

**BASIC DESIGN STUDY REPORT
FOR
THE YOUTH TRAINING CENTRE
IN
THE SOCIALIST REPUBLIC OF THE UNION OF BURMA**

October 1983

JAPAN INTERNATIONAL COOPERATION AGENCY

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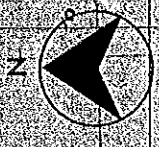
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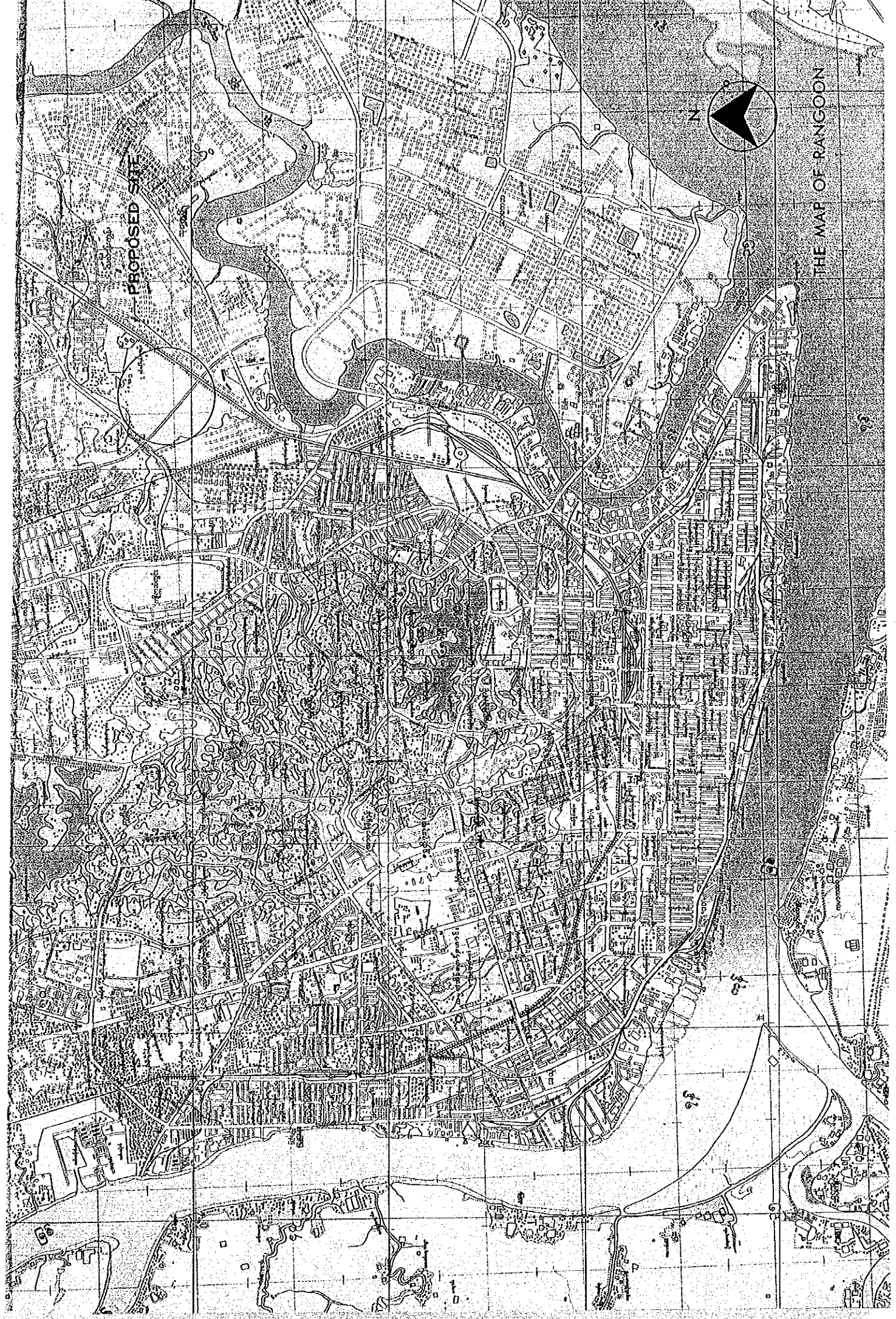
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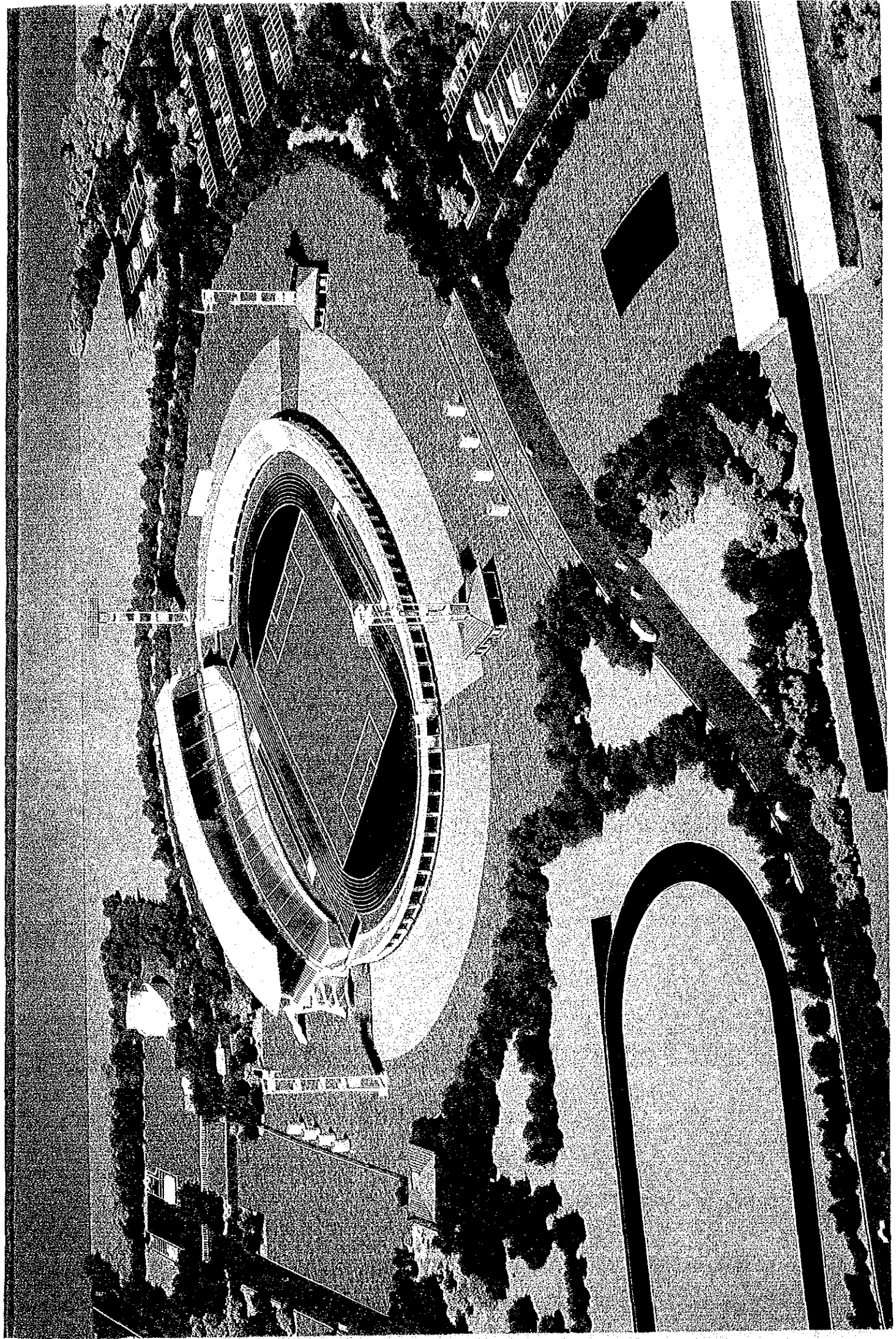
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PROPOSED SITE



THE MAP OF RANGOON





PREFACE

In response to the request of the Government of the Socialist Republic of the Union of Burma, the Government of Japan decided to conduct a basic design study for the Youth Training Centre Project and entrusted the study to the Japan International Cooperation Agency. The JICA sent to Burma a study team headed by Mr. Mitsuaki YAMAGATA from June 4 to 23, 1983.

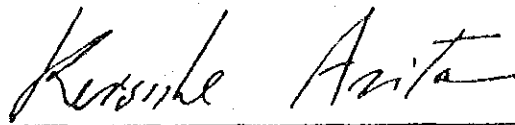
The team had discussions with the officials concerned of the Government of Burma and conducted a field survey in the Rangoon area.

After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Socialist Republic of the Union of Burma for their close cooperation extended to the team.

October, 1983



Keisuke Arita

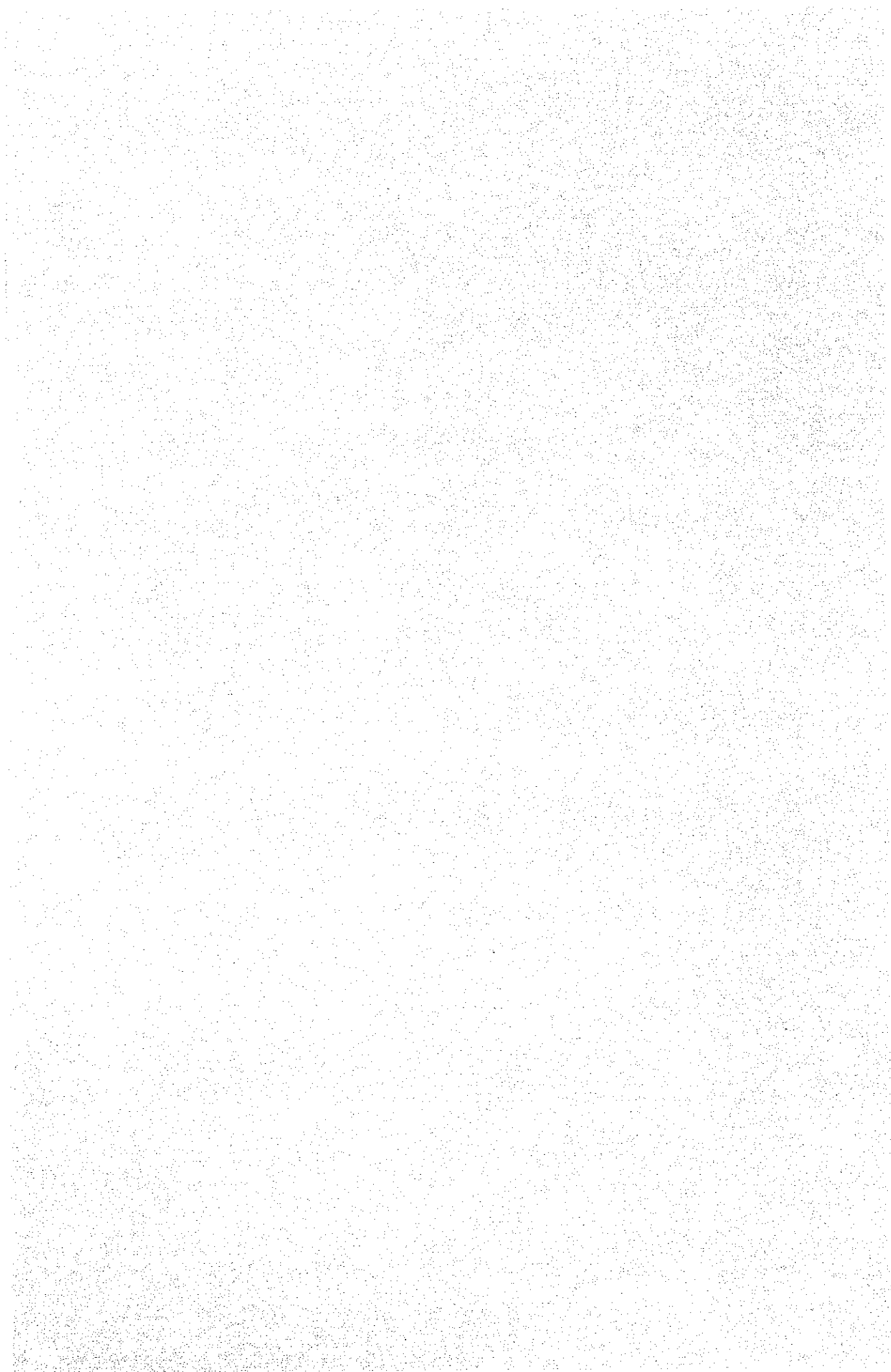
President

Japan International Cooperation Agency

CONTENTS

	Page
Summary	1
Chapter 1 Introduction	5
Chapter 2 Background of the Project	7
2-1 Background of the Request	7
2-2 Educational System	8
2-3 Present Situations of Physical Training Activities and Facilities	15
2-4 Contents of Request	24
Chapter 3 Outline of Project Site	29
3-1 Selection of Proposed Sites	29
3-2 Site Conditions and Surroundings	32
3-3 Situations of Infrastructure	34
Chapter 4 Contents of the Plan	37
4-1 Purpose and Contents	37
4-2 Orientation of the Plan	38
4-3 Basic Design	41
4-4 Filling and Grading Works	79
Chapter 5 Project Execution Plan	83
5-1 Implementation System	83
5-2 Construction Planning	85
5-3 Allotment of Work	86
5-4 Construction Time Schedule	90
5-5 Maintenance and Administration Planning	91
Chapter 6 Evaluation of the Project	101
Chapter 7 Conclusion and Proposals	103
Appendix	105

SUMMARY



SUMMARY

The socialist Republic of the Union of Burma, of which people are deeply attached to their own history and tradition, had achieved the honorable independence and revolution after colonial ages and has been contemporarily making efforts to be a modernized nation. Along with the establishment of the new political system resulted from the revolution in 1962, new educational systems and policies were established to bring up young people, who are to shoulder the future of the nation, through intellectual, physical and moral education.

