3．要　請　書　（写）

PROPOSAL FOR GRANT AID OF

MULTI MEDIA TRAINING CENTRE IN YOGYAKARTA

(MMTC - MTA - 17)

CONTENT

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A. Background of the Project.

Since the inaguration of MMTC in 31st July 1985, the Head of State had been declared that MMTC in Yogyakarta carried out the education and training in diploma program system. The declaration had been decided in the Presidential Decree No. : 59/1985. By this decision of presidency, it means that the status of MMTC had been lifted up into national policy. It is, therefore, MMTC is one of the manifestation of political will, and political commitment as well as, political involvement of the government of the Republic of Indonesia.

Since there is no single university, academy or high learning institute in Indonesia offering such kinds of education in Radio and Television professions, the existence of MMTC, is a must and inevitable. The needs of skills in Radio and Television are increasingly significant due to the intensive activities in disseminating informations to motivate the idea of development. This is also fostered by the utilization of Domestic Communication Satellite "PALAPA" boosted the needs for the larger quantity and the better quality of Radio and Television Profession.

B. The Fundamental Thinking of Expansion.

1. Manpower needs.

The amount of personnel in the Ministry of Information of the Republic of Indonesia, in 1984/1985, reach 43,777 employees. At the end of the coming Five Year Plan it is projected 66,203 employees. This means the growth rate of personnel is 5.31 % per annum. But those who had enjoyed the trained skills is only 18.14 % ranging from Radio, TV, Film, Press, Publications, to other public informations.

The amount of Radio and TV personnel up to the present reach 13,606 employees. The growth rate of recruitment is 22.92 % per annum. Meanwhile the growth rate for education and training on trained skill reaches 14.94 % per annum.

This figure points out that it will be very difficult to create Cadres in the future, if the qualification is only Diploma I level. On the other hand, there is no high learning institute in Indonesia offers such kinds of profession. The only solution, therefore, is that MMTC should carry out her own education to reach a certain standard of profession. To expand the MMTC Curricula from D. I to D. II and D. III means to expand also the equipments and facilities.

2. Integrated needs.

The Ministry of Information operated TV Training Centre and Radio Training Centre both in Jakarta. The participant of MMTC is required to have basic education and training from both training centre, respectively. It is, therefore, MMTC is higher to its standard since the students should have basic knowledge in their professions. But both training centre are conducted in the separated places and organizations. Each of them has their own heads of training.

MMTC accomodates both of these Training Centre. The students consist of Radio and TV people from RRI and TVRI. Since MMTC becomes the "common path" of Radio and TV Training Centre, then the curricula should be in integrated ways. The result is, there are many more peoples from Radio and TV will enroll at MMTC bring the equipments and facilities will be overutilized. So, instead of one organization to be handled, say TVRI, now MMTC accomodates two organizations. The RRI people should also know the TV production and equipments, and vice versa. This will bring the utilization of equipments and facilities are overutilized.

3. Sinchronizing needs.

The system of curricula in Radio Training Centre and TV Training Centre should be synchronized with MMTC. While MMTC developing curricula on the basis of experiences which is to go through by Radio and TV Training Centre. The implementation in synchronizing the curricula is more effective if the activities is conducted at "one platform" .At least the students of MMTC and the participants of Radio Training Centre and TV Training Centre can meet together to break up the disengagement.

This is one reason, why the non diploma program is carried out at MMTC. At least, nineteen non diploma programs had been conducted at MMTC. The following table depicts the situation :

Year	Number of Diploma Program	Increased/Decreased
1985 / 1986	2	-
1986 / 1987	4	+ 100 %
1987 / 1988	13	+ 225 %

The presence of non diploma programs brought the equipments and facilities can't cope the program education and training. This means that the equipments and facilities of MMTC should be brought to expand from Diploma I to Diploma II and Diploma III.

4. The Raising needs.

Many of equipments in MMTC is now more sophisticated compares to other Radio and TV Stations. This brought to raise up the eagerness to learn the technology at MMTC into more substantial. The rest of information technology was relatively obselete. The result is that there are many peoples from outside of MMTC are willingness to study at MMTC. But MMTC cannot afford this demand due to the limited of facilities and equipments. But the demand for higher standard of profession is inevitable.

These phenomena, some day will be turned into political issues, if MMTC does not accomodate this raising demands. To mention some examples, the Organizations of Private Radio Station of Indonesia has demanded to MMTC to give opportunity for their respective members to study at MMTC. The other ministries such as, Ministry of Education and Culture, Ministry of Public Works, Ministry of Post and Telecomunication, The Coordinating Board of Family Planning, The Private TV Station, SBC (Singapore), ASBU Training Centre (in the Republic of Syria) and many more, have sent letters to MMTC, as well as, the Ministry of Information to carry out the "Open door policy" for their respective participants.

It is, therefore, for MMTC the expansion of this institute is inevitable, and it will be more disadvantaged

impact in the future, if there is no additional in equipments and facilities to cope the increasing demands of this "information society". Someday this project might be facing difficulties that MMTC as once grant by Japanese Goverment, is "more conservative " in responding others demands.

It is quite impossible for other ministries to invest such kinds of education and training facilities since their portions of work are too small; for example, just to serve their public relations personnel. They quite realize that to build Radio and Training institute is not relevant, because it will increase the overhead cost and therefore, is ineffective. May be some of the private radio and TV station can buy equipments and hire consultants from outside of Indonesia, but they cannot buy the professional peoples who will handle the equipments and facilities. These kinds of professions can only produce· by MMTC.

The expansion of MMTC is quite needed because the only hope that to produce the professional personnels of Radio and Television is only done by MMTC.

C. The Principal Aims of Diploma II and III.

1. Diploma II.

The main objective of Diploma II is to enable the students to produce Radio and TV Production in which the format, the content, the artistic/journalistic works, the electronic works, etc.; are much complex, than Diploma I.

The knowledge and skills of Diploma II are capable to :

a. identify, design, collecting data for technical programming, production, journalism, and engineering.

b. solve the problems which is more complex in related to the method of works, team works and its relationship, professional needs and properly equipments to reach good quality in Radio and TV Production.

c. make complex decision on technical matter to achieve efficiency and effectivity in the scope of their profession, but integrated to other relevant professions too.

d. obtain improvisation, in order to get new invention or innovation in designing and producing package of production and technique as well.

e. practice professional in searching new format, and new method of works to develope new nuances in artistics or journalistics work.

The output of qualification of Diploma II is considered as "Associated Skill".

2. Diploma III.

The knowledge and skills of Diploma III are capable to :

a. identify, design, collecting data for tactical programming, production, journalism and engineering.

b. solve the problem which is most complex in related to the method of works, teamworks and its complexity, professional needs and suitable equipments to get better quality in Radio and TV Production.

c. make more complex decision on tactical matter to achieve efficiency and effectivity in the scope of their profession, but integrated to other relevant professions.

d. obtain more improvisation, in order to get new invention and innovation in designing and producing package of production and technique as well.

e. practice more professional in searching new format, and new method of works to develope new nuances in artistics or journalistics as well.

The output of qualification of Diploma III is considered as "Senior Skill".

D. The Contents of Diploma II and III Curricula.

The Program Education and Training for Diploma II consists of 8 Study Programs and for Diploma III consists of 11 Study Programs.

The descriptions of Diploma II curricula are as follows :

1. Programme Broadcast Planners,

is the group of jobs which required knowledge on planning systems, simple data and information analysis, the magnitude of programme classifications, format of programs and productions and others relevant knowledge to integrate all program sources in to a pattern of policy (Pre-requisite : Programme Compilation Planners and certain subjects in Program Lines Producers from the subjects of Diploma I).

2. Program Package Producers,

is the group of jobs which required knowledge on the complexity of method, technic and artistic of production of individual profession as well as integrated professions involved in the production lines process. (Pre-requisite : Program Lines Producers and certain subjects in Programme Compilation Planners from the subjects of Diploma I).

3. Broadcast Journalists,

is the group of jobs which required knowledge on the complexity of journalistic substance in the method of writing, reporting, editing, commenting, analising and in all kinds of specialized fields such as politics, economics, social, science, sports, culturals and arts and military (Pre-requisite : News and Current Affairs Reporters and certain subjects in Programme Compilation Planners, Program Lines Producers from the subjects of Diploma I).

4. Script/Story Writers,

is the group of jobs which required knowledge on methodology research, idea's development, writing technic, and procedures writing for production. (Pre-requisite : Program Lines Producers, and certain subjects, in Programme Broadcast Planners and News and Current Affairs Reporters from the subjects of Diploma I).

5. Broadcasting Performers,

is the group of jobs which required knowledge on voice reporting, narrations, acting, effective speaking, body language, mimic and other style of arts of appearance for program presentation (Pre-requisite : Program Lines Producers, and certain subjects in News and Current Affairs Reporters and Programme Compilation Planners).

6. Studio Production Technicians,

is the group of jobs which required knowledge on the complexity of technology on studio production to meet the program substance and understand the system structure of technology. (Pre-requisite : Studio and Master Control Technic Operators, and certain subjects in Program Lines Producers, News and Current Affairs Reporters and Transmissions Operators from the subjects of Diploma I).

7. Transmission Technicians.

is the group of jobs which required knowledge on the complexity of transmitter and antenna technics, the wave propagation characters and audio video transmission quality. (Pre-requisite : Transmission Operators and certain subjects in Studio and Master Control Technic Operators from the subjects of Diploma I).

8. Technical Repairmen,

is the group of jobs which required knowledge on the structure of calibration and measurement and ability to functionalize, improve and repair the failured or malfunction of equipments. (Pre-requisite : Studio and Technic Operators and certain subjects in Transmission Operators from the subjects of Diploma I).

The descriptions of Diploma III curricula are as follows :

1. Broadcast Managers,

is the group of jobs which required knowledge on the managerial and technical aspects of broadcast, to plan, organize, execute, monitor and control all broadcast program resources, to analize feedback, understanding the phenomena for strategic planning. (Pre-requisite : Program Compilation Planners and certain subjects in Program Lines Procedures, Program Package Producers, News and Current Affairs Reporters, Studio and Master Control Technic Operators and Transmission Operators from the subjects of Diploma I and II).

2. Program News and Information Producers,

is the group of jobs which required knowledge on the sophisticated method and technic of news and information productions according to the qualifications and discipline of professions in the specialized field of journalism (Pre-requisite : News and Current Affairs Reporters, Broadcast Journalist and certain subjects in Program Lines Producers, Program Compilation Planners, Programme Broadcast Planners, Program Package Producers, Script/Story Writers, Broadcasting Performers and Studio and Master Control Technic Operators from the subjects of Diploma I and II).

3. Program Education and Religion Producers,

is the group of jobs which required knowledge on the sophisticated method and technic of education and religion productions according to the qualification and discipline of professions in the specialized field of science, technology and philosophy on the basis of age, target audience and social perception. (Pre-requisite : Program Lines Producers, Program Package Producers, and certain subjects in Compilation Planners, Program Broadcast Planners, Script/Story Writes, Broadcasting Performers and Studio and Master Control Technic Operators from the subjects of Diploma I and II).

4. Program Cultural and Entertainment Producers,

is the group of jobs which required knowledge on the sophisticated method and technic of cultural and entertainment productions according to the qualifications and discipline of professions in specialized field of show, arts (visual, performing, music, traditional, classical etc.) and performance (stage, drama, comedy, tragedy etc) (Pre-requisite : Program Lines Producers, Program Package Producers, and certain subjects in Programme Compilation Planners, Programme Broadcast Planners, Script/Story Writes, Broadcast Performers and Studio and Master Control Technic Operators from the subjects of Diploma I and II).

5. Technical and Artistic Production Designer,

is the group of jobs which required knowledge on character of technical and artistic aspects, understanding the property needs in supporting th esthethical design for production (Pre-requisite : Program Lines Producers, Program Package Producers, and in certain subjects of News and Current Affairs Reporters, Studio and Master Control Technic Operatos, Broadcast Journalists, Script/Story Writes, Broadcasting Performers and Studio Production Technicians from the subjects of Diploma I and II).

6. Scenario and Storyboard Writes,

is the group of jobs which required knowledge on the dramaturgy, radio and teleplay theatrical writing and others relevant show on performance literatures writings, including comical character sketching supporting screen directing and shooting script for package of production (Pre-requisite : Program Lines Poducers and Program Package Producers and certain subjects in Programme Compilation Planners, News and Current Affairs Reporter, Script/Story Writes, Broadcasting Performers and Broadcasting Journalists from the subjects of Diploma I and II).

7. Public Speech and Drama Casters,

is the of jobs which required knowledge on oratory, rhetoric, talkshow, acting, dramatisation, play and other arts of presentation for the production purposes (Pre-requisite : Programme Lines Producers, Broadcast Performers and certain subjects in News and Current affairs Reporters, Programme Compilation Planners, Script/Story Writes and Broadcasting Journalists from the subjects of Diploma I and II).

8. Apparatus Engineers,

is the group of jobs which required knowledge on sophisticated studio and master control technology and understanding of planning, designing and constructing to search for new inventions and innovations in producing package of production (Pre-requisite : Studio and Master Control Technic Operators, Studio Production Technicians and certain subjects in Transmissions Operators, Transmission Technicians and Technical Repairmen).

9. Open Studio and Mobile Production Engineers,

is the group of jobs which required knowledge on sophisticated openstudio and mobile production technology and understanding of planning, designing and constructing, to search for new invention and innovations in producing package of production. (Pre-requisite : Studio and Master Control Technic Operations, Studio Production Technicians, and certain subjects in Transmission Operators, Transmission Technicians, Technical Repairmen from the subjects of Diploma I and II).

10. Satellite and Terresterial Transmission Engineers,

is the group of jobs which required knowledge on satellite and other space and ground segment communication and broadcasting technology, the character propagations, footprints, wheather and geographical impact, mobile as well as fixed stations, and other satellite communication and broadcasting systems (Pre-requisite : Transmission Operators, Trasnmission Technicians, and Master Control Technic Operators, Studio Production Technicians, and Technical Repairmen from the subjects of Diploma I and II)..

11. Maintenance,

is the group of jobs which required knowledge on calibration, testing, measurement, repairing and improving the sophisticated technology in electronic media communication and broadcasting and to understand the stage and prospect of obsolescence of product technology, the new technology, new inventions and innovations, to ensure the continuityof technical, production, as well as, broadcasting operations. (Pre-requisite : Technical Repairmen, Studio and Master Control Technic Operators and certain subjects in Transmission Operators and Transmission Technicians from the subjects of Diploma I and II).

E. The Installation of Equipments and Facilities.

MMTC as an Institute of Education is based on the function of "Laboratory Concept". This mean, whatever the equipments and facilities are should be tolerated as experimental basis. By and large, there are five classifications of facilities and equipments act as laboratory functions i.e. :

1. Planning and Programming Laboratory
2. Electronics Laboratory
3. Production Laboratory
4. Journalistics Laboratory
5. Artistics Laboratory

Planning Laboratory is supporting for the planners, programming, managers, etc. Electronic Laboratory is supporting for the studio, master control, transmitter, editing, etc. Production Laboratory is supporting for directing, scriptwriting, editing, music illustration, all performing arts activities such as, announcers, artists, quiz master, interviewer, discjockey etc. Journalistic Laboratory is supporting for news writing, news editing, reporting, news casting, commentary etc. Artistic Laboratory is supporting for set design, sound artistic, lighting artistic, property, wardrobe, special effect, decorating etc.

The Principle of Laboratory is doing experiments, out of its contemporary style of production, content, and against the grammar

to create new idiomatic of works and for technique matters it refers to get new inventions or innovations.

The needs of equipments and facilities are appeared in the attachment I.

F. Activities / usages of MMTCs' equipments and facilities.

1. Academic year : 1985/1986.

In the 1985/1986's Academic Year the equipments were utilized from 31st July 1985 to 19 February 1986. In those time it is very difficult to record the utilization of equipments since we didn't have any system of administration yet. Lack of personnels, brought the data collecting was quite impossible to be carried out.

2. Academic Year : 1986/1987.

But since 1986/1987's Academic Year, the record of utilization of equipments can be conducted after several personnels were trained in domestic and overseas such as in Japan. In those year, the utilization of facilities was recorded for two Study Programs as follows :

Utilization of Equipments
and Facilities in MMTC
Academic Year 1986/1987

Classification of Activities	Operations (Unit x Frequency)
a. Production Equipments Activities (indoor & outdoor).	1.623
b. Studio & Transmitter Facilities	154
c. Maintenance (main/supporting facilities)	69

From these figures it could be said that the Production Equipments were utilized 31,21 units x frequency, in a week for two Study Programs. This means, if MMTC practicum was conducted 3 times a week then the number of Production Equipments is 10,40 units. This was handled by two Study Programs.

The Studio and Transmitter Facilities were utilized 2,96 units x frequency, in a week for two Study Programs. Since the frequency of utilization is 3 times a week, then the number of unit is 0,99.

The maintenance activities run 1,33 units x frequency, in a week, also for two Study Programs. If the utilization is 3 times in a week, then the maintenance can only be done in one of the 3 days in a week. In other words, if the Production Equipments and Studio and Transmitter Facilities are utilized 3 days in week simultaneously, then three days for theory. Among the 3 days of theory, one day can be used for maintenance. The number of unit is : 0,44

The Utilization of equipments in 1987/1988 operating three Study Programs (until December 1987) is shown as follows :

3. Academic Year : 1987/1988.

Utilization of Equipments and Facilities in MMTC Academic Year 1987/1988 *)

Classification of Activities	Operations (Unit x Frequency)
a. Production Equipments Activities (indoor & outdoor).	1.198
b. Studio and Transmitter Facilities	114
c. Maintenance (main/supporting facilities)	53

*) Until December 1987.

The above figures shows that Production Equipment within 8 months were utilized, 37,44 units x frequency, in a week for 3 Study Programs. This mean, if MMTC practicum was conducted 3 times a week, then the number of Production Equipments is 12,48 units. This was handled by 3 Study Programs.

If we compare the figure in 1987/1988 to 1986/1987 then the Utilization of Production Equipments had increased by 80%

Studio and Transmitter Facilities were utilized 3,56 units x frequency, in a week. If the practicum runs 3 times a week then, the utilization of Studio and Transmitter Facilities happens to be 1,19 units for 3 Study Programs.

If we compare the figure in 1987/1988 to 1986/1987, then the utilization of Studio and Transmitter increased by 80,30%.

The maintenance activities runs 1,66 units x frequency, in a week for 3 Study Programs.The number ofunit is : 0,55. If this figures of

1987/1988 is compared to 1986/1987 then the maintenance activities increased by 88,63%.

