As the post-production room has the editing functions, and the usage time of P.P. room is normally not so long, one room would be enough.

Based on the estimation outlined above, the required numbers of sets of the equipment will be as follows:

	EFP (sets)	Editing (sets)	Post-production (room)	EFP programme min./day
Islamabad	3	2	1	30'
(To be equipped during the first 2 years, along with the construction of the TV studio)				
Lahore	4	2	1	45'
(To be equipped during the later 3 years, along with the construction of the TV studio)				
Karachi	4	2	1	45'
(To be equipped during the later 3 years, along with the construction of the TV studio)				
Quetta	3	1	1	30'
(To be equipped during the later 3 years)				
Peshawar	3	1	1	30'
(To be equipped during the later 3 years)				

1-4 Development Plan of ETV On Air Time Table

The ETV programmes to be thus produced by different TV Centres will need to be broadcast at the most suitable viewing times for the respective target audiences.

Following is the Development Plan of ETV On-Air Time Table in order to achieve the final target of 10 hours broadcast per day according to the production capability development plan of each regional ETV Centre, mentioned in previous clause 1-2.

Table 1-1 Development Plan of ETV On Air Time Table

Time \ Year	1992	1993	1994	1995	1996
9:00 10:00	Allama Iqubal Open University Courses 60'				
10:00 Women 11:00	Repeat 30'	New 30'			
	Repeat 30'				New 30'
11:00 Student 12:00		Import 30'			
		New 30'			
Women Children 13:00			New 30'		
			New 30'		
17:00 Repeat 18:00	60' (ETV etc)			Family. New 60'	
18:00 Farmer 19:00	New 30'				
	Repeat 30'				New 30'
19:00 Import 20:00	(Science etc) 60'				
20:00 Special 21:00	New 60'				
21:00 Repeat 22:00	(GTV etc) 60'				
Night Music 23:00	New 30'				
	Repeat 30'				

A.I.O.U.	1 H	1 H	1 H	1 H	1 H
New ETV	2	3	4	5	6
Import	1	1.5	1.5	1.5	1.5
Repeat	4	3.5	3.5	2.5	1.5
Total	8	9	10	10	10

(1) As for the morning broadcasts from 9:00 a.m., the one-hour time-slot reserved for the Allama Iqubal Open University (A.I.O.U.) will be filled with two programmes (each 30 minutes).

(2) The broadcast of the two 30' repeat programmes for women from 10:00 a.m. will start in 1992. From 1993, the first 30' will be scheduled for a new programme. And from 1996, the second 30' will be filled with a new programme.

(3) From 1993, a 60' students' programmes time-slot will be reserved for 11:00 a.m. The first 30' will be an imported programme and the remaining 30' will be a new programme by PTV.

(4) From 1994, programmes will be newly produced for broadcast to women and children, starting at noon; 30' for women and 30' for children, respectively.

(5) The broadcast of evening programmes will start at 5:00 p.m. The first 60' will be repeats of GTV or ETV programmes. From 1995, new family programmes will start. From 6:00 p.m., there will be programmes for farmers. The first 30' will be a new programme and the second 30' will be the repeat programmes. From 1996, the entire 60' will consist of new ETV programmes.

(6) The 60' from 7:00 p.m. will consist of imported programmes including science and various international social issues, etc. From 8:00 p.m., there will be a 60' broadcast of an ETV special.

(7) During the 60' from 9:00 p.m., there will be the broadcast of repeats of some popular programmes broadcast on GTV. From 10:00 p.m., there will be a 30' broadcast of a newly-produced Night programme and the next 30' will consist of repeat programme such as Music Album.

(8) As a result of this time table, there should be a total 8 hours ETV broadcasting by 1992. By 1994, the ETV will operate with 10 hours daily broadcasting.

1-5 Estimation of the Total Production Cost

According to the Development Plan of ETV On-Air Time Table, the total production cost for each developing year is calculated as shown below, assuming that:

(1) Unit production cost of each programme is shown in the column of 1992 as the first year of the operation.

(2) The unit cost is increased at a rate of 10% due to the present escalation of commodity prices.

(3) Repeat programmes will cost 30% of the original production cost for royalty fees.

(4) As to the Allama Iqubal Open University programme, the production cost is estimated at 40,000 Rs. for a new 30-min. programme and 10,000 Rs. for a repeat 30-min. programme, which have to be borne by PTV. AIOU has to pay to PTV 25,000 Rs. per 30-min. programme for transmission charges. Therefore, the AIOU's case is a special case in which payment to AIOU is 40,000 + 10,000 = 50,000 Rs., but income from AIOU is 25,000 Rs. x 2 = 50,000 Rs., viz., both will cancel each other, as a result, in this calculation AIOU's cost is estimated as zero.

Table 1-2 Estimation of the Total Production Cost (RS)

Time \ Year		1992	1993	1994	1995	1996
	30' 30'	Allama Iqbal Open University Courses				
Women	30'	(R) 1,500	(N) 6,600	(N) 7,260	(N) 7,986	(N) 8,784.6
Women	30'	(R) 1,500	(R) 1,650	(R) 1,815	(R) 1,996.5	(N) 8,784.6
Student	30'	(I) <6,000>	(N) 6,600	(N) 7,260	(N) 7,986	(N) 8,784.6
Children	30'	(N) <6,000>	(N) 6,600	(N) 7,260	(N) 7,986	(N) 8,784.6
Women	30'	(N) <4,000>	<4,400>	(N) 4,840	(N) 5,324	(N) 5,856.4
Children	30'	(N) <6,000>	<6,600>	(N) 7,260	(N) 7,986	(N) 8,784.6
Repeat-Family	60'	(R) 10,000	(R) 11,000	(R) 12,100	(N) 7,986 ×2	(N) 17,570
Farmer	30'	(N) 6,000	(N) 6,600	(N) 7,260	(N) 7,986	(N) 8,784.6
Farmer	30'	(R) 1,500	(R) 1,650	(R) 1815	(R) 1,996.5	(N) 8,784.6
Import	60'	(I) 35,000	(I) 38,500	(I) 42,350	(I) 46,585	(I) 51,243.5
Special	60'	(N) 30,000	(N) 33,000	(N) 36,300	(N) 39,930	(N) 43,923
Repeat	60'	(R) 15,000	(R) 16,500	(R) 18,150	(R) 19,965	(R) 21,961.5
Night	30'	(N) 10,000	(N) 11,000	(N) 12,100	(N) 13,310	(N) 14,641
Music	30'	(R) 3,000	(R) 3,300	(R) 3,630	(R) 3,993	(R) 4,392.3
Cost		113,500	143,000	169,400	189,002	221,079.9
Total (cost×365)		41,427,500	52,195,000	61,831,000	68,985,730	80,694,163.5

Note: (R)=Repeat (N)=New (I)=Imported

1-6 Basic Resource allocation plan at Islamabad ETV Centre

Prerequisite conditions for the Production according to the compilation plan are as follows.

(1) The required programme productions of the Islamabad ETV Centre are as follows:

1) Seven 40-minute programmes/Week production in a 200m² medium size studio A.

2) Fourteen 25-minute programmes/Week production in the 200m² medium size studio A and a 100m² small size studio B.

3) Seven 30-minute programmes/Week production by three EFP crews using 2 editing rooms.

4) Seven 1.5-hour dubbing of imported programmes/Week production in a post production room, where the original foreign language is dubbed into the Urdu language.