The national literacy and school attendance of Burma is one of the highest among the developing countries of South-East Asia. However, actual situations of facilities for social and physical educations are extremely insufficient; Aung San Stadium is a single stadium equipped with a proper track, field and spectators' stands.

Although the Education Committee and the Lanzin Youth Organization are desirous to use the Stadium for extra-curricula activities and physical trainings of youths, the Stadium has always to be open initiatively for international sports matches, national matches and adult athletic meetings, and accordingly there are few opportunities for youths to use the Stadium for their sports activities.

In addition, primary and secondary schools have few physical education facilities, and they offer only two units of physical education per week, of which contents concentrate upon class room exercises and calisthenics. Although football is quite popular among young people as an extra-curricula, vacant lots and roads in general are available.

As for the educational facilities for natural science, there are only a few places such as the National Museum and Rangoon Library, and it is too few in opportunities for young people to utilize these facilities.

The Burmese Side has proposed National Sports Park Plan to improve the shortage of physical education and natural science

education facilities and to promote intellectual and physical education for the youth of Burma. The plan includes the constructions of outdoor stadiums, indoor gymnasiums, swimming pools, libraries and various kinds of sports exhibition spaces.

The Burmese Sides requested an economic cooperation from the Government of Japan to build outdoor stadiums, including the sports exhibition space and library, and a planetarium. In response to the request, the Government of Japan has made a basic design study through the Japan International Cooperation Agency (JICA). This report is the summary of the study.

This proposal is for the construction of Youth Training Centre as a place for group education for the youth of Burma, which will function as both physical and intellectual training centre. The centre will consist of a stadium with a track, a field and spectators' stands, including a library, a lecture hall and meeting rooms, and also a planetarium dome.

As a site for this project, the northern half of a 60 ha land in the Thuwanna area of Thingangyun Township which was provided for the National Sports Park Project by the Burmese Side has been selected with a synthetic consideration on circumstances of traffic conditions and relevant facility plans although the Kyaikkasan Ground was studied as an alternative. Since this site is low marsh land, approximate 2 m of fill is required before the construction starts.

The outdoor stadium will be designed as a youth education facility according to the following criteria.

1. The stadium is to have a 400 m, 8-lane track, and a field for jump, throw and ball events.
2. The stadium is to have a 10,000 seat grandstand and back and side stands of 7,000 seats, with a roof of grandstand to cover approximate half of the seats.
3. On the first floor of the grandstand building will have the ancillary spaces and the soecond floor will house the library, sports exhibition space, lecture hall, meeting rooms and office.

4. The first floor of back and side stands will be used as a training room.

The planetarium is to be located approximate 100 m away from the stadium. A seating capacity of approximate 200 is required to ensure that every youth in Burma will be able to visit it at least once during his or her school career.

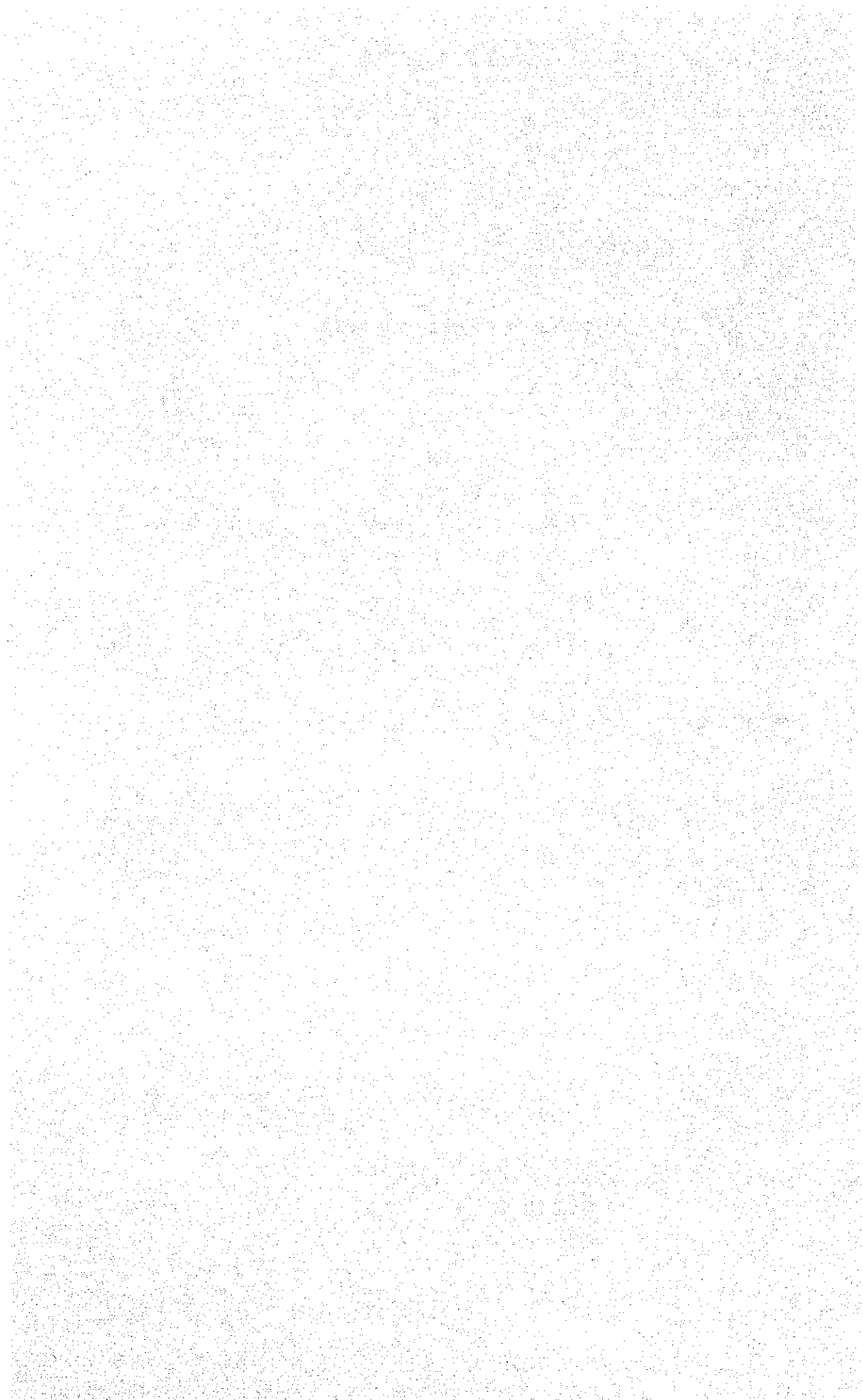
The construction period for this facility is expected to take a minimum of 28 months because of the large scale concrete work involved and require approximate 34 months from E/N to completion.

A special department will be organized inside the Sports and Physical Education Department of the Ministry of Health in order to manage the facility, and the maintenance expenses will be allotted for by the admission fees to Aung San Stadium (2,500,000 kyat annually).

The proposal suggests that after completion the new Centre should secure a smooth and sufficient maintenance by means of establishing an adequate management organization and fund system of annual budget.

In conclusion, this project is satisfactorily reasonable in feasibilities depending upon staff plan and maintenance management plan as previously described, and adequate financial measures and organizations provided by the Burmese Side would ensure that a contribution be made to the youth education in Burma and to physical education and natural science education in particular.

CHAPTER 1 INTRODUCTION



CHAPTER 1 INTRODUCTION

The Socialist Republic of the Union of Burma is now making every effort for the education of youth. Many attempts to promote the intellectual, physical and moral education of youth have been made by the Burmese side not only for consolidating the school education but also for developing the extra-curricula education for youth to join public welfare activities and to participate aggressively in various kinds of sports and athletic activities throughout the nation.

Particularly in these days when there is little healthy recreation available, youth is prone to juvenile delinquency and thus it is a national concern to promote youth educational development through sports and physical training.

However, Aung San Stadium is the only facility available for the youth's sports education and physical training in the City of Rangoon and thus the construction of proper facilities is urgently needed. Based on these backgrounds, the Burmese side formulated the Youth Training Centre Construction Project and requested grant-aid cooperation from the Government of Japan for the construction of the Centre. Upon these requests, the Government of Japan decided to send a survey team through JICA to conduct the basic design survey for this project.

A preliminary survey for this project was conducted in February 1983, to evaluate the feasibility of the construction of the proposed Youth Training Centre. Then, the Basic Design Study Team headed by Mr. Mitsuaki YAMAGATA, Deputy Director, 2nd Economic Cooperation Division, Ministry of Foreign Affairs, was dispatched to Burma for 20 days from June 4th to June 23rd, 1983. (Refer to Annex for members of the team).

In the first phase of the survey, a series of dynamic discussions between the Sports and Physical Education Department, Ministry of Health and the Study Team were held with respect to the

framework of the basic schemes of the project, and Minutes on mutually confirmed items were exchanged (refer to Annex).

A consolidated survey was placed on the overall field work in the second phase, and various kinds of relevant facilities were visited for study, information and data were collected. Also, various kinds of technical surveys were separately conducted by each group in charge. In the final phase of the study, a series of discussions were held again mainly between the SPED and the Study Team, with respect to the priority orders of internal functions of stadium based on the framework of basic schemes, structure of track and field, and also all round administrative and operating plan of the proposed Centre including planetarium facilities. In addition, particular discussions were held regarding site preparations such as clearing, grading, filling and levelling to be performed in advance by the Burmese side and the construction time schedule of this project.

After returning to Japan, the Basic Design Study Team analyzed and examined the items discussed during the survey and also integrated the materials and information collected through the field survey. This report has been compiled from the results of the survey.

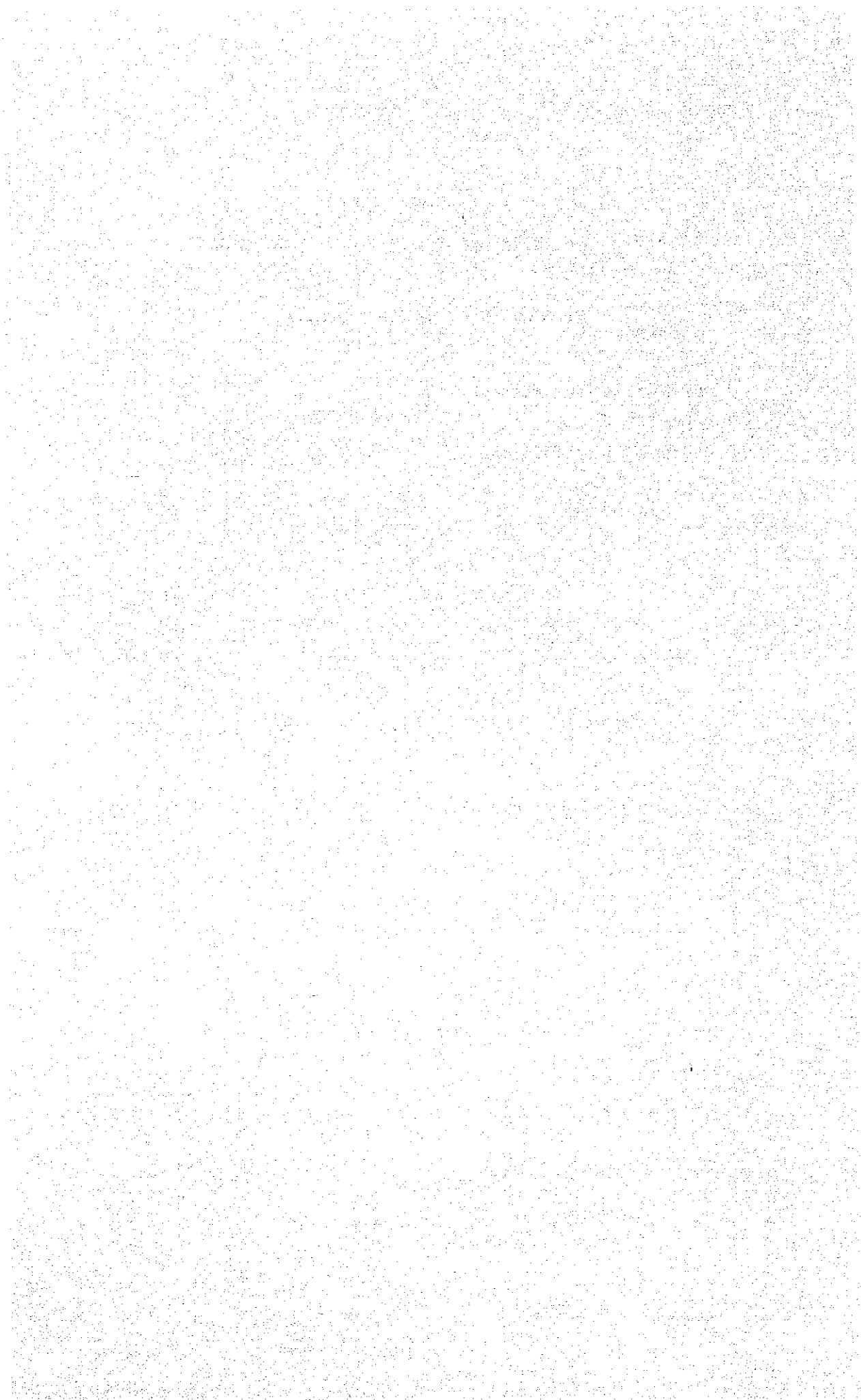
CHAPTER 2 BACKGROUND OF THE PROJECT

2-1 Background of the Request

2-2 Educational System

2-3 Present Situations of Physical Training Activities and Facilities

2-4 Contents of Request



CHAPTER 2 BACKGROUND OF THE PROJECT

2-1 Background of the Request

The Socialist Republic of the Union of Burma has been endeavouring to promote education and physical training for youth ever since the political revolution of Burma in March 1962. This will be necessary in order to transform the country into a modern nation.

