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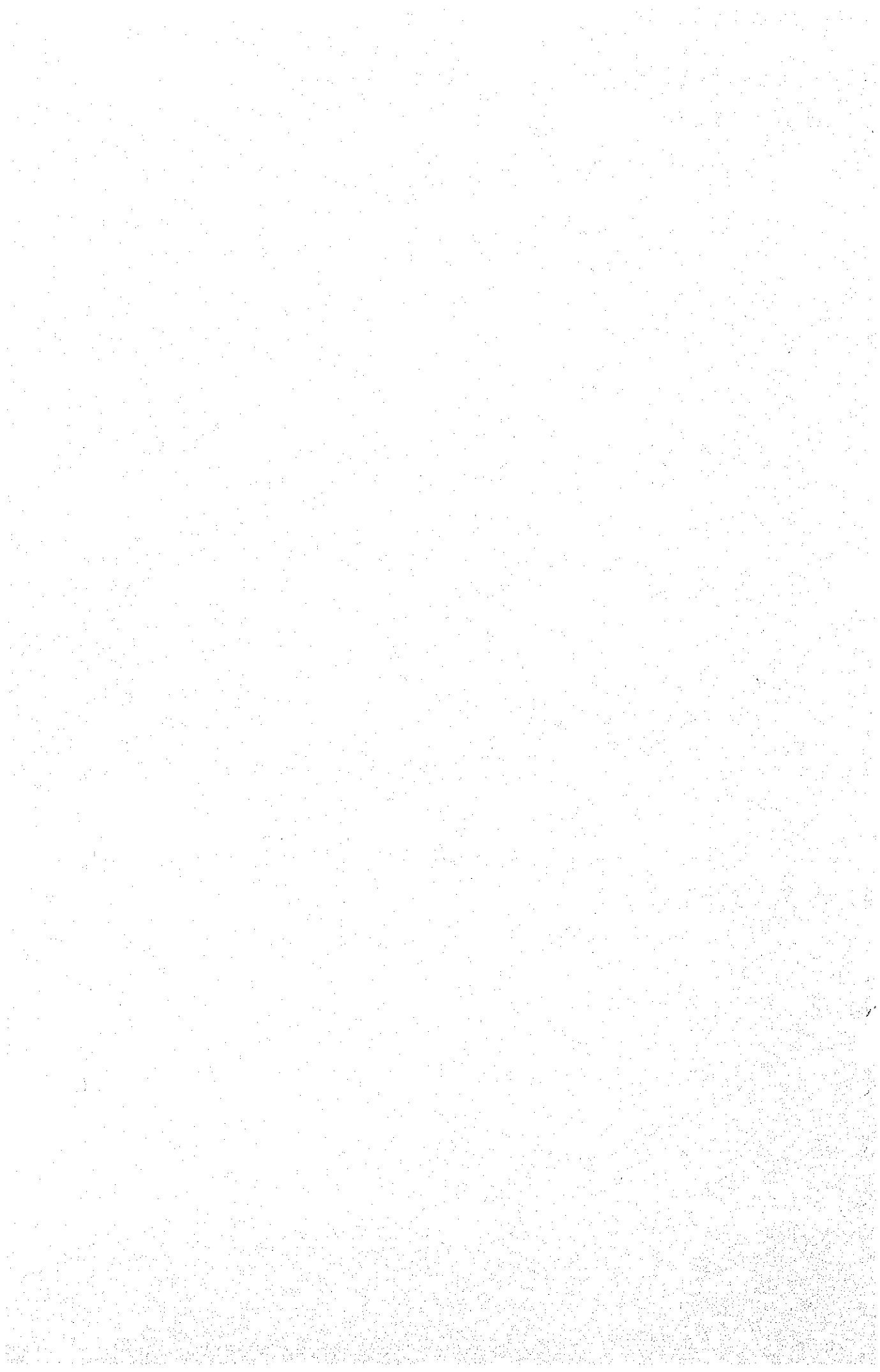
JAPAN INTERNATIONAL COOPERATION AGENCY  
MINISTRY OF LANDS AND SETTLEMENT  
THE REPUBLIC OF KENYA

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE PROJECT FOR ESTABLISHMENT**  
**OF**  
**THE KENYA INSTITUTE OF SURVEYING AND MAPPING**  
**IN**  
**THE REPUBLIC OF KENYA**

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MINISTRY OF LANDS AND SETTLEMENT  
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**MARCH, 1995**

**YAMASHITA SEKKEI INC.**

## PREFACE

In response to a request from the Government of the Republic of Kenya, the Government of Japan decided to conduct a basic design study on the Project for Establishment of the Kenya Institute Surveying and Mapping and entrusted the study to the Japan International Cooperation Agency (JICA).

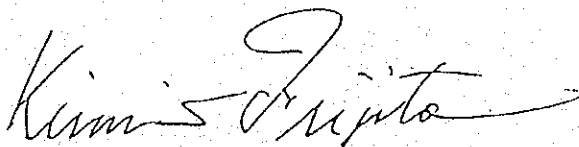
JICA sent to Kenya a study team headed by Mr. Yoshiro Nakahori, Director for Research Coordination, Planning Department, Geographical Survey Institute, Ministry of Construction and constituted by members of Yamashita Sekkei Inc., from October 10 to November 8, 1994.

