreation facilities in the urban areas, which can be used by people (Yücel, 2007). Any city with such areas and activities becomes a livable space for the users. The urban open spaces are considered as an important part of the city, since they have a place in the entire design of the city and offer recreation, entertainment, facilities etc. to the users of the city (Yıldırım, 2000).

The used frequency of the urban open spaces is connected with assessment of the satisfaction of the users and also related to the expectations, requirements and objectives of the users in terms of offering suitable facilities.

It is known that any urban open space should have some physical and symbolic characteristics. While organizing such an area, meeting the user requirements,

providing the city with an aesthetic appearance and ensuring continuity/integrity with the other urban spaces etc. are factors that should be considered (Yıldırım, 2000).

One of the most important factors among them is the safety factor. Since such areas cannot be appropriated because they are public properties and thus they may be exposed to all kinds of negative actions. And as a result the spaces that cannot be appropriated are highly damaged (Gür, 1996).

Users' feeling themselves safe in the urban open areas, is an important factor that impacts utilization directly. And one of the facts that impair the safety factor most is the acts of vandalism at the urban public areas. Since the damaged spaces loose their quality, they are not preferred by the users and become idle in time. This causes not only a decrease in the recreation activities of the residents but also some negative impacts on the aesthetic view of the city.

In this study, the spatial dimension of acts of vandalism that cause negative impacts on the city and the residents is discussed. And this study also gives the paradigms about the negative impacts of acts of vandalism in the urban open spaces and urban equipment and a comparative analysis of such paradigms. Based on such discussions, the relation of act of vandalism with the physical spaces and equipment is set forth and as a

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Figure 1. Ahmet Şener Park.

result, availability of measures to alleviate such action in terms of space and equipment is questioned.

PROBLEM AREA: VANDALISM

Act of vandalism has various definitions based on different points of views and different scientific areas. Cohen, a psychosocial researcher, and Conklin, criminologist, agree on the same vandalism definition proposing that vandalism is "damaging or deteriorating the appearance of a property/properties owned by any other person without the consent of such owner" (Cohen, 1955; Conklin, 1989).

Vandalism has been defined and categorized in various ways based on its different dimensions (Ward, 1973; Cohen, 1984; Geason, 1989; Coffield, 1991; Goldstein, 1996). In such categorizations, it can be seen that vandalism has many different types ranging from being aimless to being involved in hostility.

Cohen's categorization (1995), which is referred most in the literature, classifies vandalism in two main groups:

1. Vandalism that has become traditional-institutionalized as transgression.
2. Classic vandalism.

In this categorization, there are many subheadings and it covers all kinds of act of vandalism (Cohen, 1995).

Many studies have been conducted about vandalism. In such studies, vandalism has mostly been considered as a crime fact. The subject of the studies is mostly focused on environmental psychology and behaviors (Barker, 1968; Wicker, 1979).

And the elements leading to vandalism, according to many sources examined (Cohen, 1955; Goffman, 1963; Ward, 1973; Newman, 1973; Altman, 1975; Underwood, 1980; Poyner, 1983; Hollin, 1989; Downes, 1989; Coffield, 1991; Stollard 1991; Poyner, 1991; Ferrel, 1995;

Phillips, 1996), include psychological factors, social and physical environment, education, appropriation, repair, intense use, population density and number of children, lighting, defensible space-visual control, color, surface texture and durability (Yıldırım, 2000). Vandalism occurs based on such factors that causes some negative impacts such as damaging public properties-visual pollution, accidents, crimes, cost etc.

PURPOSE AND METHOD OF STUDY

The main idea in this study is that the act of vandalism may be alleviated some design decisions are being taken. It is considered that the space, equipment in the space and characteristics of such equipment have been influencing the act of vandalism. Van Vliet (1984) classifies the places, where acts of vandalism are mostly felt into 6 groups; that is, parks and playgrounds, schools, public transportation vehicles, establishments such as libraries and dormitories, government agencies, urban furniture. Therefore, a research was conducted on the equipment in the urban parks, which are among the urban open spaces that are exposed to the action, frequently, and the measures that can be taken against vandalism in terms of space and equipment was discussed in the lights of the results of this research.