Movements to promote sports and physical training is currently being carried out not only through school education but also through extra-curricula activities and social mass activities in accordance with the basic policies set forth in fourth 4-year plan (1982 to 1985) under the provision of Article 10 of Constitution stating that "The state shall provide the all-round physical and mental development of youth".

Out of the Burmese population of 35 million, there are about 18 million young people between the ages of 5 and 25. As all-round development for these youths, new education policies were introduced under the establishment of State Constitution in 1974 which stipulates the expansion of basic education and scientific education as well as the implementation of extra-curricular and social activities by all educational organizations in order to cultivate the spirit of socialism.

Willingness to work and responsibility which are the basis of these activities and collective training are cultivated through participation in sports training and attendance at sports competitions, and friendship and feeling of unity beyond the differences in races, age and sex are most effectively and directly created through sports and physical training. By participating in the campaign for illiteracy, campaign against menace of drug abuse and voluntary service such as construction projects of irrigation facility and road etc., the youth volunteer movement will contribute to cultural development and economic growth in the communities and,

on the other hand, the sports and physical training will not only be useful for cultivating physical strength and strong spirit as the basis of construction of Socialist Society but also give sound influences to the sensitive youths in childhood and adolescence. Public interest in the sports and physical training for youth is increasing under such general concerns, the number of physical training facilities is insufficient so that many young people are unable to keep education branches in the aspect of physical training activities.

Burma is promoting the all-round development of youth in both intellectual and moral aspects in parallel with the physical aspect, for there are almost no facilities other than school classrooms that can be utilized for this purpose. There are now three libraries including the largest library of Rangoon attached to Art and Science universities (a capacity of some 620 seats). They are open only to university students and government officials and are hardly available to the general youth.

Although exhibition facilities of natural science and sports are basically needed to develop the intellectual research thinking of youth, there is only one national museum presently available.

In these circumstances, the construction of the Youth Training Centre is now getting more national and social interest than ever before, and therefore the Burmese side formulated this Centre Project and requested a grant aid from Japan.

2-2 Educational System

2-2-1 History of Education

Burma is a Buddhist country and has a historical environment in which cultural traditions have been accumulated throughout many centuries. In the dynasty ages, Buddhist temples were the fields of education and basic educations by Buddhist priests were given voluntarily free of charge. During the Pagan Dynasty established in the middle of eleventh century in Burma, higher education institutions are organized not only for studying the doctrine of

Buddhism but also for learning non-religious subjects, practical skills and arts. Those who indicated extraordinary academic achievements during primary education level were given the middle education which included even arithmetics, history, geography, astrology and medicine.

Education for general public as well as teaching of Buddhism in Burma had been borne by the Buddhist monastery in villages, and British education system in the 19th century was introduced to this country.

Under the British education system (1886 to 1948), three kinds of schools completely different from the traditional Buddhist monasteries were opened in Burma.

- (1) Vernacular schools using Burmese for teaching.
- (2) Anglo-Vernacular schools using both languages for teaching.
- (3) English schools using English for teaching with Burmese as second language.

Schools were classified by the language used in classrooms and also by the kind of financial capacity of school management. And schools were divided into two kinds of schools such as colonial government schools and government-assisted schools. As the primary and middle school education by English progressed, the colonial government began to take apparent discriminating policies with which the finance of vernacular schools were borne by the community while the Anglo-vernacular schools were financed by the government and controlled by the department of education. This policy of education basically remained unchanged even after 1921 when Burmese Autonomy Government Law was established and 1923 when social welfare and education were handed over to Burmese ministers. One of the reason for not giving the aids of central government to the English schools, the management of which was handed over to the community, was that they were unsuccessful especially in the middle school level. It was natural that young people had difficulty in finding jobs after completing schools since they could neither read nor write English.

2-2-2 Educational Renovation after Independence

When Burma achieved independence from Britain in 1948, Burma introduced new educational policies and began to make efforts for developing Burma's own education system. The aim of the system after independence was to renovate the colonial education system.

After March 1962, a state policy declaration known as "Burmese Way to Socialism" was proclaimed under the new political system, in which the education policy were stated as follows:

"The existing education system not harmonized with the way of living of nation must be renovated. A new education system harmonizing with the way of the living and founding on the socialistic moral value will be established, and also importance will be attached upon natural sciences.

The objective of education policy is to provide with opportunities of education for whole nation. Higher education will be in particular given only for those, as an incentive, who have the diligence and ability to make good use of it."

University Education Law was issued in 1964 and Basic Education Law was issued in 1966 and became effective in 1978.

Purposes of basic education are:

- (1) To enable every citizens to become a physical and mental worker well equipped with basic education, good health and character;
- (2) To procreate citizens fully capable of building and safeguarding Burmese socialist society with full understanding and strong conviction in the ideology of the Burmese Way to Socialism;
- (3) To lay foundations necessary for branching off at an appropriate stage to appropriate vocational education and training for the purpose of establishing and maintaining Burmese socialist society;
- (4) To give precedence to the teaching of science capable of strengthening and developing productive forces;
- (5) To give precedence to the teaching of arts capable of preservation and development of culture, fine arts and literature of the state;

(6) To build a firm educational base for the pursuance of University education.

Under the new education policy, the first target was to bring basic education within reach of all, the second goal was to use the Burmese as teaching language and also to recognize the lessons using mother tongues (of minority races) for lower classes in primary schools, the third goal was to found technical middle schools in each district, and the fourth goal was to promote the educational administration by the responsibility of the central government. Thus, all schools became the government-owned schools and the system of government-assisted schools was abolished. However, the continuation of a few private schools was recognized, such as traditional Buddhist monastery schools, Chinese schools and Indian schools, etc.

In the latest education policy Burma has to proceed with nation-wide popularizing of basic education, in which 5-year primary school education is to be made available to whole nation and within reach of all. However, this has not been realized due to the population increase with an annual rate of 3% and the shortage of teachers. With respect to the enrichment of technical and professional education, the labour and production education which adds the vocational and technical subjects to the ordinary curricula of the middle and high schools or the integration of ordinary education and vocational education was experimentally started since 1974, as same as other Asian countries, which is noteworthy as a mean of expansion of the vocational and technical education.

2-2-3 Educational System

The basic education, which is mentioned in previous pages, consists of three stages of educations; 5-year primary education, 4-year middle school education and 2-year high school education. The primary education consists of infant class opened for 5 years old children and primary school for the 1st through 4th-year students, which is followed by the middle and high school education.

There are 3 kinds of high schools; ordinary high schools, agricultural high schools and technical high schools. Most of them are ordinary high schools. High schools, which were once divided into social and natural science, are now integrated into a single comprehensive course.

A completion test, supervised by the Government, is offered at the final year of the high school. Students are supposed to finish the high school at the age of 15.

A variety of courses are available by choice after the high school education; three courses of professional training institutes (so-called vocational schools), colleges and universities. Three-year technical institutes, agricultural institutes and commercial institutes are offered as professional training institutes.

Courses of the universities consist of 4 years for art and science, 6 years for engineering and 7 years for medical, and regional colleges established in 1977 is 3 years.

The school system mentioned above is illustrated in Table 1. Table 2 shows the school statistics for fiscal years 1981 to 1982. The percentage of the literates in Burma is relatively high and was 70% in the beginning of 1950, and the percentage entering each school year in the primary school education is 96% at present.

Table 1

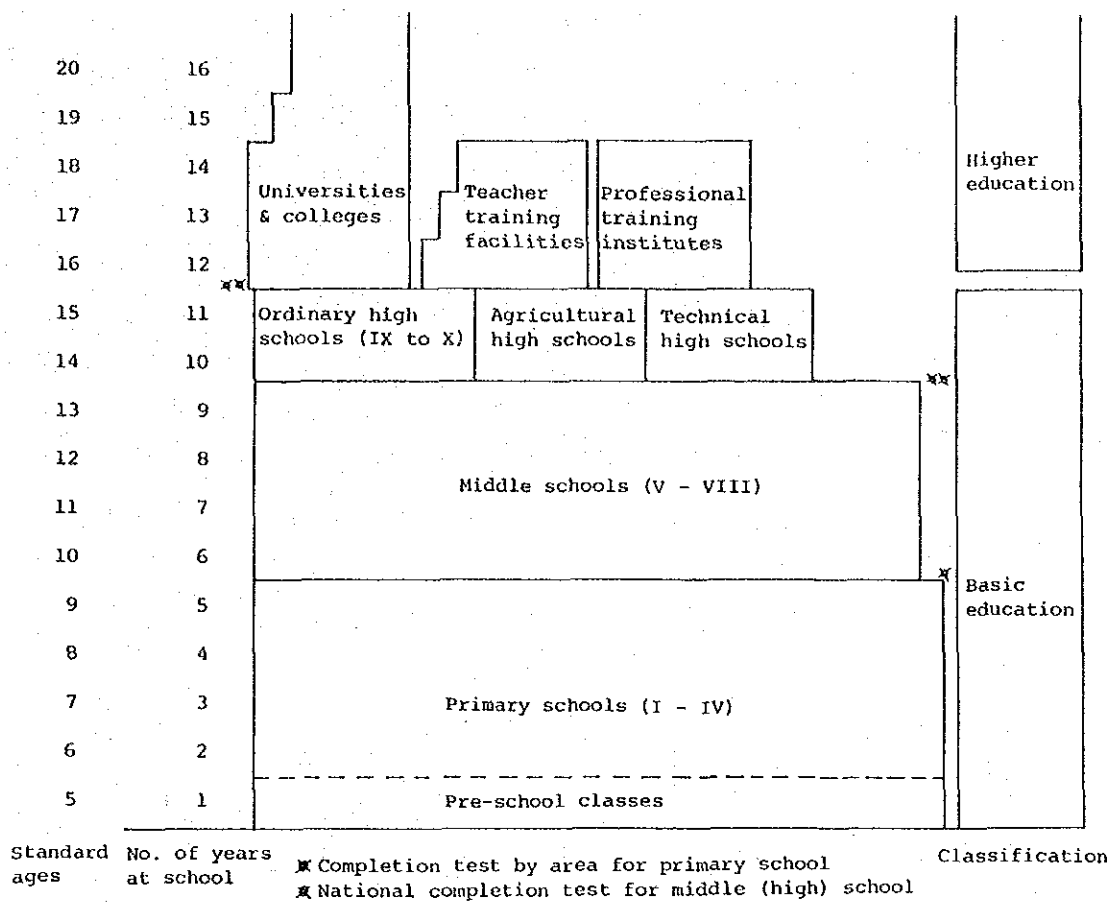


Table 2 School Statistics

	1981/82				1982/83			
	No. of schools	No. of teachers	No. of students		No. of schools	No. of teachers	No. of students	
			Total enrolled	Final year passed			Total enrolled	Final year passed
1. Primary schools	23,499	86,354	4,392,520	370,053	25,499	95,435	4,541,866	382,635
2. Middle schools	1,422	23,227	910,177	98,115	1,492	25,614	929,317	99,482
3. High schools	626	12,498	222,399	24,251	651	13,067	241,216	25,356
4. Academy for development of national groups	1	62	673	168	1	62	725	175
5. Teacher's training schools	14	271	3,252	3,236	14	329	4,560	4,560
6. Teacher's training institutes	3	117	1,627	1,622	3	201	1,840	1,840
7. Technical high schools	9	279	3,945	1,076	14	316	3,722	1,160
8. Technical institutes	5	166	3,764	882	7	207	4,183	1,025
9. Agricultural high schools	13	106	1,985	757	9	85	1,542	790
10. Agricultural institutes	2	43	633	146	6	82	1,124	171
11. Other vocational schools	22	144	2,347	1,769	34	189	3,440	2,690
12. Engineering evening classes	8	120	2,906	1,572	8	120	3,660	2,050
Universities and Colleges								
1. Arts and science universities	2	1,104	14,978	7,334	2	2,254	40,084	7,542
2. Degree colleges	4	487	5,396	1,925	4	798	9,293	1,540
3. Regional colleges	20	1,559	38,126	15,998	14 [†]	673	12,388	4,824
4. Institutes of medicine	3	543	3,140	601	3	634	3,500	650
5. Institutes of dental medicine	1	40	261	46	1	48	277	55
6. Institutes of animal husbandary & veterinary science	1	39	605	109	1	39	592	106
7. Institutes of economics	1	200	2,895	1,196	1	200	2,969	1,088
8. Rangoon institute of technology	1	260	3,190	490	1	268	3,557	644
9. Institutes of agriculture	1	92	605	276	1	92	958	289
10. Institutes of education	1	156	2,017	998	1	156	1,421	707
11. University of correspondence courses			76,818	7,435			88,933	12,502
12. Institutes of foreign languages	1	23	1,076	133	1	23	1,202	155
13. Postgraduate courses for medicine	1	94	168	66	1	97	143	50
Total	25,661	127,992	5,695,503	540,255	27,769	140,989	5,902,505	552,086

According to the data of 1981 and 1982, the number of schools, teachers, students and percentage of school attendance in the basic education in Burma, and the numbers of schools and students in Rangoon Township are as follows:

	Number of schools	Number of teachers	Number of students	Number of pupil eligible to attend the school (ages)	Percentage entering school
Primary school	23,499	86,354	4,392,520	4,578,000 (5 9)	95.9%
Middle school	1,422	23,227	910,177	3,944,000 (10 14)	23.1%
High school	626	12,498	222,399	3,458,000 (15 19)	6.4%
Total	25,547	122,079	5,525,096	11,980,000	Average: 46.1%

Number of schools and number of students in Rangoon:

High school:	119 schools,	67,911	Students
Middle school:	154 "	228,095	"
Primary school:	1,795 "	548,357	"

2-3 Present Situations of Physical Training Activities and Facilities

2-3-1 Physical Training Activities and Outdoor Activities of Youths

Physical education and training in basic education is controlled under the curricula specified by basic educational council. However, teaching hours of physical education and training in a week time table are extremely limited because of insufficient number of teachers and athletic facilities. An example of the teaching periods for one week is as follows.

