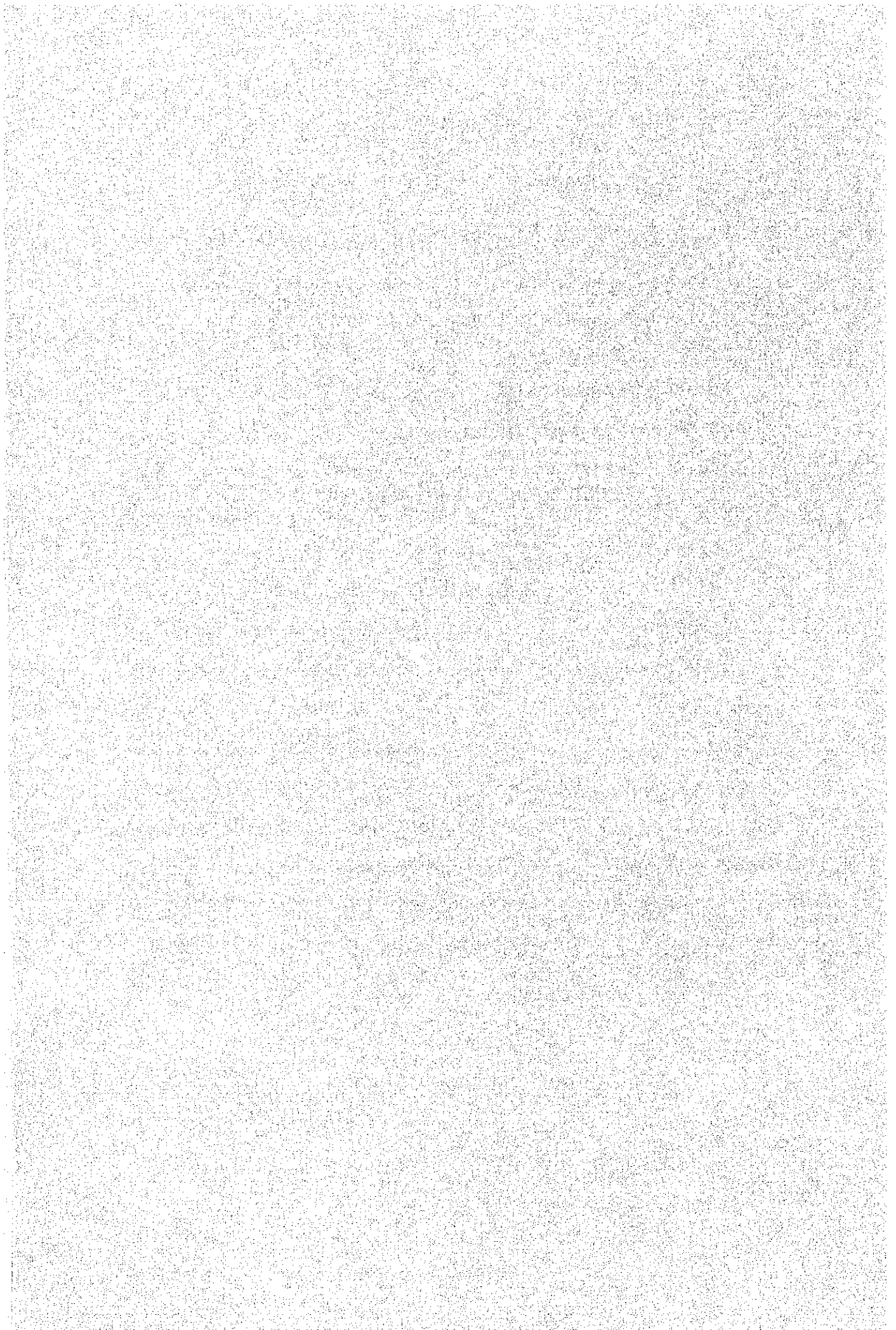


SECTION 3 PROJECT OUTLINE



SECTION 3 PROJECT OUTLINE

3-1 Basic Project Concept for Expansion of TV Facilities

3-1-1 Objectives

To construct TV studios and to arrange an outside broadcast (OB) van and broadcasting equipment including system converter are necessary for the expansion of TV broadcasting hours and the enrichment of programmes for the purpose of the progress of the economy, social development and educational and cultural standards of Burma.

3-1-2 Plans

(1) Programme plan

At present, IBD broadcasts TV programmes for two hours ~ two hours and 30 minutes every evening. 37% of the programmes broadcast by IBD are self-produced programmes 18% are Burmese moving pictures and the remaining 44% are imported programmes. When programmes are classified by type, 54% are entertainment programmes, 12% are educational and cultural programmes, 19% are news programmes and other programmes are 15%. Thus the percentage of educational and cultural programmes

Table 3-1 Programmes which will be Studio Produced

Type of Programmes	Broadcasting Time (minutes)	Times Per Week	No. of Performers	No. of Sets	S.U.F.	No.1 Studio	No.2 Studio	Ex Studio	News Studio	
Cultural dances	30	1	20-30-40	1-2	25	750				
Dance dramas	30	0.5	15-20-30	2-3	30	450				
Musical shows	30	1	8-12-16	1-2	20			600		
Variety dances	30	1	8-12-16	1-2	20			600		
Chorus with 2 orchestras	40	0.25	20-30-40	2-3	25	250				
Dramas (Telefeatures)	30	0.5	15-20-30	3-4	30	450				
School educational programmes	20	2	15-20-30	2-3	20	800				
Children's programmes	15	1	10-15-20	2-3	20		300			
Youth programmes	20	1	10-15-20	2-3	15		300			
Educational (Informal)	20	2	7-10-15	2-3	15		600			
Classical music	30	1	10-15-20	1-2	20		600			
Quiz programmes	20	0.5	10-15-20	1-2	15		150			
Discussions	15	1	5-7-10	1-2	10		300			
Discussions	20	2	3-5-7	1	10		500			
News forum	20	1	3-4-5	1	10		400			
Talks	20	3	2	1	8		480			
School educational programmes	20	7	15-20-30	1-2	10	800		600		
News	15	14	2	1	2				420	
News commentary	15	7	3	1	5				525	
					Daily studio utility hours (min.)		583	605	300	

and that of news programmes are not so high.

IBD intends to start school educational broadcasting service and enrich educational and news programmes by developing the percentage of self-produced programmes and plans to extend the total broadcasting hours to 4 hours and the broadcasting hours of self-produced programmes to two hours and 30 minutes per day.

In this case, the basic concept of programmes to be produced at the studio will be as shown in Table 3-1.

In addition, outside programmes which will be produced by the OB van will be broadcast for 15 minutes per day on average and documentary programmes produced by portable cameras will be broadcast for 10 minutes per day.

The broadcasting hours (minutes) of various types of self-produced programmes per day are as follows:

Type of Programme		Broadcasting Minutes per Day	Percentage(%)
Studio Programmes	News	56	37
	Educational/Cultural	60	40
	Art	10	7
	Entertainment	9	6
Outdoor Programmes	Sports	15	10

It can be easily understood that self-produced programmes are prepared by putting stress on news and educational programmes.

For the remaining one hour and 30 minutes, imported programmes and Burmese moving picture programmes will be broadcast but too much stress should not be given to entertainment. Although IBD's policy in programming plan has been described earlier, the current programme production system and the present situation for individual types of programmes are as follows:

a) Educational and cultural programmes

For school educational programmes, the Educational Research Bureau, organized mainly by professors from

universities has prepared 90 types of manuscripts and produced test programmes by using 60 cassette tapes. They have exhibited an enthusiasm for education through broadcasting.

b) News programmes

News, news commentary and forum programmes will be stressed together with school educational programmes and broadcasting hours for these programmes will be doubled or more. However, at present, news programmes are mainly broadcast by an announcer who reads a news copy with little on-the-spot scenes and almost no news pictures of foreign countries. Accordingly, IBD desires to develop its news programmes by utilizing news materials to be received through satellites (INTELSAT).

c) Art and entertainment programmes

Art programmes are mostly about Burmese classical arts and are very important for the preservation of arts. Having few entertainment facilities, people are very much interested in the broadcasting of healthy entertainment programmes. Programmes of cultural dances are very effective for keeping a

good harmony among races in the country.

d) Outdoor programmes

IBD has no OB van for the time being and cannot produce relay programmes. In addition, news gathering by mobile equipment is very limited from the standpoint of facilities. IBD eagerly desired to have relay broadcasting from the Philku Hlu Haw, relay of soccer which is the national sport of Burma, and relay of various events held outdoors. OB van is essential for gathering and relaying these programmes, for increasing broadcasting hours or making changes in programmes and for allowing programmes to be close to people through gathering materials on the spot.

(2) Facility Plan

Burma has planned in its master plan, which depicts the goal of the expansion of TV broadcasting facilities, to construct a studio complex which will incorporate nine studios including one large studio for expanding the current broadcasting hours (2 hours) and under this future plan Burma has planned to construct a studio complex which will incorporate three studios in Rangoon in the fourth 4-year plan.

On the other hand, the study team has discussed the number of studios and their sizes by analysing the programming plan and the contents of programmes to be

broadcast.

The number of studios is determined by using the studio utilization factor $\left(= \frac{\text{Studio utilization hours during programme production}}{\text{Broadcasting hours of the programme}} \right)$

related with the degree of complexity of the programme, the number of scenery sets, the operationality of the facilities, the programme production technical level, etc.

IBD has an experience of producing programmes including comparatively complex programmes for the past two years; thus, the studio utilization factors are comparatively high as shown in Table 3-1. Through analysis and calculation by using these studio utilization factors, it can be understood that 3.5 medium and small-size studios are required. Thus, a studio of about 230m² for producing mainly art, entertainment and educational programmes, a studio of about 160m² for producing educational and cultural programmes, and a multi-purpose studio of about 60m² for broadcasting news and general programmes will be constructed for use in addition to the existing studio. The existing studio has been modified from the radio studio and is furnished with simple facilities, and its studio operating efficiency is very low. Therefore, it is necessary to produce programmes suitable for the capability of the studio.

These studios to be newly constructed will be furnished with a subcontrol room, scenery and props rooms, performer's makeup rooms, dressing rooms, etc. The studios and subcontrol room will be furnished with cameras, lighting equipment, and programme producing equipment. The master control room in which the switching operation of programmes will be furnished with switching equipment, VTR, telecine equipment, etc., and a news studio for broadcasting news and general programmes will be located next to the master control room. Also, a power plant, an airconditioning equipment room, an OB van, and a system converter will be installed in the building to be constructed in this project.

3-2 Basic Design

3-2-1 Project for Expansion of Broadcasting Facilities

Although the Burmese side has set out a studio plan including nine studios to be constructed in the future, due consideration should be given for future expansibility in designing facilities. However, it is not recommendable from the standpoint of economy to

provide surplus for all facilities and thus design will be such that it will allow for future expansion through minor modification.

The system configuration and specifications should conform with the CCIR recommendations in the broadcasting field, with movable items to be as sturdy as possible while assuring sufficient safety both electrically and mechanically. In particular, facilities should be selected with consideration for operationality, maintainability, reliability, economy, and supply of spare parts.

In principle, spares of major parts will be provided and inevitably, unit spares will be employed.

(1) Studio and Subcontrol Room Facilities

Each of the 230m² and 160m² studios will be furnished with the lighting equipment of the manual elevational batten system and three cameras. The news studio will be furnished with a fixed lighting system and two cameras. For the cameras for studio and OB van use, 1-inch 3-tube cameras and 2/3 inch 3-tube cameras will be used. Two sets of 2/3 inch 3-tube camera will be used in the news studio, one set in No.2 studio and one set for OB van use. When No.1 studio

or OB van uses four cameras, these cameras should be usable for both No.1 studio and OB van. No.1 studio will be furnished with mini-crane dollies for mounting 2/3 inch cameras. The subcontrol room will be furnished with camera control equipment, a lighting control console, a video and audio control console, etc.

(2) Master Control Room Facilities

The master control room will be furnished with equipment for switching the video and audio signals from each studio, VTR, telecine equipment, etc., to the transmitter or another studio equipment, for receiving signals from the OB van and PTC, etc. In addition to these items of broadcasting equipment, a clock system for sending standard clock pulses to the individual rooms in the station and intercom equipment for communication between rooms will be installed in the master control room.

(3) Telecine Equipment

Two sets of telecine equipment will be installed in the telecine room next to the master control room

so as to allow film programmes to be sent out continuously.

(4) VTR Equipment

C format VTRs with a one-inch tape width will be used together with simple electric editing equipment.

A total of five VTRs will be furnished: Three sets for recording at each studio and two sets for editing or sending programmes. These VTRs will be usable for initially unintended applications as well by means of the preset system in the master control room. Two 3/4 inch tape VTRs will be provided for broadcasting news programmes. In order to develop the operational efficiency of VTRs, programmes should be packed as much as possible into perfect programmes for omitting editing work and the time for operating VTRs should be reduced as much as possible.

(5) Power Plant

It has been confirmed through discussion with the Burmese Electric Power Corporation that the transmission capacity of 1000 KVA will be available and 2 ~ 3 power systems distributed through substations will

be supplied through automatic switchover in the event of power failure. A power of 6.6KV will be transferred to the terminal board in the existing power room of IBD which will form the boundary between IBD and the Electric Power Corporation. The maximum receiving power capacity at the new studio site will be approx. 1000KVA, which can be covered by the transmission capacity from the Electric Power Corporation.

The voltage and frequency fluctuation are $\pm 5\%$ and $\pm 4\%$ respectively. At present no service interruption has been experienced even by the power receiving system with the switchover function of two systems and stable power is supplied. Thus, no engine generator equipment will be installed. For the receiving power equipment, a high-voltage transformer, an automatic voltage regulator, and a receiving and distributing rack will be installed.

(6) Outdoor Relay Facilities

One OB van system will be provided for relaying and recording outdoor programmes. The vehicle will be such that has a total length of 7 ~ 8m in consideration of road conditions, quick reporting capability and economy. The OB van will be furnished with three

Table 3-2 Results of Survey on FPU Propagation
Conditions for Major Relay Spots

Place	Distance	Propagation Condition	Remarks
Pyilku Hlu Haw	3km	Within line of sight	Under construction
P.T.C (Regional Centre)	5km	Within line of sight	Five-storied building with a steel tower.
Aung San Stadium	5km	2-hop relay via PTC	A large gymnasium with nighttime illumination.
Swimming Pool	4km	Impossible	No high building appears in the neighborhood.
Exhibition Hall			
State Cultural Centre	5km	Impossible	Outdoor theaters with a capacity of 1,500 audiences.
Kyaikasan Ground		Nearly on line of sight	Used for national ceremonies and others.
New Sports Stadium		Within line of sight	Under construction by Chinese grant.
Earth Station	10km	Within line of sight	Verified by mirror test.

cameras, a video and audio control equipment, VTR, power generator, airconditioner, wireless equipment, etc.