During this research, an interrogation was conducted on the equipment in the urban parks. The study area was determined as Trabzon City in the Eastern Black Sea Region of Turkey. 3 parks located on the coast line of this city were selected as the case area: Ahmet Şener Park, Adnan Kahveci Park and 100. Yıl Park (Figures 1, 2 and 3). Acts of vandalism on the equipment in these selected park areas were determined and observed. The method used in this study was the observation method and it was executed through a foreign observer. It is known that the observation method was used in the previous studies on vandalism (Ward, 1973; Samdhal and Christensen, 1985; Goldstein, 1996).

The sample parks selected and the equipment in such parks are given in Table 1 (Yıldırım, 2000, p. 37). The solid squares show presence of the equipment.

After pre-observations made on a weekly basis, it was decided that the observation frequency will be once a month. 14 observations were made for each equipment in the selected parks. Each of the equipment determined was photographed in the first month and their status of destruction was determined. And during



Figure 2. Adnan Kahveci Park.



Figure 3. 100. Yil Park.

Table 1. Parks Selected and distribution of equipment in the parks.

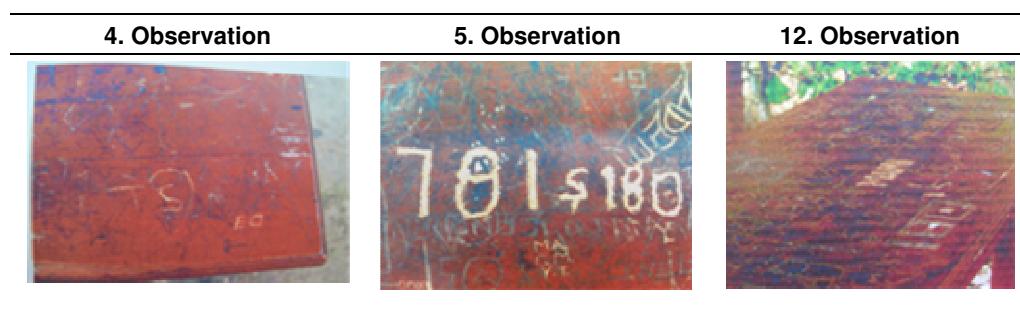
Equipment	Ahmet Şener Park	Adnan Kahveci Park	100. Yil Park
Lighting equipment	■	■	■
Bench	■	■	■
Plants	■	■	■
Kiosk	□	■	■
Fountain	■	■	■
Bin	■	■	■
Playground equipment	■	■	■
Flooring element	■	■	■
Sculpture	□	■	□
Covering element	■	■	■
Picnic table	□	□	■
Border element	□	■	□

the following observations, the changes in the destruction rate were recorded using photography method. For example, the status of destruction of the picnic table no. 8 located in 100. Yil Park during the observations no: 4, 5 and 12 are given in Table 2.

After pre-observations, it was found that the equipment that are damaged mostly were benches, lighting elements, covering elements and picnic tables and it was decided that the following

observations will be made on such equipment. Table 3 shows the number and types of equipment in all three parks observed (Yildirim, 2000: 38).

The physical status of the equipment was determined and the equipment in the parks were classified by their colors and materials based on the factors to be observed as given in Tables 4 and 5 (Yildirim, 2000: 39-40).

Table 2. 100. Yil Park: Picnic Table No. 8; Observations No. 4, 5 and 12.**Table 3.** Distribution of equipment observed by parks.

Equipment	Ahmet Şener Park	Adnan Kahveci Park	100. Yil Park	Total
Benches	30	76	51	157
Lighting elements	41	112	57	210
Covering elements	5	6	4	15
Picnic tables	-	-	11	11
Total	76	194	123	393

Table 4. Distribution of equipment observed by parks and materials.