Time schedule at primary school

Subject	Kinder- garten (6 years of age)	1st standard	2nd standard	3rd standard	4th standard (10 years of age)
Burmese	12	15	15	12	12
English	5	5	5	5	5
Arithmetic	7	9	9	8	9
History	-	-	-	2	2
Geography	-	-	-	2	2
Science	-	-	-	3	3
Nature observation*	4	5	5	-	-
Physical & moral training	2	1	1	3	3
	30	35	35	35	35

Time schedule for middle school

Subject	5th standard (11 years of age)	6th standard	7th standard	8th standard (14 years of age)
Burmese	5	5	5	5
English	7	7	7	7
Mathematics	9	9	9	9
History	2	2	2	2
Geography	2	2	2	2
Science	4	4	4	4
Physical & moral training	6	6	6	6
Domestic science**				
	35	35	35	35

Time schedule for high school

Subject	9th standard (15 years of age)	10th standard (16 years of age)
Burmese	5	5
English	6	6
Mathematics	5	5
History	2	2
Geography	3	3
Basic economics	3	3
Basic physics	4	4
Physical & moral training	3	3
Domestic sciences**		
	35	35

4 subjects in the morning

3 subjects in the afternoon (40 minutes for each subject)

7 subjects a day

5 days a week (Monday through Friday)

* Nature observation is a class to walk around and observe natural environments.

** Domestic science for girls and drawing for boys.

Physical training and education in the school curricula is very little as indicated above because about 80% of schools have no playgrounds and physical training facilities, which means that extra-curricular physical activities must rely upon facilities outside the schools.

The basic education council is now conducting schools to promote the following activities as co-curricula physical training:

- (1) Free gymnastics
- (2) Group games
- (3) Competitions
- (4) State and Township sports mass meetings

Under this guidance, schools have sports clubs such as soccer, volleyball, basketball, table tennis, athletic sports clubs and so forth.

There is a special youth organization in Burma called "Lanzin Youth Organization." The Lanzin Youth Organization is the highest state political organ for Youth and plays a major role in laying down policies and guidelines for Youth. In compliance with Article 10 of the State Constitution and the policies of the Lanzin Youth Organization, the Ministry of Education launches various schemes to promote the moral and physical assets of the nation's Youth. One remarkable scheme, known as "Luyechun Scheme" selects all-round outstanding students (Luyechuns) who excel themselves in social, moral, academic and athletic fields. Together with a large number of selected students, these "Luyechuns" are being sent to many parts of the country during summer vacations to render their services on construction projects. In the same way their intellectual capacities are fully utilized by assigning them as voluntary teachers for the "3-Rs Movement" viz: Reading, Writing and Arithmetic in the illiteracy eradication campaign, to teach the illiterate in the rural areas. In comparison with this, provided with the necessary special training courses to elevate their potential so as to become the future leaders of the nation. Scholarships up to University graduation are also given as honours to the young people who are selected as "Luyechuns" for three consecutive years.

2-3-2 Sports Activities

The Burmese are traditionally sportsloving people. One of the Burmese traditional sports from olden times is Chinlon, a ball made of rattans wicker. The game of Chinlon is normally played by 6 players who form a circle and try to keep the cane ball in the air as long as possible while using various kinds of difficult techniques. After the introduction of European sports, soccer became the most popular among the Burmese because they were

traditionally well accustomed to the Chinlon and thus were very skillful in using their feet. In Burma, where recreational facilities are not enough, sports other than the Chinlon are also played with enthusiasm, and there are many sports federations as shown in Table 3.

Sports in the school education comprises both co-curricula and extra-curricula. However, in the courses of basic education, a mixed curricula of moral, housekeeping and physical training is being used and thus there are no systematically organized sports and physical training courses, but calisthenics (free hand exercise) and mass games are mainly played. The reason is that the number of teachers specialized in the physical training is insufficient and there are almost no playground and sporting equipment. Therefore, the sports that can be played daily are mainly of simple one, and it is no wonder that quite a few number of students are found to participate in the competitions held in university and national physical training facilities where the real sports can be played.

Sports are the most popular as club activities in the courses of higher education but students are doing exercises and competitions using a small number of sports facilities only available in a few universities.

With respect to the worker and adult sports, the most games and matches are strongly sponsored by organizations belonging to the sports federations, the ministeries, departments and defence services. Popular sports in Burma are track and field, soccer, cycling, basketball, table tennis, badminton and tennis but other sports such as swimming, rowing, shooting, yachting, judo and karate are also gradually becoming popular. Also, Burma has participated in overseas sports competitions in various sectors such as Regional Inter-University competition and SEA Games (South East Asian Games). In the case of the 12th SEA Games held in Singapore in 1983, Burma sent 105 athletes to take part in the 8 sports of soccer, volleyball, boxing, weightlifting, yachting, track and field, judo and shooting out of the 18 sports. Burma also sent over 70 athletes to the 9th Asian Games.

Sports activities in which the youths are allowed to participate are the summer sports camps and all-Burma student sports intercollegiate competitions which are held every year. These are the opportunities for mass sports and physical training offered to the youths during vacation. Aung San Stadium is being used merely for these sports competitions other than some of the University sports ground and small indoor halls.

Table 3 List of Federations

- | | |
|-----------------------------|----------------------------------------|
| 1. TRACK & FIELD FEDERATION | 12. HOCKEY FEDERATION |
| 2. BOXING FEDERATION | 13. HIKING & MOUNTAINEERING FEDERATION |
| 3. BADMINTON FEDERATION | 14. JUDO FEDERATION |
| 4. BASKETBALL FEDERATION | 15. SWIMMING FEDERATION |
| 5. CYCLING FEDERATION | 16. SHOOTING FEDERATION |
| 6. CHINLON FEDERATION | 17. TENNIS FEDERATION |
| 7. CHESS FEDERATION | 18. TABLE TENNIS FEDERATION |
| 8. CRICKET FEDERATION | 19. THAING FEDERATION |
| 9. FOOTBALL FEDERATION | 20. VOLLEYBALL FEDERATION |
| 10. GYMNASTIC FEDERATION | 21. WEIGHTLIFTING FEDERATION |
| 11. GOLF FEDERATION | 22. YACHTING & ROWING FEDERATION |

2-3-3 Physical Training Facilities in Rangoon

About 80% of the primary schools, middle schools, high schools, colleges and professional training institutes except universities have no proper playgrounds and gymnasiums. Since Burmese people traditionally love sports, there are some individual sports facilities in Rangoon but most of them belong to either universities or the Defence Services. Only two comprehensive sports facilities are available to the public; Kyaikkasan Ground and Aung San Stadium. Kyaikkasan Ground has a large field, soccer ground and stands but has no track. However, as this ground is mainly reserved for nationally significant ceremonies and mass rallies, it is no longer suitable for sports activities. On the other hand,

Aung San Stadium is the sole comprehensive stadium having track, field, stands and indoor stadium and is by all means utilized for various kinds of sports competitions ranging from Inter-Township and departmental to Inter-State Divisional and Burma National Championships. Other main sports facilities in Rangoon are:

- . Rangoon University Ground
- . Rangoon Command Ground
- . Burma Air Force Ground
- . Rangoon University Indoor Recreation Centre (Indoor Hall)
- . Theinbyu Ground
- . Media Ground
- . National Pool
- . Kokine Pool (Private)
- . Orient Pool

Although there had been some other large grounds such as the Pyidawtha Ground and the Ahlone Ground, these had been converted to sites for the construction of Children's Hospital and Recreation Park respectively.

Kyaikkasan Ground a large and good sports field it is no longer suitable for sports activities but it is frequently used for festivals and national events.

2-3-4 Present Situations of Aung San Stadium

Aung San Stadium, is the single stadium in Burma available for international sports competitions and was built in 1908. Its scale and contents are as follows:

Stands: Main stand, side stand, and back stand

For 24,000 spectators

Grand stand: Capacity of 10,000 persons, fully covered with roof

Side stand: Score board, flood lighting tower

Facilities in grand stand:

VIP room, library, meeting rooms, medical room, administration room, offices, other rooms

Track: 400 m, cinder surfacing track

Field: Sodded court

Indoor stadium stand: For 3,000 spectators, 1 basketball court

Sports activities and physical training facilities in Rangoon have been outlined above. Sports stadiums are insufficient at present in Burma and only Aung San Stadium is available for all kinds of training and sports competition. Use of Aung San Stadium throughout year is shown on Table 4 (FY 1981).

Table 4 Athletic Games and Football Matches held at the Aung San Stadium from 1st April 1981 to 31st March 1982

<u>S.No</u>	<u>Department</u>	<u>Games</u>	<u>Month</u>	<u>No:of days</u>	<u>No:of matches</u>
1	Universities	Track & Field & F/ball	Apr	5	5
2	SPED	Inter Dept. Track & Field	May	4	4
3	Red Cross Society	Red Cross Day	May	1	1
4	Cycling Fedn:	National Championship	May	5	5
5	Football Fedn:	Football	May~ Sep	101	101
6	SPED	China-Burma Track & Field	Oct	2	2
7	SPED	India-Burma Army F/ball	Oct	3	2
8	Defence Services	F/ball	Oct~ Nov	25	45*
9	Ministry of Mines	F/ball	Nov	1	1**
10	SPED	Pak-Burma F/ball	Nov	2	2
11	Ministry of Transport & Communications	F/ball	Nov	1	1
12	Rangoon Division	F/ball, Track & Field etc.	Nov	22	27
13	Universities	F/ball	Nov~ Dec	3	3
14	Ministry of No:1 Industry	Track & Field	Dec	2	2
15	Ministry of Transport & Communications	Track & Field	Dec	3	3
16	Disabled army personnel	Track & Field	Dec	4	4
17	Ministry of No:1 Industry	F/ball	Dec	1	1
18	Ministry of Mines	Track & Field	Dec	2	2
19	Defence Services	Track & Field	Dec	4	4
20	Basic Education Schools	Track & Field & F/ball	Dec	12	18*
21	Football Fedn:	Inter Div: & States F/ball	Jan	17	32*
22	SPED	Inter: Ministry Track & Field	Jan	3	3
23	SPED	German-Burma F/ball	Jan	2	2
24	Track & Field Fedn:	Inter Div: & States Track & Field	Feb	5	5
25	Football Fedn:	F/ball	Feb	19	19
26	SPED	German-Burma F/ball	Feb	2	2
27	Cycling Fedn:	Inter Div: & States Cycling Championship	Feb	10	10
28	Football Fedn:	F/ball	Mar	11	11
29	Football Fedn:	F/ball	Aug~ Oct	7	7
30	Track & Field Fedn:	SEA Training	Nov~ Dec	26	52**
31	SPED (Summer vacation)	Youth Elementary Track & Field Training	Mar~ Apr	30	30
				<u>341</u>	<u>413</u>

* = Two matches

** = Morning

Fedn: = Federation

SPED = Sports and Physical Education Department

F/ball = Football

In the City of Rangoon where people really love sports as stated before, Aung San Stadium is mostly used for competitions of national level such as Inter-State and Inter-Township competitions, Inter-Ministry and Inter-Department soccer and athletic competition. Thus, Aung San Stadium is occasionally available for youth sports competition. As shown on Table 4 Aung San Stadium is available to youth for only 49 days of the year (8 days for intercollegiate competitions, 12 days for Inter-State and Inter-Township national student' sports meetings, etc.).

2-4 Contents of Request

The Burmese Side actually requested the following contents of facilities for the Youth Training Centre:

(1) Stands of stadium with a capacity of 50,000 spectators are demanded. Grand Stand is to be fully covered with roof.

(2) Sports exhibition rooms are to be provided to display medals, trophies and records of the Burmese sports achievements in order to stimulate the interest of youth in sports.

(3) A library for books related to sports techniques and science is required to be opened to the youth.

(4) A lecture hall and meeting rooms are required.

(5) Training rooms are needed.

(6) All-weather type pavement is required for the track.

(7) A score board at the North Side Stand is needed and each stand is to be equipped with a floodlighting tower to allow night games and matches.

(8) A planetarium with a capacity of 200 persons is demanded.

(9) Athletic and planetarium equipment required for the facilities stated as above are all needed.

Each item of the request was discussed between the Burmese Side and the Study Team. After consecutive discussions, both parties reached the mutual understanding on the following matters:

(1) Stadium and track and field

- ① A capacity of about 10,000 persons for the Grand Stand with roof to cover approximate one half of seatings.
- ② A capacity of about 7,000 persons for the Back and Side Stand consisting of frame structure similar to that of the Grand Stand.

With respect to a capacity of 50,000 persons for the Stadium, adequacies and reasonabilities in the capacity had been objectively discussed and reached, in conclusion, to the capacity of 17,000 persons on condition that the Centre is to be a youth education facility, and also administrations and maintenances due to manpowers, specialities and expenses are to be realizable through the Burmese own property.

In addition, a feasible plan of the future extension of the stadium with 50,000 persons' capacity, including planning of surrounding land formations has to be proposed in order that an intention of the project basically meets the grand master plan of National Sports Park Plan.

As for structures of the Back and Side Stands, the original bank type stands are to be substituted with frame structure stands so that, in future, the inside of the structure has to leave bunk rooms and training places for students who are coming from remote area to participate athletic meets at this Stadium.

But with respect to a roof of Grand Stand, because overall roofing of the Grand Stand requires the excessive order of structures and expenses, a roof to cover approximate one half of Grand Stand is to be appropriate and reasonable in conclusion.