The team held discussions with the officials concerned of the Government of Kenya, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Kenya in order to discuss a draft report, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Kenya for their close cooperation extended to the teams.

March, 1995



Kimio Fujita  
President

Japan International Cooperation Agency

March, 1995

Mr. Kimio Fujita  
President  
Japan International Cooperation Agency  
Tokyo, Japan

Letter of Transmittal

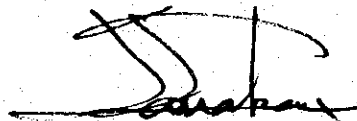
We are pleased to submit to you the basic design study report on the Project for Establishment of the Kenya Institute of Surveying and Mapping in the Republic of Kenya.

This study was conducted by Yamashita Sekkei Inc., under a contract to JICA, during the period October 5, 1994 to March 15, 1995. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Kenya and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

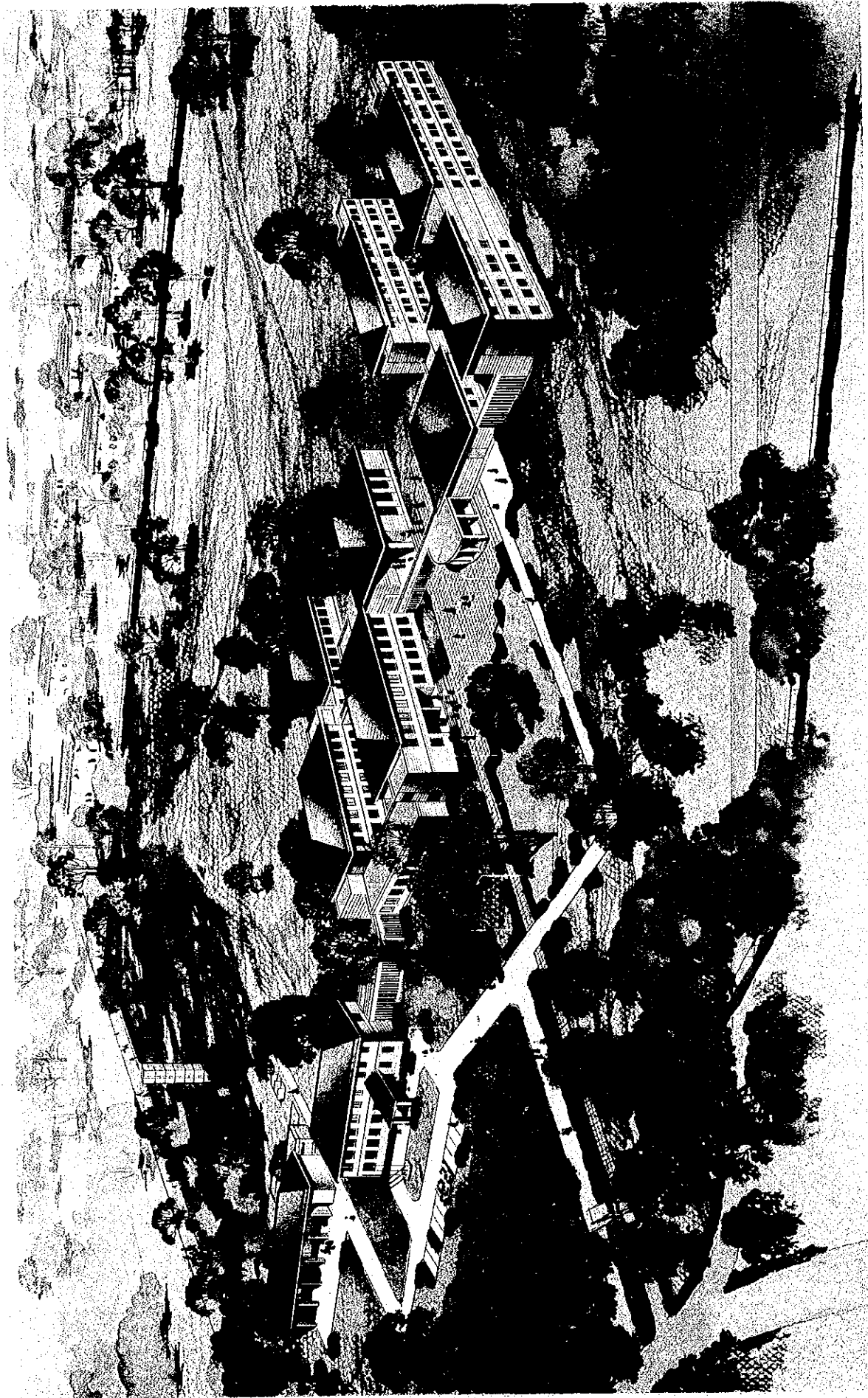
We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, and the Ministry of Construction. We would also like to express our gratitude to the officials concerned of the Survey of Kenya, Ministry of Lands and Settlement, the JICA Kenya office, the Embassy of Japan in Kenya for their cooperation and assistance throughout our field survey.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