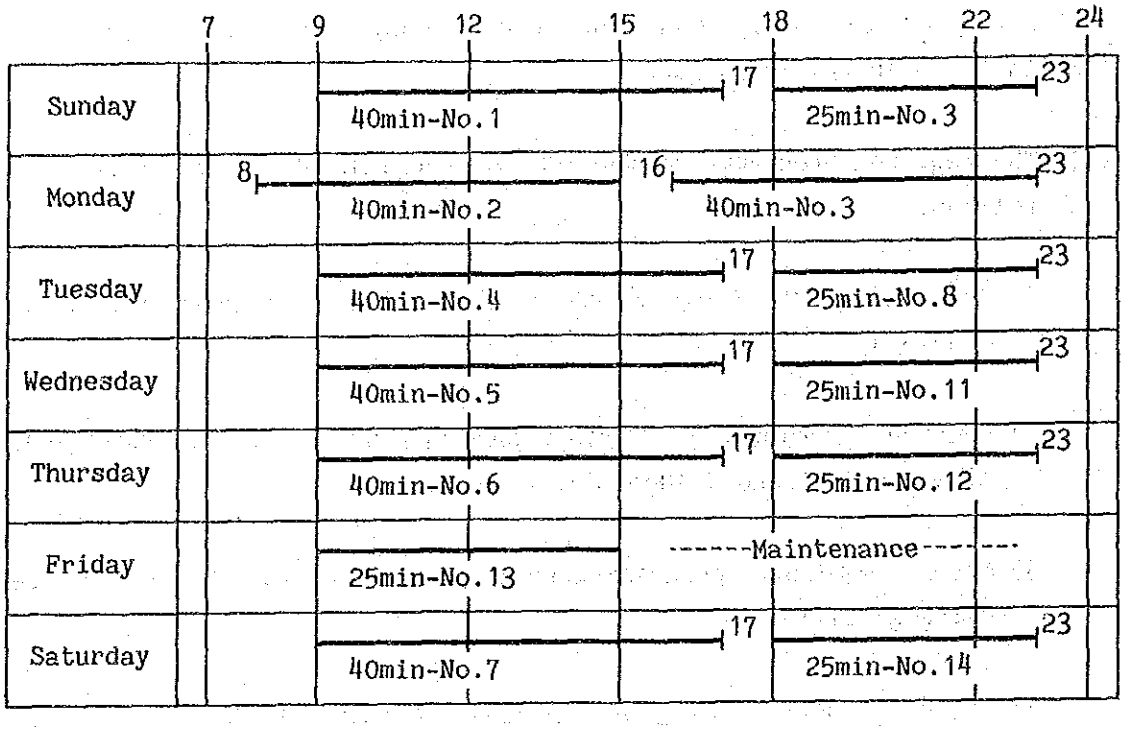
5) Seven 25-minute (on average) 4 language Programmes/Week production in a post production room, provided that 20% of self-made ETV programmes are dubbed into the 4 local languages.

(120 minute of total programmes x 20% ≒ 25 minute/Day)

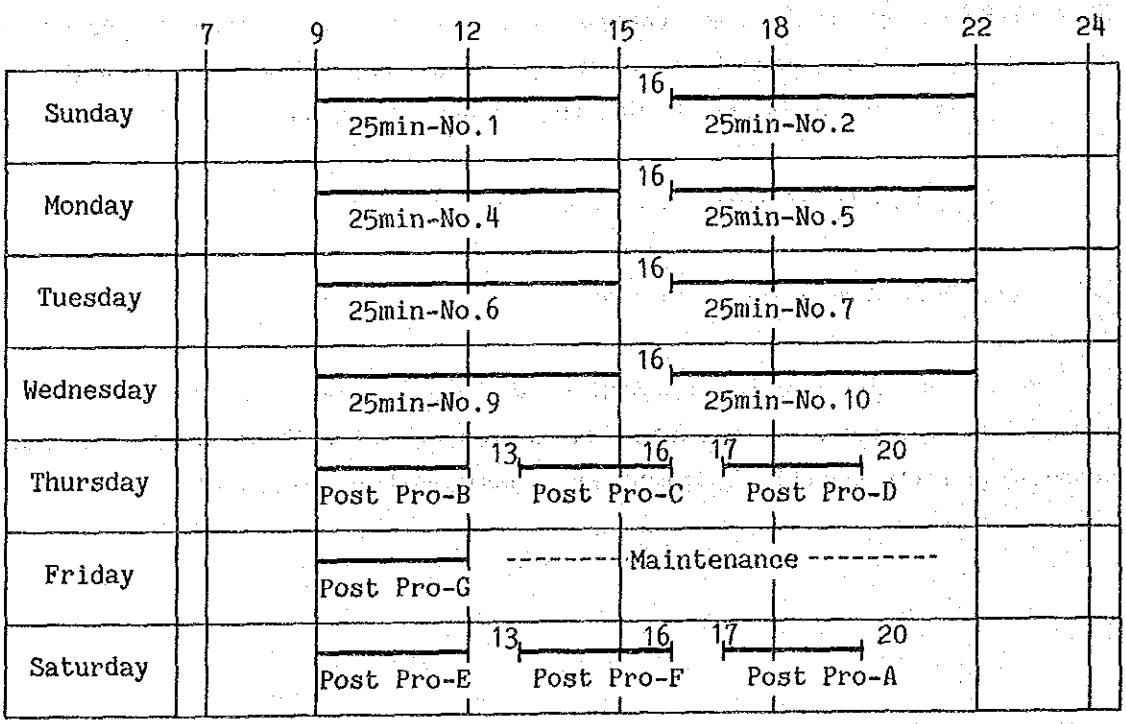
(2) Basic Resource Allocation Plan

Based on the previously mentioned clause about required production demand, basic weekly allocation schedules of studio A, studio B, post production room and EFP equipment are considered as shown below.