As long as the track surfacing is concerned, en-tout-cas in original is a standard utilized for student athletics and also international games. However, recently en-tout-cas becomes clear to require high technics and cost for maintenances, particularly in such locations as the tropical countries where heavy rain season and dry season come alternatively. Finally a resilient asphalt surfacing of track was selected to be recommendable in view of efficiencies in easy maintenances, obtainable expenses and also local climate conditions.

Turf surfacing of field was doubtlessly agreed to be used for such stadium that requires to bear against frequent use for ball games and to keep natural green.

(2) Planetarium

- ① A dome of 12 m in diameter to cover a capacity of about 200 persons.
- ② Planetarium equipments of a scale to meet scientific inclinations of primary, middle and high school students.

The Burmese Side was considerably desirous of planetarium. Consecutive discussions had been done repeatedly on a scale and a capacity during field survey to draft explanations, and finally a capacity of about 200 persons is consented to be appropriate considering that a scale of the planetarium should be at a level of the accommodation limited chiefly to cover students' observation rather than overall public presence, and also every student of all primary, middle and high schools in Burma should have an opportunity to experience the planetarium at least once.

(3) Facilities to be installed in Grand Stand with priority order as indicated below:

- 1 Exhibition room
- 2 Library
- 3 Lecture hall and meeting room
- 4 Physical training room

Inside of the Grand Stand necessary rooms not only for administration and maintenance but also for physical and intellectual education of youth have to be provided as many as possible.

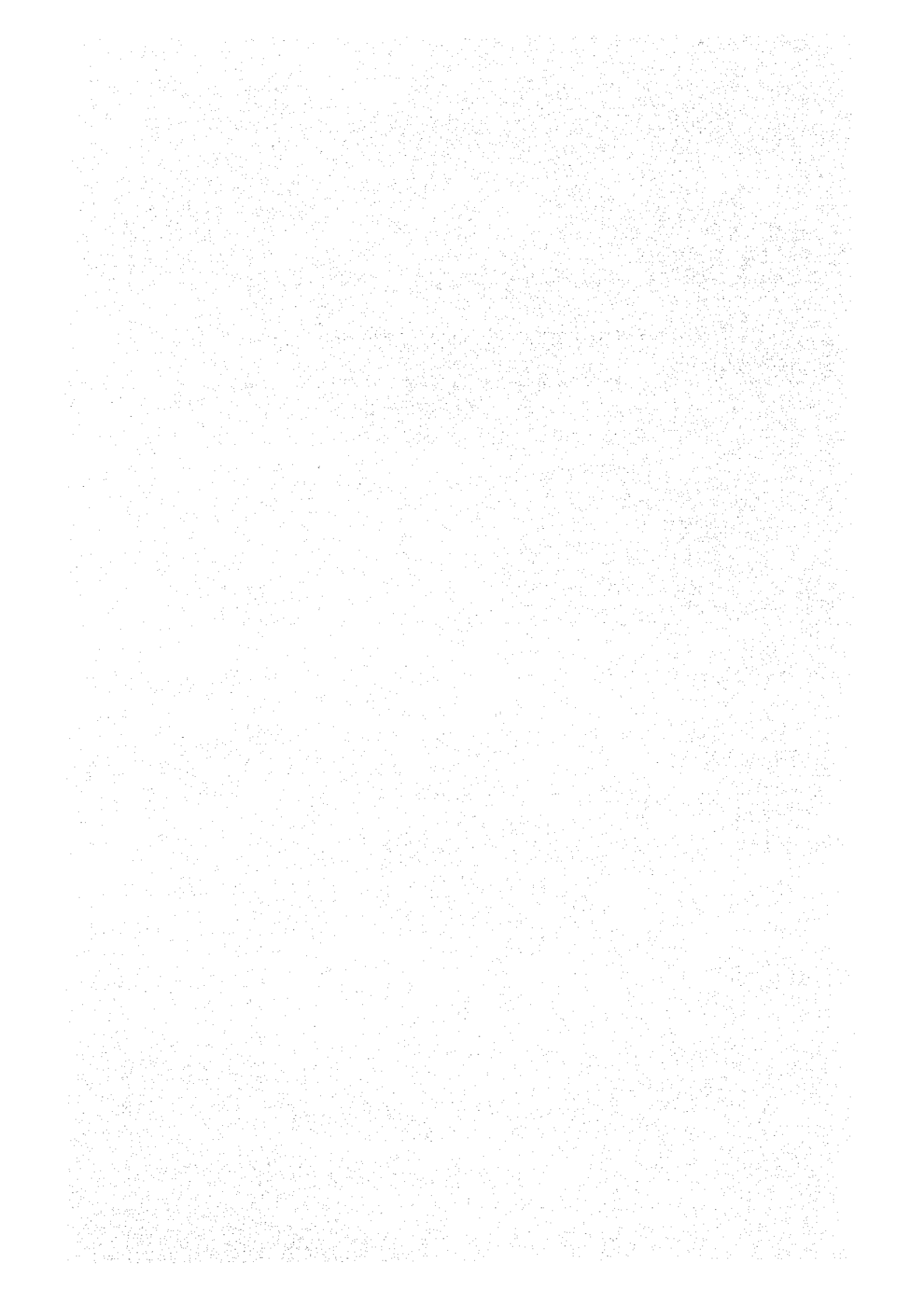
With respect to usages, purposes and specific contents, discussions had been done to arrange an order of priority, as above mentioned, in view of efficiencies in usage frequencies.

CHAPTER 3 OUTLINE OF PROJECT SITE

3-1 Selection of Proposed Sites

3-2 Site Conditions and Surroundings

3-3 Situations of Infrastructure



CHAPTER 3 OUTLINE OF PROJECT SITE

3-1 Selection of Proposed Sites

The National Sports Park Project Site suggested as a proposed site for the Centre by Burmese Sports Authorities, was surveyed, while another feasibility study was made for the Kyaikkasan site.

The National Sports Park Project Site (this will be abbreviated as "Park Project Site" hereinafter) is located along Weizayanta Road in Thingangyun Township about 15 km off the center of City of Rangoon, and the size of whole area of the Park Project Site is about 60 ha.

The Kyaikkasan Site is about 2 km closer to the centre of Rangoon than the Park Project Site and has an area of 60 ha surrounded by residential and commercial zones. This Site is located within the Tamwe, Bahan and Yankin Townships.

There are no other vacant lots larger than 50 ha site sufficiently spacious and suitable for the Project and thus only these two sites will be reviewed hereinafter.

(1) Traffic Conditions for Users

Thingangyun Road runs in the west of the Park Project Site and Weizayanta Road runs through the center of the Park Project Site from East to West and both the roads are suited to bus transportation. With respect to railway transportation, Hnizigone Station of Rangoon-Mandalay Line is located close to the east of the Park Project Site. Myittanyunt Station of Rangoon Railway at the south side can also be utilized. The traffic conditions of the Park Project Site are therefore excellent.

On the other hand, Kyaikkasan Site is surrounded by a road wider than 10 m but this road is already badly congested by cars every day. Also, Tamwe Station of the Rangoon Loop Railway is located about 1 km from the Site. When 100,000 spectators come to a Union Day held at this Site, the traffic in nearby areas would be completely paralyzed.

(2) Development of Facilities Related to the Project

An indoor stadium (about 10,000 seats) is currently being built in the Park Project Site through aid from China. Also, houses for the park management personnel, electric power receiving and transforming facilities, and water supply and drainage facilities are currently under construction or design in accordance with the National Sports Park Master Plan (prepared by Rangoon Institute of Technology).

On the other hand, Kyaikkasan Site already has water supply, drainage and communication facilities but no new plans for future extension.

(3) Site conditions

Since the City of Rangoon belongs to South Burmese Delta Zone (Lower Burma), and the Park Project Site belong to northern delta alluvium of which soil type is loam. Altitude is about 10 to 12 feet (about 3 m) above the sea level. Water level in Pazuntaung Creek about 1 km off the site is 12 feet above the sea level during high tide, and the overhead flooding inundation of scores of centimeters always occurs in the rainy season. An earth fill of about 2 m high is required for the construction of the structures for the proposed centre.

Kyaikkasan Site is located about 10 m above sea level and its ground conditions are excellent.

(4) Current Situations of Use of Two Proposed Sites

Most of the Park Project Site is already owned by the Ministry of Health and is not being used at present.

A portion of the site has some existing private housings which should be demolished or moved as quickly as possible after an agreement has been reached between the Ministry of Health, authorities concerned and residents.

Kyaikkasan Site is being used as a meeting place for Union Day (February 12) and Farmer's Day (March 2) which are the national events every year in Burma. Other than this ground for the national events, there are no more other site with the required accommodations and extent.

(5) Effects for City Planning

Progress of urban development near the Park Project Site is delayed but if this centre is completed, the traffic facilities, water supply and sewer facilities and park green area will at least lead good environment to the residents living in the nearby community.

An urban area surrounding the Kyaikkasan Site has been developed to a certain degree and thus even if this proposed centre is established, and except for the park green area, it is not expected that the urban facilities will be greatly developed for the improvement of the community.

Items of comparison stated above are indicated in the table shown below.

	National Sports Park Project Site	Kyaikkasan Site
(1) Traffic conditions	○	△
(2) Improvement of relevant facilities	○	△
(3) Ground conditions	△	○
(4) Current use conditions	○	×

(Legend ○: Superior, △: Inferior, ×: Bad)

After comprehensively comparing and examining the conditions stated above, the Study Team will consider that the National Sports Park Project Site is more appropriate as the site for establishment of the Centre. In this case, it is indispensable that the stable earth filling work for the site should be promptly and completely performed by the Burmese side to be in time prior to commencement of the construction of the Centre.

3-2 Site Conditions and Surroundings

The National Sports Park Project Site is located within the Thingangyun Township and is next to the Thaketa, South Okalapa and Tamwe Townships. The population in these townships is about 685,000 according to a survey conducted in 1982.

The area of the Park Project Site is 58 ha (144 acres) including the building site for the Centre by the northeast side of the Weizayanta Road and another 29 ha (72 acres) for indoor stadium building site by the southwest side of the road.

As shown in Fig. 1, the site is surrounded by the Rangoon-Mandalay Railway at the southeast side, by Rangoon Loop Railway at the southwest side, and by Thingangyun Road at the northwest side. Also, the north and south sides of the site adjoin the residential zone, and the portion next to the Thingangyun Road now forms a busy neighborhood commercial zone.

(1) Traffic

The Rangoon-Mandalay Railway running along the southeastern side of the site has the Hnizigone Station very close to the outdoor stadium of the proposed Centre. About 1 to 2 trains, each consisting of 6 to 8 carriages, will come to this station every hour for both directions of the present lines.

Also, the Tamwe and Myittanyunt Stations are about 1 km away from each other on the Rangoon Loop Line. If the electrification currently being planned is completed, the transportation capacity of this railway will be greatly increased.

Weizayanta Road running through the centre of the Park Project Site from the northwest to southeast has a width of about 10 m and is a gravel road. The road surface is about 1 m higher than the existing ground level, and is not inundated even during rainfalls in rainy season.

At the southeastern end of this road, the Thuwanna Bridge is now under construction through technical cooperation by the Government of Japan.

When this bridge is completed (schedule in 1985), the park will be connected to the Thaketa Township and the usefulness of this park will be greatly increased.

Thingangyun Road at the northwest side has a total width of about 20 m with about 10 m wide central lanes asphalt pavement. The traffic volume of this road is considerably high, and regular bus services are now in operation on this road.

(2) Present Land Use

This site was a forest during the ages of King Alaungpuya and King Tharrawaddy but was later developed as arable land during the colonization by Britain after 1853. It was also used as farm land even after independence. Ever since this land was owned as the Park Project Site by the Ministry of Health, the greater portion of this land is no longer cultivated and is now fully covered with hygrophytic weeds. Also in the northern part of this Park Project Site, there are some housings, temples and small factories. Small wooden houses must be demolished or moved after an agreement is reached between the parties concerned in response to the National Sports Park plan, but temples and small factories may remain, after having been excluded from the National Sports Park plan.

(3) Ground of the Construction Site

A soil investigation was performed by the Burmese side during the period of the basic design study, in order that the ground conditions of the proposed site could be determined.

- 1) Borings
- 2) Standard Penetration Testing
- 3) Laboratory Soil Tests
 - Test for Specific Gravity
 - Test for Moisture Content
 - Mechanical Analysis
 - Unconfined Compression Tests

- Liquid Limit Tests
- Plasticity Limit Tests
- Consolidation Tests

Investigations were made at 13 places within the proposed construction site with three 40m borings and ten 30m borings performed by Construction Corporation. According to results of the boring tests, the under layer conditions are such that there are complicated changes in the characteristics at the respective points. The results of the soil quality and standard penetration tests are summarized as follows.

The first six metres from the surface have strata composed of a main body of either clay or silt mixed with sand and wood chips, etc.

Depths from 6m to 20m have a main body of either sand or silt composed of sandy silt and clayey silt forming either single or alternate layers, mixed with intermittently clay at places. Layers deeper than 20m are silt and clay trace sand. Many differences were found to exist between investigation boring lots and therefore it is rather difficult to standardize these differences in soil types for formation.

The N-values from the standard penetration test fluctuated according to conditions of the soil layers and there are even differences in the N-values at the same depth. In general the fluctuation in the N-value were found to increase with depth.

These tendencies of soil conditions are practically identical with the adjacent ground of the proposed site for the indoor stadium.

3-3 Situations of Infrastructure

(1) Electric Power

Electric power is being supplied by the Electric Power Corporation, and the transmission voltage in the vicinity is 400 V, 66 kV and 33 kV with a frequency of 50 Hz.

The indoor distribution voltage is 400 V to 230 V for ordinary buildings, 400 V and 3 phases for the power, and 230 V for lighting fixtures and outlets.

Power supply to the proposed Centre will be provided with 33 kV and 50 Hz from Good Life Substation and Patheinyunt Substation.