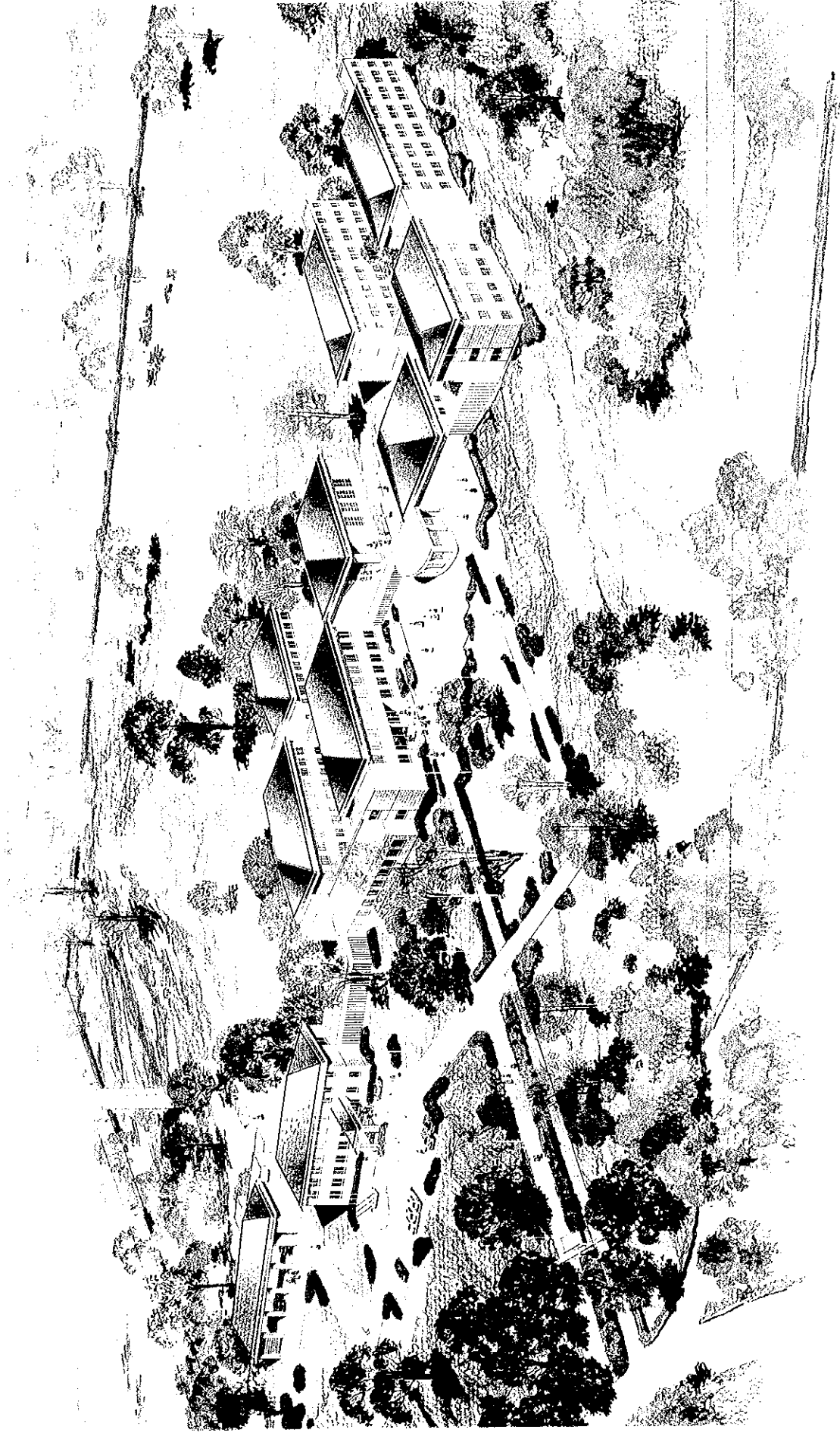
Takanori Tanaka  
Project manager,  
Basic design study team of the Project  
for Establishment of the Kenya  
Institute of Surveying and Mapping  
The Republic of Kenya