Equipment	Materials						Total
	W	G	M	W-P	P-M	M-C	
Ahmet Şener Park	Benches	24	-	6	-	-	30
	Lighting elements	-	41	-	-	-	41
	Covering elements	-	-	-	-	5	-
	Picnic tables	-	-	-	-	-	-
	Total	24	41	6	-	5	76
Adnan Kahveci Park	Benches	66	-	3	-	7	76
	Lighting elements	-	112	-	-	-	112
	Covering elements	2	-	-	-	4	6
	Picnic tables	-	-	-	-	-	-
	Total	68	112	3	-	7	194
100. Yil Park	Benches	51	-	-	-	-	51
	Lighting elements	-	57	-	-	-	57
	Covering elements	-	-	-	5	-	5
	Picnic tables	11	-	-	-	-	11
	Total	62	57	-	5	-	124

W: Wooden, G: Glass, M: Metal, W-P: Wooden-PVC, P-M: PVC-Metal, M-C: Metal-Canvas.

The observations made related to act of vandalism were examined under the following groups and the results obtained were interpreted accordingly:

1. Equipment Type-Action Type Relation
2. Color Factor
3. Material Factor

4. Previous damage-repetition factor

The study was conducted in order to test the impacts of the said 4 factors on act of vandalism. We tried to explore the relation of such factors with act of vandalism using the statistical tests conducted based on such observations.

Table 5. Distribution of equipment observed by parks and colors.

	Equipment	Colors									
		B	G	Y	Gr	R	Br	O	W	Bl	Tot.
Ahmet Şener Park	Benches	10	3	1	-	4	12	-	-	-	30
	Lighting elements	-	-	-	41	-	-	-	-	-	41
	Covering elements	5	-	-	-	-	-	-	-	-	5
	Picnic tables	-	-	-	-	-	-	-	-	-	-
	Total	15	3	1	41	4	12	-	-	-	76
Adnan Kahveci Park	Benches	28	7	3	-	13	8	10	7	-	76
	Lighting elements	-	-	-	106	-	-	-	-	6	112
	Covering elements	2	-	-	-	2	2	-	-	-	6
	Picnic tables	-	-	-	-	-	-	-	-	-	-
	Total	30	7	3	106	15	10	10	7	6	194
100. Yıl Park	Benches	-	-	-	-	-	51	-	-	-	51
	Lighting elements	-	-	-	57	-	-	-	-	-	57
	Covering elements	-	-	-	-	-	5	-	-	-	5
	Picnic tables	-	-	-	-	-	11	-	-	-	11
	Total	-	-	-	57	-	66	-	-	-	124

B: Blue, G: Green, Y: Yellow, Gr: Grey, R: Red, Br: Brown, O: Orange W: White, Bl: Black.

Table 6. Values of χ^2 test showing damage type-equipment type relations.

	Benches		Lighting elements		Covering elements		Picnic tables	
	O.F.	E.F.	O.F.	E.F.	O.F.	E.F.	O.F.	E.F.
Writing	300	267.16	4	54.05	17	14.91	58	42.87
Removing	106	96.57	21	19.53	5	5.39	5	15.49
Tearing	0	0.70	0	0.14	1	0.03	0	0.11
Dismantling	0	0.70	0	0.14	1	0.03	0	0.11
Breaking	1	43.00	59	8.70	0	2.40	1	6.90
Cutting	0	0.70	1	0.14	0	0.03	0	0.11
Burning	0	1.40	2	0.28	0	0.07	0	0.22
Scraping	18	14.80	0	2.99	0	0.82	3	2.37
Craving	2	2.81	0	0.57	0	0.15	2	0.45
Displacing	3	2.11	0	0.42	0	0.11	0	0.33

χ^2 : 498.66; Degree of freedom: 27; Table value for $P = 0.01$: 47.00. O.F: Observed frequency; E.F: Expected frequency.

FINDINGS

Equipment type-action type relation in vandalism

It was determined if the equipment observed were exposed to new damages compared to their status during first observation. During such paradigms, the type of the action was also determined: Action types were observed as: Writing, removing, tearing, dismantling, breaking, cutting, burning, scraping, carving and displacing (Yıldırım, 2000: 57).

When the types of damages determined are observed, it may be concluded that there is a relation between the equipment type and the action type. It is considered that the equipment type is influential on the person for selecting the action type to be committed on the

equipment.