If these percentage are counted in the average basis, the facilities and equipment utilization had increased by 82,98%.

G. Estimation of the Budget.

Budgeting in Indonesia is adopted in two systems, i.e. Development Budget and Routine Budget. In MMTC, it is called Development Budget for Education is provided for conducting the Diploma Program Courses. The size of Diploma Program is entirely depend on the availibality of Development Budget. It may vary from year to year.

It is, therefore, as far as the Development Budget for Education is provided for MMTC, then all budgets are automatically allocated to MMTC. The expenditure is under supervised by MMTC, and we know exactly the amount of budget. The Development Budget for Education can be called as Direct Cost.

The amount of development budget to build the infrastructure of MMTC had reached Rp. 5.732.095.000,- from Indonesia side and Y 1.800.000.000,- from the Japan side. The development budget of MMTC since it started in 1982 to 1985 indicated as follows :

Fiscal Year	Total Amount
1981/1982	Rp. 700.000.000,-
1982/1983	Rp. 1.613.900.000,-
1983/1984	Rp. 1.048.698.000,-
1984/1985	Rp. 1.626.000.000,-

The Routine Budget, is the budget that allocated to MMTC for expending its routine activities, such as :

- Personnels Budget, (salary),
- Logistic Budget,
- Maintenance Budget,
- Travelling Budget.

This Routine Budget goes in separate procedure with Development Budget. Each budget has its own administration, but still within one organization of MMTC.

Although, MMTC is also conducting Non Diploma Program but its Development Budget Education is not under supervised by MMTC. MMTC is only received for : House Keeping and Food and Beverages of the dormitory expenditure. It is the compensation of the participants who are staying in the MMTC's dormitory. Therefore, some of the budget is unknown by MMTC since it is not under the jurisdiction of MMTC. The development budget might come from Radio Training Centre, TV Training Centre, Directorate of TV, JICA, etc. The Development Budget for Education since the inauguration may be shown as follows :

Development Budget For Education

Academic's Year	Total
1985/1986	Rp. 239.495.000,-
1986/1987	Rp. 180.860.000,-
1987/1988	Rp. 191.588.000,-
1988/1989	Rp. 240.000.000,-

The above budget of MMTC is added by Non Diploma Program. To mention some :

- In 1986/1987 : - Radio Transmission Course
  Budget = Rp. 34.679.000,-

- In 1987/1988 : - Radio Production Course
  Budget = Rp. 25.124.000,-

- Radio Transmission Maintenance Course
  Budget = Rp. 25.124.000,-

- Radio Program Planning Course
  Budget = Rp. 25.124.000,-

On the other hand, the Routine Budget since the inauguration may be indicated as follows :

Routine Budget

Academic's Year	Total
1985/1986	no routine budget
1986/1987	Rp. 454.600.000,-
1987/1988	Rp. 421.100.000,-
1988/1989	Rp. 628.600.000,-

In spite of financial difficulties, due to the decreasing oil prices, but the government of Indonesia is still considered that MMTC is one of priority. The budget increased every year and the amount of Study Programs are also increased. In 1986/1987, MMTC has only 2 Study Programs, in 1987/1988, MMTC conducted 3 Study Programs, and in 1988/1989, MMTC will conduct 4 Study Programs. But the whole budget are insufficient. The First Batch of Semester II students whom are taking for Semester II (another six month) examination are postponed. There are of administrative difficulties is involved, since the budget should be administered for the whole fiscal year and not for half fiscal year, brought the process is still going on to find the best solution. The Routine Budget is to be called The Indirect Cost.

If we recapitulate the whole budget, the total amount may be looked as follows :

PROGRAM EXECUTION AT MULTI MEDIA TRAINING CENTRE

NO.	PROGRAM TRAINING ACTIVITIES	DURATION	NUMBER OF PARTICIPANTS	TOTAL BUDGET	R E M A R K
1.	1985/1986				
	1) Training of Trainers	17 days	24	Rp.	Cooperation of JICA and IVRI Training Centre
	2) Diploma I Program :				
	- Radio TV Program Production	7 months	12)		Development Budget
	- Radio TV Journalism	7 months	12)	Rp. 239.495.000,-	of TV Training
	- Radio TV Studio Operation	7 months	29)		Centre.
	- Radio TV Transmission	7 months	19)		
	3) Music and dance course	30 days	22	Rp.	Cooperation of AIBD and TV Training Centre
				Rp.	No routine Budget
	T o t a l		118	Rp. 239.495.000,-	
2.	1986/1987				
	1) Diploma I Program :				
	- Radio TV Program Production	12 months	20)	Rp. 110.660.000,-	MMTC's Develop-
	- Radio TV Sto. Engineering	12 months	20)		ment Budget.
	2) TV Transmission	6 months	48	Rp. 70.200.000,-	MMTC's Project Budget with TV.TC.
	3) Radio Transmission	42 days	25	Rp. 34.679.000,-	Financed by Radio Training Centre.
	4) News Editing and Lighting Techniques	17 days	15	Rp.	Cooperation of JICA and MMTC.
	5) Power Supply System and Safety Engineering	17 days	15	Rp.	Cooperation of JICA and MMTC.
				Rp. 454.600.000,-	MMTC's Routine Budget
	T o t a l		143	Rp. 670.139.000,-	

NO.	PROGRAM TRAINING ACTIVITIES	DURATION	NUMBER OF PARTICIPANTS	TOTAL BUDGET	REMARK
3.	1987/1988				
	1) Diploma 3 Program				
	- Radio TV Program Production	12 months	20)		MMTC's Development
	- Radio TV Journalism	12 months	20)	Rp. 191.588.000,-	Budget.
	- Radio TV Sto. Engineering	12 months	20)		
	2) Elementary Training:				
	- Radio Production	40 days	20	Rp. 25.124.000,-	Financed by RTC.
	- Radio Transmission Maint.	40 days	20	Rp. 25.124.000,-	" "
	- Radio Program Planning	40 days	20	Rp. 25.124.000,-	" "
	- TV Production	40 days	12	Rp.	Financed by TV.TC.
	- TV Sto. Engineering	7 months	12	Rp.	" "
	- Microwave Engineering	21 days	12	Rp.	" "
	- TV Set Design	12 days	16		Financed by ADAB
	- TV Drama Production	30 days	20		" TV.TC
	- Sound Mixing & Sound Effects	18 days	12		" JICA
	- Audience Research	14 days	17		" JICA
	- Documentary Production	3 days	20		" Fredrich Ebert Stiftung (Republic Federal of Germany).
	- News Reporting & Editing	3 days	23		Finance by Directorate of TV Jakarta.
	- Introduction to Radio & Television Technology.	14 days	10		Finance by Military Academy, Magelang, Central Java
				Rp. 421.100.000,-	MMTC's Routine Budget
	T o t a l		284	Rp. 688.060.000,-	

NO.	PROGRAM TRAINING ACTIVITIES	DURATION	NUMBER OF PARTICIPANTS	TOTAL BUDGET	REMARK
4.	1988/1989				
	I) Diploma I Program:				
	- Program Lines Production (Radio & TV)	12 months	18	Rp. 57.492.000,-	MMTC's Developaent Budget.
	- News and Current Affairs Reporting (Radio & TV)	12 months	18	Rp. 55.851.000,-	
	- Studio and Master Control Technique Operation	12 months	18	Rp. 55.581.000,-	
	- Transaission Operation	12 months	18	Rp. 58.051.000,-	
	2). Non Diploma for Overseas				
	- Radio Broadcast Management	6 days	12	Rp.	Financed by ADAB, Australia.
	- Rural Broadcasting	14 days	12	Rp.	Financed by CIDA, Canada.
	- Microwave Engineering	30 days	20	Rp.	Financed by AIBD, Kualalumpur.
	3). Elementary Training for Non Diploma *)				
	- Radio Production	40 days	20	Rp.	Financed by Radio
	- Radio	40 days	20	Rp.	Training Centre,
	- Radio	40 days	20	Rp.	Jakarta.
	- TV Production	40 days	12	Rp.	Financed by TV
	- TV	40 days	12	Rp.	Training Centre,
	- TV	40 days	12	Rp.	Jakarta.
				Rp. 628.600.000,-	MMTC's Routine Budget.
	T o t a l			Rp. 855.575.000,- **)	

*) Radio and TV Training Centres Programs will be conducted of MMTC.

**) This aaount is the budget under the Juridiction of MMTC.

Note: The above Programs of education and training in 1988/1989 are still to be expanded.

H. Required Duration of Technical Cooperation and the amount of JICA Experts.

In connection with the expansion of MMTC into D II and D III programs, technical assistance from Japan becomes necessary. The experts consist of Chief Advisor, Coordinator and Experts in related fields. Chief Advisor may cover more than one field, and short term experts may be dispatched, when necessity arises, for the smooth implementation of the Project.
In running D II and D III programs it was felt that at least 7 (seven) experts are needed for technical assistance. It may consist of expert in field of advance of programming, of program production, of news reporting, of production engineering and of tranbsmission engineering. In addition to the broadcasting field, expert of training of the trainers, lecturing for certain subjects in D II and D III programs and other relevant activities are also required.

The field to be covered by the experts may vary as follows :

1. Building Architect
2. Construction and instalation experts
3. Environmentalist
4. Advanced Planning and Programming (Radio and TV)
5. Advanced Production (Radio and TV)
6. Advanced News Reporting (Radio and TV)
7. Advanced Art Performance (Radio and TV)
8. Advanced Studio Apparatus Engineering (Radio and TV)
9. Advanced Transmission Engineering (Radio and TV)
10. Maintenance
11. Safety Engineering and Fire Protection, and other related skills

These experts are needed to assist the Indonesian Counterparts to smooth and maintain the projects during that period. The Indonesian experts can absorb the knowledge from the Japanese experts and can act as instructors to implement the program. Although, there are at least 11 (eleven) fields to be covered, it does not necessarily means 11 (eleven) experts for the whole terms of the project. The amount of the experts are remained 7 (seven), and 4 (four) experts have finished up their terms, they can be replaced by others.

I. The Prospect of MMTC in the future.

As it was mentioned before that MMTC is directed to academic type of education. It was felt that, the Radio and TV skills will be more competetive and professionally in the future. Vocational type training will be invalidated in the future as the raising of expectation on Radio and TV professional is inevitable. Although, it may happen that the middle or lower middle skills is still needed, but more profesional and qualified personel will be more demanding.

So far, MMTC is the only institute of Education and Training in Indonesia committed in the field of Radio & TV brainware. The demand will be directed that MMTC should provide more facilities for Radio & TV professional education. It is quite difficult for other ministries or private institute to invest such kind of facilities, since their works is too small to cope the Radio and TV technology. If they are willingnes to invest, then the cost will be high, especially the overhead. They will also face the difficulties in recruiting the instructors.

The technology sooner or later will be obsolete. It is quite difficult for other Ministries and privates to step into this kind of investment. The only hope is that it relies upon the role of MMTC, whether this institute will become the driving force for promoting the Radio and TV professional. MMTC had already exist in Yogyakarta, and it will be impossible to build other institutes without supported by MMTC in the "brainware" side. If some day other institute will come to realize which similar to MMTC, then she needs qualified personnels, who will run and become instructors for this new institute. And that the hope to whom these personnels can be provided will come from MMTC.

It is, therefore, MMTC should walk futher ahead than other potential institutes in Radio and TV profession. The MMTC should be in the higher position in hardware, software and brainware. The experience of new private TV station said that buying hardware and software are not complicated one, but buying brainware is something else, which is difficult to obtain.

The end of MMTC's journey is to reach the standard of academic institute. Diploma program has implied the academic type of education. The path is in non-degree but it is similar to the University. The amount of semesters, the total credit systems, the position as tertiary education, the requirements for lecturers are all similar with the University. The degree of Diploma is respected to University Degree in the government service.

The expansion of MMTC to Diploma II and Diploma III programs is to bring the MMTC accomodates the future development of radio and TV professional as the part of the "information society". MMTC is an institute which is advantage for the user's benefit of RRI and TVRI. Now, 3 years, it has come into being, that from the user's benefit propogates into developmental benefit. The demand

for joining the MMTC program's education from outside of Ministry of Information has increased enormously from other ministries and private sectors, nationally, regionally as well as, internationally.

In the nearest future, that from developmental benefit propogates into Consequential benefit. The output of MMTC is not only works for the Government service, but also can contribute their knowledge to other education institute in media electronic. The students of MMTC itself who are taking Diploma Program will join in carreer planning at the Ministry of Information. They will become the "academic generations" in the future who are purely graduated from the institute run by the Ministry of Information itself.

If we look at the history, Ministry of Information have had once the so-called Academy of Information. Some of the the Director Generals and Directors in the Ministry of Information who are now holding position were graduated from this Academy. So, it may happen, that the students of Diploma III program someday will fill up the position in the high ranking level in the Ministry of Information.

Finally, the knowledge and skill of MMTC will disseminate throughout the country, to foster the development information and motivating to learn the production, artistic and journalistic works, as well as, broadcasting engineering technique, for the socio-economic progress in Indonesia.

Conclusion and Request.

Since Presidential Decree No. 59/1985, issued, the Multi Media Training Centre was determined as diploma program training centre. The Diploma Systems of the MMTC includes the qualifications of Diploma I, Diploma II, and Diploma III.

As Diploma I training course, such fundamental factors as the training period, content of curricula, etc. are almost equivalent to those of the Basic Training Course based on the Record of Discussions.

The training course in MMTC are originally planned as basic training course composed of three different grades, Basic I, II, and III. These three courses are simply aimed to train the new comers to be fit for the job as assistant skill in the broadcasting station. Therefore, these courses are planned to be absolutely practical. Though the courses include theoritical lessons, these are just to support practical training on the short term basis.

On the contrary, the new training program includes much higher grade, which offers much wider and much higher lessons on both practice and theory. The training of the higher graders, D. II and D. III, the theoritical lesson itself needs to be taught

together with experiments in the laboratory. At present, MMTC provides no laboratory or facility for the experiments for Diploma II and III.

To conduct the three diploma courses, MMTC faces several difficulties. There is insufficient laboratory to carry on experiments. There is the lack of large class rooms and other supporting facilities which needed to carry on the training several classes together to save the number of instructors.

There is the needed for much complicated production facilities to run the higher grade classes as D. II and D. III. If MMTC tried to conduct the new three courses with present facilities and equipment, the courses will be crippled by the lack of needed facilities and equipment, and the facilities and equipment will be deteriorated rapidly because of excessive of utilization.

The additional facilities are badly needed by MMTC to cope with the new training scheme. It is thought that to provide additional facilities by the Ministry of Information is almost impossible because of the present world economic situation. Therefore, the new facilities are to request Japanese Grant Aid.

Attachment I

22.0

A T T A C H M E N T I

Project Sumary :

1. Project Title	:	EXPANSION OF TRAINING FACILITIES OF MULTI MEDIA TRAINING CENTRE.
2. L o c a t i o n	:	Yogyakarta
3. Executing Agency	:	Secretariate General, Ministry of Information
4. Objectives	:	To expand the training facilities of Radio, Television and Film Training Centre in Yogyakarta to Diploma II, and III program
5. Project Description	:	Scope of the proposed project would include supply, delivery to site, installation, test and commissioning of :

- Electronic Power Laboratory : Switchboard & Generators, Measuring Instruments, Working Materials.
- Electronic Laboratory I & II : Training Sets,Measuring Instruments.
- Audio Laboratory : Training Sets, Measuring Instruments.
- Video Laboratory : Training Sets, Measuring Instruments.
- H F Laboratory : Training Sets, Measuring Instruments.
- V H F Laboratory : Training Sets, Measuring Instruments.
- Digital Laboratory: Personal Computer, Training Sets, Measuring Instruments.
- Workshop Tools.
- Mechanic & Store : Tools, Electronic part Working Materials.
- TV Transmitter R-STL & TV STL.
- Microwave Receiving Tower, HF test Antennas.
- Building (6.500 sq-m)
- Furniture
- Common Facilities
- Program Training Facilities
- Consultant Fee

22.1

6. Implementation time : 1988 - 1991

7. Project cost :

a. Expert service	: 20 m.m.	= US $	140.000
b. Fellowship	: 20 m.m.	= US $	60.000
c. Equipment	:	= US $	6.120.000
d. Local cost*	:		
	Total cost	= US $	6.320.000

* in terms infrastructure, land, water supply, etc. is available total estimated Rp. 3.270.000.000,-

Appendix I. PROJECT FACILITIES AND EQUIPMENTS.

1. Project Site.

Location of the site is in Yogyakarta, withim the complex of Multi Media Training Centre.

The land where the new building supposed to be built is a space neighbouring the studio building on its west side. This space is originally planned for the film studio and stereo-phonic sound studio of the phase II of the MMTC Project, but it can be converted for the use of Broadcasting Training Centre because of delay of implementation of MMTC Project except the Broadcasting Training Centre.

The infrastructure of that space such as electricity and water supply are already secured.

2. Estimation of Facilities and Equipments.

2.1. Common Facilities.

2.1.1. Joint Lecture Room
2.1.2. Seminar Room
2.1.3. Audio-Visual Room
2.1.4. Language Laboratory
2.1.5. Print Room
2.1.6. Mini TV Studio and Radio Studio
2.1.7. Library*
2.1.8. Office*

* Rooms are available but lack of equipments, facilities, publications, book, etc.

2.2. Program Training Facilities.

2.2.1. Preparation
2.2.2. Audio Editing Room
2.2.3. Video Editing Room
2.2.4. Physical Laboratory
2.2.5. Chemical Laboratory and Chemical Store
2.2.6. Dark Room
2.2.7. Store/Workshop
2.3. Technical Training Facilities.

2.3.1. Electric Power Laboratory
2.3.2. Electronic Laboratory I & II
2.3.3. Audio Laboratory
2.3.4. Video Laboratory
2.3.5. H F Laboratory
2.3.6. V H F Laboratory
2.3.7. Digital Laboratory
2.3.8. Workshop
2.3.9. Mechanic & Store
2.3.10. Transmitter Room*
2.3.11. Outdoor

* existing room.

2.4. List of Rooms (Recapitulation)

Electric Power Laboratory and attached Diesel Generator Room
Electronic Laboratory I
Electronic Laboratory II
Audio Laboratory
Video Laboratory
High Frequency Laboratory
Very High Frequency Laboratory
Digital Laboratory
Workshop, Mechanic, and Store
Physical Laboratory
Chemical Laboratory and Chemical Store
Preparation Room
Audio Editing Room
Video Editing Room
Dark Room
Audio-Visual Room
Language Laboratory
Joint Lecture Room
Seminar Room
Instructors Room
Print Room
Tea Room
Guardmans Room

Air Conditioner Room
Toilet
Garage for OB Vans
Storage for Properties and Decors
etc.