PERSPECTIVE

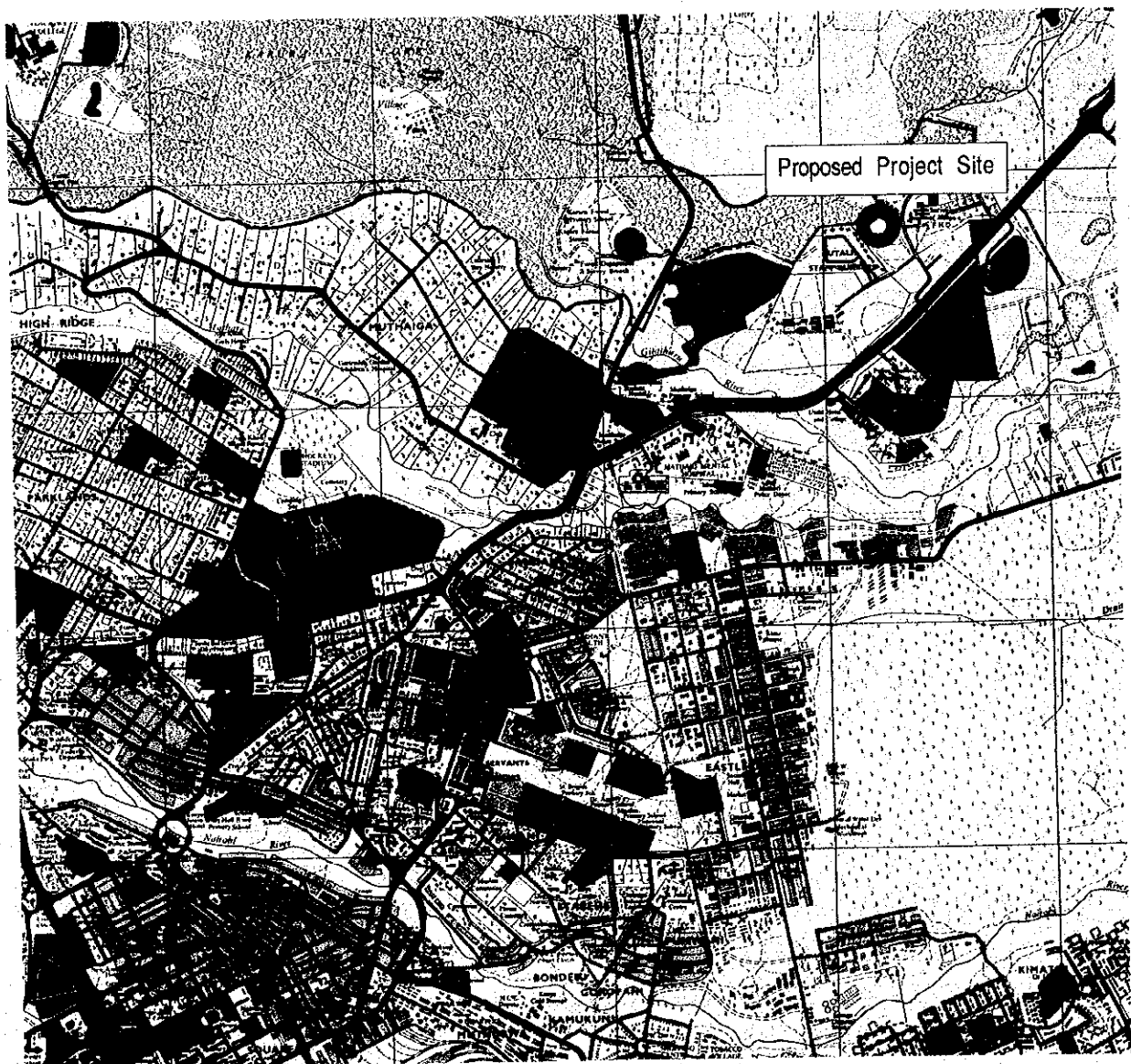
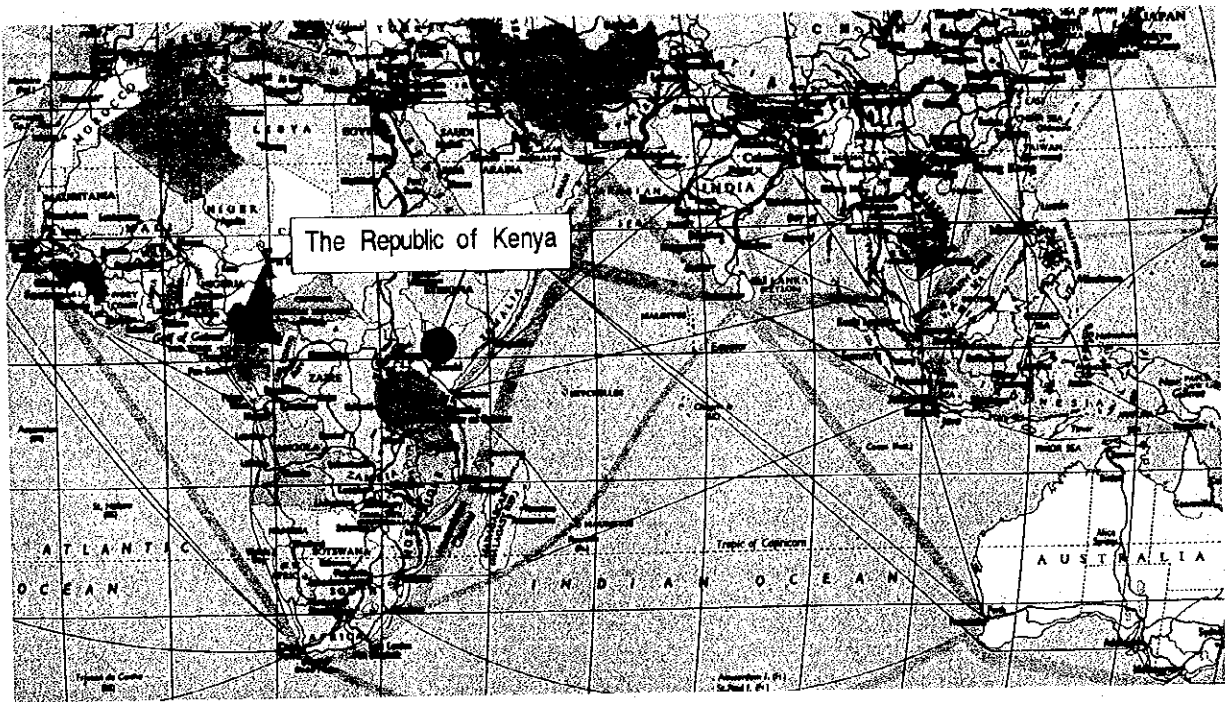
THE KENYA INSTITUTE OF SURVEYING AND MAPPING