When the OB van goes out to relay a programme from an outdoor spot to IBD, FPU (field pickup) or transmitter-receiver for relay broadcasting will be used. Survey was made at important relay spots selected in Rangoon City as shown in Table 3-2. It was then determined that there is a hill on which there stands Shwedagon Pagoda at the centre of the city. This extremely affects the line-of-sight condition. Accordingly, 2-hop relay is required, and thus two sets of microwave transmitter/receiver will be provided. When relay is not achievable, programmes will be recorded by the VTR on the OB van.

(7) System Converter and Radio Circuit

For reception of Foreign TV programmes the following equipment are to be provided, namely:-

1. Universal Standard Converter for installation at satellite communication earth station at Toegyauungale.
2. NTSC Modules for installation at the existing microwave back haul link for replacing the existing PAL Modules between the Earth Station and the Regional Centre of PTC.
3. One-way microwave link between the Regional Centre and IBD.
4. Facility for sound adding function at the earth station so as to allow both video and audio signals to be

transmitted from the earth station.

IBD will be required to receive microwaves from the Regional Centre and microwaves from the OB van. Therefore, a steel tower with a height of approx. 30m above the ground will be constructed and a parabolic antenna will be mounted on an antenna rotator to be provided. The antenna for VHF communication will also be mounted on this steel tower.

An outline of the broadcasting facilities has been mentioned earlier. A list of broadcasting equipment is given in Table 3-3.

Table 3-3 List of Broadcasting Equipment
to be Provided

Location	Equipment	Q'ty	Remarks
No.1 Studio/ Subcontrol Room	Colour camera (one-inch 3-plumbicon tube)	3	x10 zoom lens
	Pedestal dolly	3	
	Mini-crane dolly	1	
	Lighting equipment	1 set	Manual elevational batten system
	Video switcher console	1	Including soft chromakey function.
	Audio mixer console	1	
	Lighting control console	1	
	Camera control console	1	
	Colour opaque scanner	1	With vertical and horizontal scroll function
	Disc player	2	
	Audio tape recorder and player	2	
	Video and audio monitor	1 set	
	Microphone	1 set	Including wireless microphone.
	Microphone stand	1 set	Including boom stand.
	Video and sync signal distributor	1 set	
	Others		
No.2 Studio/ Subcontrol Room	Colour camera (One inch 3-plumbicon tube)	2	x10 zoom lens
	Portable colour camera	1	x13 zoom lens
	Pedestal dolly	3	
	Lighting equipment	1 set	Manual elevational batten system
	Video switcher console	1	Including soft chromakey function.

(Continued)

Location	Equipment	Q'ty	Remarks
No.2 Studio/ Subcontrol Room	Audio mixer console	1	With vertical and horizontal scroll function. Including boom stand.
	Lighting control console	1	
	Camera control console	1	
	Colour opaque scanner	1	
	Disc player	2	
	Audio tape recorder and player	2	
	Video and audio monitor	1 set	
	Microphone	1 set	
	Microphone stand	1 set	
	Video and sync signal distributor	1 set	
Others			
News Studio/ Subcontrol Room	Portable colour camera	2	Fixed type With monitor and audio fader unit
	Pedestal dolly	2	
	Lighting equipment	1 set	
	Video switcher console	1	
	Audio mixer console	1	
	Camera control console	1	
	Colour opaque scanner	1	
	Audio tape recorder and player	2	
	Disc player	2	
	Monitor equipment	1 set	
	Announce table	2	
	Microphone and stand	1 set	
	Others		

(Continued)

Location	Equipment	Q'ty	Remarks
Master Control Room	Master control console	1 set	
	Sync pulse generator and distributor rack	1 set	
	Audio equipment rack	1 set	
	VTR/telecine assignment rack	1 set	
	FPU control rack	1 set	
	Video equipment rack	1 set	
	Video and audio monitor	1 set	
	1-inch VTR and TBC	5	
	3/4 inch VTR and TBC	2	
	35mm film projector	2	
	16mm film projector	2	
	35mm slide projector	2	
	Telecine camera	2	
	Multiplexer	2	
	Video and audio monitor	2	
	Clock equipment rack	1 set	
Intercom equipment rack	1 set		
VHF communication equipment	1 set		
Power Room	High-voltage transformer	1 set	
	High-voltage distribution board	1 set	
	Automatic voltage regulator	1 set	
	Low-voltage distribution board	1 set	
	Others		

(Continued)

Location	Equipment	Q'ty	Remarks
OB Van	Vehicle	1	
	Colour camera (1-inch, 3-plumbicon tube)	2	With x22 zoom lens
	Portable colour camera	1	With x17 zoom lens
	Tripod dolly	3	
	Monochrome opaque scanner	1	
	Video switcher	1	
	Audio mixer	1	
	1-inch VTR	1	(Recording only)
	Audio tape recoder and player	1	
	Video and audio monitor	1 set	
	Power generator	1	
	FPU transmitter/receiver	2 sets	With parabolic antenna
	VHF communication equipment	1	
	Video, sync and audio signal distributor	1 set	
Others			
Others	FPU rotator	1	To be mounted on IBD steel tower.
	Microwave transmitter	1	To be mounted on PTC steel tower.
	SVS unit	1	To be installed at PTC earth station.
	Microwave receiver	1	To be mounted on IBD steel tower.
	Broadcasting materials	1 set	
	Measuring instruments	1 set	
	System converter	1 set	at PTC earth station

3-2-2 Architectural Plan

(1) Construction Site

1) Site conditions

IBD's site, expected to be the construction site of this project, is on a comparatively high hill about 5km north of the centre of the city and the east side of the site faces Prome Road which is one of the principal roads. On the other side of the Prome Road is the campus of the Institute of Education.

On the west side of the site there is a vast cemetery. Thus, the site is surrounded by the green.

Because the Prome Road, to which the site faces, is a principal road, it is prohibited to construct building within 8m from the boundary of the road in consideration of keeping good scenery along the road.

2) Natural conditions

Burma is located in both tropical and semi-tropical zones. The Rangoon area belongs to the tropical zone and it has three climatical seasons: Rainy season, cool season and hot season.

The rainy season lasts from the latter half of May

to October or so. A great amount of rain falls because of rain clouds produced on the Indian Ocean. Both temperature and humidity are high in the rainy season. When the rainy season is over, the cool season comes which lasts from November to the beginning of February. In the cool season, the maximum temperature in the daytime reaches as high as 35 ~ 36°C, but the minimum temperature in the nighttime may become as low as about 11°C. In addition, it scarcely rains, thus producing less moisture in the cool season. The hot season lasts from the middle of February to the first half of May when the temperature in the daytime reaches as high as 40°C and the temperature in the nighttime is nearly 20°C. It scarcely rains in this season either. Climatic data is given in Table 3-4.

Although cyclones, which somehow resemble typhoons over Japan, may often be caused, the maximum instantaneous wind velocity of a cyclone is 55m/s or less.

Earthquakes may also happen, which are, however, much weaker than those experienced in Japan. A seismic coefficient of 0.12 will be sufficient in designing buildings.

Table 3-4 Climatic Data (Kaba Aye Station, Rangoon)

1945 ~ 1977

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Throughout the Year
Temperature(°C)													
Average	25.6	27.2	28.9	30.6	28.9	27.2	27.2	26.7	27.2	27.8	27.8	25.6	27.2°C
Maximum	36.1	37.8	40.0	40.0	40.0	35.6	37.2	35.6	35.0	36.1	36.7	35.0	
Minimum	10.6	12.2	15.6	20.0	17.8	18.3	20.0	20.6	20.0	19.4	13.9	11.7	
Relative humidity (%)													
Average(1979)	64	65	68	66	75	84	86	87	85	78	71	67	75
09:30	60	65	64	66	77	87	86	87	82	80	67	64	
18:30	50	50	56	60	78	86	87	89	81	78	65	56	
Rainfall (mm)													
Monthly rainfall (Average)	7	2	7	22	297	538	537	590	408	224	39	11	2682
Maximum rainfall per 24 hours	12	17	73	138	262	225	135	127	160	125	119	68	('80, 24: May 24, '80)
Number of rainy days	51.26	57.13	70.25	53.30	80.24	55.6	68.11	68.3	68.8	64.11	73.22	50.6	123.26
0.39	0.13	0.39	1.07	13.00	23.09	24.57	25.48	20.17	11.17	2.65	0.65		
Wind (Rangoon)													
Dominant wind direction													
Average during 1927~37	N	S	S	S	S	S	S	S	S	N.E.	N.E.	N	S
1979 09:30	N.E.	N.E.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	E	N.E.	N.E.	
18:30	N	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	S.W.	N.E., E., S.W.	
Average wind speed (M.P.H)													
1979 09:30	2.6	2.7	2.8	2.5	3.1	4.0	2.3	3.7	2.4	3.0	4.1	4.1	
18:30	2.4	4.1	6.4	6.0	5.0	3.7	2.8	2.3	1.5	1.4	1.5	2.3	
Maximum wind speed (M.P.H)													
Average during 1945~77	-	-	-	70	70	50	46	67	41	66	-	-	

3) Infrastructure

a) Power supply

Power to Rangoon City is supplied at 50Hz by the Electric Power Corporation. In this project, the cost of high-voltage power supply branched at the existing building will be borne by the Burmese side.

b) Water supply

Water supply to the business quarters in Rangoon City was completed more than 30 years ago. Since the IBD's site is located 5km north of the business quarters of the city, no main water pipe has been laid in the neighbourhood, nor is there any plan of laying waterpipe there. For the existing building, a well of approx. 110 feet was dug and ground water obtained from it is used. In this project also, it is inevitable to use ground water.

A well, if necessary, will be dug and the cost borne by the Burmese side.

c) Drainage

The sewerage system in the business quarters in Rangoon has a long history. However, in the neighborhood of the IBD site, no sewage pipe has been laid as in the case of the water supply system.

Nor is there any plan of laying sewage pipes in the future.

Soil and waste water from the existing buildings is collected by a septic tank to be processed and then transported and disposed at intervals of 3 months by a vacuum car. Since the building to be constructed in this project is more than 150m uphill from the existing septic tank, it is not possible to provide a slope for sewage. Accordingly, a new septic tank will be provided in the neighborhood of the facilities to be constructed and the cost borne by the Burmese side. Rainwater is drained naturally through runoff channels to be laid along the roads around of the site.

d) Telephone

Telephone cable will be laid from the existing building.

e) Gas

City gas is not supplied at all in Rangoon City. LPG or propane gas also cannot be used. In this project only electricity will be used as an energy source.

4) Subsoil of the construction site

The location of Rangoon City was under a shallow sea until the

end of the Tertiary period. A great amount of soil and sand was brought by Rangoon River to form an extremely thick stratum containing sand, shale and clay layers one after another.

For the soil condition in a lower stratum of Rangoon City, the western part of the city along Rangoon River consists of a soft alluvium and the remaining parts consist of comparatively hard sandstone or shale covered with loamy laterite. The IBD's site is located on the boundary between two types of soil, so that it is inevitable to perform soil survey. Execution of boring at three different places (depth: 20m) was then recommended. At the same time, the following method has been employed for determining the soil bearing capacity which is to be used in the basic design.

Note: The alluvium is the newest sedimentary layer ranging from ten thousand years ago to the present. It has undergone secondary sedimentation of diluvium or accumulated

under the sea or swamp. In each case, alluvium has not yet hardened sufficiently but is still soft. Due care should be taken if alluvium is encountered during the foundation work.

a) Study of design drawings of existing IBD building
(constructed in 1952)

Since only architectural design drawings were available, boring logs and other data were not shown. However, it has been determined that no pile was used and spread foundation seemed to have been used. No significant crack or uneven sinking was observed on the outside wall and inside floor or wall of the existing reinforced concrete building which has partly a height equal to a 3-story building and which was built 30 years ago. Accordingly, spread foundation is usable since the building to be constructed is a 3-story reinforced concrete building.

b) Study of boring data of adjacent site

Five years ago the Construction Corporation performed a soil survey of the adjacent site north of the IBD's site. The study team was able to obtain the boring data of the soil survey. (See the relevant reference

attached.) This boring data indicates that a thick reddish brown, sandy silt and clay stratum appeared at a depth of 1.5m in the ground and the bearing capacity of soil was about 11 tons/m².

However, since the bored spot is at a distance of about 300m north of the proposed construction site, a test excavation (digging of a test pit) was recommended at the centre of the proposed construction site.

c) Digging of test pit

The results of the digging of a test pit to a depth of about 2m showed that a soft soil exists to the depth of 1m in the ground and then the above-mentioned reddish brown, sandy silt and clay stratum appeared. According to a soil survey engineer of the Construction Corporation, the bearing capacity of soil is supposed to be more than 10 tons/m² from this experience.

Judging from the results of a) ~ c) above and the data of the intermediate report on the boring which was sent from Burma after the return of the study team to Japan, the foundation level has been set at 1.5m in the ground and the bearing capacity of soil at 10 tons/m² in the basic design. In detailed design, however, final boring data should be used. Further, it is essential to reconfirm the stability of soil by soil

load test prior to commencing the construction work since the proposed site may consist of the soft alluvium.

5) Construction conditions

a) Construction materials

Construction materials produced in Burma are limited not only in type but also in volume so that it often takes a lot of time to procure materials in Burma. Whether it is possible or not to procure materials as scheduled is closely related to the priority order in construction works.

There are many construction materials that do not conform with JIS quality.

Cement, aggregate (sand and gravel), brick, wood (teak, pyjinkado and miscellaneous trees), corrugated asbestos-cement sheet, asbestos board, plywood, sheet glass (with thickness of less than 6mm), bamboo (for scaffolding), etc., are procurable materials in Burma. Steel materials including nails are in short supply. Plain steel bars, small shape steel for steel-frame work, etc., which are procurable at the site, are not only in short supply but also expensive.

Gypsum board, mineral acoustic tile, high-quality plywood, glass wool mat, P tile, long PVC sheet, light steel base, soundproof steel doors, soundproof aluminium windows, crimp wire netting, etc., which are necessary for finishing the interior of the studios, master and subcontrol rooms and the other areas should be imported from Japan. The finishing materials procurable in Burma are terrazo, marble, floor parquet, etc., which are more reasonably priced than in Japan.