3. Project Equipments.

The details of project as follows :

3.1.A. Common Facilities

Facilities	Equipments		Million Yen
3.1.1. Joint Lecture Room	O H P s Video Players Link Line from studio Calculators		3.7
3.1.2. Seminar Room	Whiteboards		0.6
3.1.3. Audio-Visual Room	16 mm Projectors Slide Projectors with Screens Load Speaker Systems Slide Printers Videoscopes		2.7
3.1.4. Language Laboratory	L - L Laboratory		1.7
3.1.5. Print Room	Copy Machines		3.0
3.1.6. Mini TV Studio and Mini Radio Studio	Camera Cranes	2 units	3.3
	Camera Electronic	1 unit (NC 37)	
	ENG Betacam	5 units	
	ENG MNC 82 B	5 units	
	U-Matic Portable HB-BVU 110P	5 units	
	Editing Unit for :		
	Betacam Player 2 BVU 800P	5 units	
	Audio Junction Box	18 channels	
	Audio patch cord -pp 5	5 pieces	
	Continued		15.0

Continuation 15.0

Video patch cord -MTP-119	10	pieces
Nagra N-5 TC	1	pieces
Telecine	1	unit
Band Equipments	1	unit
Lighting Equipments	20	units
Microlens for ENG Betacam	1	pieces
Microlens for ENG MNC 82 B	1	pieces
Filter :		
- Primaryred 106		
- Full Cto 204		
- Full Ctb 201		
- Light Blue 118		
- Day Light		
- Dark Green 124		
- Yellow 101		
- Heavy Frost 129		
- Half Tough Spoon		
Original Blue Box Curtain (5x10 m)	3	lb
Mirror Effect & Acc	5	sets
Solvent Paint (all color) for effeck light	5	sets
Flip Flop & Accesory	8	sets
Dimmer Light (Portable) & Acc	2	sets
Stand Floor & Hard Light Body & Acc 2 Kw, 3 Kw	10	sets
Quarzt lamp Portable & Acc	4	sets
Strobo & Acc	10	sets
Filter Effect Light Sq 3,1,2,6,7,8,9,10, 11,12,13,14		

Continued 15.0

Continuation 15.0

Bulb for 650 W, 220/230 V (Portable Light)	20 pieces
Follow spot for 3 Kw, 5 Kw & Acc	4 sets

Filter Effect Light Qc= 1,2,3,4,6,7,8,9, 10,11,12,13,14,15, (4" x 5")

Filter Effect Sq 01, 02,04,05,06,07,08, 09,10,011,012,013, 014,015,017,018, 019,020

Metal Effect SM; 1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15, 16,17,18,19,20,21, 22,23,24,25,26,27, 28,29.

Carpet (Original Blue)	0.5	20 lb
	1.0 m	20 lb
	1,5 m	20 lb

3.1.7. Library*

Books 1.1
Audio & Video Materials
Slide Materials
Discotics
Microfilm Cameras
Microfilm Projectors

Slide Projector	1 unit
Projection Screen	1 unit
VCR Betamac	1 pieces
VCR VHS	1 pieces
VCR U Matic High Band	1 pieces
TV Colour Monitor	2 units
Stereo Tape Recorder Reel	2 units
Stereo Tape Deck	2 units
Head Phone Set	8 pieces

Continued 16.1

	Continuation	16.1
3.1.8. Office*	Office Mini Computers Word Processor	5.0
	T o t a l	21.1

* available.

3.1.B. Continuation of Common Facilities.

Facilities	Equipments	Million Yen
3.1.1. Nil	O H P s Video Record Players Link Line from Studios Calculators	3.0
3.1.2. Nil	Whiteboards	0.4
3.1.3. Nil	16 mm projectors Slide Projectors with Screen Load Speaker System Slide Printers	2.1
3.1.4.	L - L Equipments	1.3
3.1.5. Nil	Copy Machines	2.4
3.1.6. Nil	Expansion of the existing Audio Mixer Desk of Studio Radio Production by 32 channel : a. using sub mixer b. 4 group stereo c. 2 master stereo 24 track audio tape recorder option : 2 units a. servo controlled b. time EBU code recording facilities	70.0
	Continued	79.2

Continuation 79.2

c. EBU time code reader	
d. Dolby-C, DBX	
e. CCIR Equalization	
f. Mixer Monitor	
1/4" open reel stereo recorder option :	2 units
a. servo controlled	
b. dolby B,C, DBX	
c. CCIR Equalization	
Digital Compact Disc	1 unit
Deeser BSS type DPR 402	2 units
Stereo Scope	2 units
Correlation meter	2 units
Stereo Digital Reverberation Lexicon PCM 60 Delay Roland SRV 3000	2 units
Stereo coder	2 pieces
Microphone Sen Ken CU 41 (with cradle suspension)	4 pieces
Microphone San Ken CU 101	7 pieces
Microphone Sonny F 760	4 pieces
Microphone Sonny ECM 50 PSW	10 pieces
Microphone Sonny ECM 969	4 pieces
Microphone Sonny C 76 CK	4 pieces

Continued 79.2

Continuation 79.2

Microphone Sonny C 35 P	5 pieces
Microphone Sonny F 770	10 pieces
Boom Stand B 303B Sonny	15 pieces
Floor Stand B 50 Sonny	3 dozens
Battery Sonny AM 5	3 dozens
Matching Trafo 10 K : 600 Ohm	10 pieces
Feet Direct Box Type 85 (Direct Injection Box)	4 pieces
Trafo Balance to Balance	10 pieces
Fish Pole Boom Mike (adjusted telescopic)	4 units
Boom Mike Stand adjustable: lenght height direction for TV Play Program	2 units
Wind Shield for Supplied Microphones	
Wireless Mike Sonny	
PB 36 Portable Base	6 units
WPR 37 Receiver (Tuner) 900 MHz	6 units
WRT 27 UHF Transmitter 900 MHz	2 units

Continued 79.2

	Continuation		79.2
	WRT 57 UHF Wireless Mike 900 MHz	2 units	
	WP 27 500 mW RF AMP. UHF 900 MHz	2 units	
	AN 57 Antenna (Ground Plane) UHF	2 units	
	Yagi Antenna 7, 14, and 21 MHz (and auto matic rotator)	1 unit	
	Shock Mount for Boom and Fish Pole	4 pieces	
	Power Line Security Key for every Rooms and Laboratory		
	Component and Parts Racks/Drawers		
	Playback Recorder/ Reproduction	1 unit	
	WB 57 A Antenna Booster UHF	2 units	
3.1.7. Library*	Books Audio and Video Materials Discotics		0.9
	Turn Table Stereo	2 units	
	Wireless Amplifier		
	Camera Photo with Lenz, Zoom/Tele lens and Accessories	1 units	
	Nikkon Motor Controlled/Lens (Servo motor)	2 sets	
	Continued		80.1

	Continuation		80.1
	Micro Reader/Micro Film	1 unit	
	Laminating Machine	1 unit	
	Foto Copy Machine	2 units	
	Paper Cutter Machine	2 units	
	Stencil Machines	2 units	
	Silver reed Connectable Carbon Ribbon	5 boxes	
3.1.8. Office*	Office/Micro Computers		4.0
	T o t a l		84.1

* available.

3.2.A. Program Training Facilities.

Facilities	Equipments	Million Yen
3.2.1. Preparation Room	Portable Audio Recorders Still Cameras Portable TV Cameras	6.7
3.2.2. Audio Editing Room	Audio Editing Machines	3.3
3.2.3. Video Editing Room	Video Editing Machines Video Animations Digital Video Effects units Paint Box Equipment	27.8
3.2.4. Physical Laboratory	Physical Test Apparatus. TV Microscopes Strobo-lights	3.1
3.2.5. Chemical Laboratory & Chemical Store	Chemical Test Apparatus. Chemical Reagents	1.7
3.2.6. Dark Room	D P E Sets	2.2
3.2.7. Store/Workshop	Tools	1.7
3.2.8. OB Van TV	Binocular 2 pieces BVU 800 P + TBC 1 unit Camera MNC 100 12 channel Audio Mixer AC/DC (Sony) 4 group + 2 Master/lo level sound (type MX-P 61 VU/PK)Phantom 48 V o Reel 1/4" audio T/R 2 units Cassetes Desk 2 speed 1 unit Audio Active LS (U monitoring) Tool Set 2 sets	11.3

22.12

Digital Multimeter	1 unit	
18 channel audio junction box	1 unit	
Color monitor 3Q Type 371 DP + ins - truction/service ma- mual	1 set	
Head phone monitoring audio	1 unit	
Head set Ashida Fox HRU 8 B 21	6 units	
5" Viewfinder Rain cover	1 unit	

Total		57.8

22.13

3.2.B. Continuation of Program Training Facilities.

	Facilities	Equipments		Million Yen
3.2.1.	Nil	Portable Audio Recorders Still Cameras Portable TV Cameras Underwater TV Cameras		8.3
3.2.2.	Nil	Audio Editing Machines Post Production Facilities		5.7
3.2.3.	Nil	Video Editing Machines Furnitures		13.7
3.2.4.	Nil	Physical Test Apparatus TV Microscopes Strobo-lights		5.4
3.2.5.	Nil	Chemical Test Apparatus Chemical Reagents		4.3
3.2.6.	Nil	D P E Sets		4.8
3.2.7.	Nil	Tools of Store and Workshop		4.2
3.2.8.	Nil	OB Van Radio		21.0
		12 ch Audio mixer AC/DC (Sony)		
		4 group + master		
		High & low level phantom 48 V (type MX-P 61 VU/PK)		
		o Reel 1/4" audio tape Recorder	2 units	
		Cassete desk 2 speed	1 unit	
		Active LS	2 units (monitoring)	
		Tool Set	2 units	
		Digital multimeter	1 unit	

22.14

18 ch audio junction box	
Head phone for audio monitor	1 unit
Audio patch caord-PP-5	5 units
HT (Hand Talky)	4 units

Total 67.4

22.15

3.3.A. Technical Training Facilities.

Facilities	Equipments		Million Yen
3.3.1. Electric Power Laboratory	Switchboard and Generators		15.1
	Measuring Instruments		
	Working Materials		
3.3.2. Electronic Laboratories I	Training Sets		32.3
	Measuring Instruments		
3.3.3. Audio Laboratories	Training Sets		11.7
	Measuring Instruments		
3.3.4. Video Laboratory	Training Sets		38.1
	Measuring Instruments		
3.3.5. H F Laboratory	Training Sets		19.9
	Measuring Instruments		
3.3.6. V H F Laboratory	Training Sets		24.5
	Measuring Instruments		
3.3.7. Digital Laboratory	Personal Computer		21.2
	Training Sets		
	Measuring Instruments		
3.3.8. Workshop	Tools		1.7
3.3.9. Mechanic and Store	Tools		6.1
	Electronic Parts		
	Working Materials		
3.3.10. Transmitter Rooms *	TV Transmitter (Tube type, 1 Kw)		26.1
	R. STL and TV STL		
	Digital multimeter	20 unit	
	V I T S Generator and inserter	1 unit	
	Envelope oscilloscope + adaptor	2 unit	
	Vector Scope	1 unit	
	TV demodulator	1 unit	

22.16

Low band frequency generator (10 khz- + 70 khz) (audio)	2 unit		
I C Test tester	2 unit		
TVRO (Television Reciever only)	1 unit		
dB meter + millivolt meter	1 set		
PG + DP analiser	2 sets		
Frequency Counter 1 GHz	2 units		
Digital Training Kit	10 sets		
Polaroid for Trans-mitter	3 sets		
Binocular	2 sets		
Automatic Voltage Regulator-500 watt	1 set	)	
		)	Mat
Automatic Voltage		)	su-
Regulator-1 K watt	1 set	)	na-
		)	ga.
Automatic Voltage		)	
Regulator-3 K watt	1 set	)	
Watt meter	1 unit		
Tang meter	2 units		
Electronic Training Kit. Radio Receiver/Monitor	2 units		
Electronic Training-Kit Radio Receiver	5 units		
Wall Synchronizing Clock for Classroom	12 units		
Automatic antene tuner HF (for NSD 515)	2 units		
Multi Band VHF UHF an-tene (VHF-UHF Discone)	1 unit		
Pal Sync pulse gene-rator	1 set		

22.17

	Microprocessor Training Kit	2 sets	
	TV Test signal generator (TG - SE)		
	Lab. Audio/Video H.D. TV Sets	2 sets	
	Audio Frequeentie Analyzer	10 units	
	V D A	10 units	
	P D A	10 units	
	A D A	10 units	
	Digital Multimeter	20 units	
	Demonstration Equipment: -The Scheme of CRT, Pick Up Tube etc. -Converter PAL,NTSC, SECAM.		
3.3.11.Outdoor	Microwave Receiving Tower Field Strength Meter's Van. H F Test Antennas Radio/TV Directions Finder	4 units	3.1
	T o t a l		199.8

3.3.B. Continuation of Technical Training Facilities.

	Facilities	Equipment	Million Yen
3.3.1.	Nil	Switchboard and Generators Measuring Instruments Working Matterials	12.1
3.3.2.	Electronic Laboratories II	Training Sets Measuring Instruments	25.8
3.3.3.	Nil	Training Sets of Audio Lab. and Measuring Instruments	9.4
3.3.4.	Nil	Training sets of Video Lab. and Measuring Instruments	30.5
3.3.5.	Nil	Training Sets of HF Lab. and Measuring Instruments	15.9
3.3.7.	Nil	Personal Computers, Training Sets of Digital Lab. and Measuring Instruments	16.9
3.3.8.	Nil	Tools of Workshop	1.3
3.3.9.	Nil	Tools, Electronic Parts and Working Materials for Mechanic and store	4.9
3.3.10.	Transmitter Rooms *)	TV Transmitters (Tube type, 1 KW) R-STL and TV-STL	20.9
3.3.11.	Outdoor	Microwave Receiving Tower H F Test Antennas	2.4
		T o t a l	159.7

*) Available

4.1. Building (6500 sq-m) *)

	Cost Components	Million Yen
4.4.1.	Direct Labour Costs	300.0
4.1.2.	Direct Material Costs	
4.1.3.	Indirect Labour Costs	
4.1.4.	Indirect Material Costs	
4.1.5.	General, Facilities and Administrative Costs	
4.1.6.	Transportation Costs	
4.1.7.	Managerial Overheads	
4.1.8.	Others	
	T o t a l	300.0

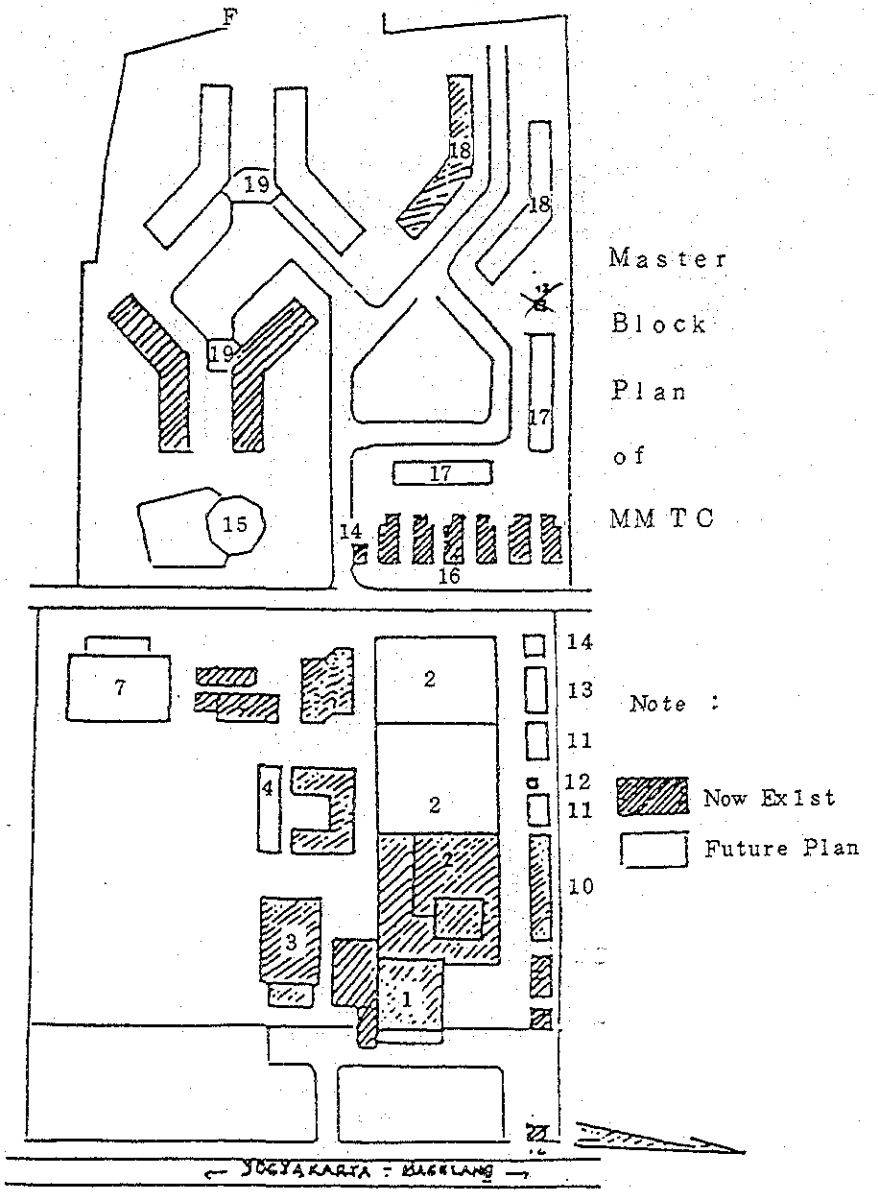
*) Including :

- OB Vans garage and Maintenance.
- Properties & Decors Storage.

LAY OUT :

1. Administration (office) Building.
2. Radio , TV and Film Studio Building *)
3. Auditorium.
4. Class Room *)
5. Library.
6. Canteen.
7. Sport Hall.
8. Transformer House.
9. Generator House.
10. Transmitter room; Mechanical building
11. Workshop.
12. Water tank / Tower
13. Decoration Workshop
14. Security post.
15. Mosque
16. House for head of Departemen
17. House for Senior Instructors
18. House for Yunior Instructors
19. Dormitory.