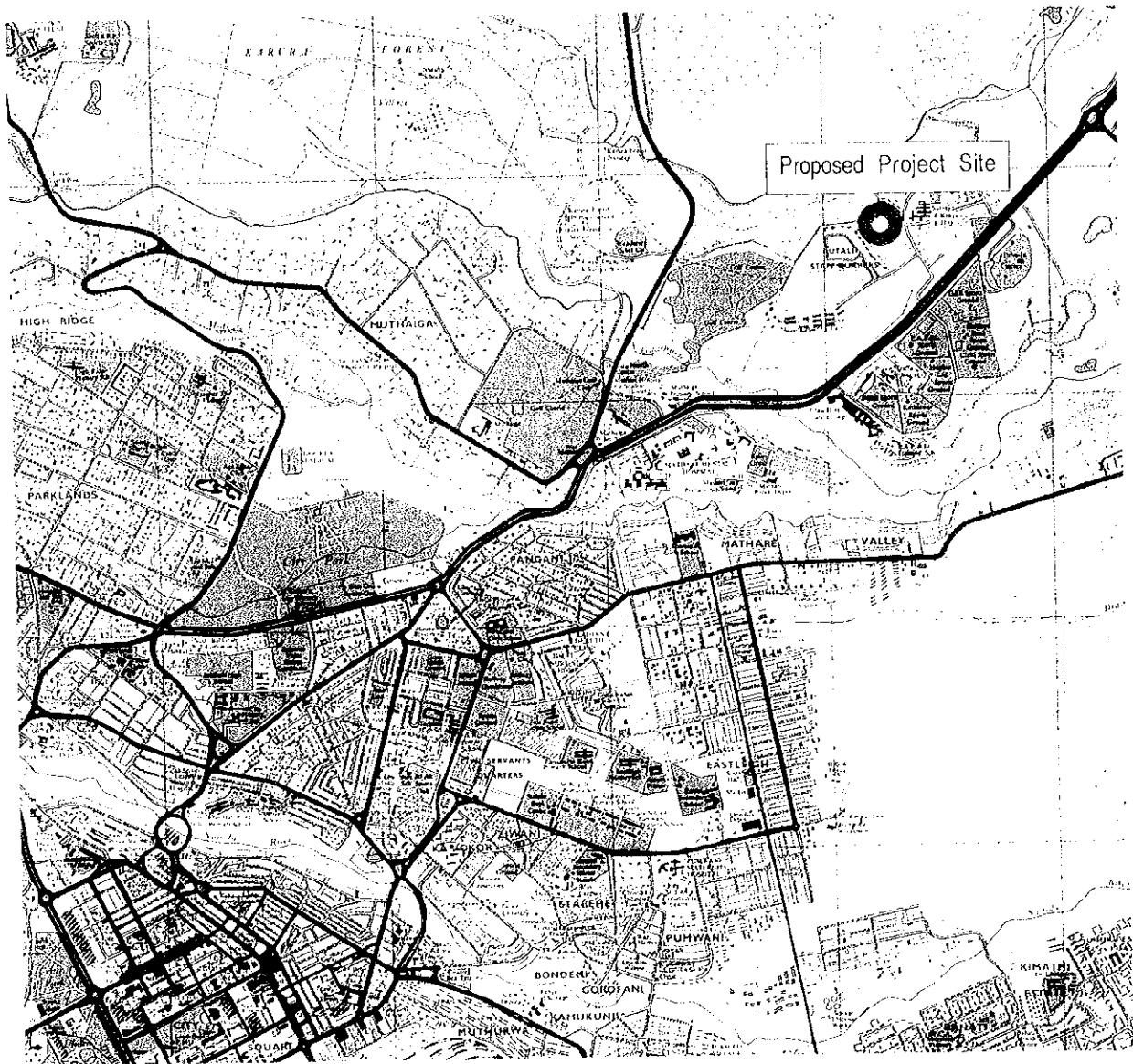
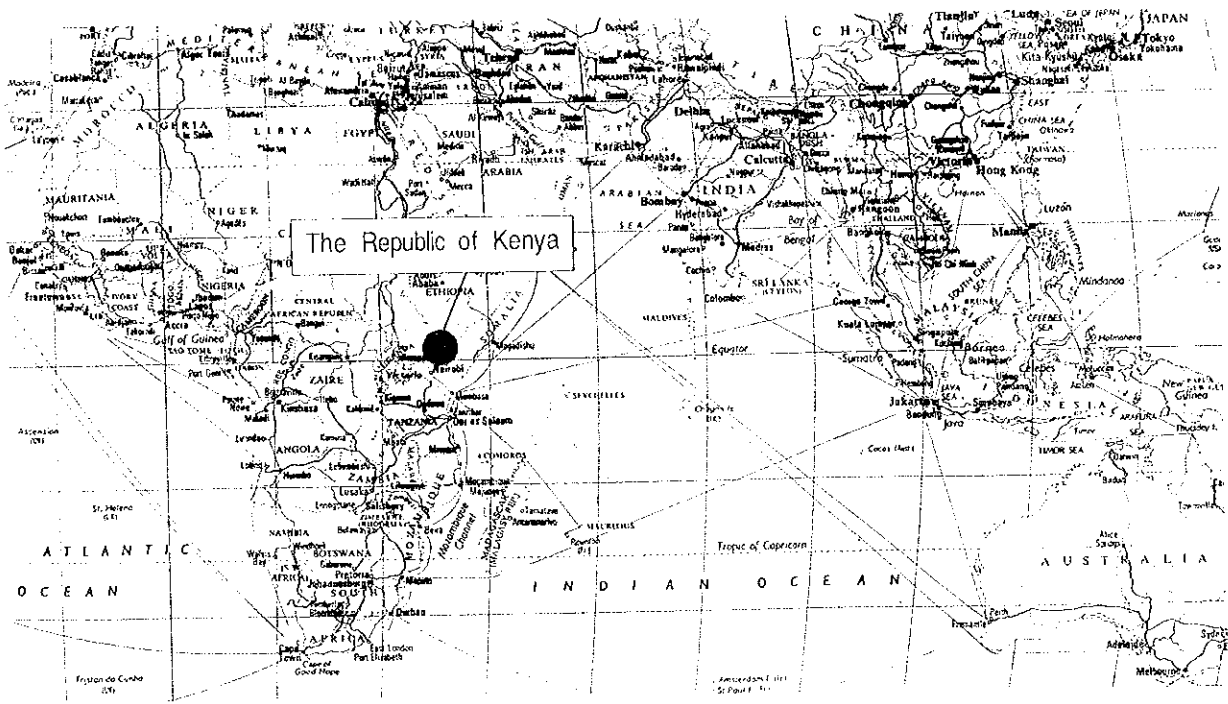