Materials for ancillary facilities are extremely limited and only Burmese type sanitary fixture may be usable at the site.

Materials usable for electric work in this project are scarce at the site.

b) Execution system of construction

In Burma, construction works are executed by Construction Corporation (abbreviated CC) under the Ministry of Construction and Technical Services Corporation under the Ministry of Industry ².

During the period of this study, the Burmese side had some persons of Construction Corporation Participating in discussion related with building construction. Negotiation with the study team was made solely with the Construction Corporation.

Accordingly, the organization of the Burmese side which will cooperate in this project will be the Construction Corporation.

Construction costs in Burma are higher than in other Southeast Asian countries for the combinations of the following varieties of reasons as follows:

- i) Construction materials procurable in Burma are limited and a substantial amount of materials for special purposes will be brought in from Japan. Accordingly, expenses for packing, transportation and others will be required, which will amount to ¥50 million per 1000m³.
- ii) The provision of labourers will depend entirely on Construction Corporation without competition among contractors, so that it will be necessary to accept the unit prices set out by Construction Corporation.
- iii) Increase in the amount of materials to be brought into Burma will result in increasing the number of Japanese technicians and craftsmen to be sent, to Burma and this increases expenses to be borne by the Japanese general contractor.

iv) Since materials procurable in Burma are limited, it is necessary to provide spares of about 5% as the matter of course.

c) Construction of structures

i) Design standard

Structural design of reinforced concrete buildings is usually in conformity with the British Standard CP114, although earthquakeproof design is not applied to unimportant buildings.

ii) Materials

1) Concrete

Ordinary Portland cement is produced in Burma. Although there is a ready-mixed concrete plant in Rangoon, it will be rather difficult to use the plant. It will be necessary to mix all concrete at the site. Stiff-consistency concrete with a strength of 180kg/cm^2 and slump of usually 5cm will be employed.

2) Reinforcing bars

ordinary round steel bars are available but in a small amounts and at extremely high

prices. Usually, imported deformed bars are used by lap splicing.

3) Steel frames

Small shape steel is produced members built up of small shape steel are used.

d) Relevant construction laws/regulations, design standard and permission for construction

For the time being, there is no written law/regulation design standard which covers construction work.

Application for building permits is not necessary.

However, this does not mean entire freedom in design.

It is advisable to consult with Construction Corporation prior to commencing the detailed design.

(2) Overall Plan

i) Selection of construction place at site

IBD's site is quite long — about 450m in the north-south direction and about 110m in the east-west direction. The existing building for radio broadcasting stands nearly at the centre of the site. The building for producing TV programmes will be built either on the northern open space

which measures about 160m in the north-south direction and about 110m in the east-west direction or southern open space which measures about 180m in the north-south direction and about 110m in the east-west direction.

The existing TV broadcasting facility (containing the studio and transmitter room) is located in the northern part of the existing building. In consideration of ease of approach to the existing TV broadcasting facility, the open space on the north side may be selected. However, a guyed transmitting antenna tower with a height of 100m stands in the open space on the north side and it is necessary to change this guyed antenna tower to a selfsupporting tower. The expenses and period for construction will be greatly disadvantaged. On the other hand, the open space on the South side features as follows.

- 1) There is and will be no relation with the antenna tower.
- 2) The existing studio will in any case be operated separately and any inconvenience in access to/from the new studio facilities will not indicate a decisive disadvantage.

- 3) For the transmitter room, access to/from the studios and master control room is of almost no problem.
- 4) The space on the south side is a little larger than the space on the north side and this provides more flexibility for future expansion.

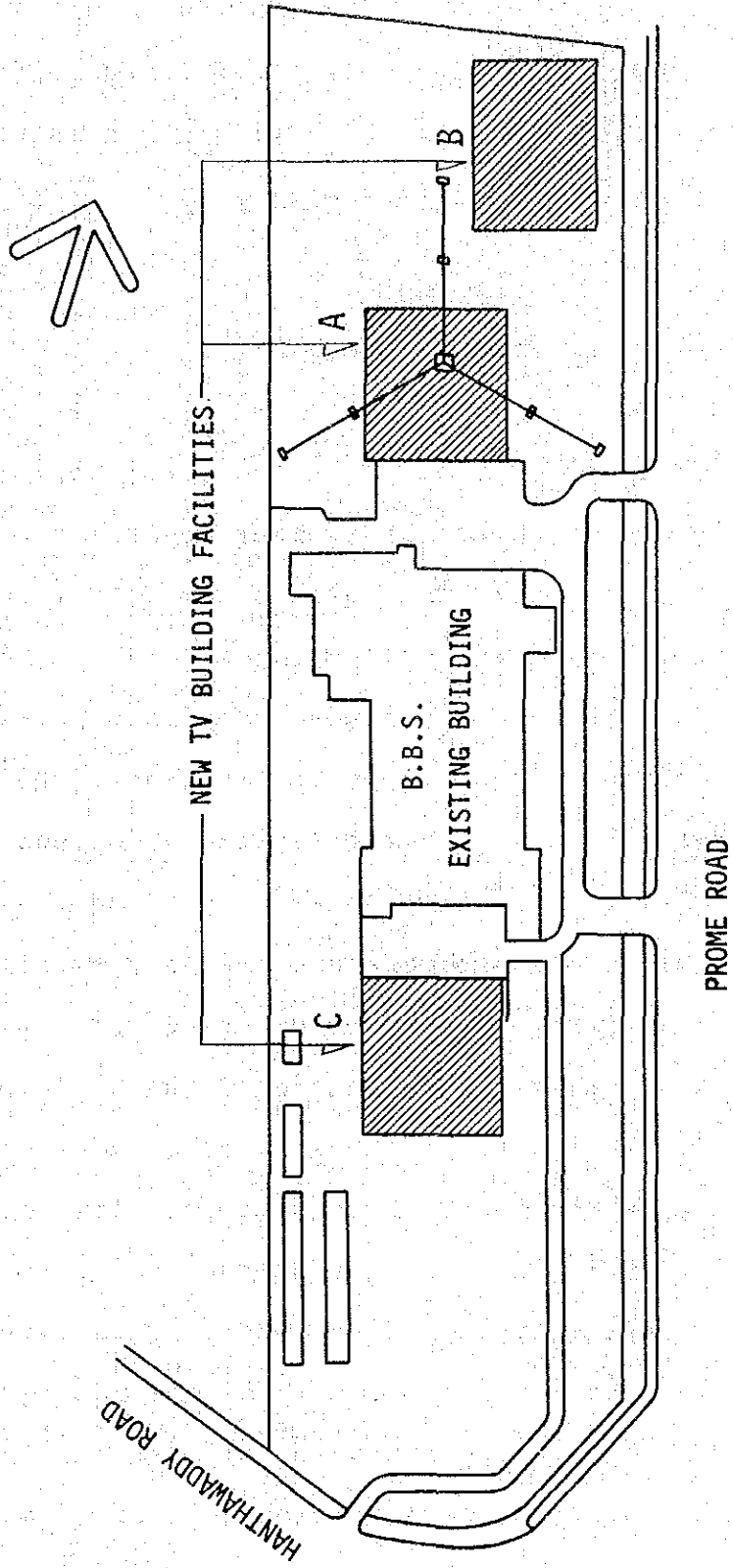


Fig. 3-1 Location of TV Broadcasting Facilities in Site

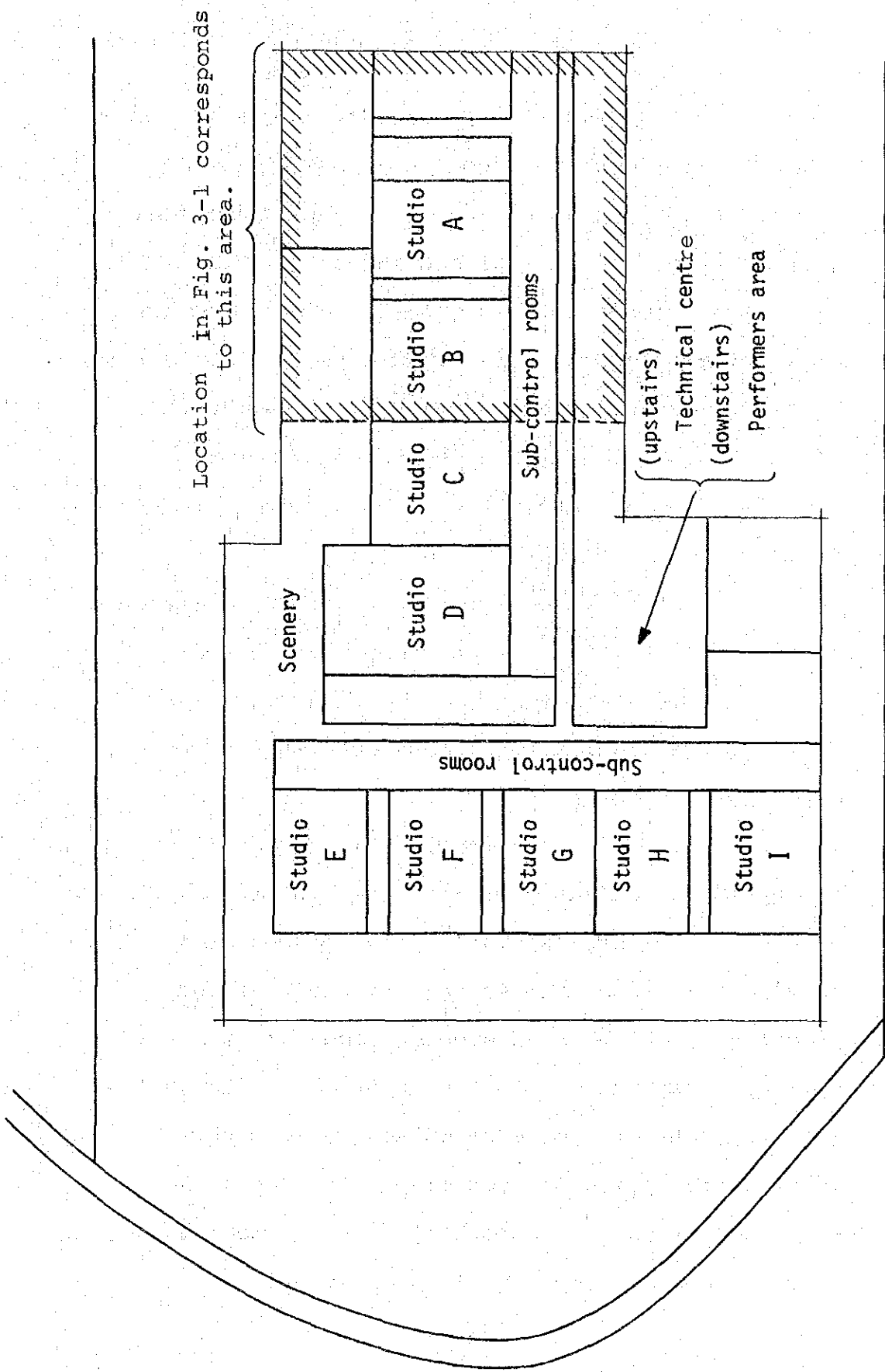
The study team agreed with the Burmese side regarding these features and the location shown in Fig. 3-1 has finally been selected.

ii) Relation with future planning

The final configuration of the studio complex in the future IBD supposes at present comprises a total of nine studios: One large studio, four medium studios, and four small studios.

Although this future studio complex plan may undergo various changes until it is finalized, the ultimate configuration will basically be as follows.

That is, the technical area comprising the master control room and others and the performer's area comprising the makeup and dressing rooms will be located nearly at the centre of the building; studios will surround these areas, and the scenery and props rooms and airconditioner rooms for the studios will surround the studios so as to achieve a concentric circle arrangement. This type of arrangement is considered to be the most rational arrangement in consideration of mutual access by various staff members related with programme production and performers, and in consideration of the flexibility



Location in Fig. 3-1 corresponds to this area.

Fig. 3-2 Layout of Future Studio Complex

in the required areas of the performers' rooms and scenery and props rooms which may change from programme to programme, and in consideration of the separation of the flow of men and materials.

At present, IBD's site is quite long and when the above-mentioned principle is applied to this site, an exact concentric arrangement is not achievable. If the nine proposed studios are constructed as they are, the arrangement will be as shown in Fig. 3-2.

Location of the new building in Fig. 3-1 corresponds to the oblique-line portion shown in Fig. 3-2.

iii) Overall plan of facilities to be constructed in this project

The ultimate scale and configuration of the TV studio complex are as stated above. However a considerable time will be required and a number of changes will be needed before they are realized. Similar construction of a few studios as planned in this project will be repeated several times.

However, the scale and period of the succeeding work are not known. Accordingly, it is necessary to give consideration for future expansibility but,

at the same time, it is not proper to introduce excessive provision of power supply and thermal sources in planning for the future or cause shortage in provision in this project by thinking too much of future expansibility. This can be said also for the areas and layout of the studios, master control room, and other rooms. In fact, a balanced, complete configuration should be realized for the entire scale of this project.

Accordingly, the areas and scales of the master control room, performers area, scenery and props room, news production centre, etc., should be planned as is required for the intended 4-hour broadcasting (that is, two hours and a half studio programme production). No particular consideration will be taken for the expansibility of rooms, etc. For the scale of the power supply, thermal source, entrances, lavatory, etc., balancing with the entire scale is considered.

For the appearance of the building to be constructed, four-outside wall finish will be adopted without providing extension ends, etc., and a hipped roof, not a gable roof, will be employed.

However, consideration should be given for future expansibility in floor planning, structural connection,

routes of main power supply, plumbing including storm-water drainage on the roof and other minimal necessities.

Needless to say, the following points should be considered in design.

- 1) Materials produced in Burma and local construction methods should be employed as much as possible.
- 2) Consideration should be given to the climate and natural features of Rangoon, that is, high temperature, high humidity, heavy rains, customs and manners, modes of living, etc.
- 3) Harmony with the environment and culture, and creativeness should be considered.
- 4) Equipment and materials to be granted, such as ancillary facilities, should assure ease of handling, be maintenance free, and be easy to repair.
- 5) Consideration should be taken for reducing running expenses and maintenance and operating expenses after commencing service.

(3) Plan of rooms

1) Names and areas of individual rooms

Those rooms listed in Table 3-5 will be provided in this project.