*) Location for Diploma II and Diploma III fecilities .

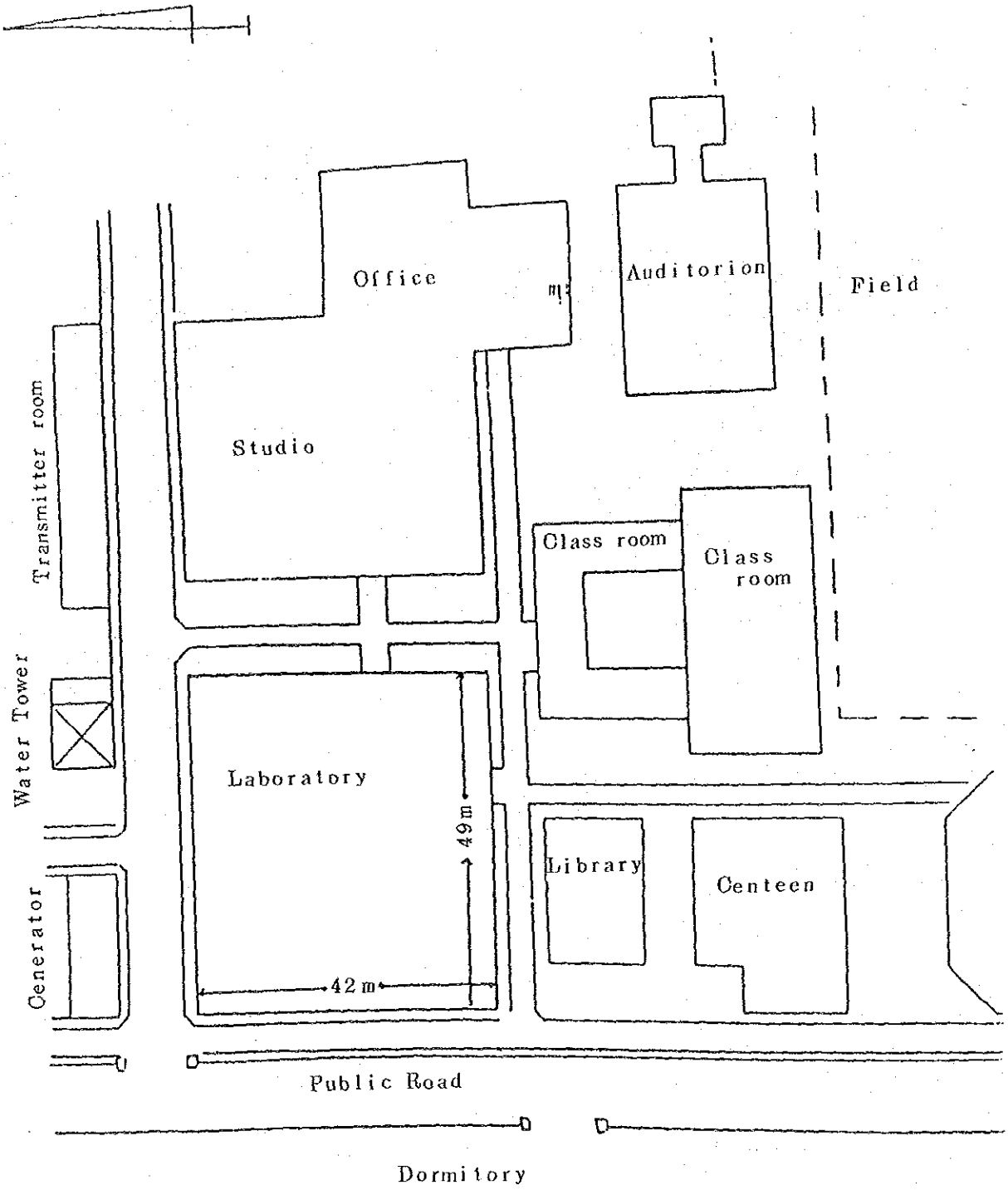


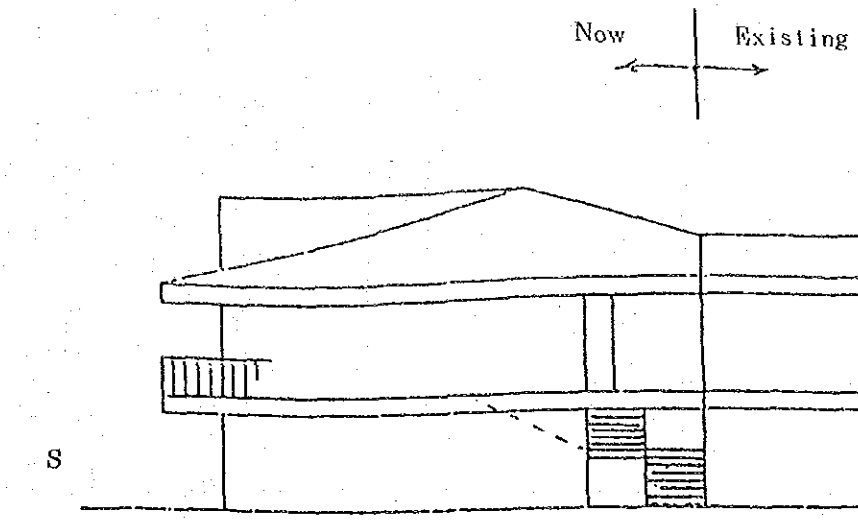
Master Block Plan of MM T C

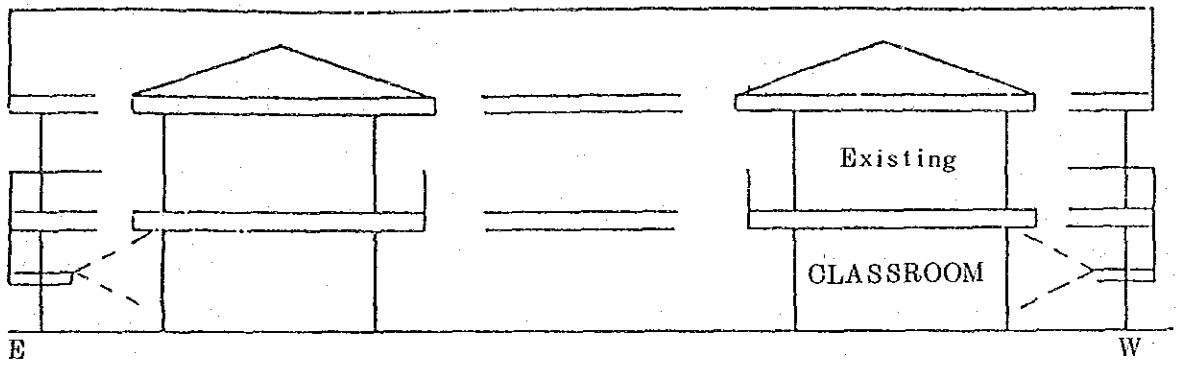
Note :

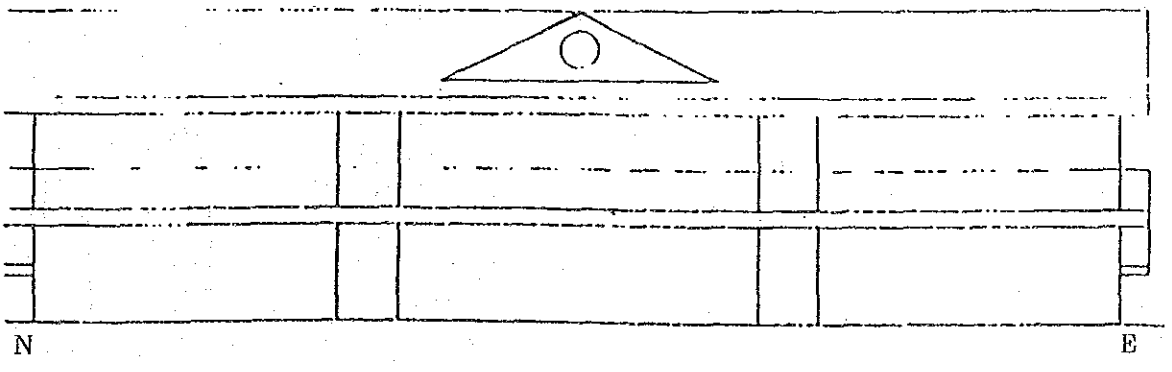
Now Exist

Future Plan


Office
Auditorion
Field
Studio
Transmitter room
Class room
Class room
Water Tower
Laboratory
49m
Library
Centeen
Generator
42m
Public Road
Dormitory


Now
Existing
S
N


Existing
CLASSROOM
E
W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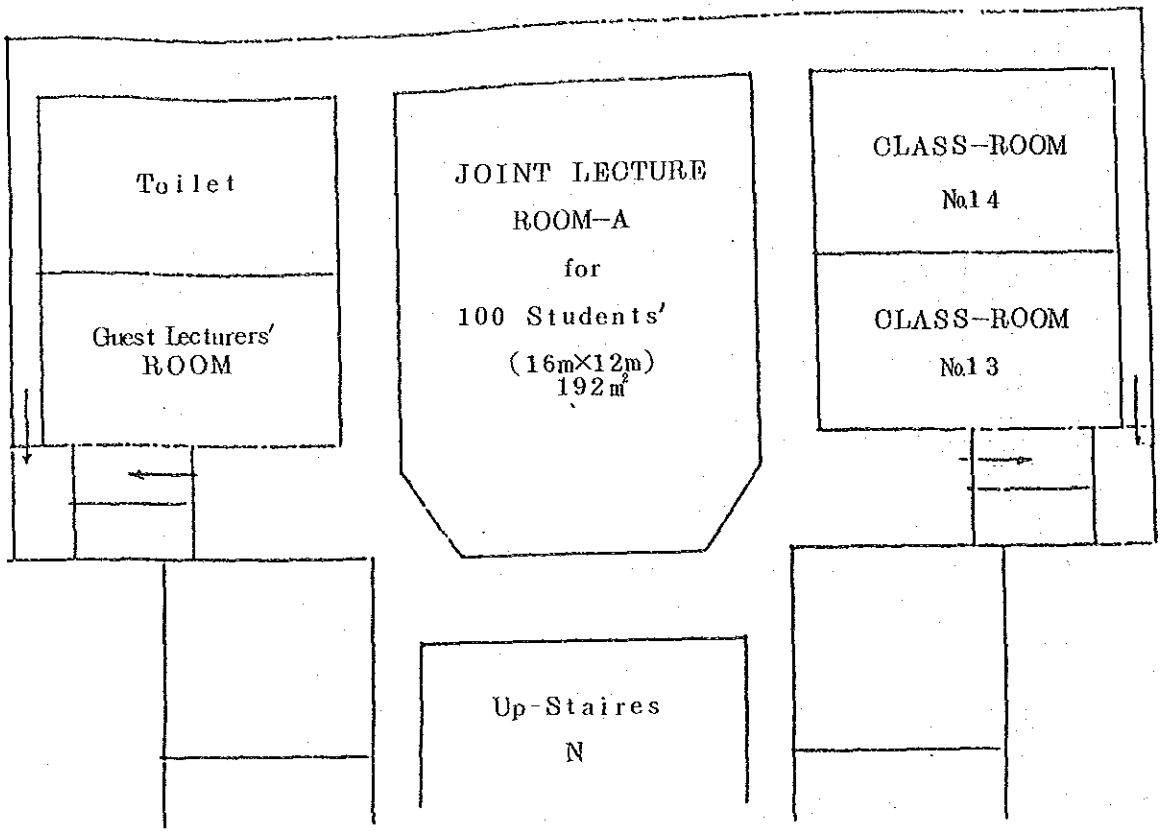
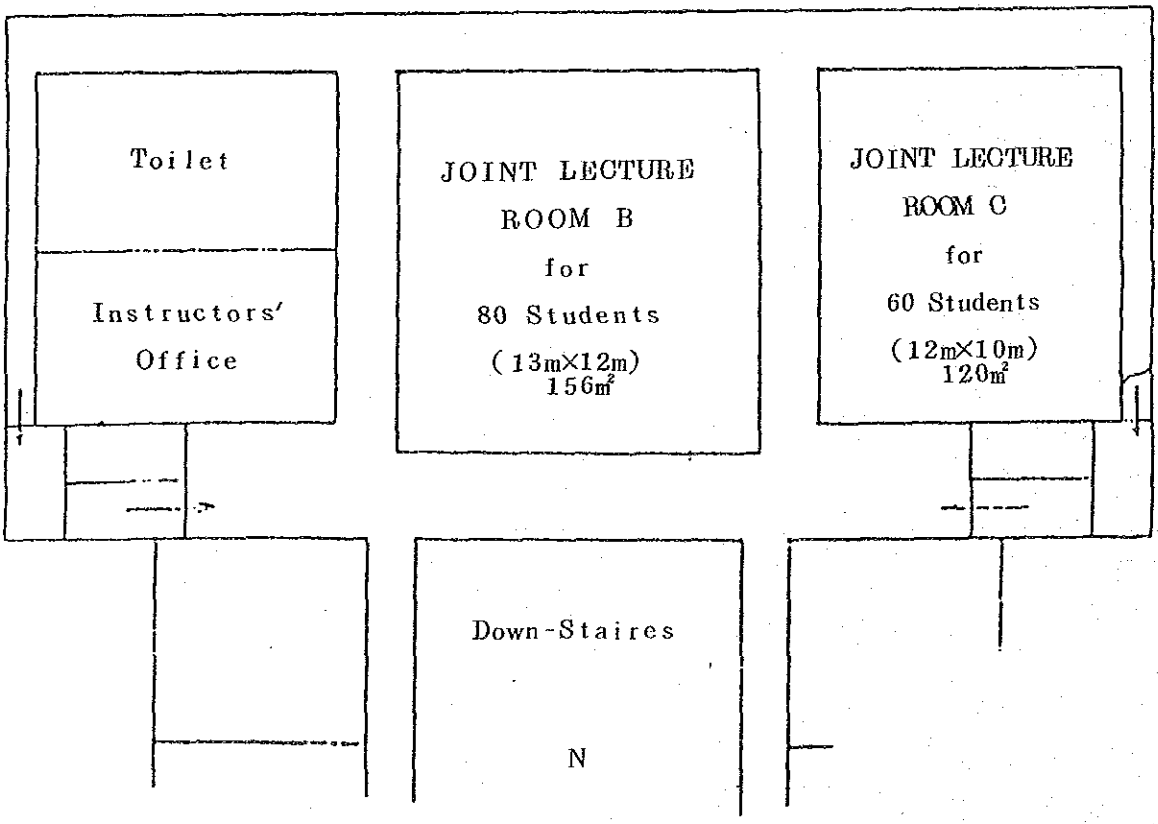
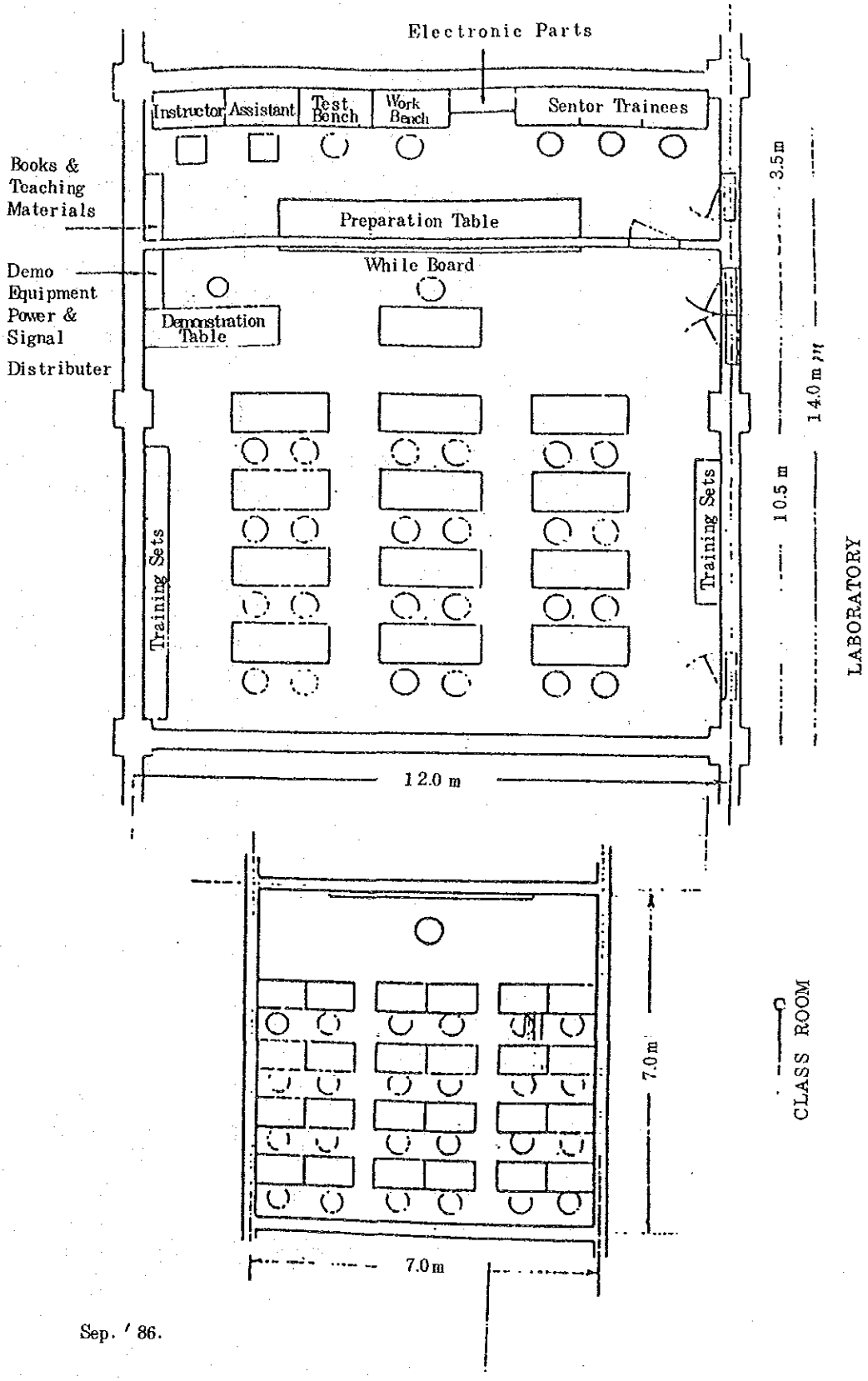