PERSPECTIVE

THE KENYA INSTITUTE OF SURVEYING AND MAPPING



SITE LOCATION MAP



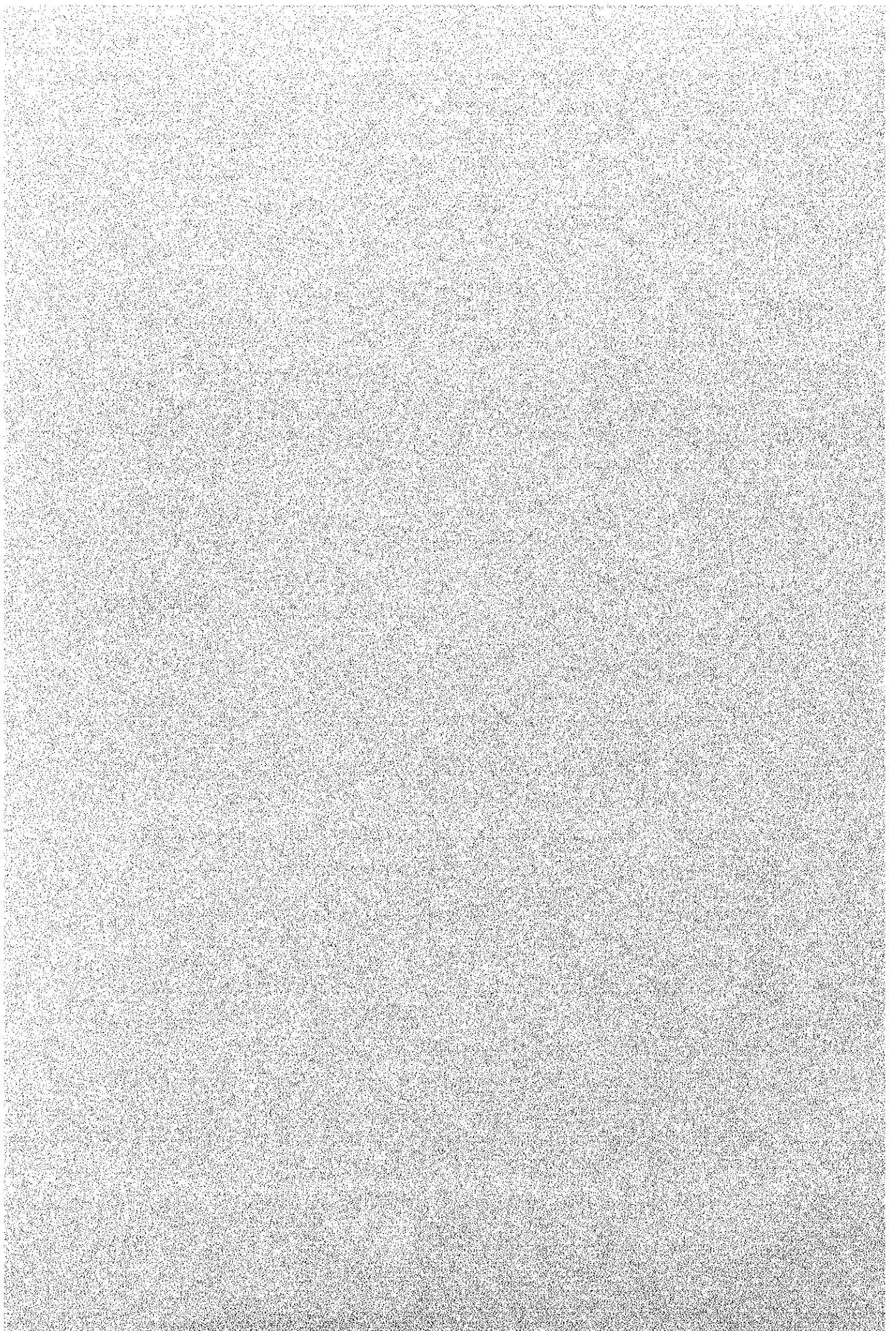
SITE LOCATION MAP



PROPOSED PROJECT SITE

## SUMMARY





## SUMMARY

Kenya's Seventh National Development Plan (1994/96) is characterized by the addition of a new chapter titled "Land Use Policy," in which land use is emphasized as an important element of the country's national development plan. In the land use policy presented in the new chapter, the Government of Kenya proposes that land information be improved both qualitatively and quantitatively and that such improved land information be utilized as early as the planning stages of development projects so that various development projects may be implemented smoothly and effectively keeping in harmony with nature. It is predicted in Kenya that in keeping with the future economic development in the country, there will be a considerable increase in the number of development projects, particularly in the areas of arid land and semi-arid land development projects, road construction projects and irrigation projects. In order to implement these projects, it is necessary to produce precise maps that meet certain standards.

In Kenya, the Survey of Kenya is responsible for the production of maps. But the large-scale maps owned by the Survey of Kenya do not cover the whole of the country or do not contain the latest land information. For example, topographical maps in a scale of 1:50,000, which are used widely as multipurpose maps, cover only 60 percent of the total land area of the country. Moreover, most of them were produced before 1980. As is pointed out in the Seventh National Development Plan, topographical maps and cadastral maps are indispensable for the implementation of development projects in the various fields promoted by the Government of Kenya. It is therefore imperative to increase the covered area by these maps, as well as to improve their quality.