Table 3-5 List of Rooms (Total 3,310m²)

<u>Room</u>	<u>Area(m²)</u>	<u>Room</u>	<u>Area(m²)</u>
No.1 Studio	288	Master Control Room	230
No.1 Subcontrol Room	57	Broadcasting Equip. Maintenance Room	40
No.1 Store	40	OB Van Garage	38
No.1 Sound Lock	15	News Editors' Office	80
No.2 Studio	216	Reference Materials Room	32
No.2 Subcontrol Room	57	Title Preparing Room	22
No.2 Store	32	ENG-tape Edit. Room	32
No.2 Sound Lock	15	ENG Preparing Room	50
Rehearsal Room	96	Tape Film Edit. Room	28
Makeup Rooms	66	Engineers' Office	64
Dressing Rooms	44	Other Rooms*1	86
Scenery & Props Room	288	Ancillary Equipment Rooms	470
News & Continuity Studio	92	Common Space*2	832

- *1 Other Rooms comprise:
- Tape Store
 - Film Tape Store
 - Wardrobe
 - Makeup Material Store
 - Rectifier Room
- *2 Common Space comprises:
- Entrance Hall
 - Corridors
 - Staircases
 - Lavatories, etc.

The major rooms planned in this project are outlined below.

2) Studios

For regular studios, No.1 studio with an effective area of about 230m^2 and No.2 studio with an effective area of about 160m^2 will be provided. In addition to the master control room, a news & continuity studio with an effective area of about 60m^2 will be provided. No.1 studio will have a height equal to a 3-story building with a cyclorama height of 6.5m, a grid height of 8.0m and a ceiling height of about 10m and is provided with a lower horizontal light trench for convenience of show programmes production. No.2 studio has a height

equal to a 2-storey building with a cyclorama height of 4.5m, a grid height of 6.0m and a ceiling height of about 6.5m and is not provided with any low horizontal light trench.

According to the IBD's plan, those programmes given in Table 3-6 will be produced in these studios, which means that these studios will be used extremely frequently. Accordingly, it is expected that the interior finish of each studio will be very similar to that employed in Japan from the standpoints of efficiency, durability, solidity, fireproofing, etc.

The subcontrol room will be located on the ground floor for convenience of access between the studio and subcontrol room. An equipment store for storing cameras, microphones, lighting appliances, etc., and a store for storing musical instruments, music stands, desks and chairs, etc., will be provided for each of No. 1 and 2 studios.

3) Rehearsal room

One rehearsal room with an effective area of approx. 80m² will be provided.

This area corresponds to the area required for one scene of a dance programme or two scenes of small

Table 3-6 Programmes Which Will Be Produced in Studios

<u>Type of Programmes</u>	<u>Broadcasting Minutes</u>	<u>Times/ Week</u>	<u>No. of Performers</u>	<u>No. of Sets</u>
No.1 Studio				
Cultural dances	30	1	20-30-40	1-2
Dance-dramas	30	0.5	15-20-30	2-3
Chorus with 2 orchestras	40	0.25	20-30-40	2-3
Dramas (Telefeatures)	30	0.5	15-20-30	3-4
School educational programmes	20	6	15-20-30	1-3
No.2 Studio				
Children's programmes	15	1	10-15-20	2-3
Youth programmes	20	1	10-15-20	2-3
Educational (Informal)	20	2	7-10-15	2-3
Classical music	30	1	10-15-20	1-2
Quiz programmes	20	0.5	10-15-20	1-2
Discussions	15	1	5 - 7-10	1-2
Discussions	20	2	3 - 5 - 7	1
News forum	20	1	3 - 4 - 5	1
Talks	20	3	2	1
Existing Studio				
Musical shows	30	1	8-12-16	1-2
Variety dances	30	1	8-12-16	1-2
School educational programmes	20	3	15-20-30	1-2
News & Continuity Studio				
News	15	14	2	1
News commentary	15	7	3	1

drama programme. In order to produce many programmes by using less studios, it is necessary to reduce rehearsal times at the studios for individual programmes. However, if rehearsal times are simply reduced, the programme quality will naturally be lower. Particularly in this country, the number of performers well acquainted with performance for TV programmes is rather small and it is necessary to increase rehearsal times. It is also necessary for those staff engaged in televising pictures, sound pick-up, lighting, art, etc., to know about the actual performance of the performers. This necessitates a rehearsal room. Although one rehearsal room is not sufficient, it is desirable to utilize the room efficiently by, for example, dividing it into two sections or by introducing other practical measures.

4) Performers' rooms

Makeup tables for about 35 performers, one dressing room for male performers and one dressing room for females will be provided together with associated facilities.

The number of makeup tables is nearly equal to the total number of average performers of No. 1 and 2

studios and news studio which are given in Table 3-6. Accordingly, when the total number of performers exceeds the number of makeup tables, performers will take turns using these makeup tables. However, the space for lockers should correspond to the maximum number of performers.

The space of the floor desk for handing over keys of lockers and for showing programme production schedules to performers, rooms for storing toiletries and props, store for dresses, etc., will be limited to a minimum. When these spaces are not sufficient, space in the existing building will be used effectively. No particular rooms for individual stars or wigmakers' room will be provided.

A shower room will be provided for each lavatory.

5) Scenery & props room

A space for storing panels for about 35 sets, a space for fabricating panels for one set, a space for storing props, paths for carrying scenery and props, a staff room (concurrently set design room), etc., will be provided in common for Nos. 1 and 2 studios. The number of sets (35) corresponds to the total number of average sets for individual programmes

given in Table 3-6. Each set will be disassembled into flat panels which will be stowed arranged vertically in rows. A panel store with an area of 1m x 2m on average will be provided for one set. The width of a path for carrying scenery and props will be 3m in consideration of the passing of two scenery carrying carts in opposite directions and the navigating at corners.

Other rooms and spaces will be limited to minimum scale for the time being since their partial expansion is comparatively easy.

6) Master control room

The master control room will consist of an area necessary for accommodating and operating the master control console, VTR, telecine and other broadcasting equipment as mentioned in paragraph 3-2-1, and associated news and continuity studio and a subcontrol room for the studio.

The news and continuity studio, the subcontrol room for the studio, telecine area, etc., will be separated by partition walls for sound insulation.

The news and continuity studio will have an effective

area of about 60m², a cyclorama height of 2.5m, a grid height of 3.5m and a ceiling height of 4m and will have interior finish similar to that of Nos. 1 and 2 studios.

Other areas will have interior finish equivalent to that of a general office room but will use free-access floors to allow change in equipment layout and replacement or renewal of equipment to some extent.

The location of the master control room in this stage may not be at the exact centre of all facilities as in the ultimate configuration of the facilities.

However, a considerable time will be required for the facilities to be arranged into the ultimate configuration as stated earlier and continuous technical innovation to be encountered until the ultimate configuration is reached may require drastic change in equipment and equipment layout. On the other hand, programmes must be broadcast continuously even during renewal of equipment or change in equipment layout, so that it may be best to locate the technical key functions of broadcasting to allow relocation from time to time.

7) Broadcasting equipment maintenance room and OB van garage

One broadcasting equipment maintenance room will be provided for the maintenance of broadcasting equipment to be provided in the studios, subcontrol rooms, OB van, etc. Next to the broadcasting equipment maintenance room a garage for the OB van will be provided.

The OB van is a mobile studio furnished with mobile subcontrol equipment. The broadcasting equipment to be mounted on the OB van will have functions identical with those of an indoor studio and a subcontrol room but will require more frequent maintenance because of being subject to shocks and vibration during movement or transportation. Different types of equipment will be mounted on the OB van depending on the type of the programme to be relayed and the broadcasting equipment maintenance room will be used as the stockroom for the equipment.

For these reasons, the OB van garage and the broadcasting equipment maintenance room will be arranged next to each other under a common roof.

8) Rooms related to news programmes

A news editors' office for those engaged in the filing and editing of TV news will be provided at a location adjacent to the news and continuity studio. Next to or in the neighborhood of the news editors' office a title preparing room for preparing titles, superimposed dialogue and tables and drawings, a reference materials room for storing photographs, records, yearbooks, etc., an ENG tape editing room, an ENG preparing room, etc., will be provided. This will allow the following works to be performed effectively.

- i) Preparation of titles, superimposed dialogue, drawings and tables, photographs, etc., collation with past records or data, editing of ENG tapes, can be performed in close relationship with the preparation of announcing manuscripts in the news filing and editing sections. Many-sided, easy-to-understand substantial news pictures can be edited in short period of time.
- ii) The latest news can readily be put on air. In particular, supplementation and correction can be processed promptly. This will permit the news to be promptly and accurately developed.

iii) Since work flow will become smooth, the efficiency of work will rise with less errors.

When broadcasting service is presented for four hours a day, news will be broadcast twice a day (morning and evening) and special news may be broadcast during daytime education programme hours to reach the widest audience. Thus the effect is very large.

According to the IBD's plan, the required staff for TV news will be as given in Table 3-7. In consideration of the rate of occupancy at the seat of each staff and other factors, the required room areas, which have been mentioned earlier, can be obtained.

9) Recorded tape editing room

6 tape editing rooms will be provided for producing documentary and educational programmes by using portable

Table 3-7 List of Staff for TV News

	<u>At Present</u>	<u>Future</u>
	<u>20 mins</u>	<u>30 mins</u>
News Editor	4	5
Typist	2	2
<u>ENG</u>		
Gathering	16	18
Editing	4	6
	(2 sets)	(4 sets)
Graphic Designer	2	2
Librarian	1	2
<u>Announcers</u>		
Male	4	4
Female	4	4
Total		43

TV cameras. The tape editing rooms will be provided in the new facilities since these programmes will be closely related with news programmes and thus it is necessary to have cooperation with the news editing section in producing these programmes and also since titles and comments may be supplemented by using the news & continuity studio after tape editing.

(4) Building structure

1) Design standards

In general, the structural design of the building will be accomplished in conformity with the Building Standard Laws and related Regulations of Japan and the various structural design standards set out by the Architectural Institute of Japan.

Structural design against earthquake will be made by setting the lateral seismic coefficient at 0.12.

Structural design against wind load will be fixed with reference to the maximum instantaneous wind speed of 110 miles/hour (about 55 meters/second).

The live load will depend on the Building Standard Laws and related Regulations of Japan and the structural load principles set out.

by the Architectural Institute of Japan. The live loads of such special purpose rooms as the studios, master control room and subcontrol rooms will be determined by calculating the weights of the equipment to be installed, etc., and based on standard values used in NHK.

2) Structural design

The building will be constructed with reinforced concrete mainly by using rigid-frame (Rahmen) construction. In the basic planning, columns will be arranged in formal style as much as possible. For the walls around Nos. 1 and 2 studios, bearing walls of reinforced concrete will be used to provide sound insulation in architectural acoustics and for securing the earthquakeproof property of the entire building. In addition, the floor layout will be well balanced to provide advantage in earthquakeproof construction. A penthouse will be provided between Nos. 1 and 2 studios so as to allow a selfsupporting type steel tower of 15m to be mounted on the roof.

3) Construction of foundation

For preventing uneven sinking or settlement of the building

in the future and for protection against earthquake, footing beams will be provided.

The weight of the building will be transmitted directly to the supporting ground by direct foundations (footings, continuous or mat foundations) of reinforced concrete.

The allowable bearing capacity of the supporting ground will be 10 tons/m^2 (long term) based on the results of the soil investigation at the site (such as standard penetration test and soil test), which should be confirmed by loading test on the ground prior to commencing the construction work.

4) Outline of building construction

The building will be two stories of reinforced concrete and bearing walls of reinforced concrete will be provided around the studios.

A sloped roof will be made by providing a steel roof truss on the reinforced concrete slab.

For the girder of the studio roof, either steel or reinforced concrete structure will be adopted after economic analysis in the detailed design.

A steel tower with a height of 15m (30m above the ground) will be provided on the roof for mounting the antenna for FPU and others.

5) Materials for structural members

- a) For steel materials, those manufactured and processed in conformity with JIS will be imported.
- b) All reinforcing bars will be in conformity with JIS.
- c) For concrete, cement and aggregate (sand and gravel) will be those produced in Burma.

6) Steel tower

A selfsupporting truss-type steel tower with a height of 15m above the roof (30m above the ground) will be used for mounting a rotational antenna for FPU and an antenna for base-station use at its top. The steel tower will be furnished with a landing and a ladder for the maintenance of the antennas, feeders, etc.

A lightning rod will be provided at the top of the antenna for base station use.

Design will be accomplished in conformity with the Building Standard Laws and related Regulations of Japan and various structural design standards set out by the Architectural Institute of Japan.

Structural design against wind pressure will be made

with reference to the maximum instantaneous wind speed of 110 miles/hour (about 55 meters/second). For steel tower members, shape steel, steel plates, bolts and other steel materials which meet JIS will be employed, which will be manufactured, processed, and hot-dip galvanized to meet JIS before being imported.

(5) Ancillary facilities

1) Airconditioning facilities

Airconditioning facilities will be designed for the following conditions.

	<u>Temperature</u>	<u>Humidity</u>
Outdoor:	35.0°C	70%
Indoor:	27.0°C	55%

Five airconditioning channels will be provided. All airconditioners will be of packaged type.

No.1 No.1 studio-suite
(No. 1 studio and its subcontrol room)

No.2 No.2 Studio-suite
(No. 2 studio and its subcontrol room)

- No.3 Master control room
(Master control room, news and continuity studio, rectifier room and film store)
- No.4 Makeup room
(Makeup rooms, dressing room and store)
- No.5 Tape editing room etc.
(Tape editing room, tape store, title preparing room, ENG preparing room, wardrobe and rehearsal room)

In addition to these airconditioning systems, exhaust equipment for lavatory and shower room and ventilation equipment for power room and airconditioner room will be provided.

The store associated with each studio will be ventilated by taking in air from the studio.

The amount of fresh air to be taken in for the airconditioning system will be $25\text{m}^3/\text{man hour}$ in principle.

2) Plumbing

Water will be stored in an intake water tank to be provided under the floor of the stair room and will be supplied to individual spots by means of water supply pumps with a pressure tank.

Water sources will be constructed separately by the Burmese side and the work to be carried out in this project will be limited to and not exceed the leading out of the pipe from the intake water tank just upto the outside boundary.

Drainage will also be accomplished separately by the Burmese side: Rainwater will be led to the drainage gutters provided on one side of the front road and drainage and sanitary sewage will be led through a septic tank to a sepage pit.

For the fire extinguish equipment, indoor fire hydrants will be provided at two places on both ground and first floors.

For toilet stools, one western stool will be provided in every lavatory and other stools will be those usually used in Burma.

3) Electric facilities

a) Power plant (Refer to paragraph 3-2-1.)

b) Lighting and socket outlet equipment

Fluorescent lighting fixture will be used mainly.