Toilet
Guest Lecturers' ROOM
JOINT LECTURE ROOM-A for 100 Students' (16m×12m) 192m²
CLASS-ROOM No.14
CLASS-ROOM No.13
Up-Staires
N


Toilet
Instructors' Office
JOINT LECTURE ROOM B for 80 Students (13m×12m) 156m²
JOINT LECTURE ROOM C for 60 Students (12m×10m) 120m²
Down-Staires
N

Sep.86


Electronic Parts
Instructor
Assistant
Test Bench
Work Bench
Sentor Trainees
Books & Teaching Materials
Preparation Table
While Board
Demo Equipment Power & Signal Distributer
Demonstration Table
Training Sets
Training Sets
3.5m
10.5 m
14.0 m
LABORATORY
12.0 m
7.0m
7.0m
CLASS ROOM

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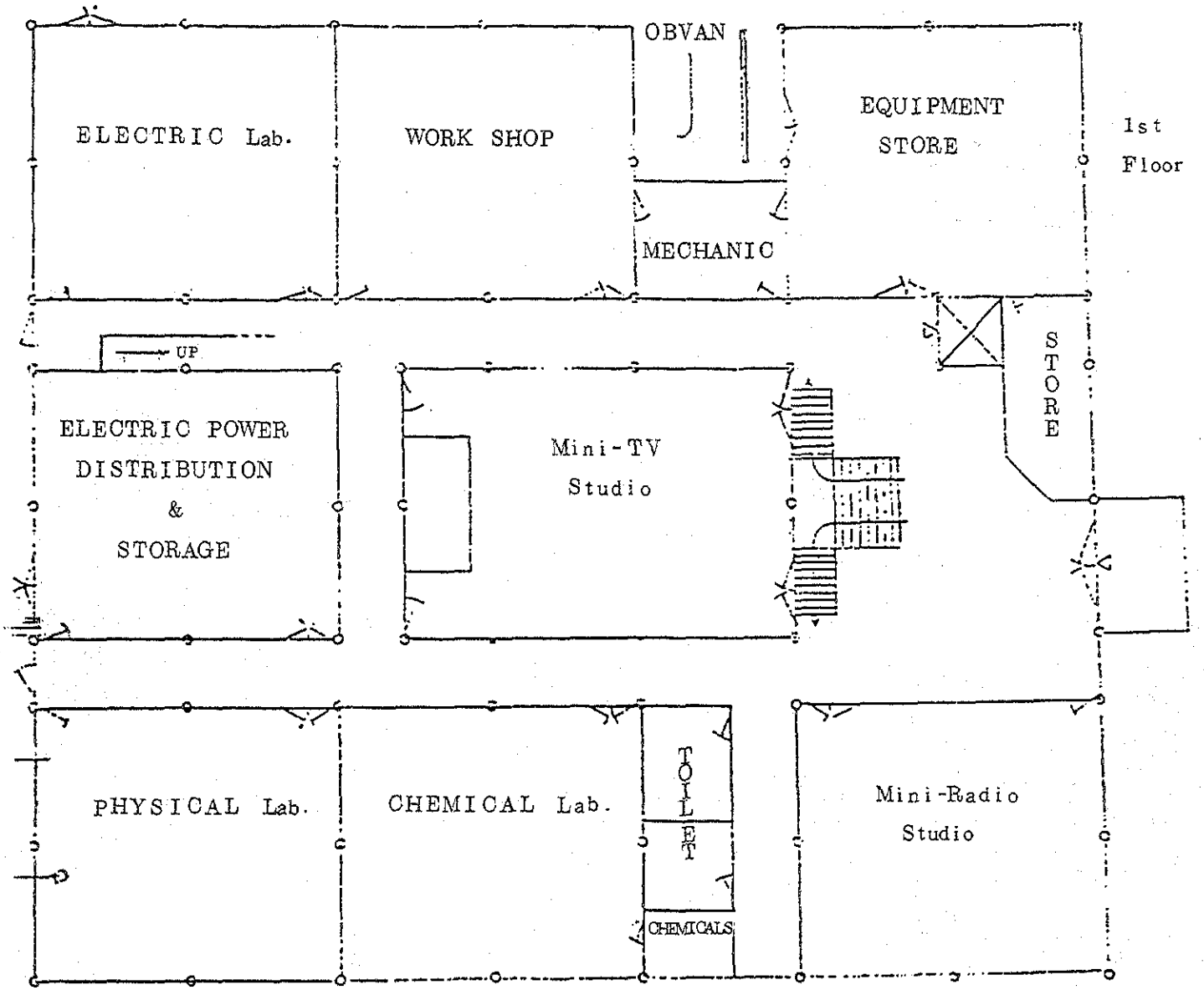
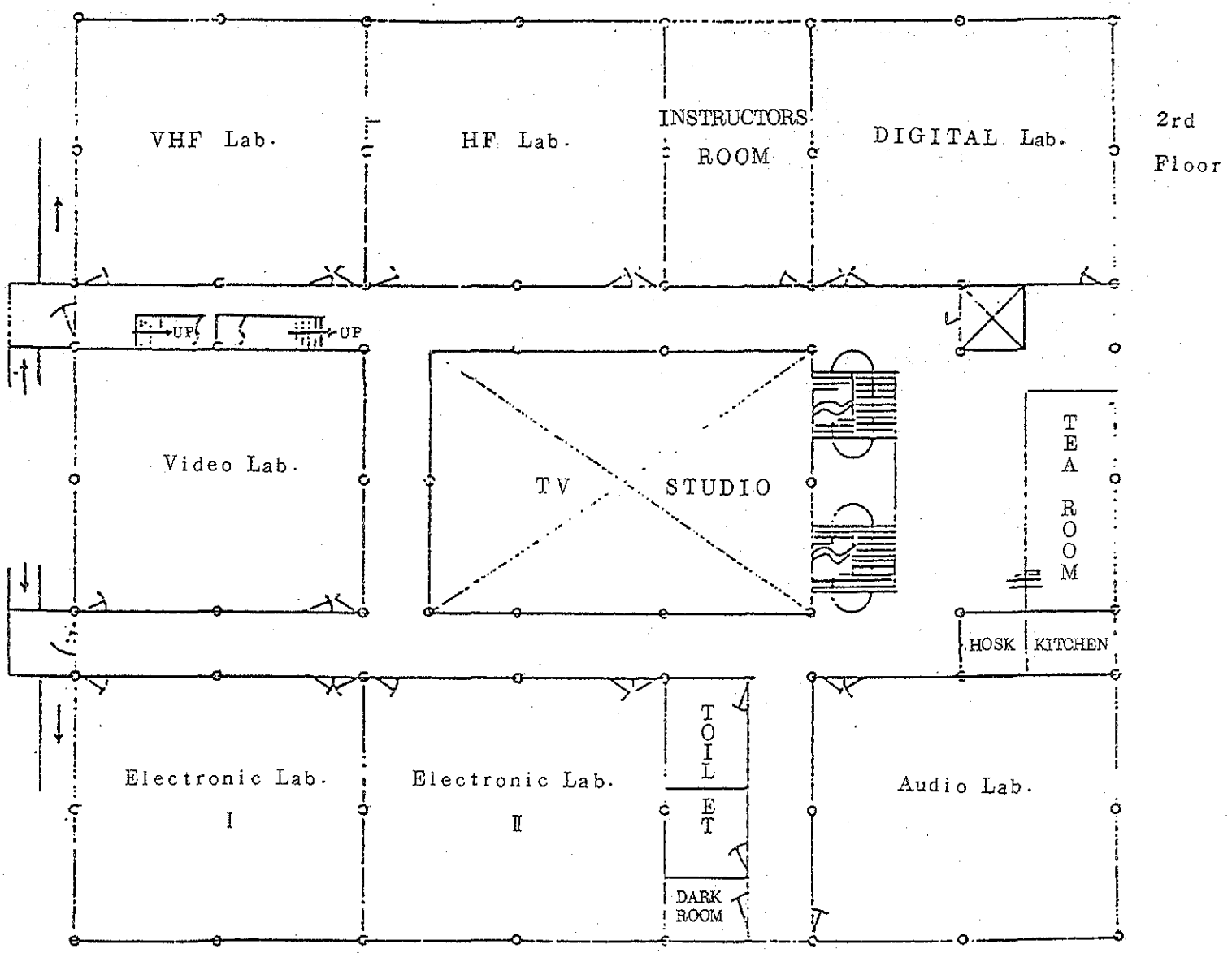
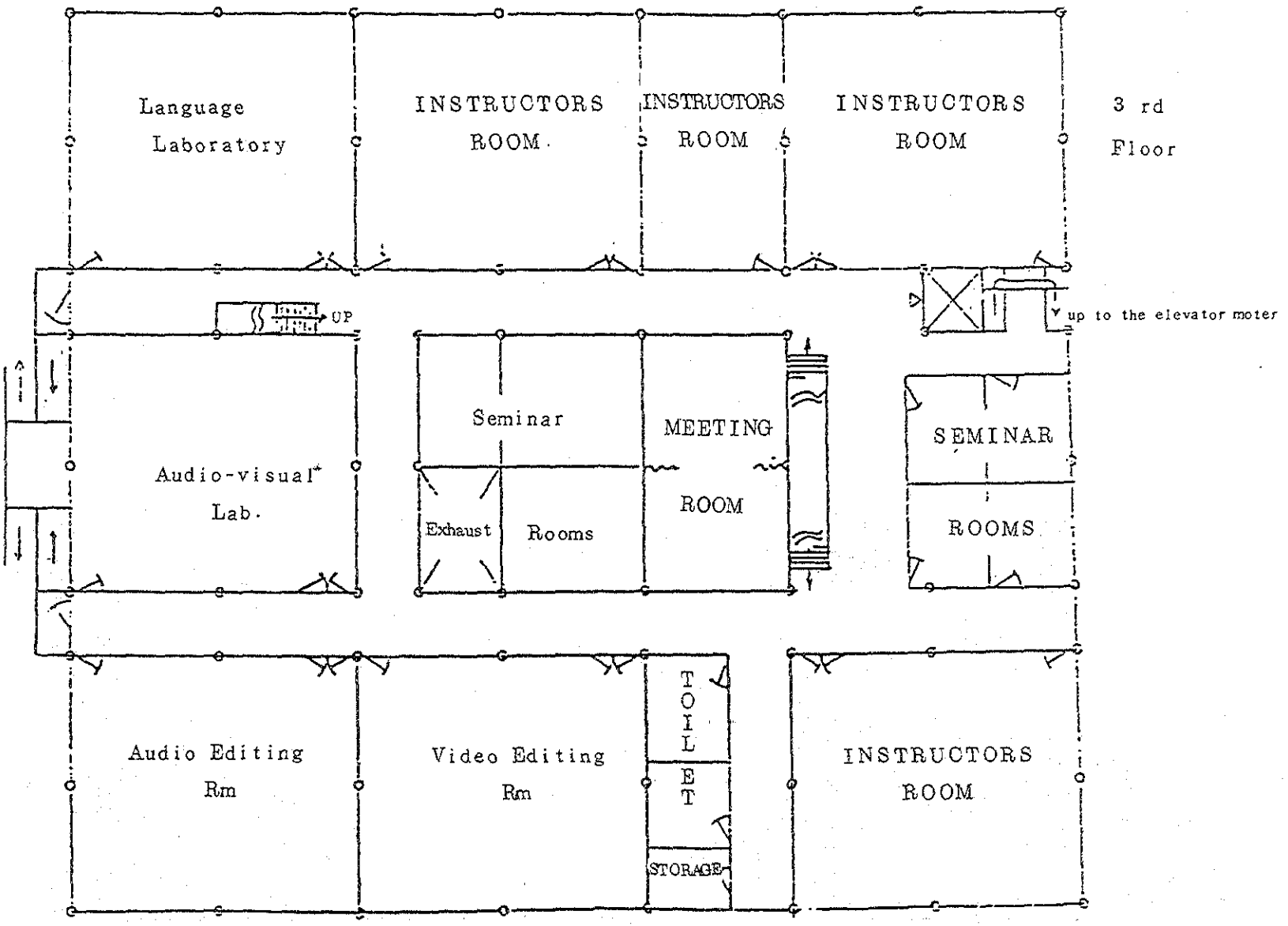
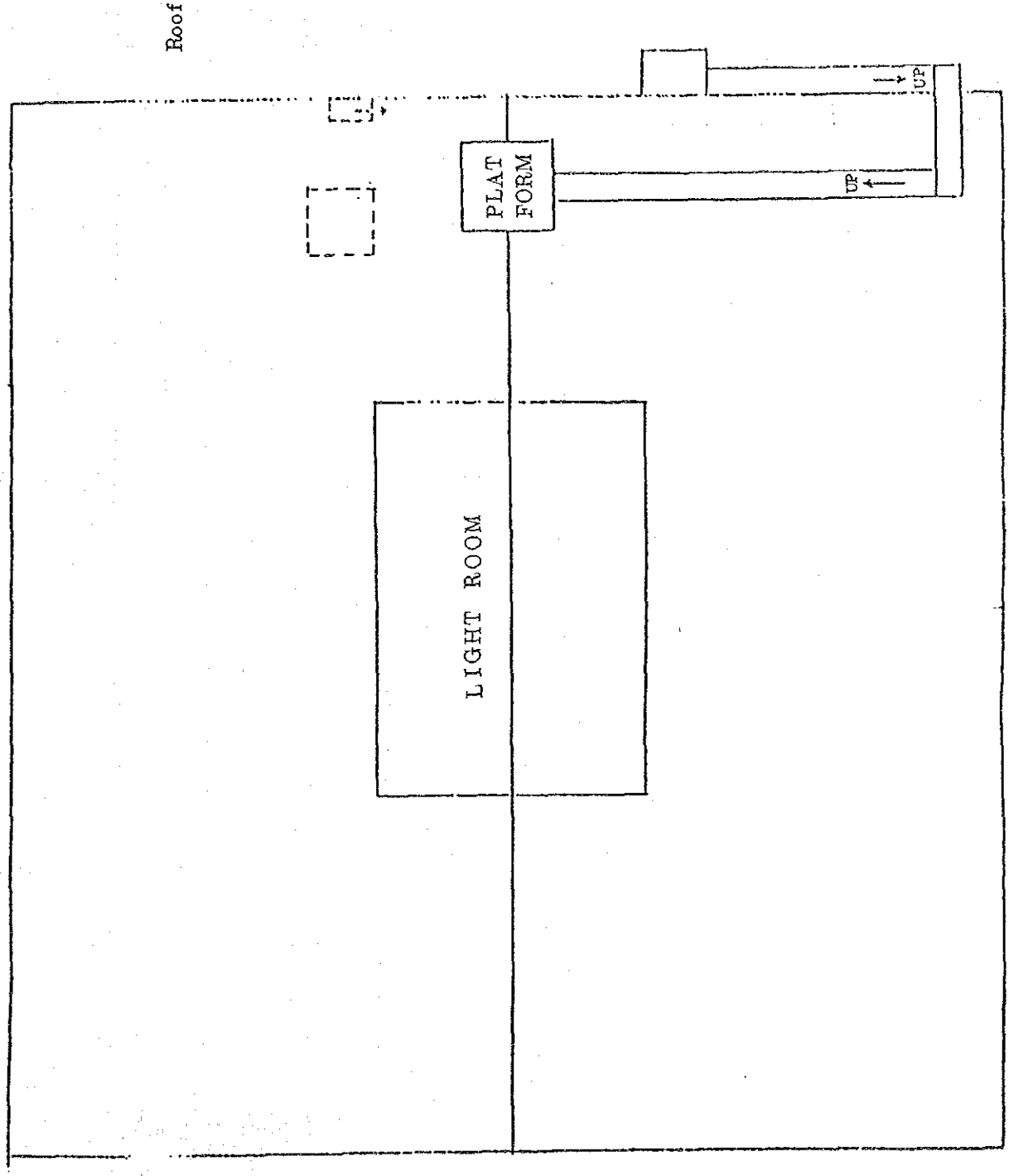
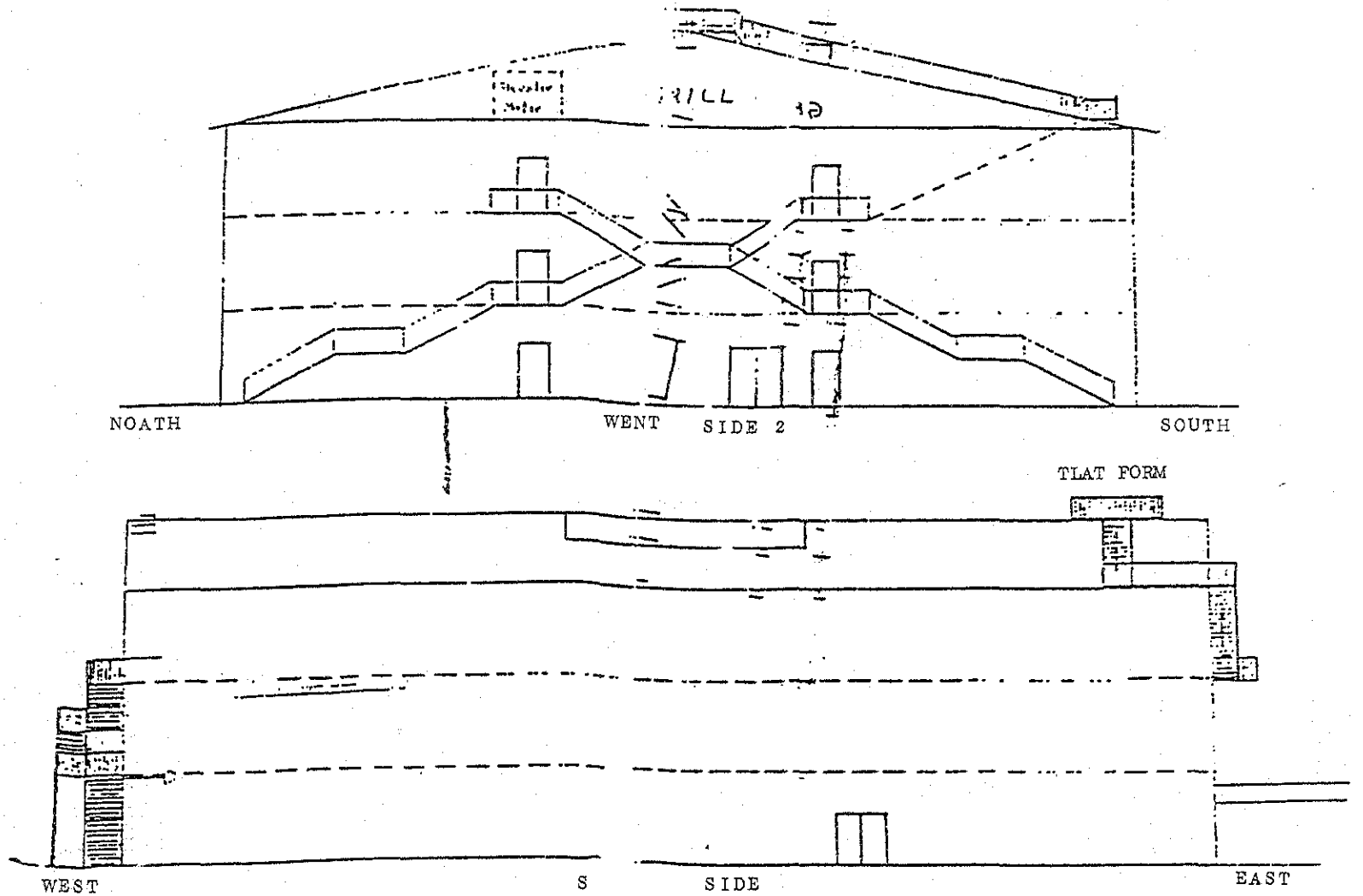

ELECTRIC Lab.
WORK SHOP
OBVAN
EQUIPMENT
STORE
1st
Floor
MECHANIC
UP
STORE
ELECTRIC POWER
DISTRIBUTION
&
STORAGE
Mini-TV
Studio
PHYSICAL Lab.
CHEMICAL Lab.
TOILET
CHEMICALS
Mini-Radio
Studio


VHF Lab.
HF Lab.
INSTRUCTORS ROOM
DIGITAL Lab.
2rd Floor
UP
UP
Video Lab.
TV STUDIO
TEA ROOM
HOSK
KITCHEN
Electronic Lab. I
Electronic Lab. II
TOILET
DARK ROOM
Audio Lab.