In order to improve the quality of map production activities at the Survey of Kenya, on the other hand, it is necessary to increase the number of its technical staff members and to train them. At present, the Survey of Kenya is commissioning the Kenya Polytechnic, Department of Surveying and Mapping, to train its pre-service staff members, specifying the full quota of trainees to receive training at the department. Every year, the Survey of Kenya recruits 45 of these pre-service staff members. However, the training of pre-service staff members at the Kenya Polytechnic is not practical enough partly because of the difficulty in increasing the full quota, which is attributable to facility and teaching staff limitations, and partly because of the fact that education given at the college is not designed to reflect the Survey of Kenya's actual operations. For this reason, the Survey of Kenya is faced with a need to nurture and train practical technical staff members in accordance with its operation and staff increase plans.

Under such circumstances, the Government of Kenya requested the Government of Japan to extend grant aid cooperation for "The Project for the Establishment of the Kenya Institute of Surveying and Mapping" (hereinafter referred to as "the Project") and the procurement of the institute's facilities and equipment, with the aim of training the Survey of Kenya's pre-service and in-service staff members.

In response to the request, the Government of Japan decided to conduct a basic design study concerning the request, and the Japan International Cooperation Agency (JICA) sent a basic design study team to Kenya from October 10 to November 8, 1994 to confirm the details of the request and to examine the requested facility/equipment plans and the necessity and propriety of the implementation of the grant aid cooperation. Upon return from Kenya, the basic design study team worked



out the basic design for facilities and the criteria for the selection of equipment, and prepared this basic design study report after explaining the contents of the draft report to the Kenyan side from February 19 to March 2, 1995.

The Survey of Kenya, which is a department in the Ministry of Lands and Settlement, is the project implementation organization of the Kenyan side. The Survey of Kenya is a public organization concerning surveying and mapping in Kenya, and has 8 provincial offices and 51 district offices operating under the supervision of its Headquarters and Field Headquarters. It has a staff of about 3,500, of which about 950 are technical staff.