Basic schedule plan for programme production in 200m^2 TV studio A

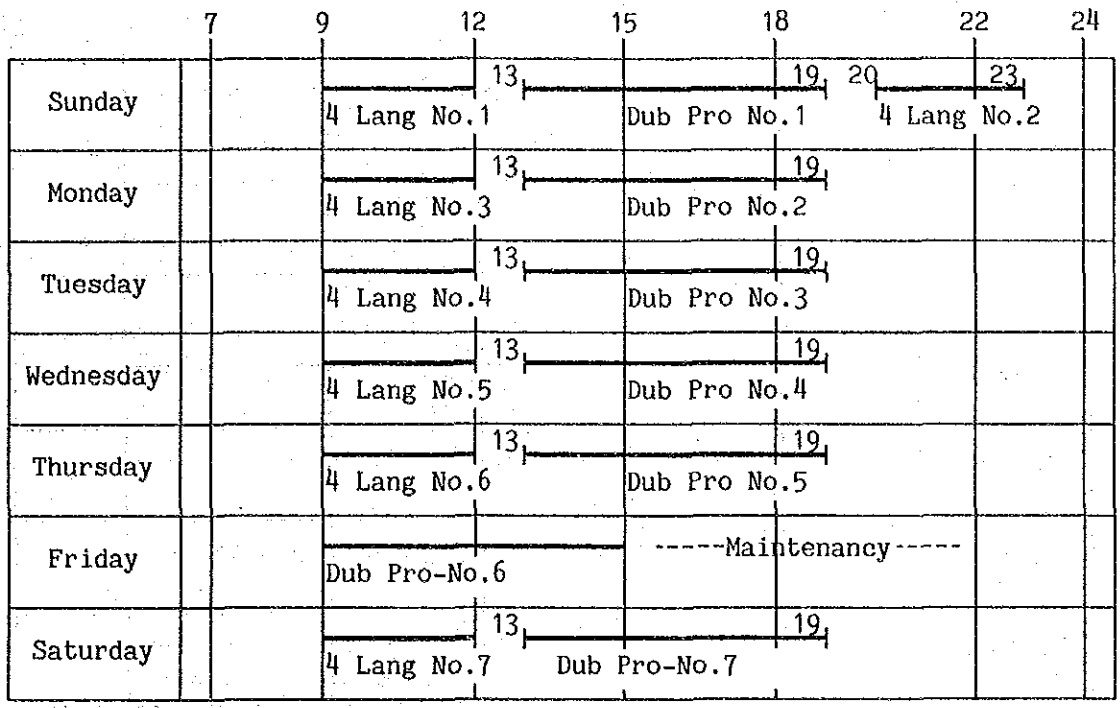


Basic schedule plan for programme production in 100m^2 TV studio B



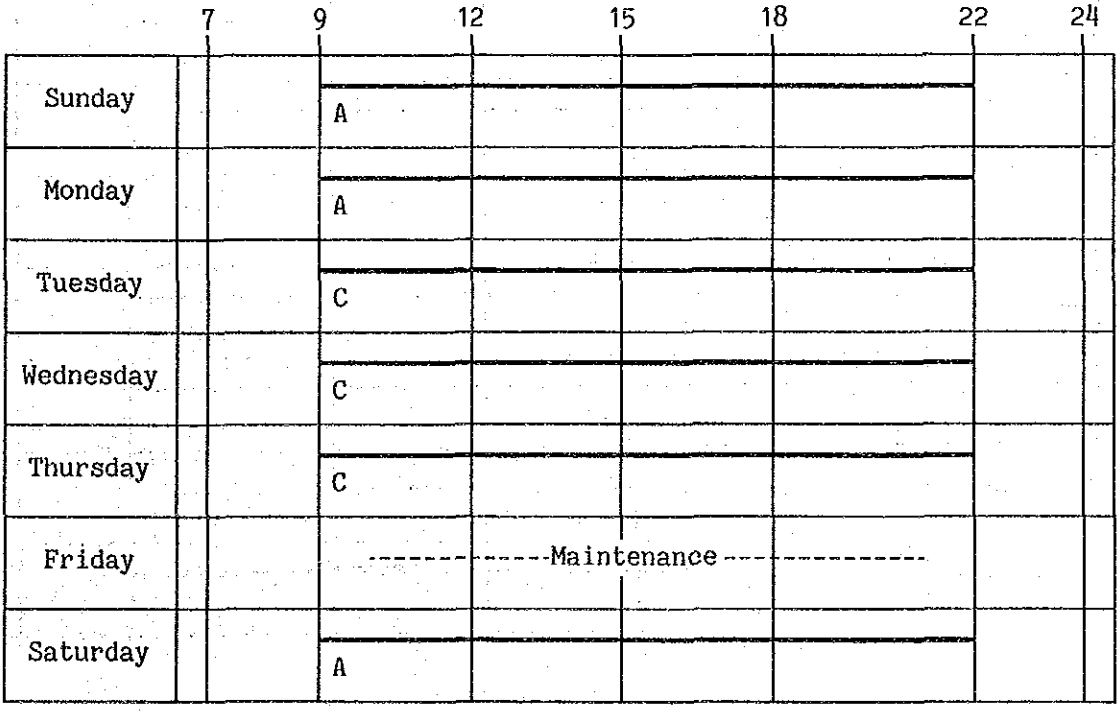
Post Pro: Post production programmes

Basic schedule plan for post production room

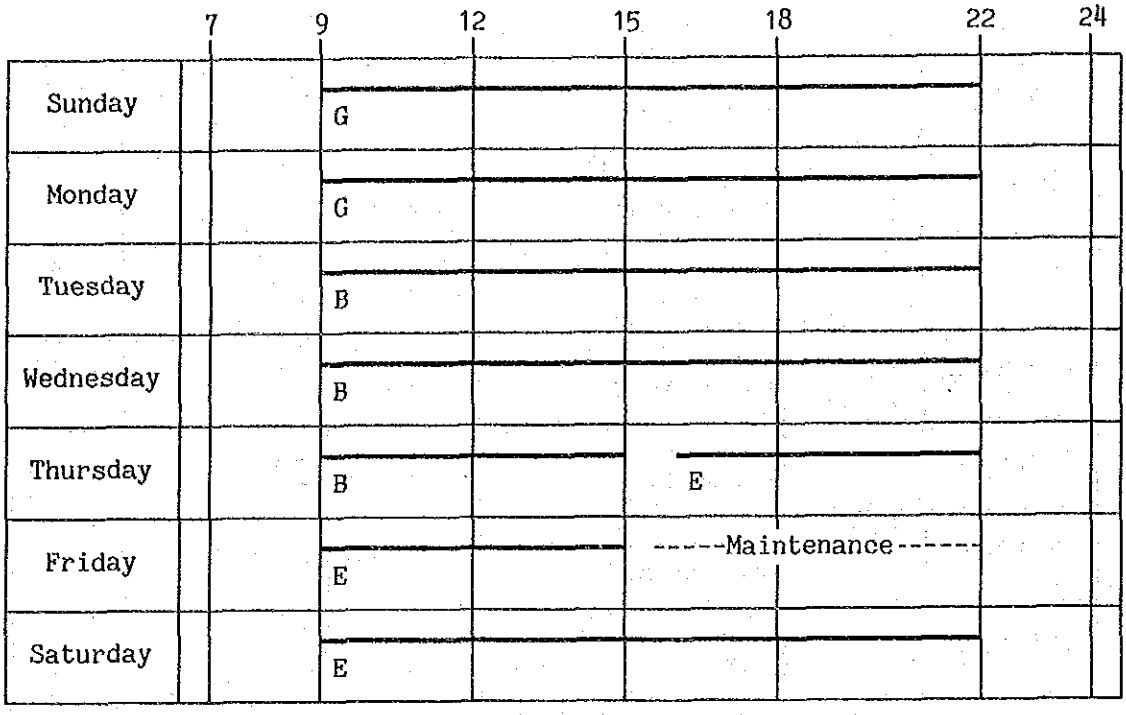


4 Lang: 4 language programme Post Pro: Post Production programmes
Dub Pro: Dubbing Programmes
Note: Practical Audio Dubbing method will be discribed in 2-6 in detail.