χ^2 test was used in order to determine if selection of the type of damage is occasional. First of all, the number of damage types on the equipment types in each park was determined. As a result of the test, χ^2 value was found to be 498.66. 47.00 was read in the table for the degree of freedom of 27 with significance level of $p = 0.01$. Since χ^2 calculated $> \chi^2$ 27; 0.01, it may be concluded that the person selects the action type based on the equipment type (Table 6), (Yıldırım, 2000: 70).

Color factor in vandalism

Color factor was tested on the benches with various colors. For this

Table 7. χ^2 Table for assessing the benches damaged and not damaged in parks by color.

Colors	Ahmet Şener park-Adnan Kahveci park-100. Yıl Park			
	Number of benches damaged		Number of benches not damaged	
	O.F.	E.F.	O.F.	E.F.
Blue	36	28.31	2	9.68
Green	10	7.45	0	2.54
Yellow	4	2.98	0	1.01
Red	15	12.66	2	4.33
Brown	38	52.91	33	18.08
Orange	10	7.45	0	2.54
White	4	5.21	3	1.78

χ^2 : 35.68; Degree of freedom: 6; Table Value for $P = 0.01$: 16.8; O.F: Observed frequency; E.F: Expected frequency.

Table 8. χ^2 table for assessing the benches damaged and not damaged in parks by material.

Materials	Ahmet Şener Park-Adnan Kahveci Park-100. Yıl Park			
	Number of benches damaged		Number of benches not damaged	
	O.F.	E.F.	O.F.	E.F.
Wooden	104	104.17	37	36.82
Metal	8	6.64	1	2.35
PVC	4	5.17	3	1.82

χ^2 : 2.08; Degree of freedom: 2; Table value for $P = 0.01$: 9.21; O.F: Observed Frequency; E.F: Expected Frequency.

purpose, benches in all three parks were classified by their colors and it was determined if such benches are exposed to new damages compared to their status during the first observation.

χ^2 test was used in order to determine if the damages on the benches are related to colors. Initially, the hypothesis suggesting that 'color has no impact in damaging of the benches' was established. The following operations were conducted based on this hypothesis and χ^2 value was calculated as 35.68 (Table 7), (Yıldırım, 2000: 73).

16.8 was read in χ^2 table for the degree of freedom of 6 with significant level of $p = 0.01$ and since χ^2 is calculated $> \chi^2_{0.01}$, the hypothesis was refused. It was determined that the damages observed on the benches are related to color in all three parks with margin of error of 1%. A study conducted by Samdhall and Christensen (1985) supports this finding.

Material factor in vandalism

Material factor was tested on the benches with various materials. For this purpose, benches in all three parks were classified by their materials and it was determined if such benches are exposed to new damages compared to their status during the first observation. The damage status of the benches in the parks and the statistical assessment made are given in Table 8.

Using the hypothesis suggesting that 'the material has no impact on damaging of the benches', χ^2 value was calculated as 1.61. 9.21 was read in χ^2 table for the degree of freedom of 2 with significance level of $p = 0.01$. Since χ^2 was calculated to be $< \chi^2_{0.01}$, the hypothesis was accepted. It was determined that the damages observed on the benches are not related to material in all three parks with margin error of 1%. Although this study shows that the material factor has no impact in damaging the equipment, it is known from Cohen's previous studies that the material has impacts

on the degree of damages (Cohen, 1955).

As a result of the assessments made within this study, it is concluded that the number of wooden equipment was higher than the number of metal and PVC equipment and this influenced the statistical assessment negatively. It is considered that more accurate results might be obtained if the numbers of material types were close to each other.

Previous damage-repetition factor in vandalism

It is considered that the previous damages stimulate the person(s) and encourage them to cause new damages (Yıldırım, 2000, p. 75). In order to prove this idea, the previously damaged equipment in the parks were determined during the first observation and it was recorded whether such equipment were damaged again by photographing during the following observations. In this context, all equipment observed in all parks and their distribution is given in Table 9.