The Project is aimed at establishing the Kenya Institute of Surveying and Mapping, which is to operate under the control of the Survey of Kenya, and procuring its facilities and equipment. The planned facilities and equipment are to be used for the training of the Survey of Kenya's pre-service and in-service staff members. Details of the training program to be implemented at the planned institute have been worked out under a project-type technical cooperation program named "Kenya Institute of Surveying and Mapping Project", which is to be implemented in parallel with the Project. Under the training program, four 3-year Diploma Courses (103 trainees in total per grade), namely, Land Survey, Cartography, Photogrammetry and Remote Sensing, and Map Reproduction are to be offered to pre-service staff members and three 2.5-year Higher Diploma Courses (30 trainees in total per grade), namely, Land Survey, Cartography, and Photogrammetry and Remote Sensing are to be offered to in-service staff members. In the case of training of pre-service staff members, in particular, practical training which fits in with the actual situation of the Survey of Kenya's operations will be provided. The Survey of Kenya

plans to recruit 60 per-service staff members who complete their respective training given at the planned institute every year. The Kenya Institute of Surveying and Mapping is to start with a staff of 197, of which 67 will be lecturers. Since most of its staff members are to be recruited from among the Survey of Kenya's staff members, there will be minimum increase in the staff of the Survey of Kenya to implement the Project.

The budget required to operate the planned institute, 556,637 Kf (about ¥24.5 million), is to be included in the Survey of Kenya's recurrent budget. The additional cost that the Survey of Kenya will have to bear for the implementation of the Project is only the cost of maintenance and operation of the facilities and equipment procured under the Project, which is estimated at 182,298 Kf (¥8.0 million). There will be minimum increase in the Survey of Kenya's personnel expenses. The maintenance and operation cost accounts for about 1.6 percent of the Survey of Kenya's annual a budget for fiscal 1995/96. It is concluded, therefore, that budgetary appropriations for the operation of the planned institute will be adequate.

Given below is the outline of the facilities and equipment required to attain the objective of the Project.

- Project site : Vacant plot of land with an area of about 8ha, which is situated on the premises of the Survey of Kenya's Field Headquarters  
Ruaraka, Nairobi

- Scale of the facilities:

Training block .....	2,920 m <sup>2</sup>	}	6,850m <sup>2</sup>
Hostel block .....	2,710 m <sup>2</sup>		
Administration block ...	1,220 m <sup>2</sup>		
Outdoor passages .....	700 m <sup>2</sup>		

- Structure/no. of stories:

Two-story reinforced concrete buildings  
(including some three-story reinforced concrete buildings)

- Details of the facilities/equipment

Block	Facility	Main equipment
Training block	Classroom	Lectures table and chairs
	Lecture hall, Ante room, Storage	Lectures table and chairs
	Land survey lab., Storage	Calibration system, Equipment for Physics lab., GPS equipment, Theodolite, EDM equipment, Level
	Cartography lab., Drawing room, Computer lab.	Planimeter, Stereo zoom transferscope, CAC equipment, Light table, personal computer
	Photogrammetry and Remote Sensing lab.	Analytical plotter, Aerial camera simulator, Mirror stereoscope, Digital image scanner, Software for image analysis
	Map reproduction lab., Photo lab.	Proofing press, Printing press, Process camera, Film processor, Plate processor, Colour scanner
	Library	Reading table and chair, Unit shelves, Monograph card catalogue duplicating machine, Map filing cabinet
	Lecturer's room	
Hostel block	Bed room	Bunk bed, Wardrobe, Dormitory desks and chairs
	Canteen, Kiosk	Dining tables and chairs
	Superintendent room	Tables and chairs
Administration block	Administrative office, Control room	
	Principal's room, Deputy principal's room, Secretary room	
	Team Leader's room, Expert's room, Coordinator's room	
	Meeting room	
	Garage	Minibus, 4WD wagon, Pickup truck
	Pump room, Electric room, Reservoir tank	

When the Project is implemented under the Government of Japan's grant aid cooperation, it will be appropriate that the construction work should be executed in a single phase (12 months) in view of the sizes of the planned facilities and the actual situation of the local construction industry. The estimated total cost of the works to be defrayed by the Government of Kenya is 26,600,000 K£ (¥58,500,000).

Under the Project, the Kenya Institute of Surveying and Mapping will be established and the facilities and equipment required to train the Survey of Kenya's pre-service staff members (103 persons/year) and in-service staff members (30 persons/year) will be procured. As a result of the implementation of the Project, the staff of the Survey of Kenya will be increased and the technical level of its technical staff members will be raised, which in turn will promote the advancement of surveying and mapping activities in the country and thereby contribute to the implementation of national development projects in the country. Moreover in view of the fact that the Survey of Kenya is a key surveying and mapping organization in East Africa, the establishment of the Kenya Institute of Surveying and Mapping will result in the realization of training of surveyors and technicians from other East African countries.

As is clear from the above descriptions, the Project is expected to produce many positive effects in terms of training of survey technicians and thereby contribute to the promotion of national development projects, as well as surveying and mapping operations. It is therefore significant that the Project is going to be implemented under the Government of Japan's grant aid cooperation.

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