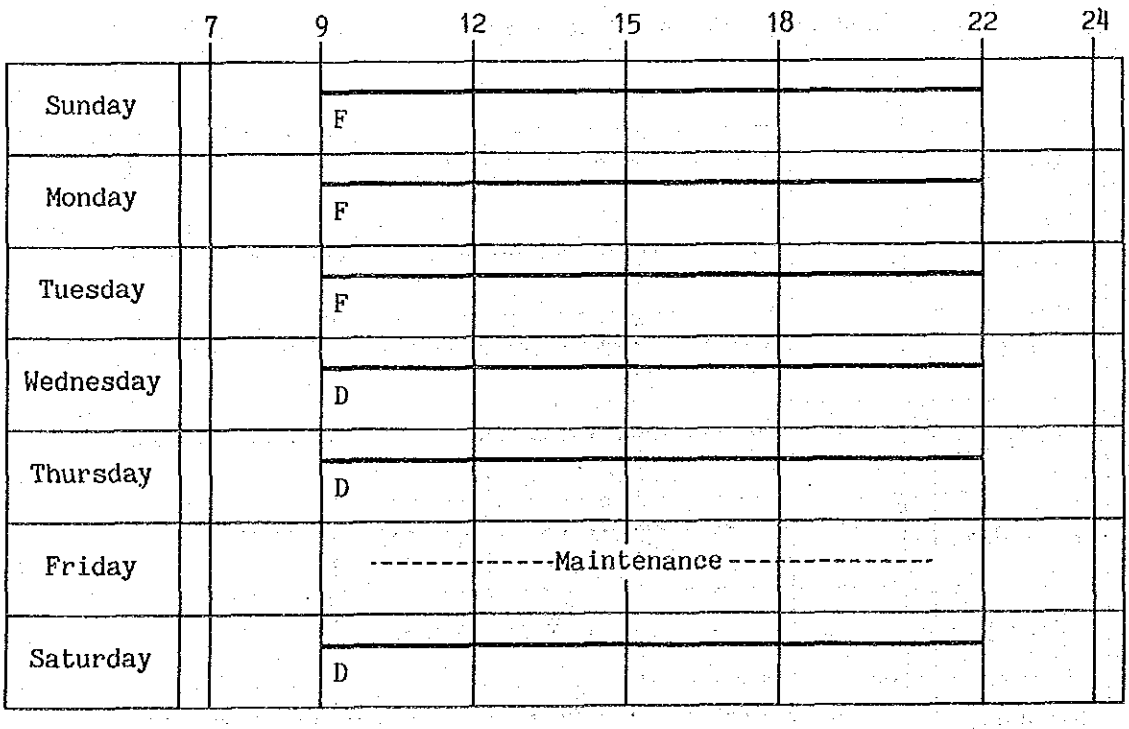
Basic schedule plan for field pick up system No.1 crew unit



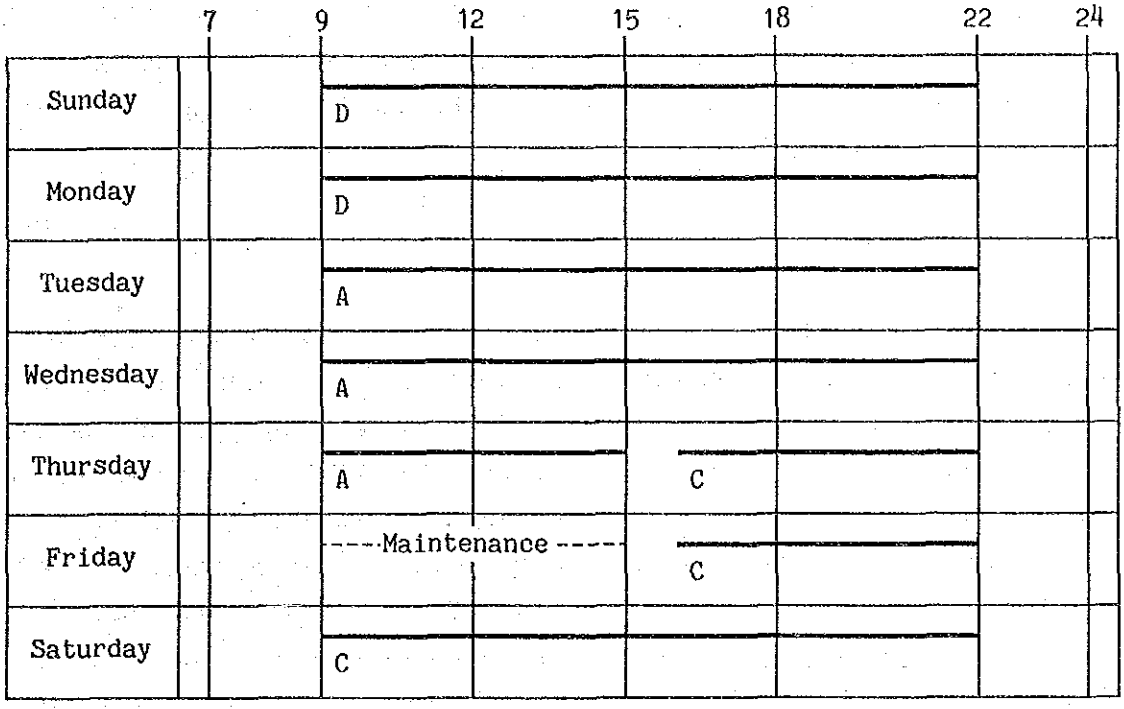
Basic schedule plan for field pick up system No.2 crew unit



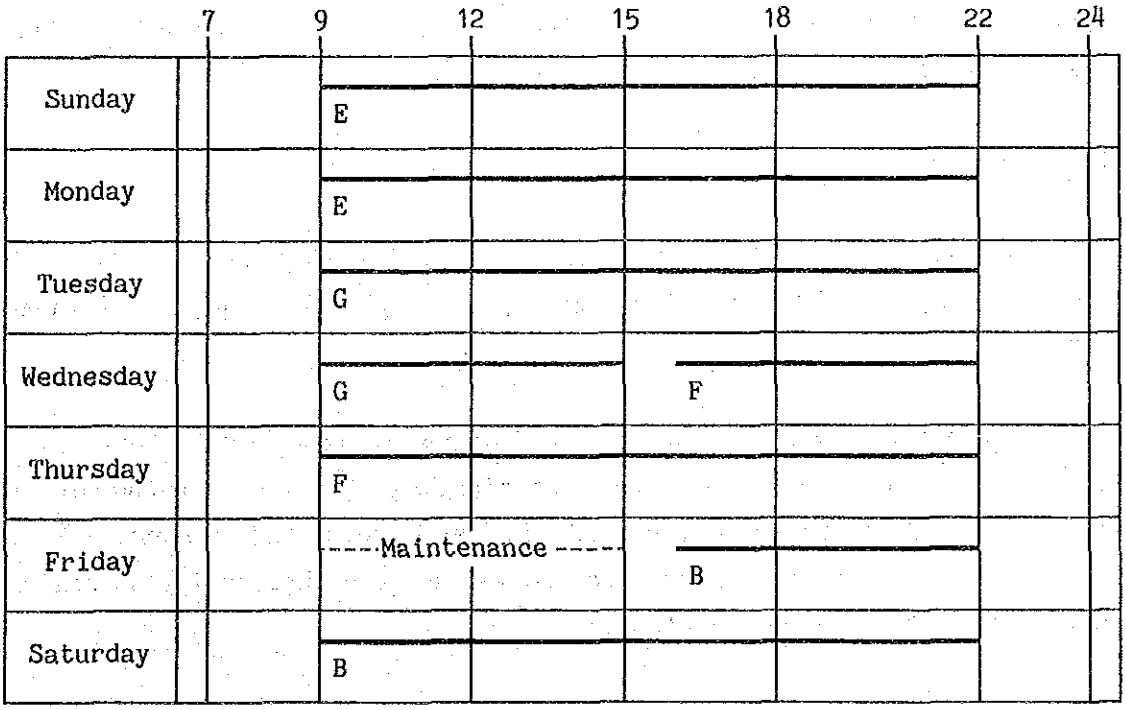
Basic schedule plan for field pic up system No.3 crew unit



Basic schedule plan for editing room No.1



Basic schedule plan for editing room No.2



1-7 Allama Iqbal Open University

Since AIOU A/V programmes are deemed to be very essential in the compilation of ETV broadcast which are scheduled one hour broadcast within 10 hour ETV broadcast a day, hereafter, the out-line of the Allama Iqbal Open University is described.