The intensity of illumination in the studios, subcontrol rooms, master control room, film

store, makeup room and office room will be 400 lux and that in other rooms will be about 200 lux. Socket outlets will be provided wherever required.

DC lamps operated from batteries will be provided in the neighborhood of emergency exits for use as emergency lights in the event of failure of the transformer.

c) Power equipment

A power control board will be provided in the airconditioner room from which power is fed to individual loads.

Except for those facilities which require automatic operation such as water supply pumps, start/stop will be initiated through pushbutton switch operation.

The water supply pumps will be such that can be started manually at each fire hydrant location.

d) Earthing facility

Earthing poles for the power receiving and distribution board, broadcast transmitter, lightning rod, etc., will be provided. A lightning conductor will be provided on the top of the antenna.

e) Fire alarm equipment

Thermally-sensitive fire detectors will be provided in the individual rooms. A manual pushbutton alarm will be provided in the neighborhood of each fire hydrant box. The receiving point will be in the master control room.

f) Clock equipment (Refer to paragraph 3-2-1.)

g) Telephone equipment (Refer to paragraph 3-2-1.)

h) Intercom equipment (Refer to paragraph 3-2-1.)

(6) Architectural acoustics

1) Ambient conditions viewed from the standpoint of noise

The east side of the proposed site is facing the principal road passing from the centre of the city to Rangoon Airport. This road has heavy vehicle traffic and will have heavier traffic in the future. Accordingly, sound insulation from traffic noise will be necessary.

The proposed site is located at a distance of about 10km from Rangoon Airport and is out of the flight

course of airplanes. Accordingly, consideration for sound insulation from airplane noise will not be necessary.

2) Countermeasures against noise

Design objectives against airconditioning noise will be as follows.

<u>Room</u>	<u>NC Value</u>
Nos. 1 and 2 Studios	25
Subcontrol Rooms	25
Continuity Studio	20
Master Control Room	30
Rehearsal Room	30
Makeup Room	35
Office Room	35

Outdoor noises such as traffic noise, which will intrude externally to the studios will be suppressed to the required level in consideration of the masking effect of airconditioning noise.

Since the building will be located at a distance

of about 40m from the front road and Nos. 1 and 2 studios will be located to be shielded by performers's room and rooms associated with the master control room from traffic noise, the walls and roof of the studios will be made of a single slab of reinforced concrete. For the outer wall of the news and continuity studio which is nearest to the road and some particular internal walls, a double wall using brick masonry in combination with a reinforced concrete wall will be employed. The floors of Nos. 1 and 2 studios and scenery and props room will be made of double reinforced concrete floors which will sandwich high-density glass wool as the vibrationproof material. This is to prevent vibration from being transmitted when a programme is recorded in one studio and scenery is being set up or removed in the other studio. A carpet will be laid on the floor of the news and continuity studio and on the floor of the adjacent corridors. This is to avoid the generation of footsteps which might affect sound pick-up. Each studio will be furnished with soundproof doors and windows.

3) Room acoustics

For the reverberation design objectives

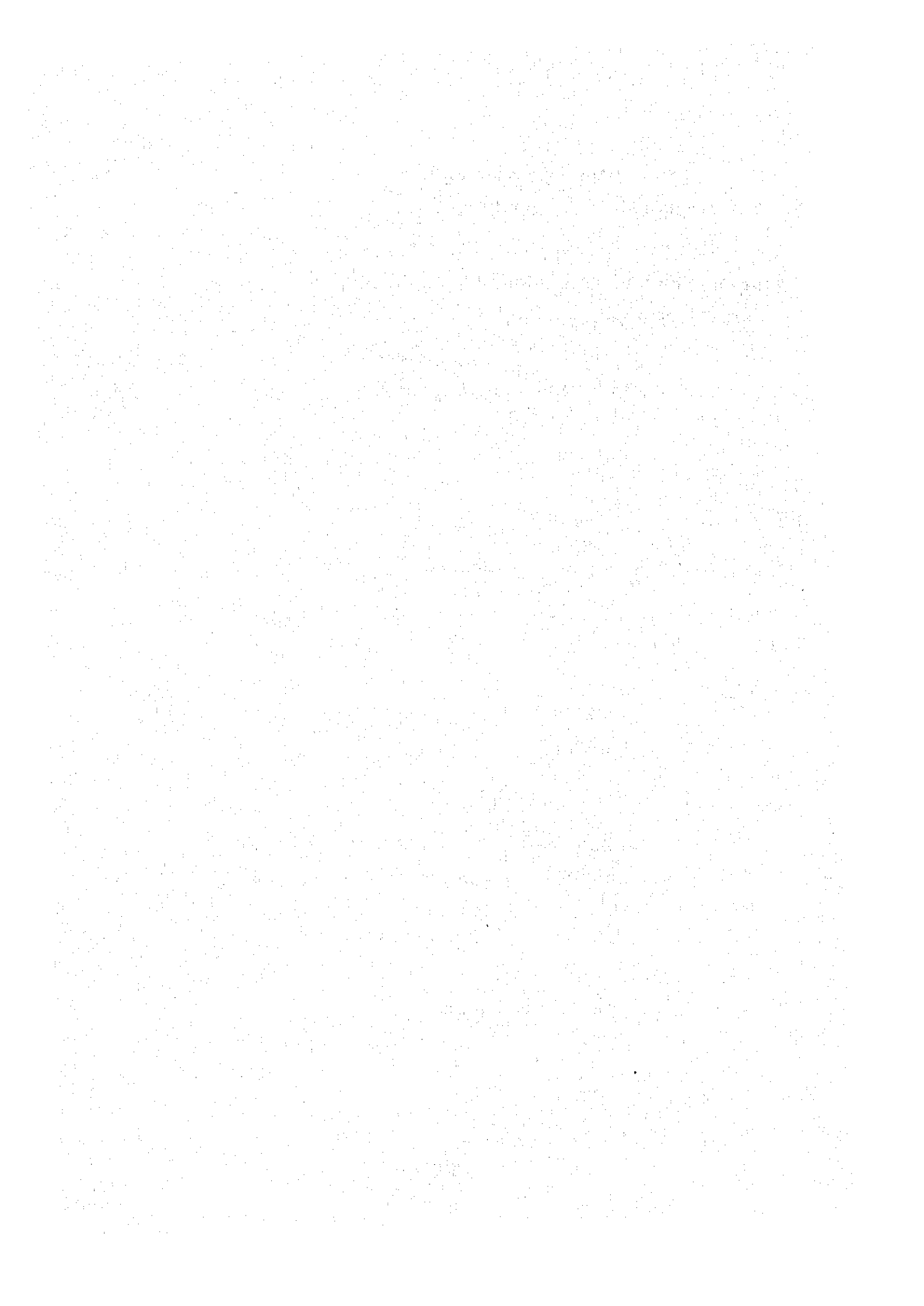
of the studios, the average absorption coefficient at 500Hz will be 0.35 ~ 0.45. For application purposes, a fixed cyclorama will be used to cover nearly a half of the wall face. Major studio specifications will be as shown below.

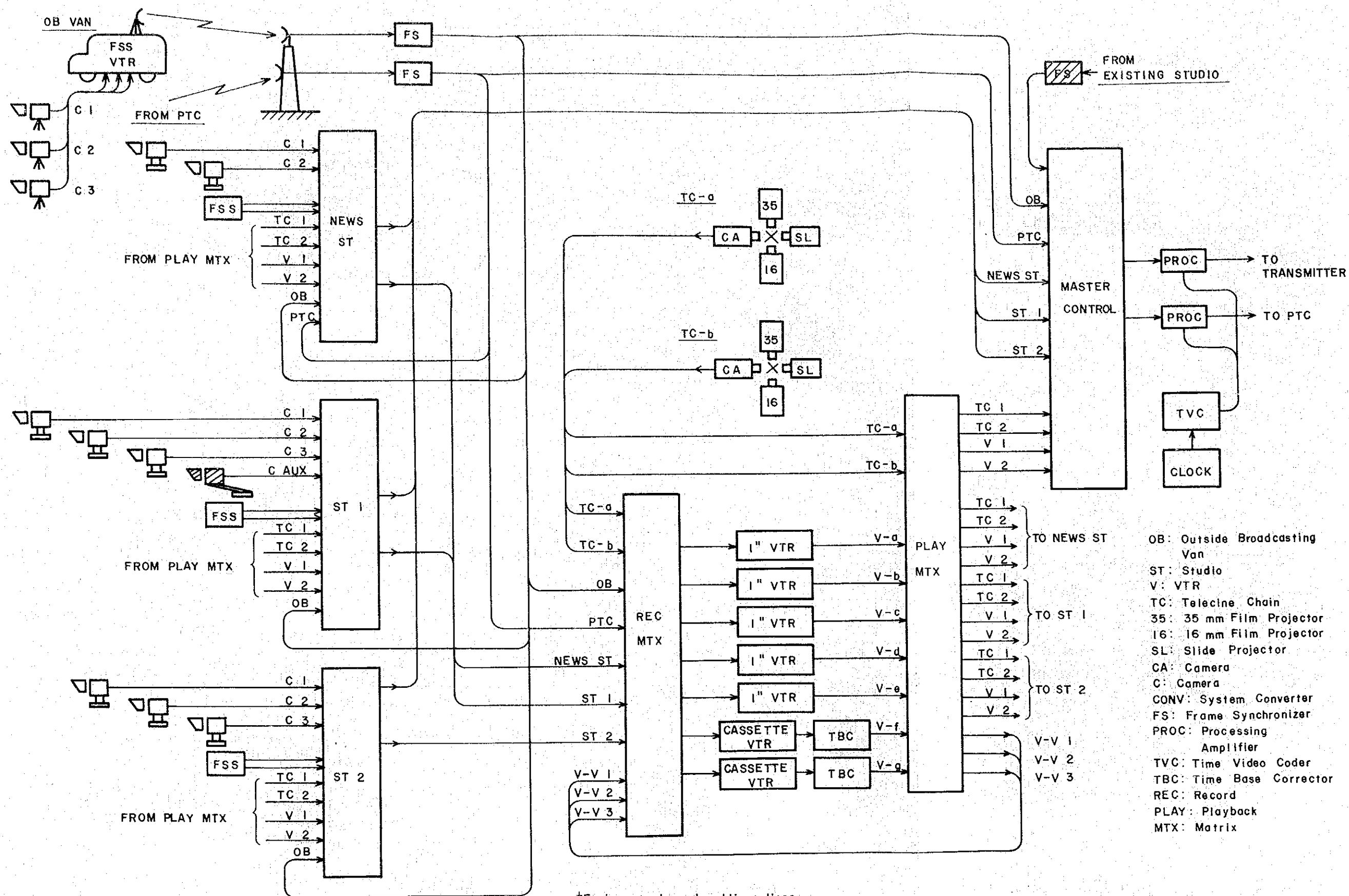
These values may be changed somewhat in the stage of detailed design.

<u>Room</u>	<u>Length (m)</u>	<u>Width (m)</u>	<u>Height (m)</u>	<u>Floor Area(m²)</u>	<u>Total Surface Area(m²)</u>	<u>Volume V (m³)</u>	<u>V/S</u>	<u>Reverbera- tion Time (sec) at 500Hz</u>
No.1 Studio	17.2	15.2	10.0	257	1162	2570	2.21	0.59 ~ 0.83
No.2 Studio	17.2	11.2	6.5	189	747	1228	1.64	0.44 ~ 0.62
News and continuity Studio	10.7	7.4	4.0	78	301	313	1.04	0.28 ~ 0.39

The subcontrol and rehearsal rooms will also be designed in consideration of room acoustics. For the airconditioner room, sound absorption on walls will be considered for controlling the noise level in the room.

3-2-3 Basic Design Drawings

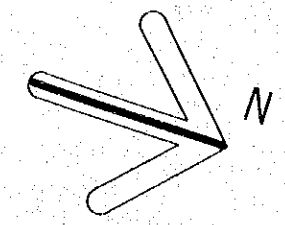




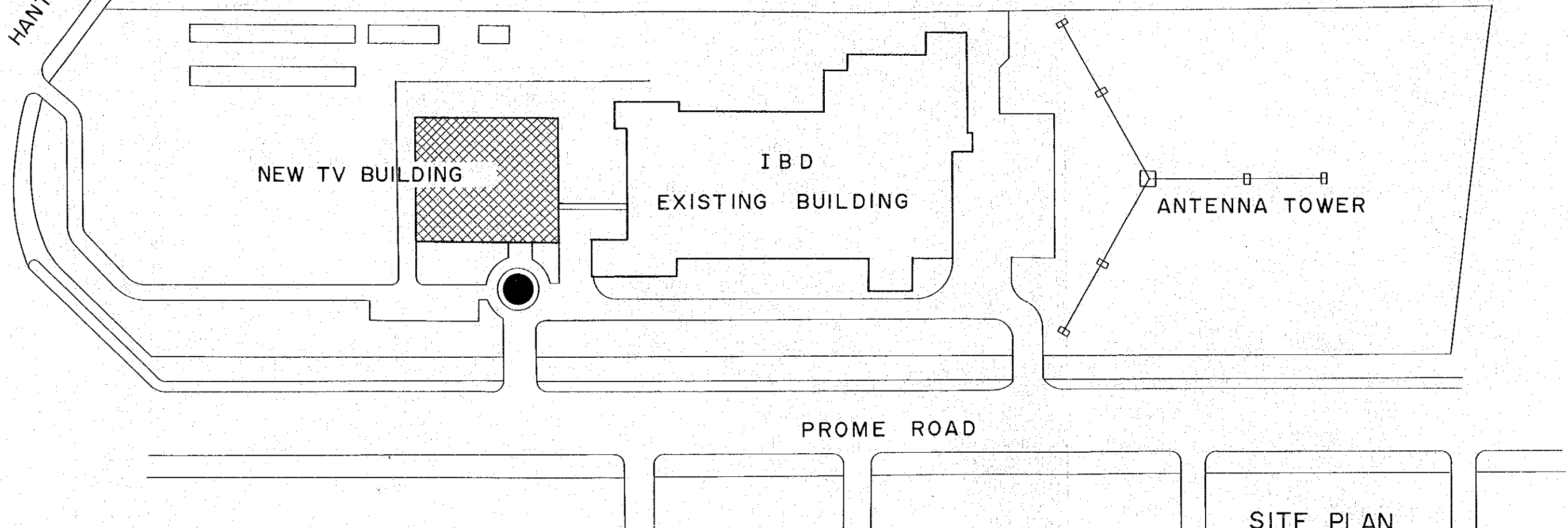
- OB: Outside Broadcasting Van
- ST: Studio
- V: VTR
- TC: Telecine Chain
- 35: 35 mm Film Projector
- 16: 16 mm Film Projector
- SL: Slide Projector
- CA: Camera
- C: Camera
- CONV: System Converter
- FS: Frame Synchronizer
- PROC: Processing Amplifier
- TVC: Time Video Coder
- TBC: Time Base Corrector
- REC: Record
- PLAY: Playback
- MTX: Matrix

*Equipment shown by oblique lines is not included in supply list.