Language
Laboratory
INSTRUCTORS
ROOM
INSTRUCTORS
ROOM
INSTRUCTORS
ROOM
3 rd
Floor
UP
up to the elevator moter
Audio-visual
Lab.
Seminar
Exhaust
Rooms
MEETING
ROOM
SEMINAR
ROOMS
Audio Editing
Rm
Video Editing
Rm
TOILET
STORAGE
INSTRUCTORS
ROOM


Roof
UP
UP
PLAT FORM
LIGHT ROOM


NOATH
WENT
SIDE 2
SOUTH
TLAT FORM
WEST
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SIDE
EAST

4．主な機器の技術仕様（参考）

4．主な機器の技術仕様書

ここに基本設計の参考として、各種機材の技術仕様の概要を示す。なお、詳細については、基本設計段階で再度検討するものとする。

4.1　映像切換調整装置(Video Production Switcher)

映像切換調整装置は、テレビ映像系の処理を行う、即ち映像入力素材を演出意図に基づいて選択切換や混合、更に映像効果の処理を行うと共に映像と同期信号の混合、各種必要な映像出力の分配を行う機能を持った映像処理の核となる装置である。本装置は、少なくとも次の機能が発揮できるものでなくてはならない。

ア）複数の入力信号に対して、単独選択、2～3信号のクロスフェード及びブラックフェードアウトができること。

イ）入力信号のそれぞれのモニターが可能であること。

ウ）打抜き信号によるスーパーインポーズ及びスーパー文字の色付加ができること。

エ）各種特殊効果が可能な機能を持っていること。

オ）編集制御装置からのコントロール信号による自動選択機能を有すること。

カ）使用状態が明確に確認できる表示機能を持っていること。

キ）電気的特性は放送局標準仕様とする。

a) 映像入力	1 Vp-p±0.2Vp-p コンポジット信号
	ハイ・インピーダンス・ルーピング　75Ω
入力数	10回路以上
b) 映像出力	1 Vp-p±0.2Vp-p コンポジット信号
	75Ω
出力数	
i）プログラム	4回路以上
ii）システム・プレビュー	2回路以上
iii）スタジオ送りモニター	2回路以上
iv）特殊効果（プログラム/プレビュー）	各1回路以上
c) 外部基準信号	4 Vp-p±1Vp-p (Sync.Signal)

2 Vp-p±0.3Vp-p (S C)

4 Vp-p±1Vp-p (PAL Pulse)

d) 映 像 特 性

i) 周 波 数 特 性	60 Hz ～ 8 MH ± 1 dB 以内
	この帯域外はなだらかな下降特性
ii) 構成回路の信号経路亘長誤差	カラー位相 4 度以内
iii) 微 分 利 得	ＡＰＬ10％～90％の範囲で３％以内
iv) 微 分 位 相	同上範囲において２度以内
v) 矩 形 波 歪	50Hzの信号に対して２％以内
vi) 信 号 対 雑 音 比	同期性雑音に対して54dB以上
	無作為雑音に対して50dB以上
vii) 漏 話	4.5MHzにおいて －50dB以下

4.2 波 形 監 視 装 置 (Wave Form Monitor)

波形監視装置は、映像信号及び同期信号等の波形監視専用のオシロスコープである。この装置は映像信号の諸特性を定められた標準方式の規格偏差値内に維持していくための監視と測定を行うものである。

本装置は、少なくとも次の機能を持つものでなくてはならない。

ア) 映像信号及び外部基準信号の監視ができること

イ) 微分利得の測定、サイン２乗波の測定、マルチバースト信号による周波数特性の測定、ラインセレクタ利用したＶＩＴ信号の測定等が可能な機能を有すること

ウ) 測定基準の校正が可能であること

エ) 電気的特性は放送局標準仕様とする。

a) 入 力 信 号

i) ﾘﾀｰﾝ･ﾛｽ	電源 ON,OFF時共 50kHz～6MHzで
	40dB以上
ii) 最大入力信号	±5V (DC+ﾋﾟｰｸ AC)
iii) ﾙｰﾌﾟｽﾙｰ･ｱｲｿﾚｰｼｮﾝ	Ｆscで80dB以上

iv) ﾁｬﾝﾈﾙ･ｱｲｿﾚｰｼｮﾝ	FSCで50dB以上
v) 入力ｲﾝﾋﾟｰﾀﾞﾝｽ	15 kΩ以上

b) 垂直偏向系

i) 感度偏差	1 %以内（基準ﾚﾍﾞﾙ において）
ii) 利得調整範囲	0.8 ～ 2 Vの入力信号（×5の時は160mV ～ 400mVの入力信号）を1Vの入力信号の波形と同じ振幅で表示可能なこと
iii) 表示位置調節範囲	利得に関係なく1V の入力信号のﾋﾟｰｸ･ﾎﾜｲﾄとｼﾝｸ･ﾁｯﾌﾟ をﾌﾞﾗﾝｷﾝｸﾞﾚﾍﾞﾙに合わせることが可能なこと

c) 周波数応答

i) FLAT選択時	50kHz--6MHz で2 %（×1）または5 %（×5）以内
ii) LOW PASS選択時	FSCにおいて40dBの減衰、通過帯域内ではFLAT応答の1 %以内
iii) ク ロ マ	公称帯域幅1MHz, 2×FSCにおける減衰20dB以上、通過帯域内ではFLAT応答の1 %以内
iv) 過渡応答	
プレシュート	1 %以下
オーバシュート	2 %以下
リンギング	2 %以下
ﾊﾟﾙｽ/ﾊﾞｰﾚｼｵ	0.99 : 1 ～ 1.01 : 1
vi) 微分利得	APL 10%～90%の範囲で1 %以下

d) DC再生

i) クランプ時間	バック・ポーチ

ii）周 波 数 応 答	入力信号の60Hzでの減衰。 スローモード :20%以下 ファーストモード :90%以上
iii）ﾌﾞﾗﾝｷﾝｸﾞﾚﾍﾞﾙ の ｼﾌﾄ	APL 10%～90%の変化またはカラーバースト信号の有無によるブランキング・レベルの変化は1%以下

e) 映像モニター出力

i）周 波 数 応 答	50kHz--6MHz で3%以内
ii）微 分 利 得	ＡＰＬ10%～90%の範囲で1%以下
iv）微 分 位 相	同上範囲において1度以内
v）Ｄ Ｃ レ ベ ル	75Ω負荷で 0.5 V以下
vi）協 調 表 示	選択されたラインに対しDC180mV のオフセット
vii）出力ｲﾝﾋﾟｰﾀﾞﾝｽ	75Ω
viii）ﾘﾀｰﾝ・ﾛｽ	50kHz--6MHz で30dB以上
ix）入力対出力利得比	１：１±５％（15kHz）

f) 校 正 器

i）周 波 数	100kHz±0.1kHz
ii）タイミング精度	10μs ±0.01μs
iii）振 幅	1V ±1%

g) 水 平 偏 向 系

i） 掃引モード	入力信号の有無に関わらず掃引
ii）１Ｈ掃引繰返率	入力映像信号または外部同期信号のライン・レートに等しい。マグニフィケーションは0.2 μs/div.
iii）２Ｈ掃引繰返率	入力映像信号または外部同期信号のライン・レートの½ マグニフィケーションは1 μs/div.

iv) 2FLD繰返率	入力映像信号または外部同期信号の½フィルド・レートに等しい
v) タイミング精度	1 μs/div.で2%以内 0.2 μs/div.で3 %以内
vi) 直線性	2%以内
vii) 微分直線性	2%以内
viii) 掃引拡大	画面の中心より拡大
ix) 表示位置調節範囲	すべての掃引モードに於いて同期し掃引のどの部分でも画面に表示可能なこと

h) 同期

i) 内部同期	公称電圧± 6dB内のシンク信号のあるコンポジット・ビデオまたはブラック・バースト信号
ii) 外部同期	143mV ～4V のシンク・パルス
iii) リモート・シンク	2.5V～5.0Vの方形波または4.0Vのコンポジット・シンク（極性が内部で反転可能なこと）
iv) RGB／YRGB	繰返率は表示信号のフィールド・レートもしくはライン・レート

v) 掃引長

3ステップ（RGB）	3.4 ～ 4.1div.
4ステップ（YRGB）	2.5 ～ 3.1div.

4.3 ベクトルスコープ装置 (Vectorscope)

ベクトルスコープ装置は波形監視装置と共に使用し、映像信号の色信号成分を復調し、その位相と振幅をブラウン管上ベクトル表示する色信号測定装置である。

本装置は、少なくとも次の機能を持つものでなくてはならない。

ア) 映像信号のカラー及びサブキャリアの位相とレベルの監視ができること。

イ）測定基準の校正が可能であること。

ウ）電気的特性は放送局標準仕様とする。

a) 入 力 信 号

i）リターン・ロス	電源 ON,OFF時共 50kHz～6MHzで40dB以上
ii）最大入力信号	±5V (DC＋ピークAC)
iii）ループスルー・アイソレーション	Fscにおいて70dB以上
iv）チャンネル・アイソレーション	Fscにおいて70dB以上
v）入力インピーダンス	15 kΩ以上
vi）クロミナンス周波数帯域幅	
上限：－3 dB周波数	Fsc＋500kHz (±100 kHz)
下限：－3 dB周波数	Fsc－500kHz (±100 kHz)
vii）ベクトル位相精度	1.25度以内
viii）ベクトル利得精度	2.5 %以内
ix）直交位相精度	0.5 度以内

b) 同 期

i）内部同期	公称電圧± 6dB内のシンク信号のあるコンポジット・ビデオ信号
ii）外部同期	コンポジット・ビデオ信号またはCWサブキャリア

c) X Y モ ー ド

i）入力	直流結合差動入力
ii）最大入力	±15V (DC ＋ピーク信号)
iii）周波数応答	DC～500kHz
iv）X及びY位相のマッチング精度	20kHz においてトレスの分離はその線幅以下

4.4 標準カラー映像監視装置 (Standard Master Picture Monitor)

標準カラー映像監視装置は、番組編集過程におけるカラー画質の監視に使用されるものであり、これによって入力素材の色合せ、白バランス調整、レジストレーション監視等の他カラーテレビ番組の総合的色彩設計及びその色彩バランスや効果の確認のための重要な装置である。

標準カラー映像監視装置は、カラーテレビ画質の判定用として測定器なみの性格を持つものであるため、その性能的要求は厳しく、高い忠実度と安定度が要求される。本装置は、少なくとも次の機能を持つものでなくてはならない。

ア）ファイン・ピッチ・ピッチＣＲＴを採用すること

イ）クシ型フィルターを採用していること

ウ）コンバージェンス、ホワイト・バランス、カラー・バランス、レベル調整、その他必要な調整が容易であること

エ）オート・セットアップ機能を有すること

オ）ＣＲＴの消磁が簡単に実行できること

カ）アパーチュア補正が可能であること

キ）モノ／カラー・モード切換ができること

ク）２入力切換ができること

ケ）電気的特性は放送局標準仕様とする。

a) ＣＲＴ特性

i）解像度	800 TV Line 以上（中央部分）
ii）色温度	D 6500° K ±１％以内（500 時間）
iii）ﾌﾟﾘｾｯﾄ 輝度ﾚﾝｼﾞ	Cut-off から 1.5 fL
iv）最大輝度	70fL以上
v）ﾌﾟﾘｾｯﾄ･ｺﾝﾄﾗﾝｽ	100 ％白の時、30fL

b) 画面特性

i）アスペクトレシオ	画面縦横比：４：３
ii）画面サイズの安定度	40fL，100 ％白の時APL 0 ～ 100％の変化に対して２％以下

iii）水平，垂直直線性	画面高の１％以内（中央部分）
	画面高の２％以内（全体画面）
iv）コンバージェンス	21ｲﾝﾁ型ＣＲＴにおいて
	0.5mm 以内（中央部分）
	0.9mm 以内（周辺部分）
c）映像入力	1 Vp-p±0.2Vp-p ｺﾝﾎﾟｼﾞｯﾄ信号
	ﾊｲ・ｲﾝﾋﾟｰﾀﾞﾝｽ・ﾙｰﾋﾟﾝｸﾞ　７５Ω
入力数	２回路
d）外部基準信号	4 Vp-p±1Vp-p (Sync.Signal)
	2 Vp-p±0.3Vp-p (S C)
	4 Vp-p±1Vp-p (PAL Pulse)
e）漏話	7 MHz までの範囲で－50dB以下
f）映像特性	
i）周波数特性	8MHzまで　± 1 dB 以内
ii）微分利得	APL 10～90％の範囲で３％以内
iii）微分位相	同上範囲において３度以内

4.5 カラー・プレビュー・モニター装置 (Color Picture Monitor)

このモニターは、ＶＴＲ、ＦＳＳ等入力映像素材のプレビュー・モニターとして、またはスタジオの中で出演者やスタッフが番組進行内容の確認のために使用する映像モニターである。従って、細かい画質を見るわけでないので高性能である必要はない。

電気的特性は、ほぼ次の値を満足しておればよい。

a）ＣＲＴ特性	
i）解像度	300 TV Line 以上
ii）色温度	D 6500° K 又はD 9300° K
iii）最大輝度	50fL以上

b) 画 面 特 性

i）アスペクトレシオ	画面縦横比: 4 : 3
ii）画面サイズの安定度	40fL, 100 %白の時APL 0 ～ 100%の変化に対して10%以下
iii）水平, 垂直直線性	画面高の±10%以内
iv）コンバージェンス	21ｲﾝﾁ型ＣＲＴにおいて 0.5mm 以内（中央部分） 0.9mm 以内（周辺部分）

c) 映 像 入 力	1 Vp-p±0.2Vp-p コンポジット信号 ハイ・インピーダンス・ルーピング ７５Ω
入 力 数	２回路

d) 外 部 基 準 信 号	4 Vp-p±1Vp-p (Sync.Signal) 2 Vp-p±0.3Vp-p (S C) 4 Vp-p±1Vp-p (PAL Pulse)

e) 映 像 特 性

i）周 波 数 特 性	150Hz ～ 4.5MH± 3 dB以内
ii）微 分 利 得	APL 10～90%の範囲で５%以内
iii）微 分 位 相	同上範囲において５度以内

4.6 音声調整装置 (Audio Mixing Console)

音声調整装置は、テレビ映像に付随した音声の処理を行うものである。即ち音声入力素材を演出意図に基づいて選択混合、更に音響効果を強調するための各種処理を行う機能を持った装置である。

本装置は、少なくとも次の機能が発揮できるものでなくてはならない。

ア）複数の音声入力信号に対して、単独選択、複数信号のミクシング及びフェードアウトができること。

イ）グループ・ミクシングが可能であること

ウ）マスター・フェーダーによる一括コントロールが可能であること

エ）入出力信号のそれぞれのレベル調整及びモニターが可能であること。

オ）各入力チャンネルごとに音声信号補正用各種イコライザーが装備されていること

カ）各種特殊効果が可能な機能を持っていること。

キ）編集制御装置からのコントロール信号による自動選択機能を有すること。

ク）使用状態が明確に確認できる表示機能を持っていること。

ケ）電気的特性は放送局標準仕様とする。

a) 入 力 系 統

i）マ イ ク 入 力	−70dBm ～−40dBm, 可変 ハイ・インピーダンス
ii）線 路 入 力	0dBm～40dBm, 可変, 600 Ω
iii）入 力 数	12回路以上

b) 出 力 系 統

i）線 路 出 力	0dBm, 600Ω, 2回路以上
ii）グ ル ー プ 出 力	0dBm, 600Ω, 2回路以上
iii）送 返 出 力	0dBm, 600Ω, 2回路以上
iv）エ コ ー 出 力	0dBm, 600Ω, 2回路以上
v）モ ニ タ ー 出 力	0dBm, 600Ω, 2回路以上
ス ピ ー カ 出 力	20 W 以上, 8 Ω
ヘットフォーン出力	+5dBm以上, 600Ω

c) ＶＵ計指示基準　　0dBmに対して0 VU

d) 周 波 数 特 性

i）線 路 出 力	50 Hz ～ 20 kHz ± 0.5dB以内

ii) グループ出力	50 Hz ～ 20 kHz ± 0.5dB以内
iii) 送返出力	50 Hz ～ 15 kHz ± 1.0dB以内
iv) エコー出力	50 Hz ～ 20 kHz ± 0.5dB以内
v) モニター出力	50 Hz ～ 15 kHz ± 1.0dB以内

e) 高調波歪　　50Hz～15kHz に於いて 0.5%以下

f) 信号対雑音比　　－70dBm 信号入力に対して50dB以上

g) 漏話　　8kHzにおいて－60dB以下（出力間）
8kHzにおいて－80dB以下（入力間）

h) イコライザー

i) 高周波数帯域	帯域: 10kHz, 利得 : 12dB 以上
ii) 中周波数帯域	帯域: 150Hz ～ 5kHz, 利得: 12dB以上
iii) 低周波数帯域	帯域: 80Hz, 利得 : 12dB 以上
iv) ﾊｲﾊﾟｽ・ﾌｨﾙﾀｰ	遮断周波数（－3 dB): 80Hz スロープ: 12dB/oct

i) コンプレッサー

i) ｽﾚｯｼｭﾎｰﾙﾄﾞ	－20dB ～ ＋10dB
ii) ｱﾀｯｸ・ﾀｲﾑ	1 ～ 5msec
iii) ﾘｶﾊﾞﾘｰ・ﾀｲﾑ	25msec ～ 1,000msec

j) リミッター

i) ｽﾚｯｼｭﾎｰﾙﾄﾞ	－12dB ～ ＋12dB
ii) ｱﾀｯｸ・ﾀｲﾑ	100msec
iii) ﾘｶﾊﾞﾘｰ・ﾀｲﾑ	500msec

4.7 オープンリール音声テープ録音・再生装置(Audio Tape Recorder/Reproducer)