(1) The University

Allama Iqbal Open University started functioning in 1975 as an experiment in distance education in Pakistan. The University has since stood the test of time and today it is an established national institution. Since its establishment in 1975 the scope of the University's educational programmes has been expanding rapidly. The University, which started functioning with an elementary course on Functional Arabic and student enrolment of less than a thousand, is now offering 114 different courses in several fields which range from basic literacy and functional education to the highest levels of academic study, as well as a number of professional education programmes. The annual course enrolment exceeds 100,000. Plans are underway to introduce programmes of studies leading to Master's, M.Phil. and Ph.D. degrees in various academic and professional disciplines. It is intended to double the number of courses in the next five years.

(2) Location

The main campus of Allama Iqbal Open University is located in H-9 section which is the same with the new site of ETV Centre in Islamabad city.

In addition, the University has thirteen Regional, five Sub-regional Directorates and nine Regional Coordinating Offices throughout the country, which serve as a means of liaison between the students and the University on the one hand and serve as the University's regional administrative units on the other.

(3) Programmes of the University

The University is offering courses and programmes of studies leading to certificates, diplomas and Bachelors', Masters', M.Phil. and Ph.D. Degrees in the following areas:

1) Functional Education
2) General Educaiton
3) Teacher Educaiton
4) Professional Education and Special Programmes/Projects

1) Functional Education

The functional education courses are viewed as essential in the context of Pakistan's needs. The purpose of the functional courses is to help individuals acquire useful knowledge and lifeskills for improved productivity and better living. Some functional courses are offered at certificate level as non-credit courses and many are accredited for general education at various levels, depending upon the academic level of the student and of the course.

2) General Education

The University's programmes of general education are offered in many fields of humanities and sciences. The general education programmes are intended to provide opportunities for continuing and higher education to those who, for any reason, could not complete their studies in the formal system.

At present, the general education courses are offered at Intermediate Certificate, Bachelors', Masters', M.Phil. and Ph.D. level. A special programme of general education leading to a Secondary School Certificate (Matriculation) for female students has already been offered by the University.

3) Teacher Education

The teacher-education courses of the University are intended to provide in-service education for various groups and levels of teaching. The teacher education programmes of the University include Primary Teacher's Certificate (PTC), Primary Teacher's Orientation Course (PTOC), Certificate in Teaching (CT), Arabic Teacher's Orientation Courses (ATOC), and a Post-Graduate Diploma in English Language Teaching (ELT). Teacher education courses leading to B.Ed., M.Ed., M.A. (Education), M.Phil. and Ph.D. Degrees in Education are being planned for the near future.

4) Professional Education

In addition to functional, general and teacher education courses, the University is also offering programmes of education leading to Bachelors, Masters, M.Phil. and Ph.D. Degrees in certain professional areas. Currently, the University is offering professional courses in Business Administration, Public Administration and Educational Planning and Management.

(4) Who can be a Student of the University?

The Allama Iqbal Open University has national jurisdiction and people from any part of the country can register for a course on a programme of the University provided they possess the necessary qualifications for admission, wherever prescribed by the University. The University does not discriminate on the basis of domicile, age, sex or ethnic origin. Some of the programmes of the University are meant for special groups of working people. Admission to these courses is made through the nomination of students by their employers or organizations.

(5) Method of Instruction

1) Study at Home

For imparting instruction the University employs a multimedia approach to teaching and learning which comprises study-at-home of

the printed and other instructional material provided and/or prescribed by the University. For a full-credit course of eighteen units per semester, about 10 hours' study per week is required.

2) Tutorials

The University appoints a large number of tutors to help and guide the students through correspondence and/or personal contacts. Tutorials are compulsory in technical courses like Electrical Wiring.

3) Radio and TV Lessons

The radio and TV lessons of the University are designed to supplement the instructional material provided or prescribed by the University and to facilitate learning and comprehension of various courses.

4) Tapes and Cassettes

Wherever necessary, the University produces audio and video cassettes for the explanation and clarification of concepts and contents of a course. These cassettes are made available to students at the University's Regional Offices and Study Centres.

5) Assessment and Evaluation

Students' achievements in each course are assessed on a regular basis. For this purpose students are required to prepare and submit to their tutors periodic assignments or tests. Students also take practical tests on the day of tutorials in courses like Electrical Wiring.

6) Workshops

In courses which require practical work, there are guided exercises in a specific field. Students are required to participate in group training workships or attend laboratories on workshops as scheduled and arranged by the University.

(6) Services of the University

1) Central Library

The University has Central Library which is located at the main campus of the University and is housed in a spacious modern building. The library has a very large collection of reference, archives, A/V materials, general books and periodicals. It has been established to cater to the needs of the faculty and research scholars of the University in general.

The University is also in the process of setting up libraries at its Regional Offices. These libraries will have texts and prescribed books, the University's own publications, the University's video and audio cassettes etc., which will be available for students to use.

2) A/V Resource Centre

The University has established within the Central Library an Audio-Visual Resource Centre. The purpose of the centre is to provide students, teachers and research scholars with access to materials of various kinds to facilitate research and scholarship. The Centre is designed to contain copies of broadcast and non-broadcast audio-visual materials for each course (for example, audio-visual tapeslides, flip charts, radio-vision books, etc.) and recording of all Radio/TV programmes produced by AIOU, copies of such materials acquired from foreign distance teaching institutions and copies of such materials produced by other agencies and institutions in Pakistan.

3) National Educational Video and Audio Library (NEVAL)

National Educational Video and Audio Library is in the process of being established. It will be an important extension of the Library's own A-V Centre, with copies of Radio and TV programmes from the AIOU itself, from agencies and institutions from within Pakistan and overseas. These recordings will be available for reference purposes or for purchase, thus permitting their availability on a

national basis to other teaching and training institutions/ organizations of all kinds, as well as to libraries and individual students. This development will significantly underline the University's role as a major resource centre for the whole of the country.

4) Institute of Educational Technology

The Institute consists of the following four departments working under the Director:—

① Programme Production
② Graphic, Design and Non-Broadcast Media
③ Engineering
④ Media Archives

The Institute has the following facilities:—

① TV studio
② Radio studios
③ Photographic studio
④ Graphic and design studio and workshop
⑤ Auditorium

CHAPTER 2 Studio Facilities Plans

The foundation for ETV programme production will be established by the end of the first two years of the 5-year project, through the installation of studio facilities in Islamabad. During the later three years of the 5-year project, TV Centres will be constructed at Karachi and Lahore (including TV studio and EFP equipment).

In this CHAPTER, the studio facilities and the EFP programme production equipment in Islamabad, to be installed during the first two years, will be discussed.

2-1 Basic Policies Concerning Studio Facilities

(1) In principle, educational ETV programmes are broadcast repeatedly; the degree of requirement for quick transmission after the production is comparatively low. It is quite possible to transmit a packaged programme at a later date. So, with regard to the studio facilities for ETV, the construction plans should, in principle, be based on the system in which ETV programmes are first videotaped as a complete package and played back at a later date at the time of transmission.