SCHMATIC DIAGRAM OF STUDIO SYSTEM



HANTHAWADDY ROAD



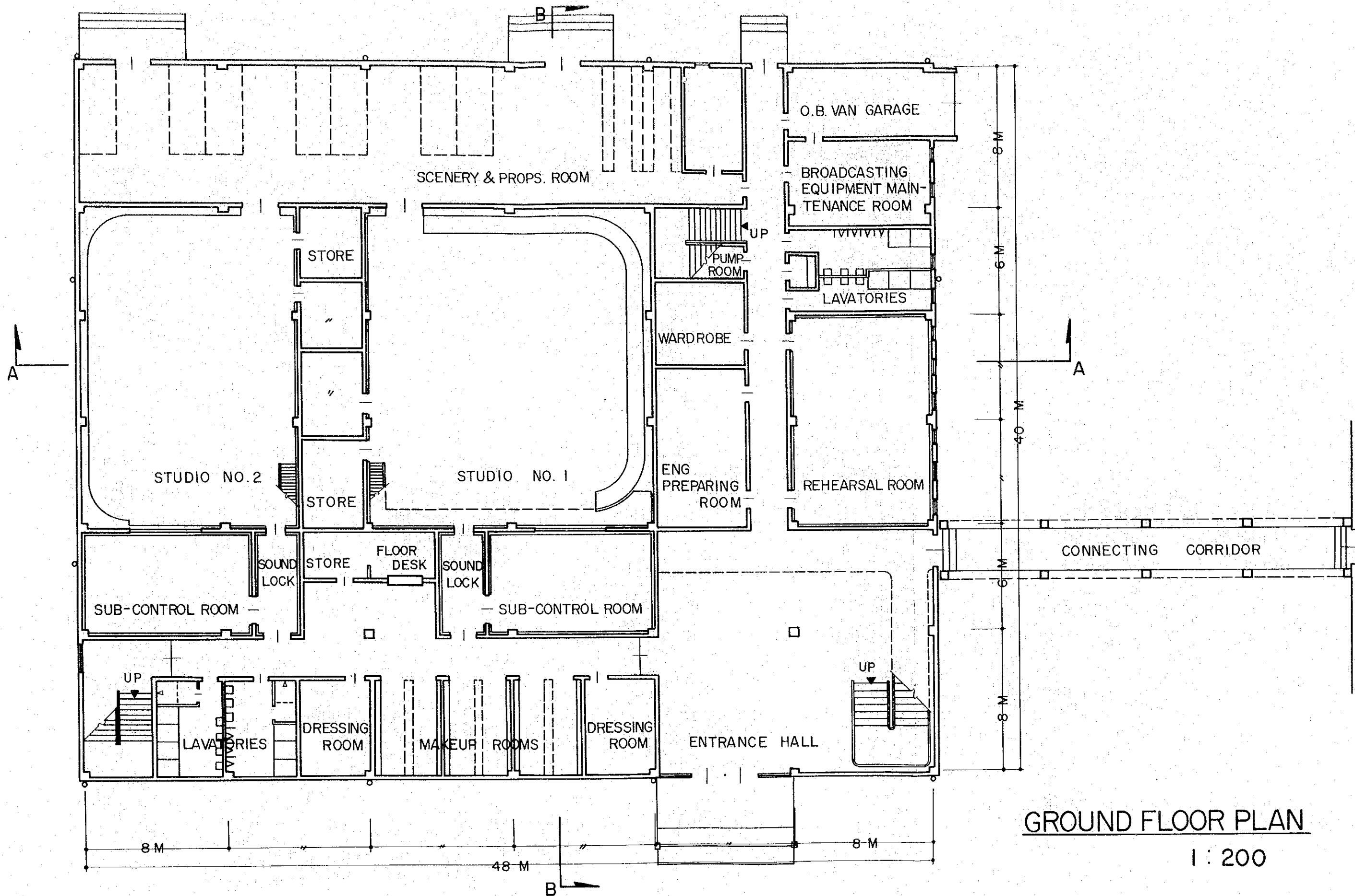
NEW TV BUILDING

IBD
EXISTING BUILDING

ANTENNA TOWER

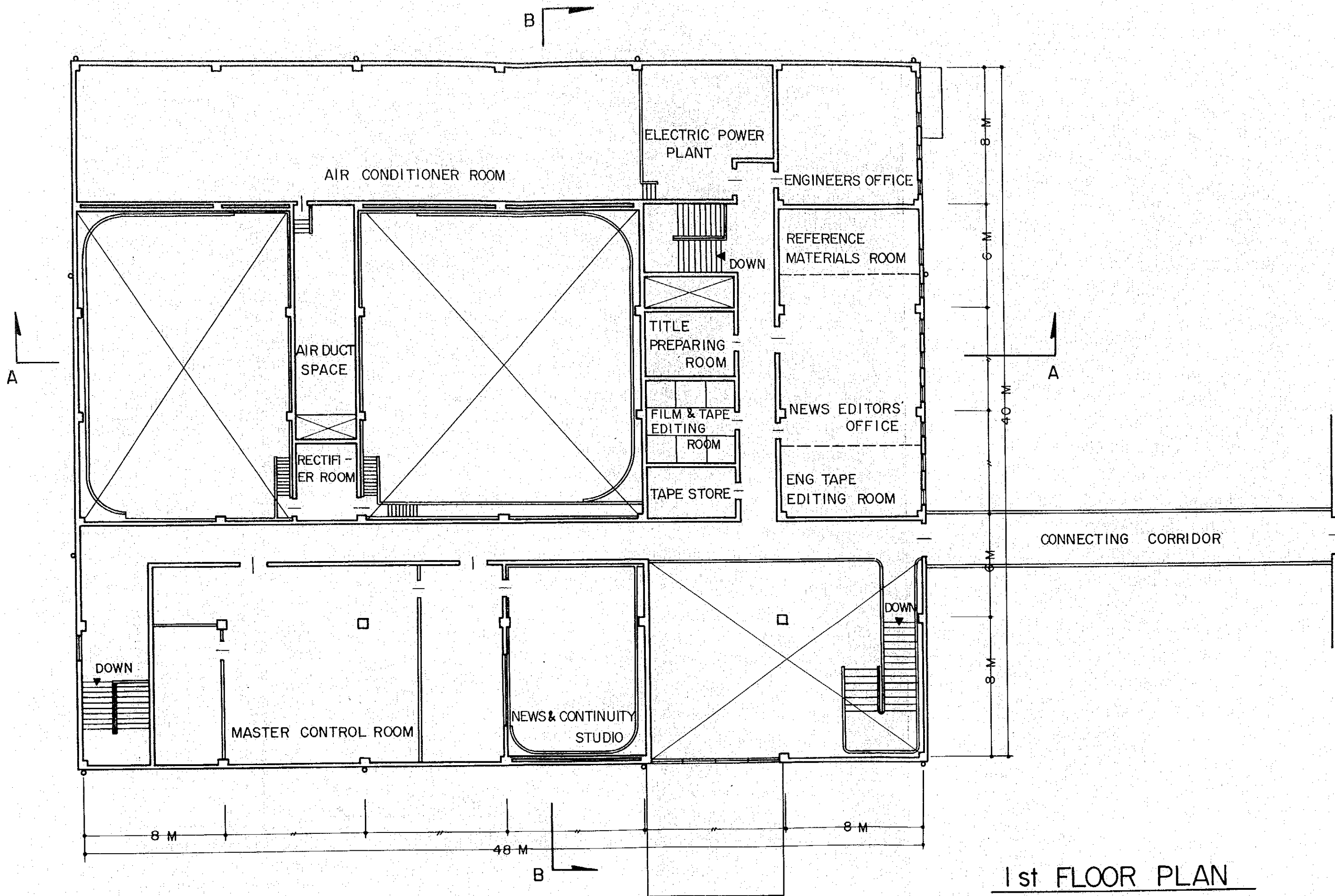
PROME ROAD

SITE PLAN
1:1000



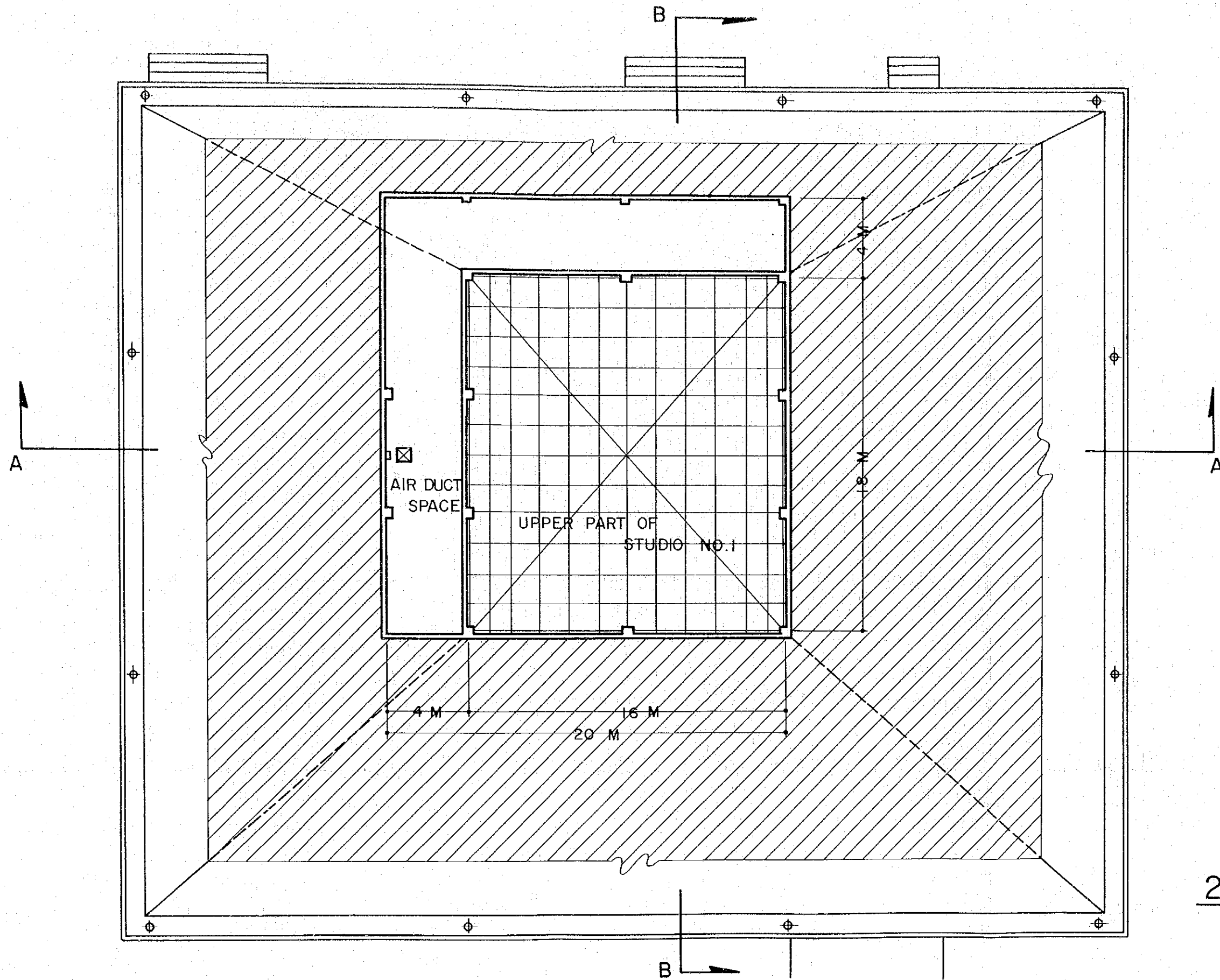
GROUND FLOOR PLAN