(2) Water Supply

Dependence on well water is unavoidable to secure water supply required for the Centre, since there is no existing water supply system in the vicinity of this proposed Centre. Wells are owned by SPED and an additional three wells are planned for use by the indoor stadium. Two of these were already drilled and all wells will be completed by the end of 1983.

Water required for the new centre will be supplied from the water pipe to the indoor stadium or supplied from new additional wells to be made exclusively for the centre. One of these ways should be selected and worked out by the Burmese side.

Although a large amount of iron ingredient is detected, the quality of the well water is good.

As a future plan, the Phugyi Plan has been formulated to provide a large storage tank in the Phugyi District by 1985/1986 for improving the water supply facilities in this district in response to the progress of development in the vicinity of the proposed site for the Centre.

(3) Drainage Facilities

The present ground height of the site is 2.8 m on average from the mean sea level and its lowest point is 2.75 m according to the survey map prepared by Construction Corporation. Water retardation is seen in scattering cave-in portions during rainy season.

With respect to the road ground surfaces, the height of the Weizayanta Road running along the southwestern end of the site is 4.95 m at the intersection with the Rangoon-Mandalay Railway, 3.75 m at the intersection with Thingangyun Road and 3.95 m at the middle point between them, which means that the slope begins at the railway as the highest point.

A record-breaking heavy rain (275 mm/24 hr, once in 20 years) occurred in 1979, during which road was not inundated but water rose to a level of 3.55 m and finally disappeared three hours later.

As a result of the construction of this Centre, the amount of storm water to be drained will increase (due to a decrease in the water staying area). Therefore, in order to protect the Centre from inundation and to secure good drainage, a ground height of 3.55 m plus at least 1 m will become necessary. This means a fill of an average of 2 m above the existing ground level.

In view of the existing ground stratum conditions and surroundings, drainage by means of infiltration is not possible but there is no complete storm water drainage facilities in this vicinity, therefore drainage discharge to a creek is unavoidable.

There is a creek along the Rangoon-Mandalay Railway line in the east of the site, which is confluent to Bauk Taw Stream running near by the indoor stadium, and then water can be discharged through this stream to Nga Mo Yeik Creek about 1 km from the confluence. This creek has a maximum width of about 3 m and minimum 1 m, and its current speed is about 1 m/sec during the rainy season.

Storm water drainage for the Centre will run into this creek, and the capacity of this creek seems to be sufficient.

(4) Disposal of Rubbish

Collection of rubbish is currently performed by the Municipal Corporation in Rangoon, and 2 to 6 trucks applicable for the amount of rubbish are being used in Aung San Stadium. Rubbish collected is disposed at a disposal area in the suburbs of Rangoon.

The same collection and disposal method is estimated to be employed for the Centre but it is required to discuss this with the city authorities about 6 months before the completion of the Centre with respect to the details of the collection and disposal.



The site viewed from South

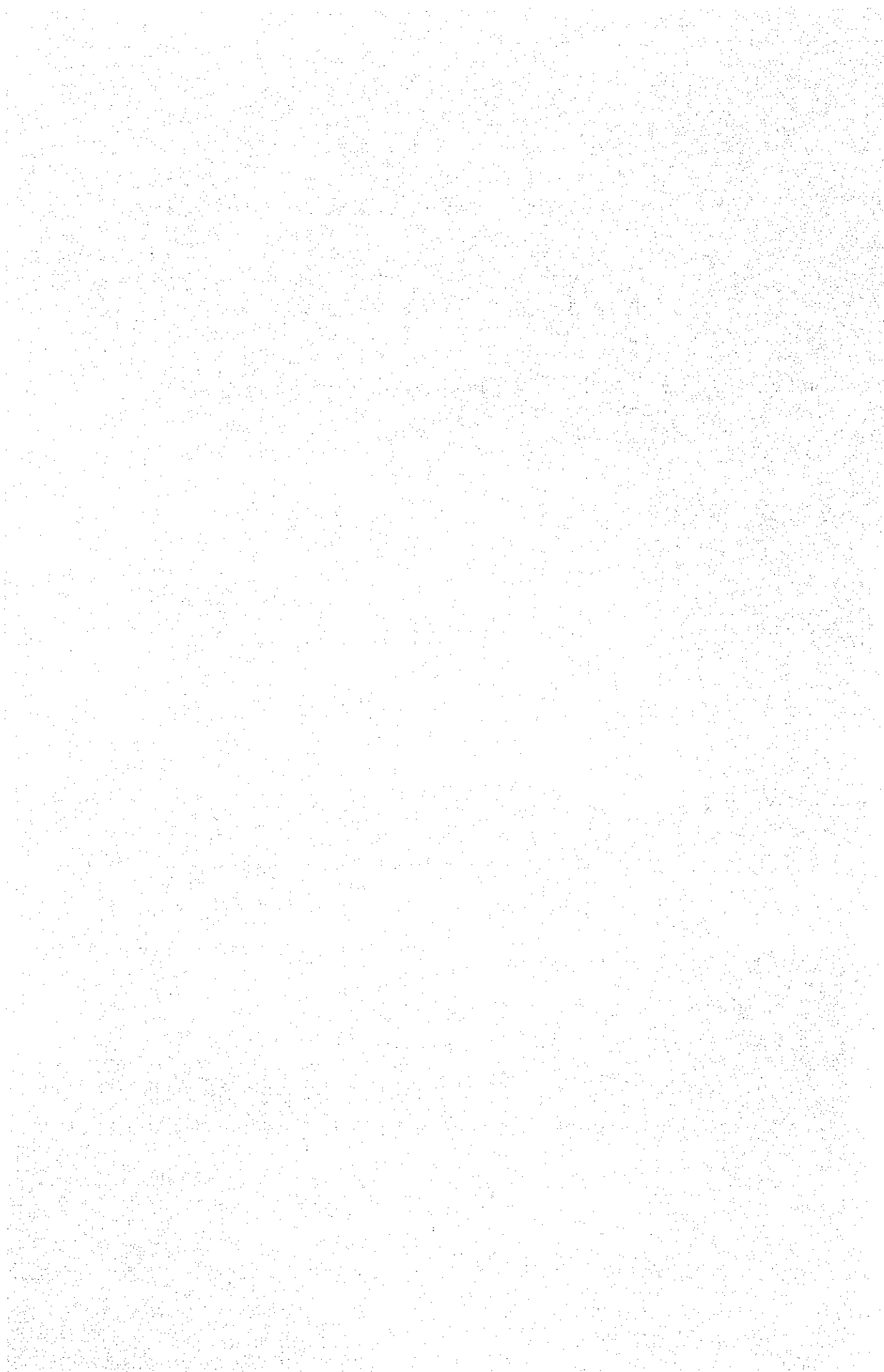
CHAPTER 4 CONTENTS OF THE PLAN

4-1 Purpose and Contents

4-2 Orientation of the Plan

4-3 Basic Design

4-4 Filling and Grading Works



CHAPTER 4 CONTENTS OF THE PLAN

4-1 Purpose and Contents

As has already been stated, this "National Sports Park Plan" has been proposed by the Burmese side to relieve the present situation concerning about its grave insufficiency of youth physical education facilities and natural science education facilities. It is planned that the following facilities be built on a site (60 ha) in the Thuwanna area, Thingangyun Township, City of Rangoon.

- . Outdoor Stadium (soccer, field athletics, training, etc.)
- . Indoor gymnasium
- . Swimming pool
- . Tennis court
- . Various educational institute
- . Park, plaza, green
- . Sports exhibition hall (room)
- . Management, accommodation facilities

On these facilities, the management and accommodation facilities have either been or are being constructed by the Government of Burma. In addition, the indoor gymnasium (with a seating capacity of 10,000) is presently being constructed through the cooperation of the People's Republic of China.

Among these facilities, those which were requested to Japan by the Burmese side are:

- . Outdoor stadium
- . The educational facilities such as library room, lecture room, meeting room and planetarium
- . Sports exhibition hall

The study team intended to clarify the objectives of these facilities and determine their respective function.

- . Outdoor stadium The ground will be mainly used for soccer matches and track and field events. The stand will be used by spectators at youth competitions. Indoor training room will be provided within the stand building.
- . Library room There is no library facility for youth at present and so this library will be for the youth, and will contain materials on every subject.
- . Lecture, meeting rooms This centre will be a general facility for use by youth and therefore lectures and meetings for sport and natural science education will be held. The parallel use of both of lecture and meeting rooms will raise even to higher convenience.
- . Planetarium The planetarium which is of envisaging facility for natural science education will give a strong impression upon young people. The planetarium should be of a scale such that every youth will have the opportunity to visit it at least once.
- . Sport exhibition room Burma's sports records and commemorative objects are to be displayed for the people who will come for camps and meets.

4-2 Orientation of the Plan

This centre should be constructed for the purpose of providing facilities for the physical and scientific education of youth in Burma. Accordingly, the number of users, the scale of the facility and the standard of function becomes of utmost importance for determining how the plan should be so that the facility can be used by all youth of school age.

4-2-1 Scale of Stands for Outdoor Stadium

The following items have been taken into account to determine the number of seats for the stands of the outdoor stadium.

(1) The numbers of matches (including games) normally held each year in Aung San Stadium are:

- . About 30 matches, each having the number of spectators of 40,000 (full capacity).
- . 80 to 120 matches, each having the number of spectators of 15,000 to 20,000.

(In case of the youth matches and competitions the stadium is always filled with 15,000 to 20,000 spectators.)

(2) Total number of senior high school students in Rangoon is about 68,000 and total number of college students in Rangoon is about 35,000. And the number of students expected to attend for cheering to interschool tournaments is:

- . One-quarter of high school students: 17,000
- . One-half of college students: 17,500

(3) The scale of stands for outdoor stadium provided by each prefectural government in Japan is 20,000 to 25,000 seats, and these stadiums are mainly used for interschool tournaments.

It is thought that the appropriate number of seats for this centre will be approximate 17,000 that is the estimated number of cheer spectators for youth's school matches and that is competitions, etc. If the facility is of this scale, it is expected that the maintenance expense will not be excessive.

4-2-2 Scale of Planetarium

This is an educational facility for natural science for the youth in Burma, and youth throughout the country will visit the planetarium at least once during their school years.

Therefore, the scale of planetarium has been calculated by the following method and conditions:

- . Total number of students and pupils is about 5,500,000 in Burma.
- . Total number of years in these schools for each person is 11 years.
- . The number of projections of the planetarium is 7 times per day, and it will be operated for 341 days of the year closed 2 days each month for adjustment).

Therefore, the number of seats required is given by

$$5,500,000 \div 11 \div (7 \times 341) \approx 209$$

In addition, the projection program is to be compiled to appeal to youth of lower school through to high school, in various variations.

4-2-3 Standard Gradations of the Centre

This centre is to be constructed as a facility for the physical and mental education of Burmese youth and it is intended to give the opportunity to use the centre for youths as possible. For this reason it is regarded as being more consistent that the facilities are to be designed with a large capacity as the requirement of first priority, rather than a high standard of the individual facilities.

However, the effectiveness which this centre will give to the youth is not only dependent upon its frequent use as many as possible, but also brought through international standards of facilities which should be equipped with proper implements and equipment. The following have been brought under consideration.

- . The track for the stadium will be of an all-weather type.
- . The athletic equipment will be of international standard.
- . The programme for the planetarium apparatus will be of such a standard that many and varied celestial movements can be explained.

4-3 Basic Design

4-3-1 Basic Planning Policies

This Centre will be designed, based on the basic policies listed below.

(1) Facilities are to be simple and easy for operation as youth training facilities.

(2) Facilities are to contribute to the environmental development around Thuwanna area.

(3) Facilities are to withstand the high temperatures and much rains.

(4) Facilities are to be designed and built in order that local materials and techniques can be utilized as many as possible.

This Centre is a complex having the following functions as a physical training and intellectual education facility.

(1) Track and field for outdoor sports.

(2) Training rooms for some kinds of sports.

(3) Storing and display of records and memorial articles related to sports.

(4) Library, lecture rooms and conference rooms.

(5) Planetarium for youth.

4-3-2 Site Planning

The site is located to the north of the Weizayanta Road in the Thuwanna area, Thigangyun Township, City of Rangoon. There is already a master plan of a Sports Park Project Site prepared by RIT.

The outdoor stadium and planetarium have been laid out on the basis of the following policies in accordance with the master plan:

(1) In order to keep the planetarium in a quiet environment, the outdoor stadium will be located at least 100 m away from the planetarium.

(2) To assure the smooth in and out flows of the many spectators of the stadium, sufficient open spaces such as plazas and sidewalks will be provided between railway stations, roads and parking areas.

(3) A space for future extension of the outdoor stadium to about 50,000 seats will be provided.

(4) The axis of track of the stadium will be oriented in the north-south direction in order to prevent strong sunshine in the afternoon.

(5) Space for a subtrack will be reserved in the same site.

4-3-3 Outdoor Stadium Planning

(1) Architectural Planning

The outdoor stadium mainly consists of the 4 structures of a grand stand, south and north side stands and a back stand as well as four attached buildings including lavatories and a power substation.

① Grand stand

- . Stand floor This floor has 10,000 seats including 470 special guest seats and 30 VIP seats. In addition, committee room, photographic referee room, announcing room, press facilities, security room, etc. are provided in gondolas. A roof covers about one-half of the stand.
- . Ground floor This contains committee rooms, judge rooms, press facilities, medical room, athlete gathering hall, VIP room, etc. at the field side; and also athlete dressing rooms (with showers), meeting room, entrance hall, electric control room, etc. at the opposite side.
- . First floor This contains rooms not directly related to the sports training, such as exhibition room, library, meeting rooms, offices, etc.

- . Second floor This contains corridors for spectators in the stand.
- ② South side stand This provides ordinary seats and its ground floor has equipment storage at the grand stand side.
- ③ North side stand This provides ordinary seats and score board, and its ground floor has equipment storage at the grand stand side.
- ④ Back stand Ordinary seats
Ground floor spaces in the south and north side stands and back stand will be used fully as training spaces.
- ⑤ Attached buildings
A large number of spectators' lavatories are required and they will be provided in the separate structures, because exhaust of odor is easier and other rooms will not be affected sanitarily. Thus, toilets will be provided in four separate buildings.