(2) The studio facilities to be installed at TV Centres for ETV should be constructed on the premise that they will be used for more than ten years. Following are the points that need to be taken into account when considering this question:

1) The equipment should be of the newest type. For example, all cameras, including those for EFP use, should be those using 3 CCDs (Charge Coupled Device).
Regarding VTR, the 1/2-inch component type for broadcast-use will be adopted, since, compared with the 3/4-inch VTR, the picture-quality degredation resulting from dubbing in the editing process is smaller.

2) The playback devices are to be arranged in a dispersed way into each production site (studio sub-control room). This is because the dispersed arrangement has become more advantageous owing to recent technological innovations than a conventional arrangement

of the devices concentrated at one spot. The reasons are as follows.

a) units have all become compact and, while their costs have been reduced considerably.

b) the conventional method of concentrating different units into a set for use for production purposes in different studios is not only inefficient, but also may prevent the other programme producers from keeping on schedule, because the work requires creative and intellectual activities. The need to share a single set of equipment, may jeopardize the work schedules of the entire production staff, causing an enormous amount of financial loss.

c) In order for a single set of equipment to be shared by different production groups, it would be necessary to provide the central control room with a matrix, with many crosspoints for multi-contact interlocked devices, including a large number of remote-control circuits, tally, intercom line, video and audio circuits. Usually, there is no such ready-made matrix available. It must be custom-ordered each time the need arises. This, of course, results in substantial expenditure. The cost would be just as high as that of purchasing separate units of VTR and other equipment for installation in each studio, because the prices of such units have recently been reduced considerably.

d) While each unit of equipment functions on its own, a matrix can function only at the particular place where it is installed; there is hardly any prospect for future expansion and/or modification of a matrix system. Thus, in recent years, there has been a trend of studio facilities undergoing change from the conventional concentrated system of 20 years ago to a dispersed system in which the units of equipment are installed on the sites of programme production (that is, in the studio's subcontrol room). In fact, this change has been going on in stages.

2-2 Programme Production Facilities and Equipment

(1) Installation Plans for Islamabad TV Centre

1) Studio A and the Subcontrol Room

a) The studio A is the main studio in which ETV staff will produce programmes on its own. The educational and cultural programmes to be produced in this studio will mostly be presented in dialogue or conversational style, using simple sets. No complicated uses will be made of this studio, such as, the production of a TV drama.

b) The floor space will be wide enough to enable smooth production of various types of ETV programmes, equipped with studio cameras, video and audio control devices and lighting units. In designing this studio, emphasis will be placed on stability and maneuverability.

c) In a subcontrol room, there is a lot of access of engineers and programme producers between the studio floor. It will be located on the same floor as the studio floor, so that the production staff can have easy access between the studio floor and the subcontrol room.

d) Taking into account the foregoing conditions, the studio will have a floor space of about 210m^2 and will be equipped with three studio cameras. In order words, since its main use is for the production of educational programmes, the studio should be able to accommodate 2 kinds of relatively simple stage settings.

e) Lighting system will consist of motor-driven batons, movable up and down.

2) Studio B and Subcontrol Room

a) This studio will mainly produce lecture programmes and talk shows with several people.

b) The floor space will be wide enough to enable smooth production of various types of programmes, and will be equipped with two studio cameras, video and audio control devices and lighting units. In designing this studio, emphasis will be palced on stability and efficient operation.

c) The subcontrol room is also located on the same floor, as is the case with studio A.

d) The studio will have a floor space of about 110m^2 and will be equipped with two studio cameras.

e) The lighting system will be the semi-fixed type with base-lighting of fluorescent bank-light fixed type and key-lights (switchable and adjustable).

3) Master Control Room and Continuity Room

For the master control room (MCR) to be the centerpiece of the studio facilities, the following equipment will be installed : transmitting/receiving device for U/D-link, STL/TSL between existing PTV and ETV centres, transmission-switching-and-mixing console, synchronized signal generater, centralized clock drive device, monitoring devices, as well as VTRs for recording signals coming from outside, etc. These will be installed in one place and will be designed so that they may be operated efficiently in a well- coordinated manner.

a) Programmes sent into the continuity operation will not be confined to completed programmes; there will also be incompleted programmes sometimes. Such incompleted programmes will be made into completed programmes by superimposing characters made by an opaque-device, etc.

b) The completed programme materials will be sent from the studio - A, studio - B, On-Air VTRs, etc. Such materials are input directly into transmission-switching device. At off-line times it is also possible to edit programme materials using the continuity equipment.

c) VTRs

① A total of 4 sets of 1/2-inch component VTRs will be installed. Using these 4 VTRs, commercials and various programme materials will be transmitted one by one, according to the programme transmission schedule.

② The 3/4-inch VTRs are used at the time when the 3/4-inch VTR programmes procured by AIOU, GTV, etc., are rebroadcast using the continuity equipment.

d) Systems Conversion

Among the imported programmes, there might be delivered in videotapes of NTSC system in 3/4-inch tapes. Such programmes recorded under different systems cannot be played back with a PAL 1/2-inch component VTR. Therefore, systems conversion device and a 3/4-inch NTSC VTR will be installed.

e) Such materials up-linked from Karachi and the materials from GTV will be phase-adjusted with FS (Frame Synchronizer) and will either be recorded after being put through the video switcher or be used as programmes to be transmitted later on.

4) Post production

a) Audio dubbing Equipment

① 4-language Broadcasts

- When an event of national importance, such as an election or a sports event, takes place, a TV programme covering the event will be produced and broadcast nationwide through the up-link and via the satellite after adding the four main Provincial languages of Pakistan (Sindhi, Baluchi, Punjabi and Pashto).
- Using the four announcer's booths installed adjacent to the post production room, announcers, commentators and others can either be recorded or broadcast live in up to 4 different languages simultaneously, by watching the picture on TV monitors.
- The 1/2-inch component VTR is capable of recording a maximum of four different sounds. So, with this VTR, it

is possible to easily play back the recorded tape, without using a special tape-recorder such as a multi-track tape-recorder.

② Audio dubbing

- According to the present ETV programming plans, 90 minutes a day of imported programmes are scheduled for broadcast.

  Selecting high-quality imported programmes in accordance with the current conditions of Pakistan and broadcasting them as educational programmes are a very effective means of cost economization, and also of providing the people with extensive knowledge and information from abroad. Besides, there is an ever-spreading worldwide trend among the broadcasting organizations to promote programme exchange and co-production of TV programmes with foreign broadcasters.

- Currently on GTV, the imported programmes are mostly broadcast in foreign languages without dubbing the words into Pakistan's own language. This substantially reduces the educational effects of those programmes on those people who do not understand a foreign language (English, in most cases). So, as far as ETV is concerned, it is most important that the imported programmes are dubbed into a language of one's own country that can be understood by the maximum number of people there.

  In order to solve these problems, there is the need to install voice-dubbing equipment for use in post production.

b) Video Post production

For the production of outdoor-taped (or EFP) programmes, a set of equipment for titling and framing each programme is required in addition to the EFP equipment. In other words, there is the need to install a video mixer, VTR, opaque device, etc., in addition to the editing system comprising playback/recording VTRs and the monitors.

- Editing and Post Production

  The 1/2-inch materials videotaped on location will be made into a completed programme after editing, adding narration and BGM, titles and framing for the beginning and ending segments. For the programme materials received from AIOU or GTV, which are in 3/4-inch tapes, 3/4-inch VTRs will also be installed sometimes to dub to the 1/2-inch component VTRs.