1 : 200

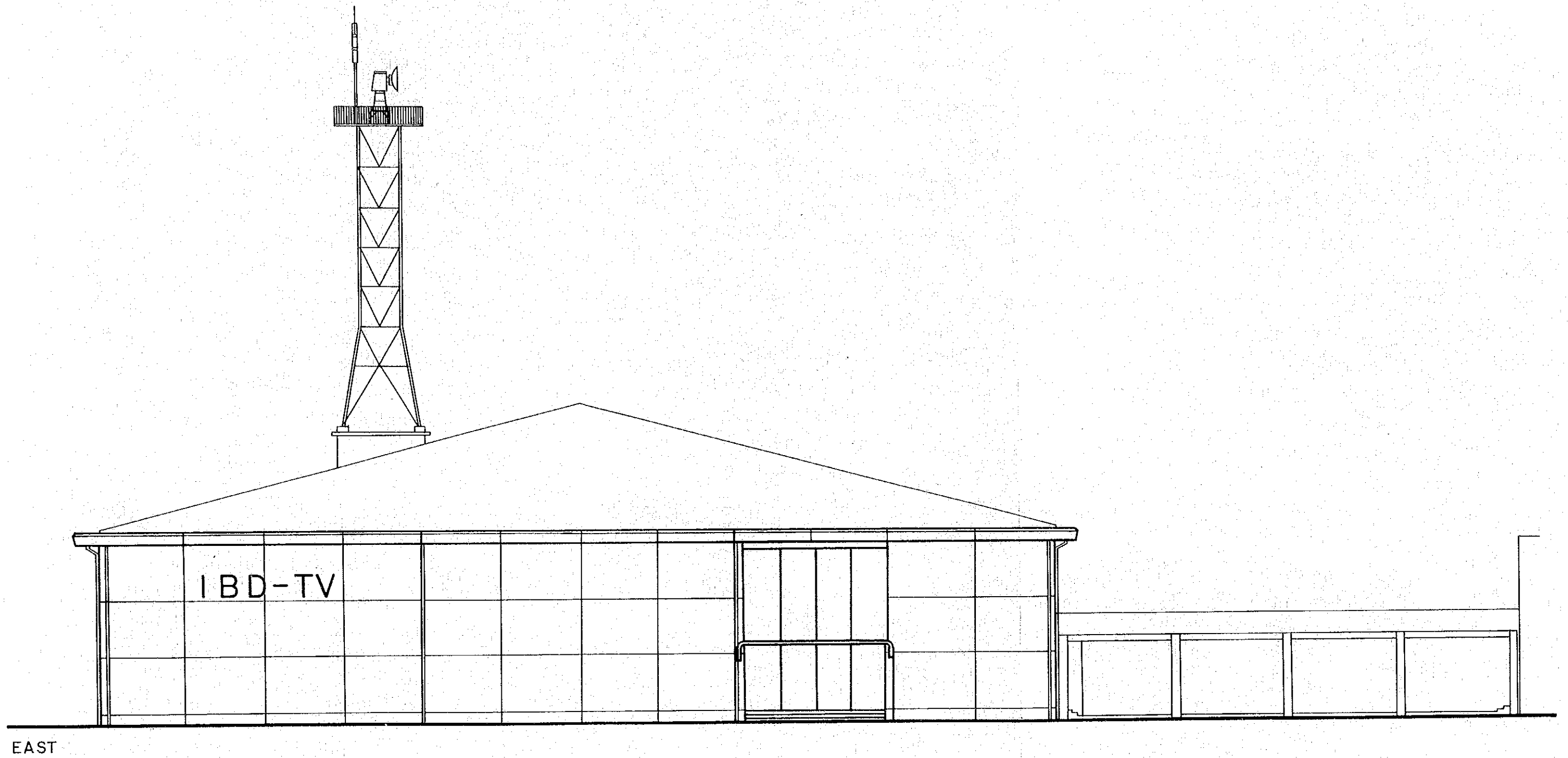


1st FLOOR PLAN

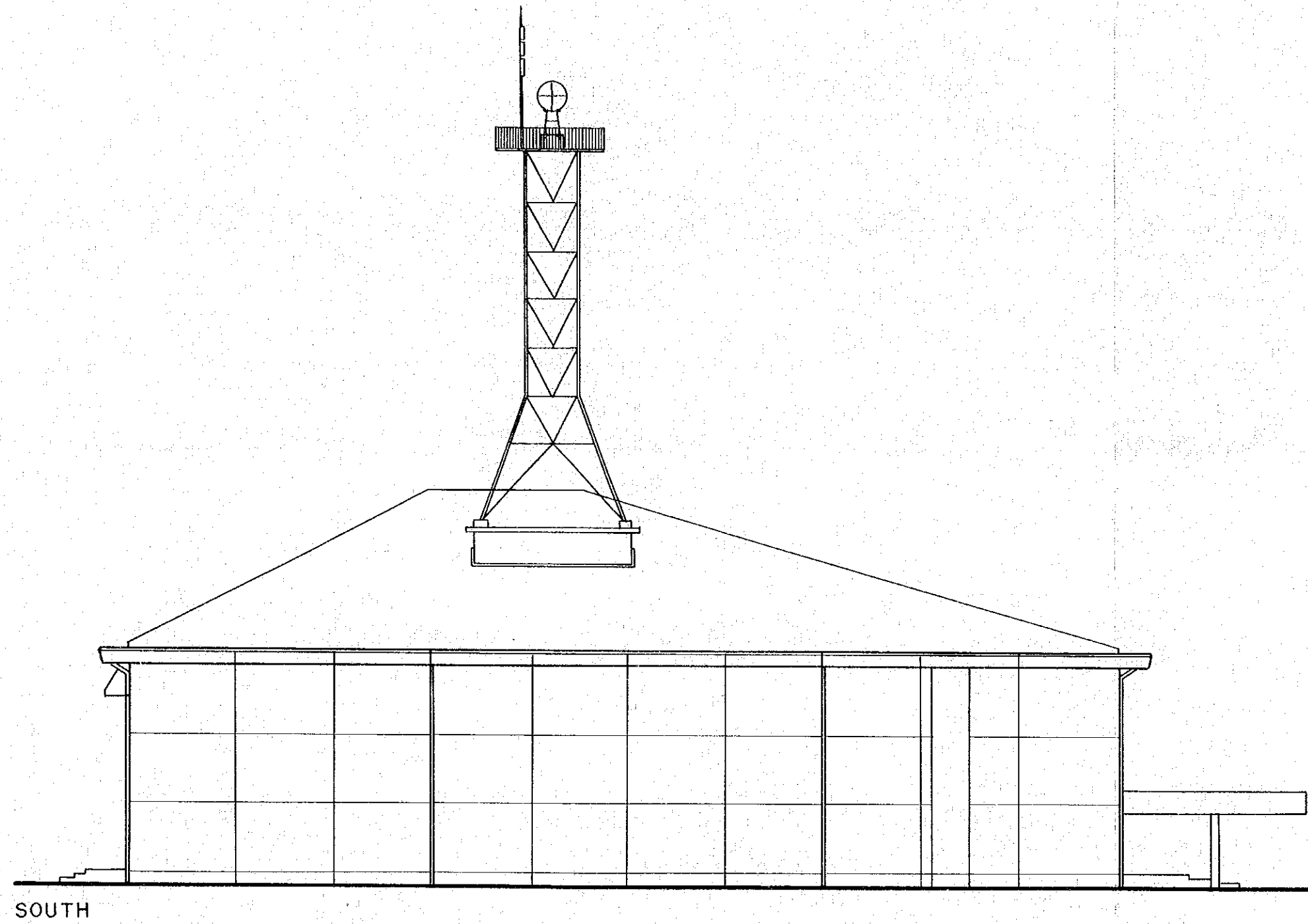
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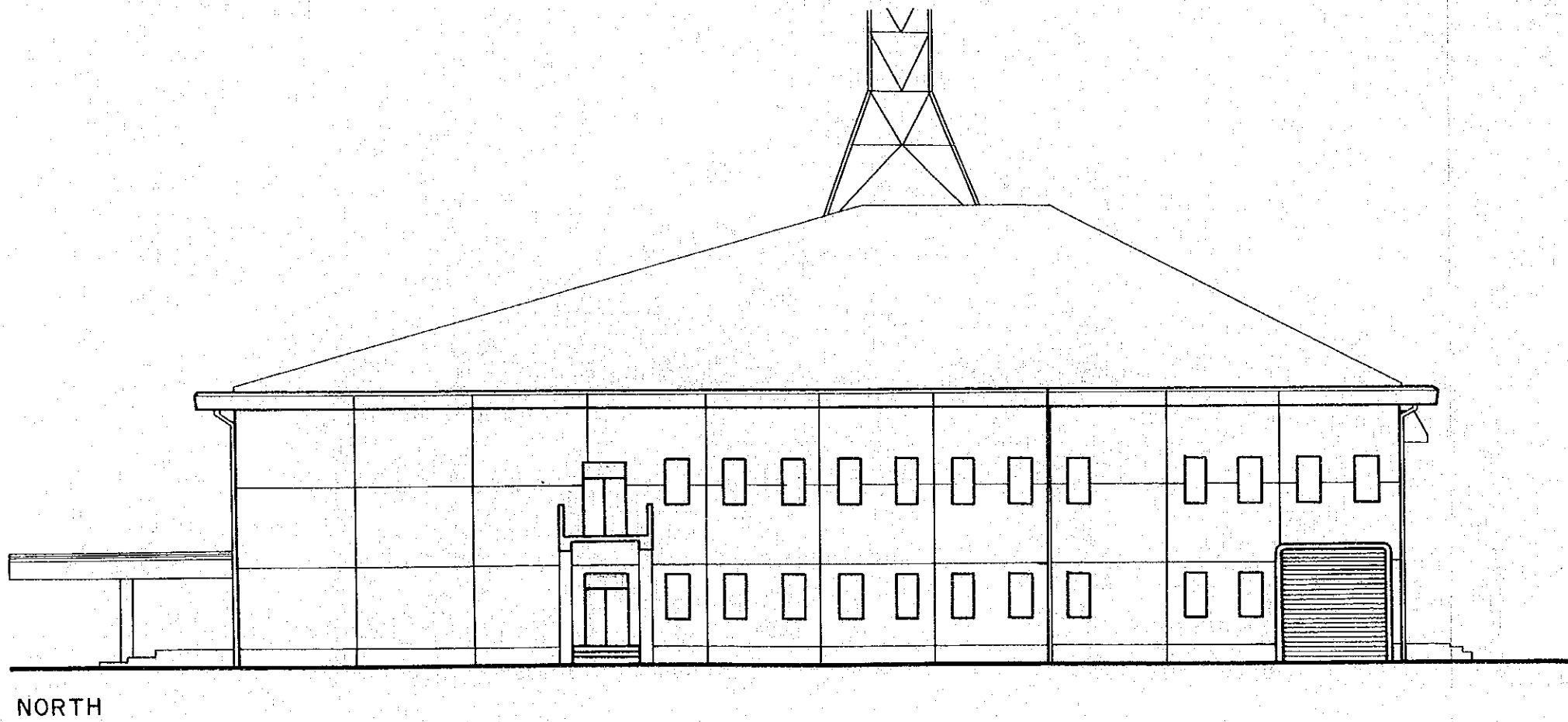
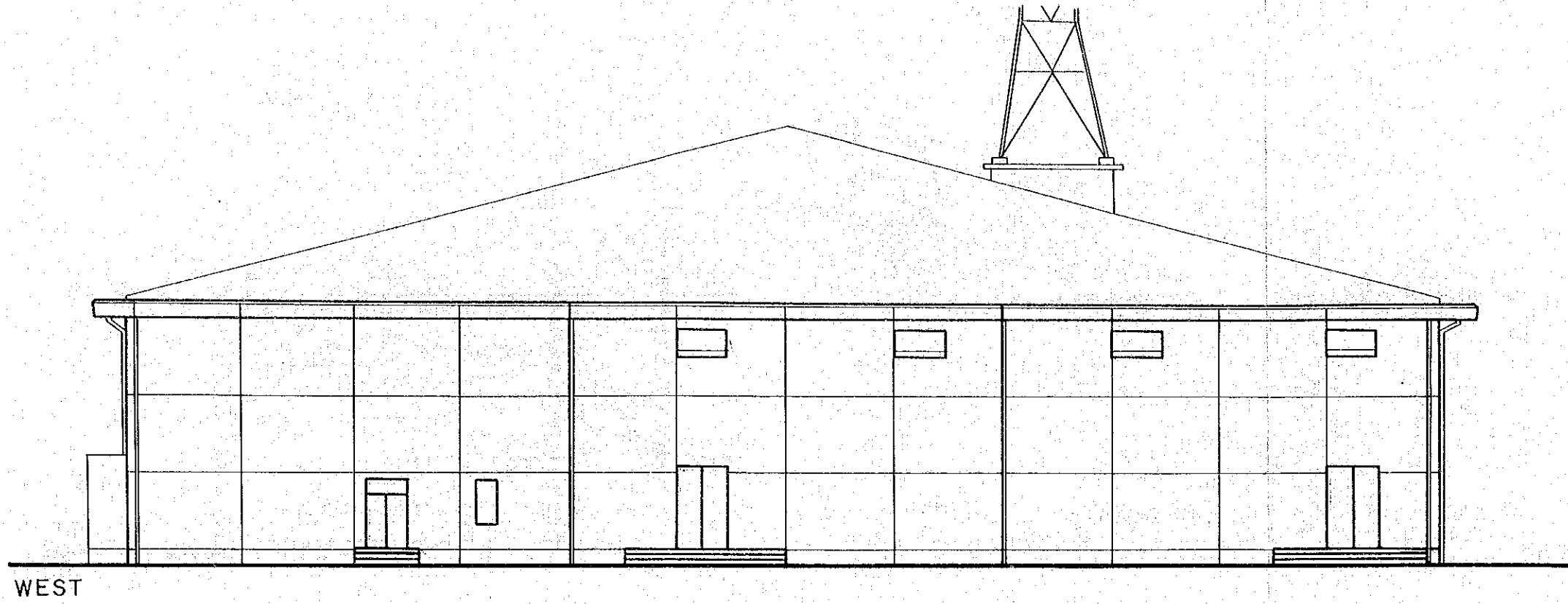
2 nd FLOOR PLAN
1 : 200