(2) Structural Planning

(Structural Design Policies)

There are no particular standards nor regulations as such for structural design in Burma. And structural designs and calculations are presently being performed basing upon the provisions of British Standards (BS) in many cases. However, conformity with BS is not compulsory and engineers are required to make their own judgement.

For this project, we will apply the Japanese Standard Building Code and standards of Architectural Institute of Japan, taking local conditions into account.

(Structural Planning)

- . Frame planning
Main frame will be a rigid frame of reinforced concrete.
- . Roof of Grand Stand
This will be steel construction.
- . Floors

Floors above ground including stands will be made of reinforced concrete. Ground floor will have concrete slabs poured on sandy soil filled and fully compacted.

. Walls

Some earthquake resistant walls (shear walls) will be made of reinforced concrete. Other ordinary exterior walls will be made of 9-inch thick brick masonry, and interior partitions will be 4-inch thick brick or wooden walls.

(Design Loads and External Forces)

. Dead load

Weight of all structural bodies and weight of all finishing materials will be calculated.

. Live load

This will be determined in accordance with the numerical values set forth in Japanese Standard Building Code and its detailed enforcement regulations.

. Seismic force

The seismic coefficient of $h = 0.12$ will be used for the basic design. This coefficient is multiplied by an use factor of 1.2 to obtain a design horizontal seismic coefficient of 0.15. That is, $h = 0.12 \times 1.2 = 0.144$ or 0.15.

. Wind force

By referring to records of wind velocity in the past, velocity pressure $q = 60\sqrt{h}$ will be used for the portion of building lower than 16 m in height (h) and $q = 120\sqrt{h}$ for the portion higher than 16 m. The wind force factor q is determined by the shape of building and then the above result multiplied by q is an answer of calculating the force due to wind.

(Foundation Planning)

Foundation planning will be determined from the results of ground survey currently being performed.

Pile foundation supported by sandy silt or sandy clay with a N-value greater than 50, which occurs from a depth of about 20 m below the ground level, will be used.

Foundation of these stadium stands should be of high strength AC piles.

By referring to the results of loading tests performed for the indoor stadium, the allowable bearing capacity of 45 tons per pile will be used.

(Structural Materials and Methods)

. Concrete

Normal portland cement produced in Burma will be used. Design standard strength of $F_c = 180 \text{ kg/cm}^2$ and work deviation of $\sigma = 60 \text{ kg/cm}^2$ will be considered, and the actual specified strength for mixture design of $F_c = 240 \text{ kg/cm}^2$ will be used.

. Reinforcing steel bars

Deformed steel bars will be used. Kinds of steel to be used are SD-30 (with yield point of $3,000 \text{ kg/cm}^2$) and SD-35 (with yield point of $3,500 \text{ kg/cm}^2$) hot rolled steel bars of JIS G 3112.

Lap joints will be used since gas pressure welding is not performed locally.

. Structural steel

The material of structural steel will mainly conform to SMA50A (yield point of $3,000 \text{ kg/cm}^2$) of weather resistant hot rolled steel for welded construction (JIS G 3114).

Structural steel will be prefabricated in Japan as much as possible for easier erection on the job site.

Connections of main frames on the job site will be made by friction connections using high tension bolts. Ordinary bolts will be partially used for other auxiliary steel materials. Efforts will be made to minimize the field welding.

(3) Air Conditioning Planning

Weather in Burma is characterized by high temperature and dryness in summer season, comfortableness in winter season and dampness in rainy season. Most buildings in Rangoon are ventilated naturally and ceiling fans, and air conditioning is performed only

for certain special rooms. For this Centre, both the natural ventilation and shading by architectural means will be considered, and air conditioning will be employed only for special zones which require airtightness such as VIP rooms, broadcasting rooms and the planetarium, etc. Mechanical ventilation will be used only for certain rooms having no exterior window. Simple systems will be adopted for easier maintenance and operation.

- . Air conditioning Only cooling cycle will be considered for the air conditioning equipment. An air-cooled method which requires no water quality control will be adopted together with the individual method which is more popular in Burma. Both window type packaged air conditioners and separate type air conditioners will be used depending upon the architectural plan. Rooms will be ventilated and cooled only by ceiling fans for the portions not equipped with cooling equipment.
- . Ventilation Mechanical ventilation will be used as required for the rooms where heat, steam or odor is generated and have no exterior window (such as lavatories, pantries, dressing rooms, electric control room). Air conditioning and ventilating system for each room are indicated in Table 5.

(4) Water Supply and Drainage Planning

As a rule, this will be designed based upon the local method so as to assure easy maintenance and control and some Japanese standards will be used in designing to ensure endurance and sanitation.

- . Main water supply and drainage facilities will include water supply, waste water drainage, fire fighting and waste water treating. All of these equipment are required to have sufficient settlement allowances since the Centre will be built on filled earth and thus a partial ground settlement is expected.
- . Water supply Water supplied to the site by the Burmese Side will be received by a water reservoir, be pumped up to

Table 5 AIR CONDITIONING AND VENTILATING SYSTEM

FOR EACH ROOM

	Room	Air Conditioning		Ventilating		
		Air Con- ditioner	Ceiling Fan	Mecha- nical	Natural	
S T A N D	Ground Floor	Gathering Hall		o		o
		Committee Room		o		o
		V.I.P. Room	o		o	
		Security		o		o
		Shower Room			o	
		Toilet			o	
		Dressing Room			o	
		Shower Room & W.C. (F)			o	
		Shower Room & W.C. (M)			o	
		Corridor				o
		Entrance Hall				o
		Referee Room		o		o
		Office		o	o	
		Multipurpose Room		o	o	
		Press Facilities		o		o
		Medical Room		o	o	
		W.C.			o	
		Electric Control Room			o	
		Storage				o

		Room	Air Conditioning		Ventilating	
			Air Con- ditioner	Ceiling Fan	Mecha- nical	Natural
S T A N D	1st Floor	Exhibition Room		o		o
		Library		o		o
		W.C.			o	
		Meeting Room		o		o
		Staff Room		o		o
		Office		o		o
		Multipurpose Room		o		o
		Corridor				o
	2nd Floor	V.I.P. Lounge	o		o	
		Service Room			o	
		Storage				o
		Toilet			o	
		Corridor				o
	4th Floor	Direct Television Room	o		o	
		Direct Broadcasting Room	o		o	
		Press Room		o		o
		Machine Room			o	
		Spare Room		o		o
		Committee Room		o		o
		Control Room	o		o	

		Room	Air Conditioning		Ventilating	
			Air Con- ditioner	Ceiling Fan	Mecha- nical	Natural
STAND	4th Floor	Announce Room	o		o	
		Score Board Control Room		o		o
		Judge Room		o		o
PLANETARIUM		Dome	o		o	
		Exhibition Hall		o	o	
		Office		o	o	
		Storage				o
		Machine Room			o	
		Lavatory				o
EXTERNAL BUILDING		W.C. (F)				o
		W.C. (M)				o
		Power Substation			o	

an elevated tank, and then be supplied to each point by gravity. Drinking water will be supplied from wells after sedimentation, filtration and sterilization but water for miscellaneous uses will be supplied directly from wells.

- . Sewage and drainage Both sanitary sewage and waste water used for miscellaneous purposes will be combined, treated and disposed. Rain water will be drained through gravity flow as much as possible and pumped up only where such slopes are not available.
- . Fire fighting Fire fighting and fire prevention equipment such as fire hydrants will be installed as required under the guidance of local fire stations and in accordance with local ordinances and standards.
- . Sewage treatment Both sanitary sewage and waste water used for miscellaneous purposes will be treated together by the activated sludge method. Estimated values of water quality of influent raw water to the treating equipment are listed below.

(Unit: ppm)

	BOD	SS
Water quality of influent raw water	200	250
Water quality of treated water	20	50

(5) Electrical Planning

It is difficult to procure local electric equipment and materials, and thus, only highly reliable and durable equipments and materials must be used to assure the safe operation and easy maintenance.

- . Power incoming 3-phase 3-wire 33 kV 50 Hz power will be supplied to the substation in the Centre from 33 kV underground power line of Electric Power Corporation located at the southwestern side of the site.

- . Substation system Voltage of received power of 3-phase 3-wire 33 kV will be transformed to 3-phase 3-wire 6.6 kV and 3-phase 4-wire 400 V/230 V, and distributed to loads.
- . Emergency generator system Generating facility will be installed as emergency power source for safety, in consideration of local power supply situations.
- . Main line and motor control system This will supply power to ordinary power plants, electric outlets and lighting towers. A simple operating system will be adopted for power plants to assure the easy operation and maintenance.
- . Lighting and outlet facility General interior lighting will be made mainly with fluorescent lamps, and single-phase 230 V will be used for convenience outlets.
- . Lightning protection system Lightning protection will be installed to lighting tower and others.
- . Telephone system A private branch exchange will be installed for communication between the Centre and the outside.
- . Public address system This system will be installed for public address, paging and announcing within the Centre and stadium.
- . Clock facility Electric clocks will be installed at several important points for the operation of the Centre.
- . Master TV Antenna System A television antenna is to be placed on the roof to relay signals to major areas.
- . Interphone System An interphone service is to be installed at places necessary for security and management of the Centre.
- . Emergency Alarm System An alarm system activated by push-buttons is installed for fire evacuation purposes.
- . Lighting Towers Lighting towers providing illumination satisfactory for the night game and the televising of night-time events, are to be provided.

- Scoreboard A scoreboard for field events and soccer matches is to install on the north side stand. A lighting display scoreboard using an outmoded system is being installed at Aung San Stadium but a magnetic turnover-type scoreboard was selected to be employed at this Centre after evaluation was performed as shown in the following table.

(Legend: ○ Superior, △ Inferior)

Item Investigated	Scoreboard Type	Light Display Type	Magnetic Turnover Type	Notes
Maintenance		△	○	Large amount of globe replacement required
Operation Function		○	△	Operation of turnover type is slower than light board type.
Initial Cost		△	○	Light board type is 10~20% higher.
Running Cost		△	○	Running cost of turnover type is very low when compared to the light board type.
Overall Evaluation		△	○	

(6) Sports Facilities Planning

① Sports facilities to be installed on ground

a. Track and field

- . 110-m short distance straight line track (9 courses)
- . 400-m track (8 courses)

- . 3,000-m Steeplechase pond
 - . Runway and sand pit for Long Jump and Triple Jump
 - . Runway for High Jump
 - . Runway for Pole Vault
 - . Circle and sand pit for Shot-Putting
 - . Circle for Discus Throw
 - . Circle for Hammer Throwing
 - . Runway and circle for Javelin Throwing
- b. Field sports
- . Soccer Goals

② Surfacing of the Track Lanes

The surfacing of track lanes can be generously divided into the following two types.

- A: All-weather surfacing Asphalt paving is base layer and a resilient surface is then laid over.
- B: Earth surfacing Base layer gravel is laid to provide adequate drainage to the clay with cinders or the en-tous-cas surface.

These surfaces were selected according to the following standards.

a) Maintenance

The all-weather surfacing is to enable water washing and cleaning as the daily maintenance, and places wearing out due to intensive use should be resurfaced with new resilient surfacing after about 5 years. Overall replacement of the resilient surfacing will be required every 10 years. Major repairs including replacement of the asphalt base paving will be required if uneven ground subsidence occurs. Earth surfacing, en-tous-cas in particular, should be maintained at the level of dampness satisfying the conditions of use. Sufficient watering should be performed for tracks when the climate is dry and

surface water should be completely drained from the tracks in the rainy season. For this purpose the size distribution of the particles of surfacing materials needs to be controlled to the appropriate composition, and necessary supplies of supplemental materials need to be added in order to obtain the standard track condition.

b) Usage in the Rainy Season

The rainy season in Rangoon extends over a half of the year from May to October. It is desirable that track be available for use as far into the rainy season as possible, since this stadium is planned for year-round youth training activities. The all weather type tracks have no problem with respect to usage in rain.

The earth tracks consisting of the appropriate en-tous-cas will be capable of use several hours later from rain cease. Clay and cinder earth tracks become muddy in the rainy season and so their use in rain is not recommended.

c) Construction Expenses should be reasonable.

The track surfacings can be classified into the following four types.

A. All-Weather Surfaces

- 1. Asphalt surfaces ... A resilient asphalt surface containing rubber chips is laid over an asphalt sublayer.
- 2. Urethane surfaces .. A compound resin urethane is laid over an asphalt sublayer. This is widely used as a field surfacing for international class stadiums.

B. General Surfaces

- 1. En-tous-cas A mixture containing an appropriate particle distribution of crushed brick is laid over a gravel base. The particle size distribution and the amount of added particles should be controlled to give an appropriate resilience and wear resistance to track shoes.
- 2. Clay with cinders Cinders are added to clay to maintain an appropriate water content for the running surfaces.

The all-weather asphalt and the en-tous-cas surfacings were selected after the relative usability in the rainy season and the expense was thoroughly investigated for each of the four types (Table 6).