2-3 Installation Plan for the New Studios in Karachi and Lahore

The plan calls for the construction of a new ETV studio in each of the TV Centres of Karachi and Lahore during the later 3 years.

The scale of the studio facilities envisaged is of approximately the same level as that of the Studio-A in Islamabad, which is to be constructed during the first two years of the project.

2-4 Composition List (Initial 2-Year Plan)

Table 2-1 Studio Facilities Composition List at Islamabad ETV Centre (1/4)

STUDIO-A, SUB CONTROL	CCD STUDIO CAMERA	3 Sets	
	VIDEO CONTROL EQUIPMENT	1S	
	AUDIO CONTROL EQUIPMENT	1S	
	1/2 inch COMPONENT VTR	2S	
	OPAQUE EQUIPMENT	1S	
	AUDIO TAPE RECORDER	2S	
	VIDEO MONITOR	1S	
	AUDIO MONITOR	1S	
	MICROPHONE	1S	Including, Wireless MIC
	MICROPHONE STAND	1S	Including, Boom Stand
	INTERCOM SYSTEM	1S	
	LIGHTING SYSTEM	1S	MOTORIZED
	OTHER		
STUDIO-B, SUB CONTROL	CCD STUDIO CAMERA	2S	
	VIDEO CONTROL EQUIPMENT	1S	
	AUDIO CONTROL EQUIPMENT	1S	
	1/2 inch COMPONENT VTR	2S	
	OPAQUE EQUIPMENT	1S	
	AUDIO TAPE RECORDER	2S	
	VIDEO MONITOR	1S	
	AUDIO MONITOR	1S	
	MICROPHONE	1S	
	MICROPHONE STAND	1S	Including, Boom Stand
	INTERCOM SYSTEM	1S	
	LIGHTING SYSTEM	1S	FIXED
	OTHER	1S	

MCR & CONTINUITY	CCD STUDIO CAMERA	1S	
	PROMPTER	1S	
	ANNOUNCER OPERATION BOX	1S	
	MICROPHONE & STAND	1S	
	LIGHTING	1S	
	VIDEO CONTROL EQUIPMENT	1S	
	AUDIO CONTROL EQUIPMENT	1S	
	V/A SWITCHER	1S	
	PROCESS AMP	1S	
	AUDIO LIMITING AMP	4S	
	1/2 inch COMPONENT VTR	4S	
	3/4 inch VTR	2S	
	SYSTEM CONVERTOR	1S	
	OPAQUE EQUIPMENT	1S	
	FRAME SYNCHRONIZER	1S	
	AUDIO SYNC. LOCK EQUIPMENT	1S	
	AUDIO TAPE RECORDER	2S	
	AUDIO CASSETE TAPE RECORDER	1S	
	VIDEO MONITOR	1S	
	AUDIO MONITOR	1S	
	CLOCK SYSTEM	1S	
	SYNC. PULSE GENERATOR	1S	
	INTERCOM SYSTEM	1S	
	TELECINE	1S	
	IN-HOUSE MONITORING SYSTEM	1S	
	OTHER	1S	

POST PRODUCTION	1/2 inch COMPONENT VTR	5S	
	3/4 INCH VTR	1S	
	OPAQUE EQUIPMENT	1S	
	VIDEO TYPEWRITER	1S	ENGLISH
	EDITING EQUIPMENT	1S	
	- EDITOR	(1S)	
	- VIDEO SWITCHER	(1S)	
	- AUDIO MIXER	(1S)	
	VIDEO MONITOR	1S	
	AUDIO MONITOR	1S	
	AUDIO TAPE RECORDER	2S	
	AUDIO CASSETTE RECORDER	1S	
	AUDIO MIXER	1S	
	AUDIO SYNC. LOCK EQUIPMENT	1S	
	COMPUTER GRAPHIC	1S	Equivalent to AMIGA 2000
	MICROPHONE & STAND	4S	
	CONSUMER Type 1/2 inch VTR	4S	For the copy for scenario writer
	CONSUMER Type 1/2 inch VTR	4S	For the monitorig for the above
EDITING EQUIPMENT	1/2 inch VTR	4S	
	COLOUR MONITOR	4S	
	EDITOR	2S	
	OTHER		

EFP	CCD PORTABLE CAMERA with 1/2 inch VTR	3S	
	TRIPOD	3S	
	BATTERY & CHARGER	3S	
	AC ADAPTOR	3S	
	MICROPHONE	3S	
	LIGHTING	3S	
MEASURING INSTRUMENT	OSCILLOSCOPE	2S	
	DISTORTION METER with OSCILLATOR	2S	
	AUDIO VARIABLE ATTENAUTOR	1S	
	CIRCUITE TESTER	1S	
	ILLUMINACE METER	1S	
	TEST SIGNAL GENERATOR	1S	
	COLOUR METER	1S	