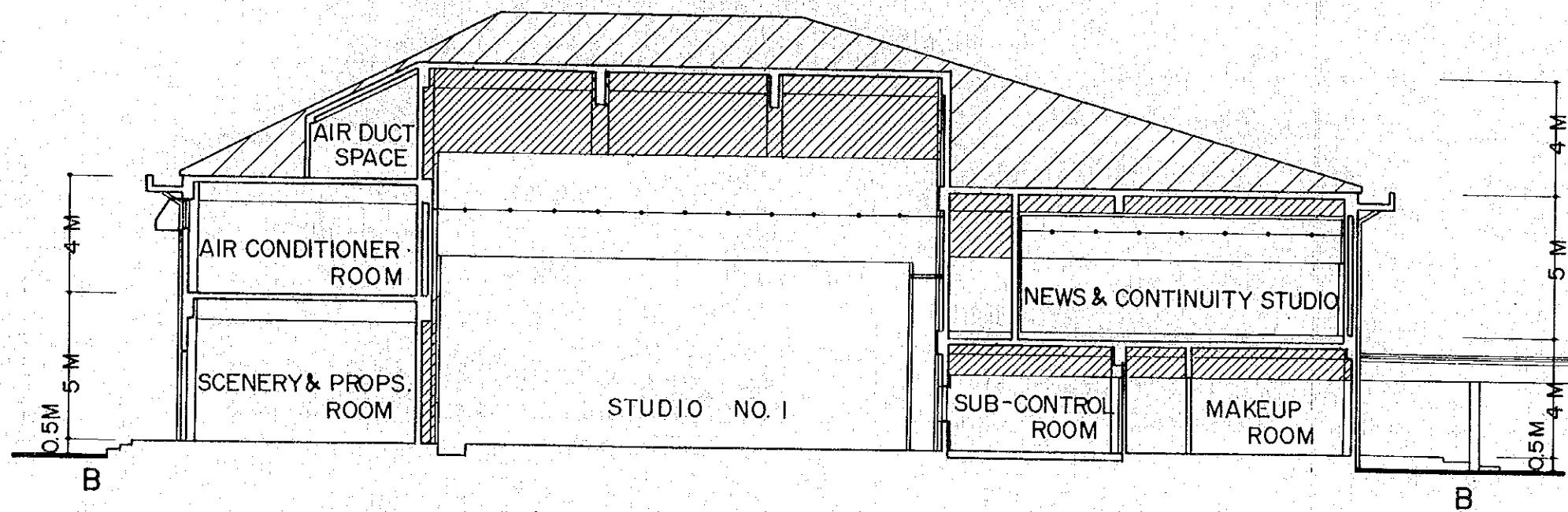
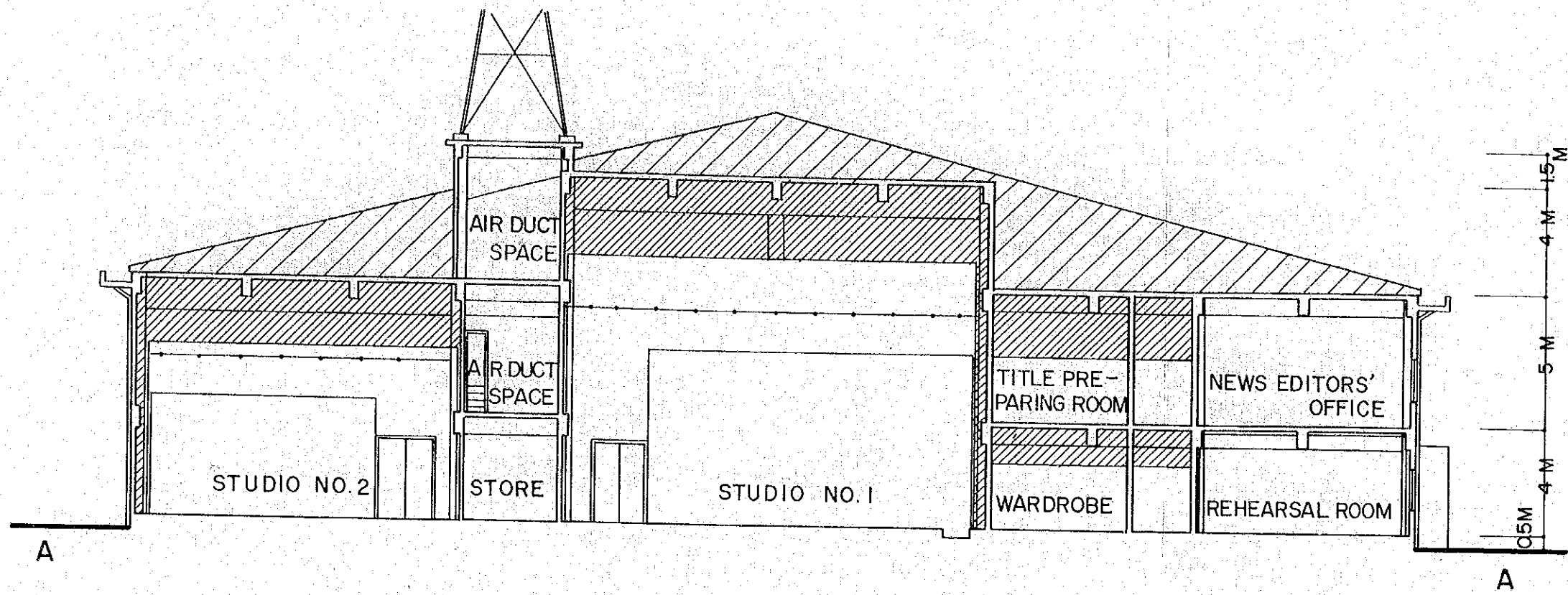
ELEVATION
1 : 200



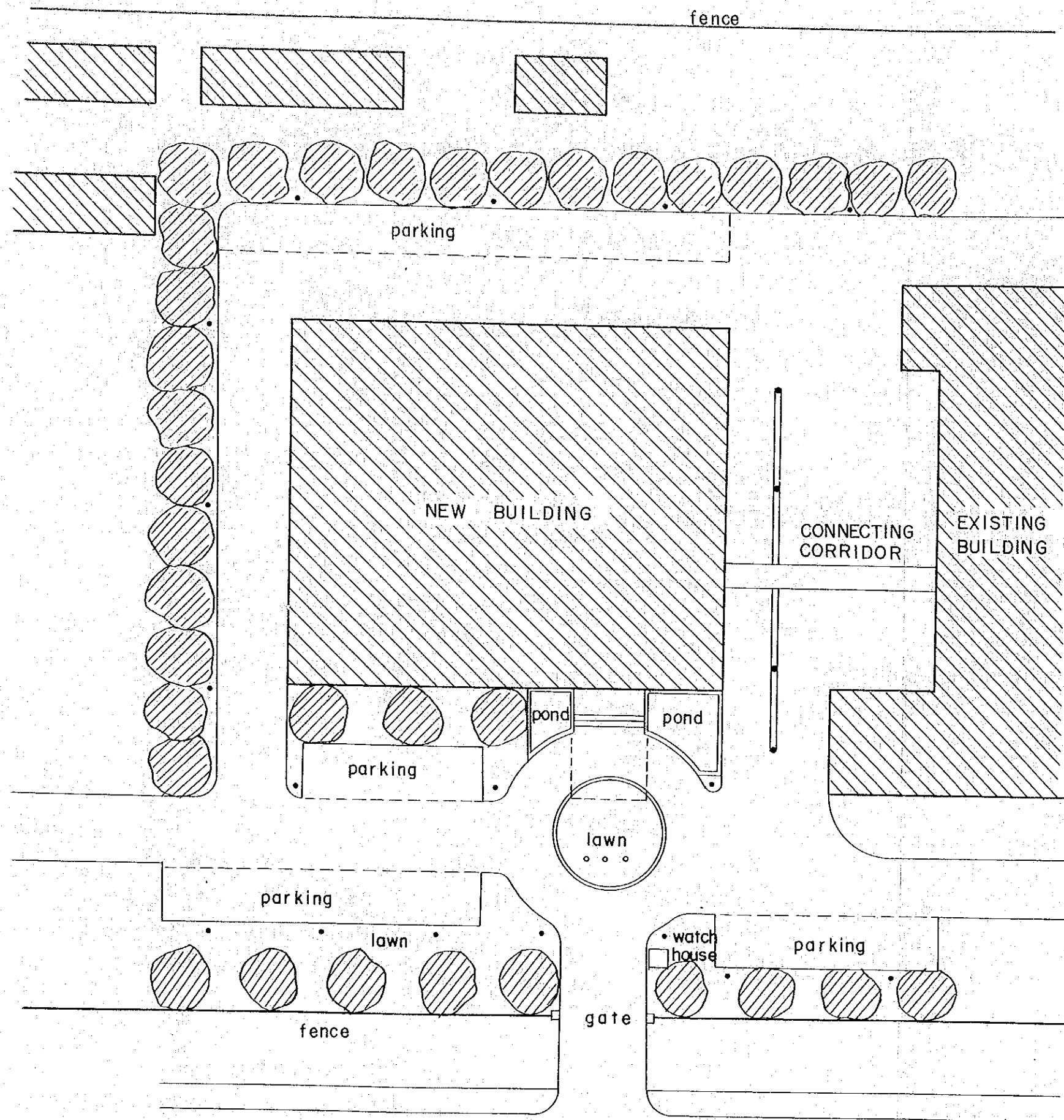
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



ELEVATION
1:200
3-74



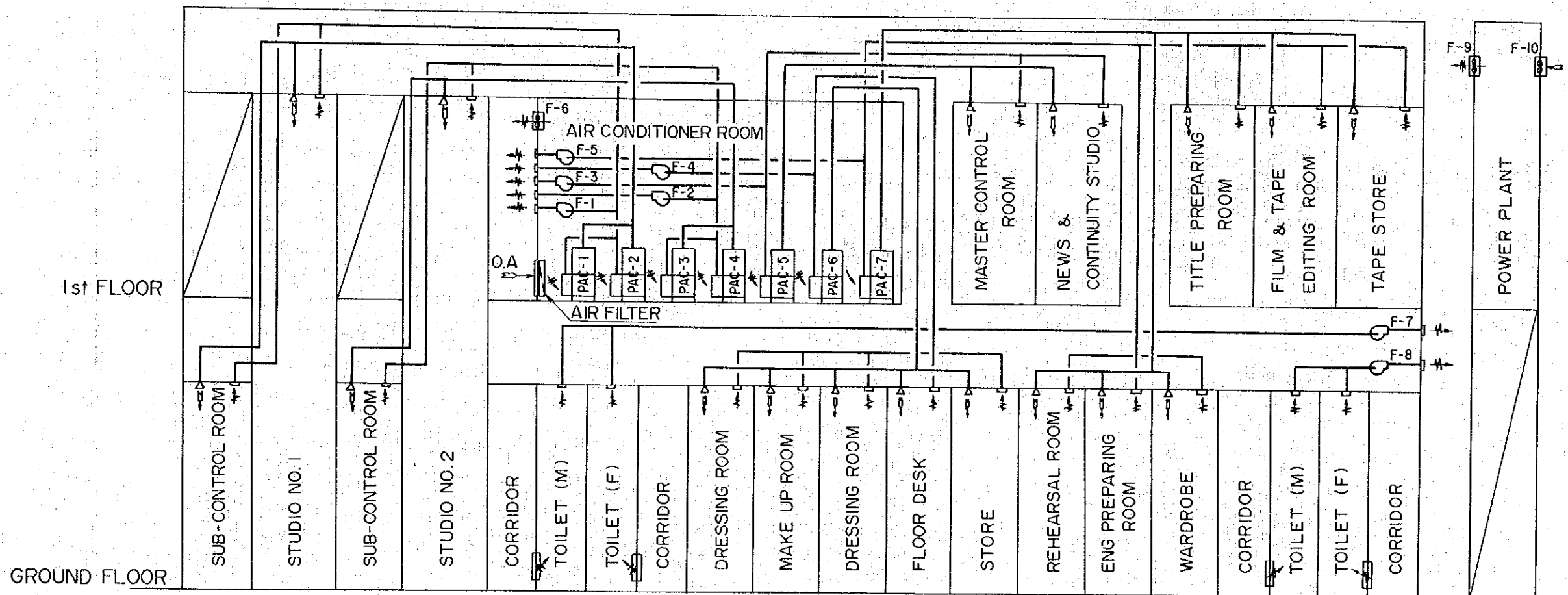
SECTION
1 : 200



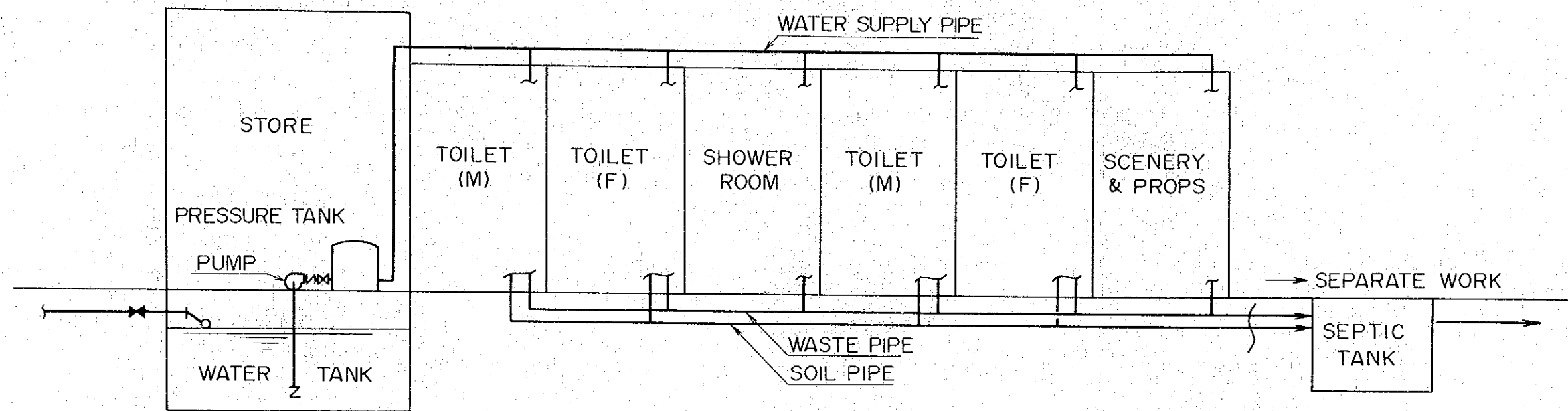
-  tree
-  flag-pole
-  lamp-pole

EXTERIOR WORKS
1: 500

SYMBOLS	ITEMS	SYMBOLS	ITEMS
PAC - 1	PACKAGED AIR CONDITIONER - NO. 1	F - 4	EXHAUST FAN FOR NO. 4 SYSTEM
PAC - 2	PACKAGED AIR CONDITIONER - NO. 2	F - 5	EXHAUST FAN FOR NO. 5 SYSTEM
PAC - 3	PACKAGED AIR CONDITIONER - NO. 3	F - 6	EXHAUST FAN FOR AIR CONDITIONER ROOM
PAC - 4	PACKAGED AIR CONDITIONER - NO. 4	F - 7	EXHAUST FAN FOR TOILET
PAC - 5	PACKAGED AIR CONDITIONER - NO. 5	F - 8	EXHAUST FAN FOR TOILET
PAC - 6	PACKAGED AIR CONDITIONER - NO. 6	F - 9	EXHAUST FAN FOR POWER PLANT
PAC - 7	PACKAGED AIR CONDITIONER - NO. 7	F - 10	O.A. SUPPLY FAN FOR POWER PLANT
F - 1	EXHAUST FAN FOR NO. 1 SYSTEM		
F - 2	EXHAUST FAN FOR NO. 2 SYSTEM		
F - 3	EXHAUST FAN FOR NO. 3 SYSTEM		



SCHEMATIC DIAGRAM OF AIR DUCT SYSTEM



SCHEMATIC DIAGRAM OF PLUMBING

3-3 Technical Cooperation

(1) Sending experts

- 1) In order to enhance this project, the following will be necessary for developing the levels of personnel to be engaged in programme production and the operation and maintenance of broadcasting facilities.
 - a) To send experts for a short period of time immediately after accomplishing the construction work in this project for the purposes of guidance in the field of operation of the equipment and system in connection with the installation of the master control room system and in programme production and for the guidance of producers and artists.
 - b) To send experts for a long period of time for substantiate training of programme producers and in production techniques which are essential particularly in connection with the improvement and expansion of the TV broadcasting facilities.

2) The Burmese side desires Japan to send experts who can advise on i) programme production techniques, ii) maintenance and control of TV equipment and materials, iii) selection of equipment and materials to be purchased in connection with the improvement and expansion of TV broadcasting facilities and iv) site selection of local stations in preparing the master plan for the TV broadcasting service in Burma.

(2) Acceptance of trainees

1) It is necessary to perform training on the operation and maintenance of VTR, TV cameras, etc., and on the operation of the master control room system and training on the control and management of broadcasting service in connection with the improvement and expansion of the TV broadcasting facilities.

2) The Burmese side desires to send trainees to foreign countries in the fields of programme production and broadcasting equipment operation and maintenance techniques.