音声テープ録音・再生装置は、音声、音楽、効果音等サウンドの録音、再生、編集に使用するものである。

本装置は、少なくとも次の機能が発揮できるものでなくてはならない。

ア）キャプスタン及びテープ駆動部は電源周波数から独立のサーボ機構による正確且つ安定な回転が確保されていること

イ）編集作業が容易な各種機能を備えていること

ウ）交流バイアス録音方式であること

エ）3磁気ヘッド（録音、再生、消去）方式を採用していること

オ）使用テープは 6.3mm幅（JMT-3100または相当品）とする

カ）外部からのコントロール信号によってリモート・コントロールが可能なこと

キ）モニター回路を内臓していること

ク）試験発振器を内臓していること

ケ）電気的特性は放送局標準仕様とする。

a)	線路入力	0dBm, 600Ω
b)	線路出力	0dBm, 600Ω
c)	VU計指示基準	0dBmに対して0VU
d)	録音再生チャンネル数	2チャンネル
e)	装填可能リールの寸法	JIS/NAB/BTS 規定の17形，26形，および 11½形
f)	テープ速度	19 cm/sec, 38 cm/sec
g)	テープ速度偏差	26形リールを使用した740mテープの始端から終端まで ± 0.1%
h)	試験発信器周波数	1 kHz および 10 kHz （切換）
i)	リモートコントロール	RECORD, PLAY, STOP, RWD, FFWD, CUE, TIMER/LAP, ZCLR, MEMO, ZLOC, MLOC
j)	総合周波数特性	80 Hz ～ 10 kHz ±1 dB以内 40 Hz ～ 80 Hz ±2 dB以内 10 kHz～ 18 kHz ±2 dB以内

k)	高調波歪率	総合(1kHz 録音／再生) 1％以下
l)	信号対雑音比	総合基準録音レベルに対し50dB以上
m)	消去	1kHz 基準＋ 5dBで録音 :70dB以上
n)	ワウ・フラッター	
	i) 19cm/sec	0.08％以下
	ii) 38cm/sec	0.04％以下

4.8 レコード再生装置(Disc Reproducer)

これは録音されたレコード盤を再生する装置である。

本装置は、少なくとも次の機能を備えたものでなくてはならない。

ア) 円板駆動部は電源周波数から独立のサーボ機構による正確且つ安定な回転が確保されていること

イ) ステレオ／モノラルが切換操作で可能なこと

ウ) PLAY, STOPの制御入力及びSTAND-BY, LINE OUTの応答出力があること

エ) 音声モニターを内臓していること

オ) 出力信号レベル監視用インジケータ（ＶＵ計）を備えること

カ) オペレーションの状態が明確に確認できるインジケーターを備えていること

キ) 各チャンネルご出力信号レベル監視用インジケータ（ＶＵ計）を備えること

ク) ステレオ再生出力の位相切換ができること

ケ) 電気的特性は放送局標準仕様とする。

a)	線路出力	0dBm, 600Ω
b)	ＶＵ計指示基準	0dBmに対して0 VU
c)	回転数	33 1/3, 45, 78rpm の3速度切換
d)	回転速度偏差	
	i) 33 1/3および45rpm の時	0.01％以内
	ii) 78rpm の時	0.5 ％以内
e)	使用可能レコード寸法（外径）	40 cm 以内
f)	周波数特性	
	i) LP RIAA 特性	50 Hz ～ 15 kHz ±1 dB以内
	ii) SP SP 特性	50 Hz ～ 8 kHz ±1 dB以内

g) ラ　ン　ブ　ル	50dB以上
h) ワウ・フラッター	0.04%以下(w.r.m.s)

4.9 ＰＡＬ　1ｲﾝﾁﾋﾞﾃﾞｨｵ・ﾃｰﾌﾟ録画装置

（1-inch Magnetic Video Tape Recorder：ＶＴＲ）

ＰＡＬ標準方式のテレビジョン信号を１インチ幅の磁気テープ上に記録し、それを再び再生する装置である。従来のフィルム録画に較べて、磁気テープの場合は、撮影録画後ただちに再生できると同時にＶＴＲの利用はテレビ番組の編集作業を容易にするものである。また記録された画像の消去も簡単であり、磁気テープの反復利用が可能で経済性にも優れている。ＶＴＲは現在の放送事業に欠かせない重要な装置である。

本装置の電気的特性は放送局標準仕様とする。

a) 記録フォーマット	SMPTE タイプＣフォーマット
b) 使用テープ幅	25.350 mm ±0.025
c) テープ速度	239 mm/sec±0.5
d) ドラム径	134.620 mm
e) 書込速度	21.39 m/sec.（相対速度）
f) ﾋﾞﾃﾞｵﾄﾗｯｸﾋﾟｯﾁ	0.214 mm
g) ｵｰﾃﾞｨｵﾄﾗｯｸ 幅	0.8 × 3
h) ﾋﾞﾃﾞｵﾍｯﾄﾞｱｼﾞﾏｽ角度	0
i) ﾋﾞﾃﾞｵﾄﾗｯｸ 角度	2° 34′ 44.4″ （走行時）
j) トラック数	
i）ﾋﾞﾃﾞｵﾄﾗｯｸ	1
ii）ｵｰﾃﾞｨｵﾄﾗｯｸ	3
iii）ｼﾝｸﾄﾗｯｸ	1
iv）CTL ﾄﾗｯｸ	1
k) 記録可能時間	125 分　以上（11.75 ｲﾝﾁﾃｰﾌﾟ時）
l) タイムベース安定度	3 μsec.p-p 以下
m) サーボ ロック時間	3秒以内

	（スタンダードモードからフレーム
	キャプスタンサーボロックまで）
n) テープタイマー精度	±1フレーム
	（連続 CTL信号使用時）
o) 早送／巻戻時間	120 秒以内
	（1時間テープ使用時）
p) 使用リール	NAB 規格 TYPE 6.5～11.75 ﾌｨｰﾄ
q) 入力信号	
i）映像信号	1 Vp-p±0.2Vp-p コンポジット信号
	ハイ・インピーダンス・ルーピング
	75Ω
ii）音声信号	0dBm, 600Ω, 平衡
iii） 外部基準信号	4 Vp-p±1Vp-p (Sync.Signal)
	2 Vp-p±0.3Vp-p (S C)
	4 Vp-p±1Vp-p (PAL Pulse)
	1 Vp-p±0.2Vp-p (Ref.Video)
iv）CFパルス	TTL レベル 6.25 Hz
r) 出力信号	
i）映像信号	1 Vp-p±0.2Vp-p コンポジット信号
	75Ω
ii）音声信号	0dBm, 600Ω, 平衡
s) 映像特性	
i）帯域幅	5.0 MHz まで ±0.5dB 以内
	5.5 MHz で −3 dB
ii）微分利得	ＡＰＬ10％～90％の範囲で4％以内
	（ＴＢＣ出力にて測定）
iii）微分位相	同上条件において4度以内
iv）Kファクター	1以下 (2Tパルス,TBC出力にて)
v）信号対雑音比	45dB以上(Unweighted,自己録再時,
	V1K テープ使用, DEMOD 出力にて)

vi)	チ　ル　ト	1以下（H，V共に TBC出力にて）
vii)	モ　ア　レ	−35dB以下（75％カラーバーにて）
viii)	Y／C デレー	20 n sec. 以下(TBC出力にて)
ix)	直　線　性	2％以下

t) 音 声 特 性

i)	周 波 数 特 性	50Hz～15kHz +1.5dB −3.0dB 以内
ii)	歪　　率	1％以下（1kHz動作レベルにて）
iii)	ワウ・フラッター	0.2 % r.m.s. 以下
iv)	信 号 対 雑 音 比	50dB以上
v)	漏　　話	−60dB以下(1kHz にて，C H間)

u) T B C 特 性

i)	ウ ィ ン ド ウ	30 Hp-p
ii)	残 留 エ ラ ー	
	a. カ ラ ー	±3 n sec. 以内
	b. 白　　黒	±15 n sec. 以内
iii)	プロセッサー調整範囲	
	a. ビデオ出力レベル	±3dB 以上
	b. クロマレベル	±3dB 以上
	c. ブラックレベル	±100 mV
	d. ヒ ュ ー	±10° 以上
	e. シ ス テ ム SC位 相	± 360° 以上
	f. システムシンク位相	−1～+3 μsec.以上 (SC レート)
	g. 出 力 SC− H 位 相	EIA RS-17A準拠

4.10 3/4 ｲﾝU-MATICビディオ・テープ録画再生装置（P A L）

(3/4-inch U-MATIC Magnetic Video Tape Recorder （ＰＡＬ System)

本装置の電気的特性は放送局標準仕様とする。

a) 記録フォーマット	U規格
b) 使用テープ幅	19.00 mm±0.03
c) テープ速度	95.3mm/sec±0.2
d) ドラム径	110 mm±0.01
e) 書込速度	8.54 m/sec.（相対速度）
f) ﾋﾞﾃﾞｵﾄﾗｯｸﾋﾟｯﾁ	
g) ｵｰﾃﾞｵﾄﾗｯｸ幅	0.8 × 2
h) ﾋﾞﾃﾞｵﾍｯﾄｱｼﾞﾏｽ角度	0
i) ﾋﾞﾃﾞｵﾄﾗｯｸ 角度	
j) 記録可能時間	60分以上（60カセット使用時）
k) 早送／巻戻時間	4分以内 （1時間テープ使用時）
l) 使用ｶｰﾄﾘｯｼﾞ	U規格標準
m) 入力信号	
i）映像信号	
a. 線路入力	1 Vp-p±0.5Vp-p コンポジット信号 75Ω
b. ﾀﾞﾋﾞﾝｸﾞ入力	
輝度信号	0.5Vp-p ±0.2V, 75Ω±10%
クロマ信号	0.5Vp-p ±0.1V, 75Ω±10%
ii）音声信号	0dBm, 600Ω, 平衡
iii） 外部基準信号	4 Vp-p±1Vp-p (Sync.Signal) 2 Vp-p±1Vp-p (S C)
iv）ﾀｲﾑｺｰﾄﾞ	0 dB± 6 dB, 10 kΩ, 不平衡
n) 出力信号	
i）映像信号	
a. 線路出力	1 Vp-p±0.5Vp-p ｺﾝﾎﾟｼﾞｯﾄ信号, 75Ω
b. ダビング出力	

輝度信号	0.5Vp-p ±0.1V, 75Ω±10%
クロマ信号	0.5Vp-p ±0.1V, 75Ω±10%
ii) 音声信号	0dBm, 600Ω, 平衡
iii) タイムコード	0 dB± 3 dB, ロー・インピーダンス, 不平衡

o) 映像特性

i) 水平解像度	
a. SPモード	300 本以上
b. 通常モード	260 本以上
ii) 微分利得	APL10%～90%の範囲で4%以内（TBC出力にて測定）
iii) 微分位相	同上条件において4度以内
iv) 信号対雑音比	45dB以上
v) Y／Cデレー	25 n sec. 以下(TBC出力にて)

p) 音声特性

i) 周波数特性	50Hz～15kHz +1.5dB −3.0dB 以内
ii) 歪率	2%以下（1kHz動作レベルにて）
iii) ワウ・フラッター	0.2 % r.m.s. 以下
iv) 信号対雑音比	50dB以上

q) TBC特性

i) ウィンドウ	30 Hp-p
ii) 残留エラー	
a. カラー	±3 n sec. 以内
b. 白黒	±15 n sec. 以内
iii) プロセッサー調整範囲	
a. ビデオ出力レベル	±3dB 以上
b. クロマレベル	±3dB 以上
c. ブラックレベル	±100 mV

d.	ヒ ュ ー	±10° 以上
e.	ｼｽﾃﾑSC位 相	± 360° 以上
f.	ｼｽﾃﾑｼﾝｸ 位 相	－1～＋3 μsec.以上 (SCレート)
g.	出力SC－H位相	EIA RS-17A準拠

4.11 ベータカムＳＰビディオ・テープ録画再生装置(ＰＡＬ)

(BETACAM SP Magnetic Video Tape Recorder (ＰＡＬ System)

本装置の電気的特性は放送局標準仕様とする。

a)	使 用 テ ー プ	12.65 mm±0.01
b)	テ ー プ 速 度	101.5mm/sec ±0.01
c)	書 込 速 度	5.7 m/sec
d)	記 録 可 能 時 間	20分以上 (HG-20 使用時)

e) 入 力 信 号

i) 映 像 信 号

a.	線路入力	1 Vp-p±0.5Vp-p コンポジット信号 75Ω
b.	ダビング入力	
	輝 度 信 号	1.0Vp-p ±0.2V, 75Ω±10%
	クロマ信号	0.7Vp-p ±0.1V, 75Ω±10%

ii)	音 声 信 号	0dBm, 600Ω, 平衡
iii)	外部基準信号	1.0Vp-p ±0.2V,(Ref.Video)
iv)	タイムコード	0 dB± 6 dB, 600 Ω, 平衡

f) 出 力 信 号

i) 映 像 信 号

a.	線路出力	1 Vp-p±0.5Vp-p ｺﾝﾎﾟｼﾞｯﾄ信号, 75Ω
b.	ダビング出力	

輝度信号	1.0Vp-p ±0.1V, 75Ω±10%
クロマ信号	0.7Vp-p ±0.1V, 75Ω±10%
ii) 音声信号	0dBm, 600Ω, 平衡
iii) タイムコード	0 dB± 3 dB, 600 Ω, 平衡

g) 映像特性

i) 周波数帯域	
a. 輝度信号	25Hz～4.0MHz +0.5dB, −3.0dB
b. クロマ信号	25Hz～1.5MHz +0.5dB, −3.0dB
ii) 微分利得	ＡＰＬ10%～90%の範囲で４%以内 (ＴＢＣ出力にて測定)
iii) 微分位相	同上条件において４度以内
iv) 信号対雑音比	45dB以上
v) Ｙ／Ｃデレー	20 n sec.

h) 音声特性

i) 周波数特性	50Hz～15kHz +1.5dB −3.0dB 以内
ii) 歪率	２%以下 (1kHz動作レベルにて)
iii) ワウ・フラッター	0.2 % DIN weighted
iv) 信号対雑音比	50dB以上

4.12 S-VHS ビディオ・テープ録画再生装置（ＰＡＬ）

(S-VHS Magnetic Video Tape Recorder (ＰＡＬ System)

本装置の電気的特性は放送局標準仕様とする。

a) 使用テープ	12.65mm/sec ±0.01
b) テープ速度	23.39mm/sec ±0.01
c) 書込速度	5.8 m/sec
d) 記録可能時間	２時間以上
e) 入力信号	
i) 映像信号	

a. 線路入力	1 Vp-p±0.5Vp-p コンポジット信号 75Ω
b. ダビング入力	
輝度信号	1.0Vp-p ±0.2V, 75Ω±10%
クロマ信号	0.7Vp-p ±0.1V, 75Ω±10%
ii) 音声信号	0dBm, 600Ω, 平衡
iii) 外部基準信号	1.0Vp-p ±0.2V,(Ref.Video)
iv) タイムコード	0dB±6dB, 600 Ω, 平衡

f) 出力信号

i) 映像信号	
a. 線路出力	1 Vp-p±0.5Vp-p コンポジット信号 75Ω
b. ダビング出力	
輝度信号	1.0Vp-p ±0.1V, 75Ω±10%
クロマ信号	0.7Vp-p ±0.1V, 75Ω±10%
ii) 音声信号	0dBm, 600Ω, 平衡
iii) タイムコード	0dB±3dB, 600 Ω, 平衡

g) 映像特性

i) 水平解像度	240 本以上
ii) 微分利得	APL10%～90%の範囲で4%以内
iii) 微分位相	同上条件において4度以内
iv) 信号対雑音比	45dB以上
v) Y／Cデレー	25 n sec. 以下

h) 音声特性

i) 周波数特性	50Hz～15kHz +1.5dB −6.0dB 以内
ii) 歪率	2%以下 (1kHz動作レベルにて)
iii) ワウ・フラッター	0.2 % r.m.s. 以下

ⅳ）信 号 対 雑 音 比　　50dB以上

4.13 テレビジョン試験信号発生装置及び測定機器

テレビ番組制作からその番組がテレビ電波として送信されるまでにテレビ信号は、沢山の機器や回路を経ることになる。従って、その過程でテレビ信号はそれぞれの機器や回路の持つ固有の特性の影響により、いろいろな『ひずみ(impairment)』を受けることがある。その結果、伝送経路においていろいろな形の劣化(degradation) 現象が引きおこされる。伝送経路を構成する各種機器は、定められた基準値以内におさまるよう考慮しなければならないのは当然のことである。機器の設計制作時は勿論のこと、日常運用に当たっても常にその基準値以内の性能特性が維持されるように調整がなされなけれがならない。

本装置は、映像機器の日常テスト及び調整のために重要な装置であり、技術関係の教育訓練に欠かせない機器である。

テレビ映像信号は電気的波形信号として伝送されるため、その波形のひずみとテレビ信号に重畳されて信号の劣化原因をつくる内外からの不要信号の混入による妨害の軽減が最も大切な保守業務となる。