The en-tous-cas surface has a disadvantage from the maintenance point of view so that incessant watering of the surface is required

Table 6 Kind of Track Surfacing

	All-weather Type Surfacing		Earth Surfacing	
	Asphalt Type	Urethane Type	En-tout-Cas	Clay with Cinder
Standard Section				
	<ul style="list-style-type: none"> <input type="radio"/> Easy maintenance <input type="radio"/> Relatively low construction cost <input type="radio"/> Usable during rainy season <input checked="" type="checkbox"/> Repair is necessary if the ground settles 	<ul style="list-style-type: none"> <input type="radio"/> Easy maintenance <input type="radio"/> High level games and matches are possible <input type="radio"/> Usable during rainy season <input checked="" type="checkbox"/> High construction cost <input checked="" type="checkbox"/> Repair is necessary if the ground sinks unevenly 	<ul style="list-style-type: none"> <input type="radio"/> Usable immediately after rain <input type="radio"/> Relatively low cost <input checked="" type="checkbox"/> High technical level and high cost for maintenance <input checked="" type="checkbox"/> Repair is necessary if the ground sinks unevenly 	<ul style="list-style-type: none"> <input type="radio"/> Relatively easy maintenance <input type="radio"/> Low construction cost <input checked="" type="checkbox"/> Use in rainy season is undesirable <input checked="" type="checkbox"/> Repair is necessary if the ground sinks unevenly
Characteristics (O: Merit) (X: Demerit)				

in the morning and evenings during the dry season. Besides, provision of rolling, additive substances and checking of the brick particle distribution after rainfall should be constantly performed. Skilled staffs have to therefore ready at hand, and maintenance equipment (rollers, etc.) and supplies of additive substances should be properly supplemented.

All-weather asphalt surfacing was selected to be used as the surfacing of the track of the stadium.

Moreover, there will be no problem with track of the all-weather asphalt type if users wear rubber-soled shoes.

(3) Field Surfacing

Both the outfield and the infield are to be covered with turf.

(7) Equipment Planning

It is vital that athletic equipment of an international standard be utilized by the youths. Equipment is indispensable for training and competition and this plan also includes equipment which is not produced by Burma.

No.	Item	Contents
1	Track & Field	Starting and finishing equipment Hurdles Scoreboard for field Long jump equipment Triple jump equipment High jump equipment Polevault equipment Shots equipment Discus equipment Javelin equipment Maintenance equipment for ground

No.	Item	Contents
2	Soccer	Soccer equipment
3	Training	Training equipment

4-3-4 Planetarium Planning

(1) Architectural Planning

A projection room with about 200 seats and dome, 12 m in diameter, and an entrance hall also functioning as exhibition hall will be planned. Lavatories are placed in a separate building for ventilation reasons.

(2) Structural Planning

The main frame of the planetarium will be reinforced concrete wall construction. Other structural portions will conform to the plan of outdoor stadium.

(3) Mechanical & Electrical Planning

(Electrical Planning)

- 3-phase 4-wire 400 V/230 V power will be supplied from electric room of the Stadium, and motor control system, lighting and outlet facility, telephone system, emergency alarm system and lightning protection system will be provided.

(Air conditioning, Water Supply & Drainage Planning)

- Individual cooling systems will be provided for spectators in the dome, but other spaces will be naturally ventilated with partial mechanical ventilation.
- Water supply and waste water drainage systems will be installed for lavatories and for pantries.

(4) Equipment Planning

The program for the planetarium will be composed in such a way as to provide a means of directing the dreams of youth towards science through science education and describing early man's life-type with its intimate relationship with the planet. The dome of the planetarium will be 12 m in diameter. This is thought to be sufficient for the projection contents and the seating capacity. Equipment necessary for the projection of fixed stars, the solar system, moving systems and science films will be included in the main projection equipment.

No.	Equipment/Function	Description
1	Main equipment, console Fixed star projection part Fixed stars Bright stars Variable star projector Milky way projector Cluster stars, nebulas	1 set To project sixty five hundred stars from the first magnitude to part of the 6.5 magnitude stars The three bright stars of Sirius, Canopus and Rigel will have a separate projector and the colour and brilliance of the other 17 will be reproducible. The brilliance of Mira Ceti is shown by a separate projector. The north and south star hemispheres are shown by respective projectors. To reproduce the four nebulae of the large Magellanic and small Magellanic clouds, Orion and Andromeda and the five double star clusters of Hercules, Perspes, Omega Centaurus and Perseus

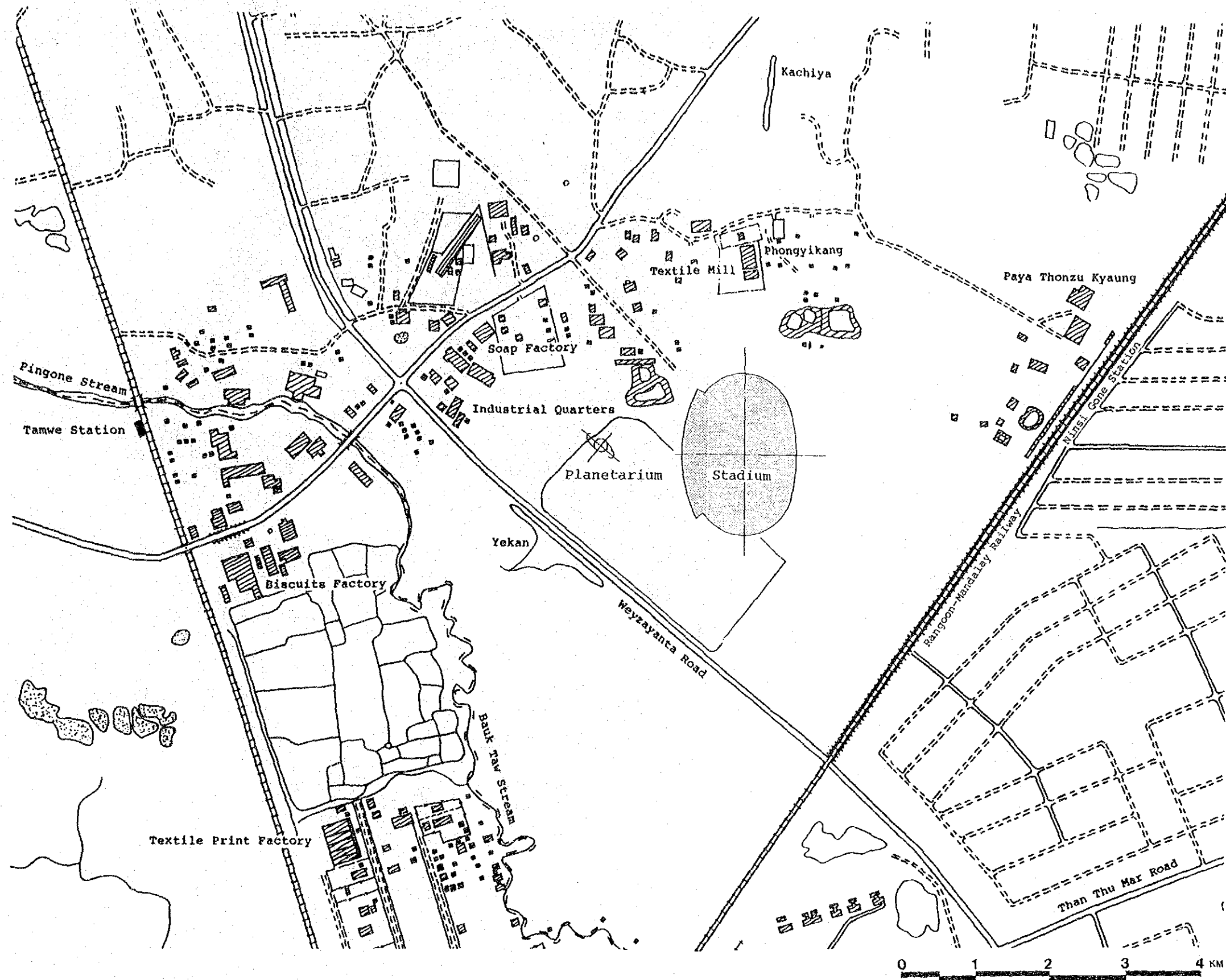
No.	Equipment/Function	Description
	Mercury, Venus, Mars Jupiter, Saturn projector	Two-projector method, Koeppler Colour reproducibility All planets are simultaneously projected with their inner and outer planetary groups.
	Coordinate projection part Equatorial projection Meridian projection Ecliptic projection Projection of deviation of axis or rotation Hemispheric latitude projection Azimuth projection	The celestial equator is projected in red. Meridians are projected as green dotted lines. The ecliptic is projected as a yellow line. To project the movement of the axis or rotation of the earth To project latitude from 0 to 90 To project the azimuth the horizon of the dome
	Attached projectors part Polar point projector Zenith projection Projection of constellations Azimuth projection	To project the polar points with arrow indicators To project the zenith on the dome To project the constellations (4 × 20 constellations) To project the azimuth on the horizon of the dome
	Sun system projection part	Double projector method

No.	Equipment/Function	Description
	Moon projector Moon projector Sun projector Illumination projector part Sunrise and sunset glow projector Dawn projector Day light projector Motion part Daily motion Yearly Movement Movement of the axis of rotation Latitude changes	To project Moon position, phases (waxing and waning) To project sunrises and sunsets To project dawn and dusk To project daylight bright To reproduce daily celestial movement To reproduce yearly celestial movements as seen from above the earth Movement of the constellations due to the movement of the axis of rotation, completing one rotation every 25,800 years To reproduce the changes in the celestial latitude
2	Rotating apparatus	1 set To rotate the mechanism and its base so that the projected image can be viewed from different angles
3	Auxiliary projector	1 set

No.	Equipment/Function	Description
4	Video Projector	1 unit
5	16 mm projector	1 unit
6	Dome screen	1 unit
7	Audio system	1 unit
8	Chairs	1 set

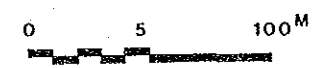
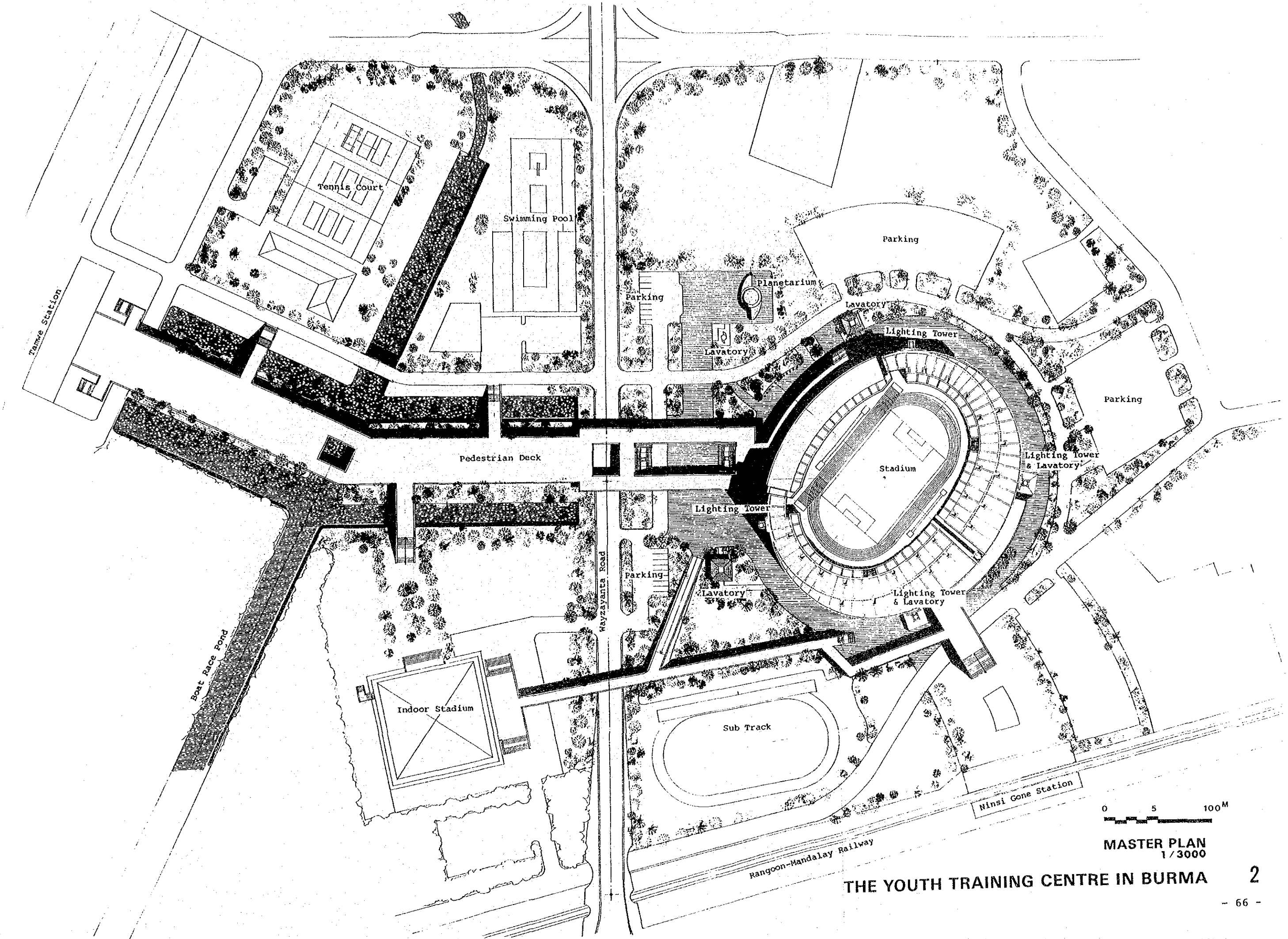
4-3-5 BASIC DESIGN DRAWINGS

1. Location Map 1/5,500
2. Master Plan 1/3,000
3. Site Plan 1/2,000
4. Stand Floor Plan 1/1,000
5. Ground Floor Plan 1/1,000
6. 1st Floor Plan 1/500
7. Section & Elevation - 1
8. Elevation - 2
9. Lavatory & Lighting Tower
10. Planetarium & Lavatory
11. Future Extension Plan
12. Birds Eye View Model Photograph



LOCATION MAP
1 / 5500

THE YOUTH TRAINING CENTRE IN BURMA



MASTER PLAN
1/3000

THE YOUTH TRAINING CENTRE IN BURMA