Assessments made on the benches, lighting elements, covering elements and picnic tables, show that the possibility of being damaged is higher for the equipment damaged previously than the equipment not damaged previously. Such results are in line with the results of the study conducted by Samdhall and Christensen (1985).

The results of χ^2 tests conducted in order to determine if such results are occasional are given in Table 10. Using the hypothesis suggesting that 'previous damages on the equipment has no impact on formation of new damages', χ^2 tests were conducted and χ^2 test value was calculated to be 228.25. 9.21 was read in χ^2 table for the degree of freedom of 21.70 with significance level of $P = 0.01$. Since χ^2 was calculated $> \chi^2_{0.01}$, the hypothesis was refused. It may be concluded that the previous damages on the equipment in all three parks have impact on formation of new damages (Yıldırım,

Table 9. Distribution of previous damage-repetition factor by parks and equipment.

Parks	Bench elements			
	Previously damaged		Not previously damaged	
	Damaged again	Not damaged again	Damaged again	Not damaged again
Ahmet Şener Park	26	1	0	0
Adnan Kahveci Park	46	0	24	6
100. Yıl Park	14	26	4	7
Parks	Lighting elements			
	Previously damaged		Not previously damaged	
	Damaged again	Not damaged again	Damaged again	Not damaged again
Ahmet Şener Park	5	0	12	24
Adnan Kahveci Park	9	0	21	82
100. Yıl Park	1	1	10	45
Parks	Covering elements			
	Previously damaged		Not previously damaged	
	Damaged again	Not damaged again	Damaged again	Not damaged again
Ahmet Şener Park	5	0	0	0
Adnan Kahveci Park	2	2	0	2
100. Yıl Park	4	0	0	0
Parks	Picnic tables			
	Previously damaged		Not previously damaged	
	Damaged again	Not damaged again	Damaged again	Not damaged again
Ahmet Şener Park	-	-	-	-
Adnan Kahveci Park	-	-	-	-
100. Yıl Park	11	0	0	0

2000).

RESULTS AND SUGGESTIONS

When the general results of this study are considered: it was found that the act of vandalism, which is deemed as a problem in urban open spaces, is also effective in all three urban parks and it reduces the visual quality of the parks as a result of the observations made in these parks.

The results obtained based on the factors investigated are thus explained.

Equipment type-action type relation

Equipment type is a factor in the paradigm of the type of the action to be committed. In this study, mostly observed type of action on the benches, covering elements and picnic tables was 'writing'. And the type of damage mostly

observed in the lighting elements is 'breaking'. It was determined that 'writing' action increased in the equipment whose material is produced in parallel to the user position.

Color factor

It was determined that the color of the equipment is a determinant in damaging any equipment. Since the color applied to the surface is damaged, act of vandalism increases if the difference between the original color of the surface and the damage is legible.

Material factor

As a result of the observations, although the assessments made in this study do not support the idea, it is considered that the material is influential in damaging any equipment. It is considered that the type and number of materials in the sample area cause such a result.

Table 10. x2 table of previous damage-repetition factor.

	Number of equipment previously damaged/ Damaged again (Observed Frequency)	Number of equipment previously damaged/ Damaged again (Expected Frequency)	Number of equipment previously damaged/ Not Damaged again (Observed Frequency)	Number of equipment previously damaged/ Not Damaged again (Expected Frequency)	Number of equipment previously not damaged/ Damaged (Observed Frequency)	Number of equipment previously not damaged/ Damaged (Expected Frequency)	Number of equipment previously not damaged/ Not Damaged (Observed Frequency)	Number of equipment previously not damaged/ Not Damaged (Expected Frequency)
Benches	89	50.33	27	11.98	28	28.36	13	66.31
Lighting elements	15	67.32	1	16.03	43	37.93	151	88.70
Covering elements	11	4.80	2	1.14	0	2.70	0	6.33
Picnic tables	11	3.52	0	0.83	0	1.98	0	4.64

x2: 228.25; Degree of Freedom: 9; Table value for P = 0.01: 21.70.

Previous damage-repetition factor

Not repairing or renovating any damaged object/equipment triggers a subsequent act of vandalism. Any equipment, which is located closer to any damaged equipment, is affected by act of vandalism more than the other equipment.