波形ひずみや妨害信号の測定にあたって、その測定方法と重要測定項目の世界的統一が必要であり、ＣＣＩＲ（国際無線通信諮問委員会：International Radio Consultative Commitee）は、電気的特性の規格及びその測定用試験信号について勧告している。測定器は、ＣＣＩＲの勧告に従った試験が可能な性能を持っていなければならない。

ア）振幅周波数特性の測定

掃引法（sweep)または、マルチバースト信号による方法のいずれかを用いた測定が可能な測定器が必要である。

イ）位相周波数特性の測定

映像機器の位相周波数特性が理想的のものでないと、テレビ信号の一部の成分が時間的に遅延し信号波形にひずみを発生させるため、日常の管理が大切である。従って、位相周波数の測定が容易に実施できる測定器が必要である。

ウ）遅延時間特性の測定

伝送系の位相特性によって、輝度信号と色度信号の間に時間的差が発生すると、

画面上で色ぶちひずみをひきおこすため、日常の管理が大切である。
従って、位相特性測定が容易に実施できる測定器が必要である。

エ）直線波形ひずみの測定

この直線ひずみの発生によってテレビ信号の輝度成分が劣化する。
直線ひずみは、長時間波形ひずみ、フィールド時間波形ひずみ、ライン時間波形ひずみ、短時間波形ひずみとに区別される。

長時間波形ひずみは、フィールド周波数以下の超低周波領域のひずみであり、平均画像輝度の変化として現れる。このひずみは、信号伝送系に輝度信号として100%変化のＤＣステップ信号を加えたときの応答特性で示され、このとき発生するダンプ振動を測定する。このひずみが大きいと同期信号の欠除や白ずまりなどの非直線ひずみを２次的にひきおこすことになる。

フィールド時間波形ひずみは、フィールド周波数から数kHz までの低域特性不良を起こし、sag が発生する。これによって、テレビ画面の上下での平均輝度が異なる垂直シェーディングが現れる。

ライン時間波形ひずみは、数kHz から数百kHz までの中域特性不良を起こし、streaking が発生し、テレビ画面上の水平方向に白または黒の尻尾を引く現象が現れる。

短時間波形ひずみは、数百kHz から数MHz に至る高域特性不良であり，ringing，overshoot，smearを起こし、リンギングは画像が反射を受け、オーバーシュートは画像のはね上がり、スメアーは画像のにじみ現象による解像度不良として現れる。　上記の直線波形ひずみの測定は、方形波信号（低域，中域のひずみ測定）、２乗正弦波信号（中域，高域のひずみ測定）が使用される。

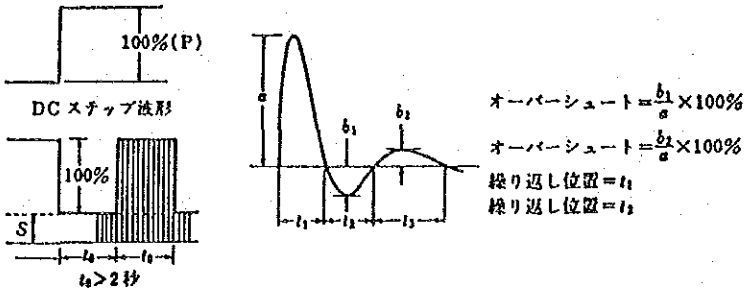
オ）直線色度ひずみの測定

カラーテレビの色度信号は、その振幅と位相にそれぞれ彩度及び色相情報を含んでいる。この信号の含まれる高周波領域の波形ひずみは、色に関する情報の劣化として画像上に現れる。

このひずみの測定には、変調 12.5 Ｔパルスが使用される。

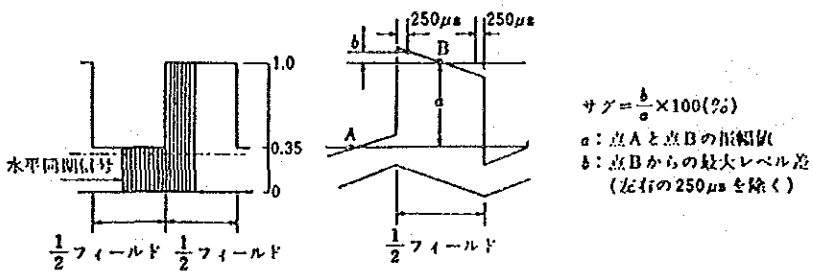
理想波形	対称	対称	非対称	非対称	非対称
振幅特性（高域）	低下	増大	フラット	フラット	低下
遅延特性（高域）	フラット	フラット	進み	遅れ	進み

方形波に現れる直線ひずみ例



（a）試験信号　（b）測定波形　（c）測定項目

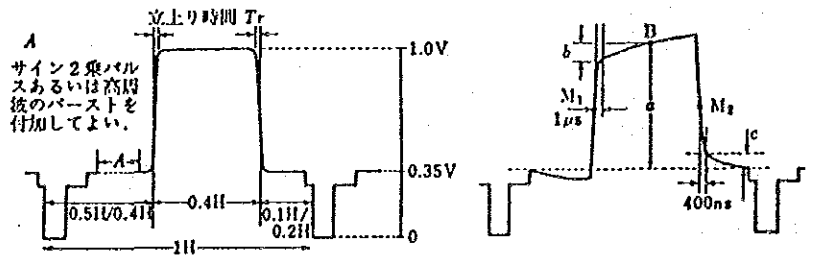
長時間波形ひずみの測定（超低域ひずみ）



（a）試験信号
（第1試験信号 Rec 421-3）

（b）測定波形　（c）測定項目

フィールド時間直線ひずみの測定

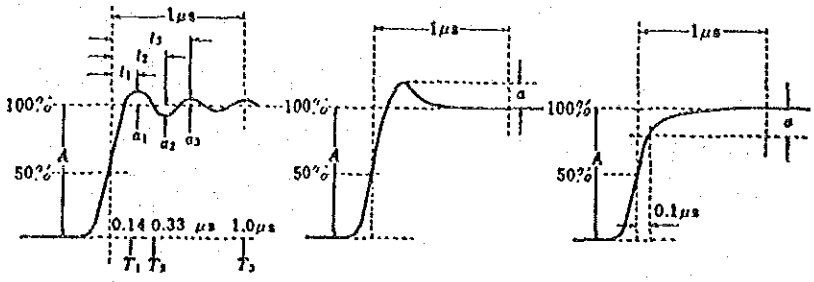


（第2試験信号：Rec 421-3）
Tr…立上り時間Tまたは2T
T=$\frac{1}{2fc}$≒0.125μs

1. ラインタイム波形ひずみ$\frac{b}{a}$×100%
2. ベースライン波形ひずみ$\frac{c}{a}$×100%

（a）試験信号　（b）ストリーキングの測定

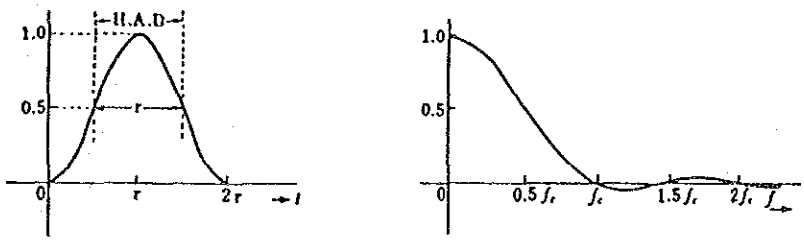
ライン時間ひずみの測定



（a）リンギング　（b）オーバーシュート　（c）スミア

	（a）リンギング				（b）オーバーシュート	（c）スミア
	正のローブ		負のローブ			
ひずみ量	$\frac{a}{4A}\times 100\%$	$0\leq t<t_1$	$\frac{a}{2A}\times 100\%$	$0\leq t<T_3$	$\frac{a}{4A}\times 100\%$	$\frac{a}{2A}\times 100\%$
	$\frac{2at}{A(1+t)}\times 100$	$T_1\leq t<T_2$	$\frac{2at}{A(1+t)}\times 100$	$T_3\leq t<T_2$		
	$\frac{a}{A}\times 100$	$T_2\leq t$	$\frac{a}{A}\times 100$	$T_3\leq t$		
	この中の値の絶対値がひずみ量					

方形波による短時間ひずみの測定



$f(t)=\sin^2\frac{\pi}{2}\cdot\frac{t}{\tau}$

$\tau=\frac{1}{f_c}$　f_c…帯域上限周波数

H.A.D…半値幅
（half amplitude duration）

$F(\omega)=\frac{\pi^2}{\pi^2-\omega^2\tau^2}\cdot\frac{\sin\omega\tau}{\omega\tau}$

$F(f)=\frac{1}{1-4\left(\frac{f}{f_c}\right)^2}\cdot\frac{\sin\left(2\pi\frac{f}{f_c}\right)}{2\pi\frac{f}{f_c}}$

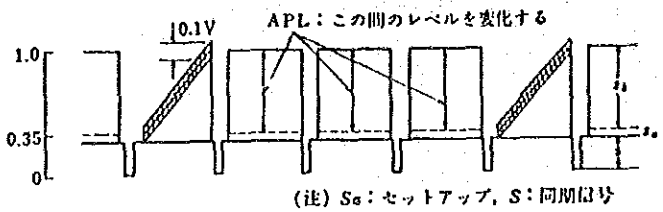
（a）2乗正弦パルス波の形　（b）2乗正弦パルス波の周波数スペクトル

2乗正弦パルス波の特性

カ）輝度信号の非直線ひずみの測定

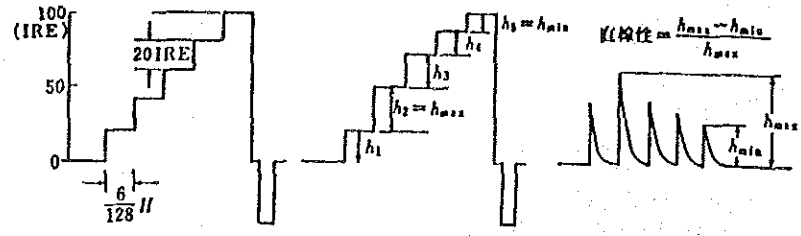
カラーテレビ信号は、大振幅低周波の輝度信号とこれに重畳される小振幅高周波の色信号から構成されている。機器に対する入力信号レベルの過大に対して出力信号波形が、上記それぞれ単独の非直線ひずみを起こす他、色度信号の振幅及び位相が輝度信号の大振幅成分で変調されるために起こる非直線ひずみ、また反対に色度信号の輝度信号への混変調による非直線ひずみが起こる。

この非直線ひずみは、ＣＣＩＲ勧告のＩＴＳ（Insertion test signals）に含まれる５段階階段波（5-riser staircase waveform）、またはＣＣＩＲ規格の第３試験信号を使用して測定する。



（注）S_a：セットアップ，S：同期信号

第３試験信号（Rec. 421-3）



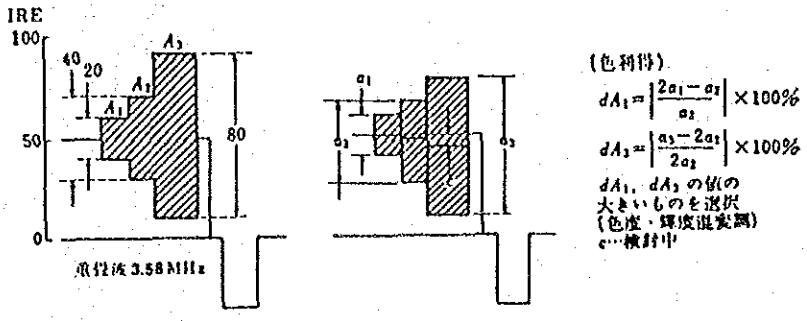
（ａ）試験信号(D1)　　（ｂ）測定波形　　（ｃ）（ｂ）の波形を微分

輝度直線ひずみの測定

キ）色度信号の非直線ひずみの測定

このひずみは、輝度信号の振幅レベルを一定にしたときの色度信号の振幅変化として現れるものであり、テレビ画面上では彩度や色相が変化する。

この非直線ひずみは、ＩＴＳの３レベル色信号（3-level chrominance bar：ITS-G 信号）で測定する。



（ａ）試験信号（ITS－G）　（ｂ）測定形　（ｃ）測定項目

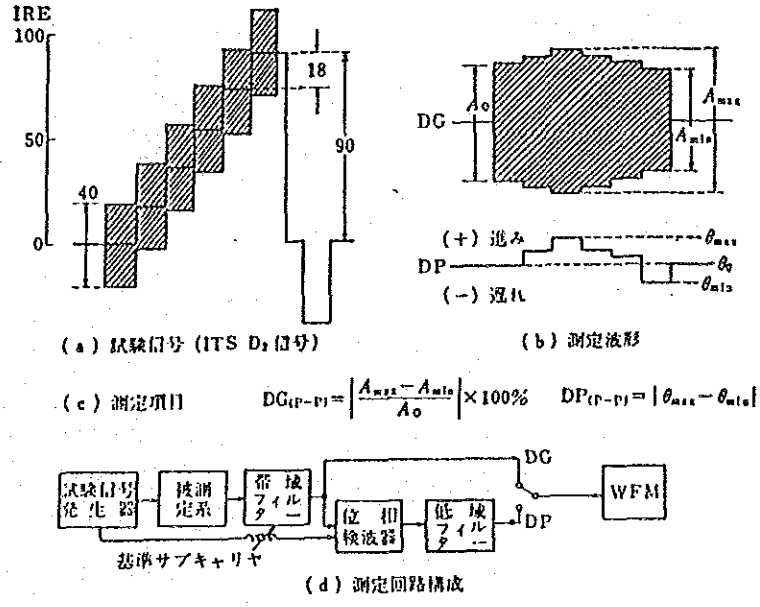
色利得（非直線ひずみ）の測定

ク）微分利得と微分位相の測定

微分利得（differential gain:ＤＧ）と微分位相（differenrial phase: DP）は、輝度信号の振幅変化に伴って発生する色度信号の振幅と位相の変化である。

微分利得は、副搬送波のバースト信号が黒レベルを含んで重畳されている５段階階段波（ＩＴＳ－Ｄ）を使用する。

微分位相は、微分利得測定とまったく同じである。



（ａ）試験信号（ITS D_2 信号）　（ｂ）測定波形

（ｃ）測定項目

（ｄ）測定回路構成

微分利得（DG），微分位相（DP）の測定

ＣＣＩＲ勧告ＩＴＳによる測定可能項目一覧

測定項目		使用する信号（CCIR勧告ITS）	
		種類	波形記号
挿入利得		2Tパー	第1信号 B_2
振幅／周波数特性		2Tパー，マルチパースト	第1信号 B_2 (C_1) *1 第2信号 C_2
ライン時間波形ひずみ		2Tパー	第1信号 B_2
短時間波形ひずみ	ステップ応答	2Tパー	第1信号 B_2
	パルス応答	2Tパルス	第1信号 B_1
色度・輝度信号利得差		変調12.5Tパルス	第1信号 B_2 第1信号 F
色度・輝度信号遅延差		変調12.5Tパルス	第1信号 B_2 第1信号 F
輝度信号ライン時間非直線ひずみ			第1信号 D_1 (D_2) *2
色度信号非直線ひずみ		変調3レベル	第2信号 G
微分利得 DG		重畳階段波	第2信号 D_2
微分位相 DP		重畳階段波	第2信号 D_2
色度・輝度混変調		2Tパー，変調3レベル	第1信号 B_2 第2信号 G
同期波形		（特に指定なし）	

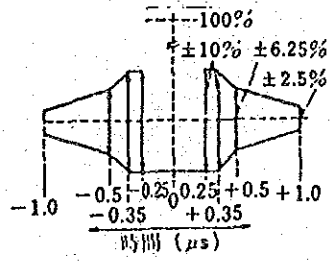
＊1　ライン時間波形ひずみが小さいとき C_1 利用可.

＊2　色度・輝度混変調が小さいとき D_2 利用可.

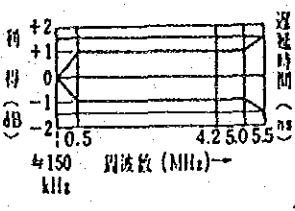
ＣＣＩＲ勧告の測定項目

	測定項目		放送局採用中	標準擬似回線における設計規格値
直線ひずみ	挿入利得	(dB)	○	0±0.5以下
	挿入利得変動 (1s)	(dB)		±0.3以内
	挿入利得変動 (1h)	(dB)		±0.5以内
	長時間波形ひずみ			(研究中)
	フィールド時間波形ひずみ	(%)	○	± 6 以内
	ライン時間波形ひずみ	(%)	○	± 3 以内
	パルス/バー比	(%)	○	100±12以内
	パルスロープ	(%)	○	(付図-2)
	色度－輝度信号利得差	(%)	○	± 10以内
	色度－輝度信号遅延時間差	(μs)	○	±100以内
	振幅/周波数特性	(dB)	○	(付図-3)
	エンベロープ遅延時間/周波数特性	(μs)	○	(付図-4)
非直線ひずみ	輝度信号振幅ひずみ	(%)		12以下
	色度信号振幅ひずみ			(研究中)
	微分利得 (DG)	(%)	○	±10以内 あるいは 12以下
	微分位相 (DP)	(度)	○	± 5 以内 あるいは 6 以下
	色度信号－輝度信号混変調			(研究中)
	同期信号のひずみ (定常状態)	(%)	○	±10 以内
	同期信号のひずみ (過渡時)			(研究中)
信号対連続性ランダム雑音比		(dB)	○	53(1)／45(2)
信号対低周波雑音比		(dB)		(研究中)
信号対同期性雑音比 (0～1kHz)		(dB)		35以上
信号対同期性雑音比 (1kHz～f_c(3))		(dB)	○	55以上
信号対インパルス性雑音比		(dB)		25以上
漏話 (無ひずみ)		(dB)	○	58以上
漏話 (微分)		(dB)		50以上

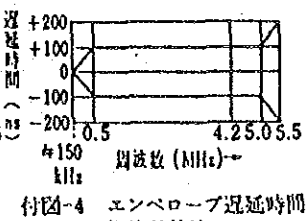
〔注〕 (1) 任意の月の1%以上の時間率に対してこの規格値以下でないこと.
(2) 任意の月の0.1%以上の時間率に対してこの規格値以下でないこと.
(3) 映像伝送遮断周波数 (525/60方式では f_c=4.2 MHz, その他は f_c=5.5 MHz)



付図-2 パルスロープ



付図-3 振幅/周波数特性



付図-4 エンベロープ遅延時間周波数特性