And the general results obtained as a result of the interrogations not included in this study may be summarized as follow:

1. It is reported that the frequency of damages is generally affected by different seasons.
2. Any object/equipment located at places, where visual control is weak, tends to be more affected by acts of vandalism.
3. Any object/equipment located at side roads, where visual control is weak, tends to be more damaged.
4. It is reported that the equipment located at regions and passage areas, where human traffic is high, are more exposed to vandalism action.
5. Any object/equipment without a certain ownership tends to be more exposed to act of vandalism.

6. Equipment located in semi-open spaces tends to be more exposed to act of vandalism than the equipment located in open spaces.

7. Insufficient lighting increases acts of vandalism.
8. Since any damaged equipment cannot function, the quality of the services provided to the user is reduced.

According to the results obtained, it is considered that there are some measures that can be taken for alleviating acts of vandalism during organization of the urban open areas (Yildirim, 2000). General measures may be summarized as follows:

1. The assumption that vandalism is not only a social problem but also a spatial problem should be considered as the first step to be taken in order to solve this problem. And in the following steps; the public areas should be planned as they can be guarded by the residents in the vicinity. This will cause development of appropriation and embracement concepts and the visual control achieved will alleviate the acts of vandalism. The social control facilities to be provided by the users

should be considered during selection of the equipment in the urban open areas. The distance between the urban equipment and the main roads and side roads should be considered carefully while planning. The distance between the equipment should not be outside the limits of visual control. In order to reduce damages, some areas, where people can form groups and people in charge can be located, should be designed.

2. At places where acts of vandalism are highly observed, spaces that can easily be perceived by the users should be preferred in place of enclosed areas. In a study on vandalism conducted in schools, increasing visibility in the school buildings as well as the surrounding buildings and landscape is deemed among the immediate actions that can be taken (Pablant and Baxter, 1975).
3. Periodical maintenance, repair and renovation works in the urban open areas may also help in reducing this action. Maintenance and repair works to be performed in the public areas by the administrations will eliminate the stimulating impacts of former damages on people and the low quality appearance of the spaces. In a study made by

Pablant and Baxter (1975) on vandalism in schools; repair and improvement of school buildings, revision of the streets and other areas around the schools are listed as some of the measures to be taken. Such findings support the requirement for continuous repair works. The measures that can be taken based on the factors discussed may be summarized as follows (Yildirim, 2000).

It is considered that placing the materials used in equipment, where writing action is highly observed, such as tables and benches, perpendicular to the user position depending on the texture form of such materials, may reduce the acts of vandalism. Committing acts of vandalism on such equipment is harder than the other equipment. Manufacturing the surfaces that are exposed to writing by spraying paint with easy-to-clean materials is a deterrent measure against such actions. Cleaning such writings easily in a short time reduces their stimulant effects on people. It is also determined that the equipment with rough or textured surfaces rather than smooth surfaces has a deterrent effect in acts of vandalism. Use of such equipment may alleviate actions. Colors that do not form a distinguishable difference with the original color of the equipment should be used. A comprehensive research should be made for the selection of materials to be used in manufacturing the equipment and it was suggested that the impacts of the material on vandalism should be examined. In order to ensure that the lighting elements become targets of vandalism acts, concealing them with long plants is beneficial. And such elements should not be located at dusk places during selection of location. Connection details of the equipment should be concealed as far as possible and the person should not be given a chance to remove or dismantle such connections. Since removing a part will also cause the removal of another part, the destruction caused by the person will increase.

Finally, with regards to the general measures that can be taken by occupational groups; the city planners should consider the arrangements that allow visual control in the public areas. Architects should design spaces that allow integrity between the building arrangement and façade characteristics and also between social control opportunities if the buildings are facing public areas. Landscape architects should make designs considering that the color, material, texture, measurement and location factors have influence on acts of vandalism, in addition to their visual and aesthetics considerations. The industrial designers should endeavor to increase the resistance of the urban equipment located in the public areas against actions considering the damages on the equipment.

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