2-5 Block Diagram Drawing

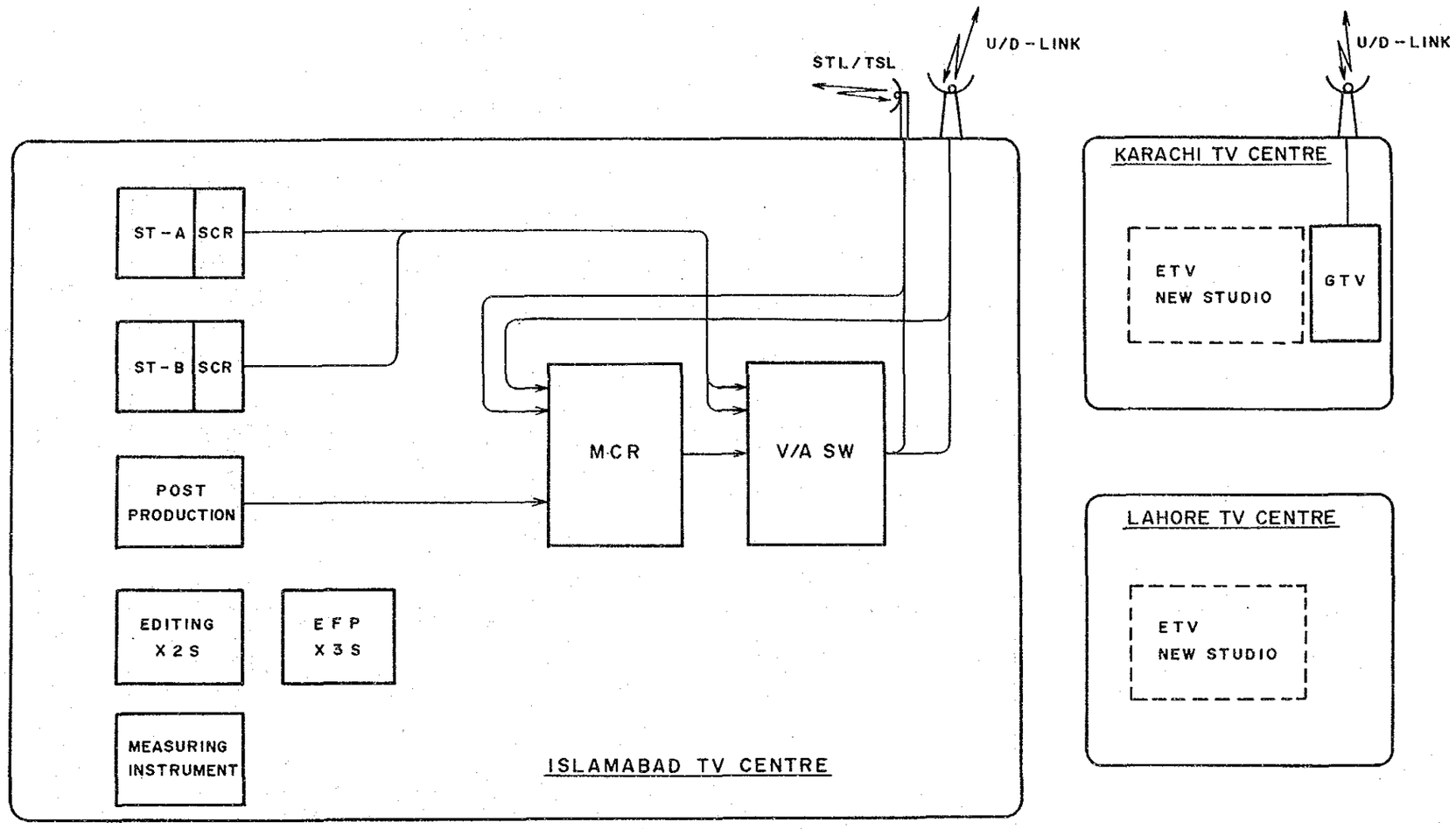
(1) Abbreviation

(2) Block Diagram of Equipment

(3) Lay Out Drawing

	ABBREVIATION		ABBREVIATION
		MIX	Mixer
A D A	Audio Distribution Amplifier	M K	Mixing and Key
A. IN	Audio Input	MON	Monitor
A. OUT	Audio Output	M S	Multi Sound
AMP	Amplifier	O P	Opaque
ANN, BOOTH	Announcer Booth	O R	Open Reel
AUX	Auxiliay	OSC	Oscillator
B. B	Black Burst	P	Player
B. C	Black Colour	PDA	Pulse Distribution Amplifier
B/W	Black and White Monitor	PGM	Program Monitor
		PVM	Preview Monitor
C A M	Camera	R E C	Recording Monitor
C B	Colour Bar	R, G, B	Red, Green, Blue
C C U	Camera Control Unit	R/P	Recorder / Player
C G	Computer Graphic	Rx	Receiver
C K	Chroma Key	S C	System Converter
C K G	Chroma Key Generator	S C R	Sub Control Room
C M	Colour Monitor	S G	Sync Generator
CONT	Control	S P	Speaker
CST	Cassette Tape Recorder	ST-A/B	Studio - A/B
		STL	Studio Transmitter Link
DSK	Downstream Keyer	SYNC	Synchronizing Signal
		T C	Telecine
EDIT	Editor	T R	Tape Recorder
E F P	Electronic Field Production	T S L	Transmitor Studio Link
E X C	Exchange	U/D-LINK	Up/Down - Link
		V D A	Video Distribution Amplifier
F S	Frame Synchronizer	V E	Video Engineer
		V S C	Vector Scope
L I M	Limiter	V T	Video Typewriter
L, R	Left, Right	V T R	Video Tape Recorder
		V/A SW	Video Audio Switcher
M C R	Master Control Room	W F G	Wave Form Generator
M I C	Microphone	W F M	Wave Form Monitor

PROJECT TITLE THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO.



PROJECT TITLE

THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN

DRAWING TITLE

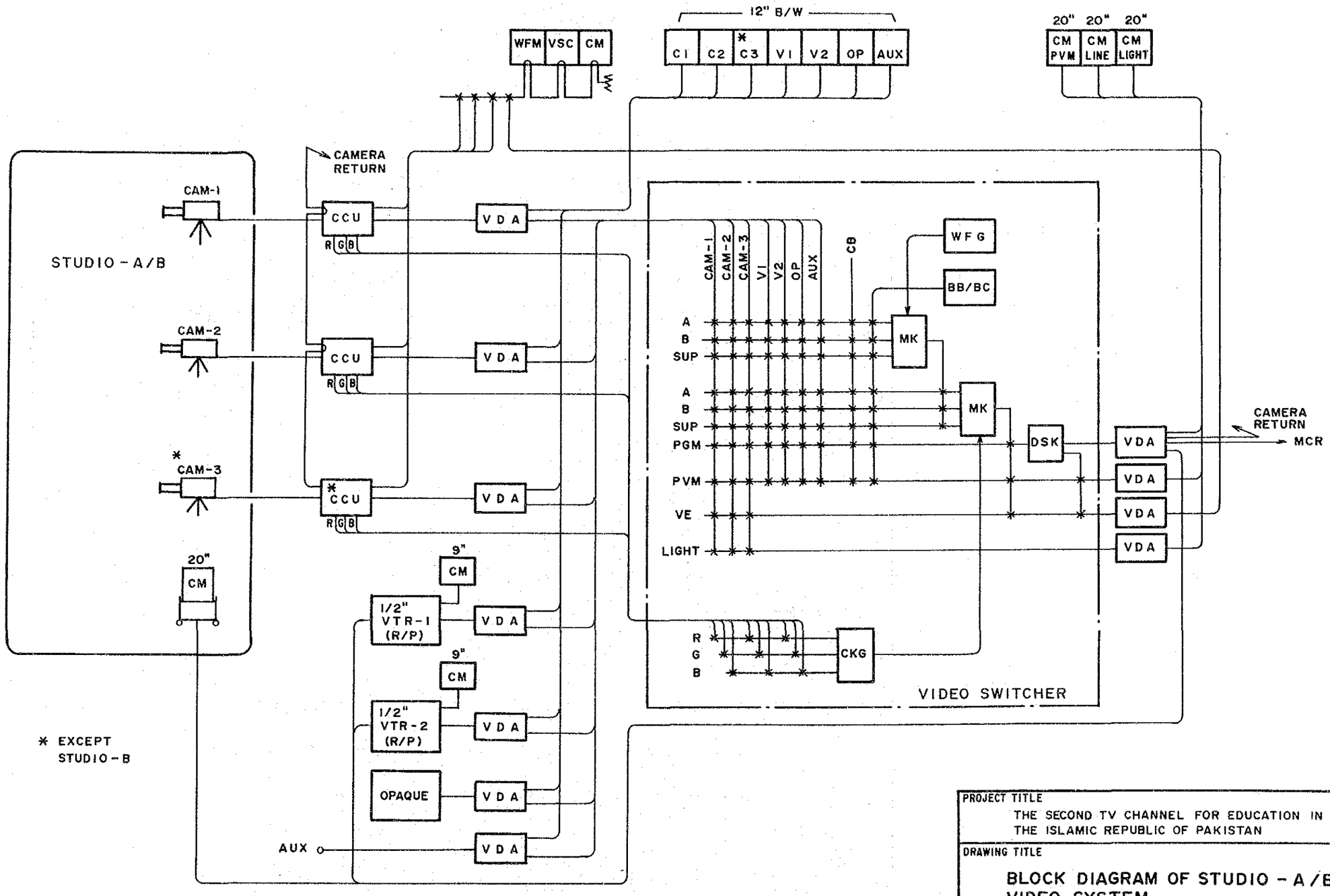
SYSTEM DIAGRAM OF STUDIO FACILITIES FOR ETV PROJECT

(FIG-1)

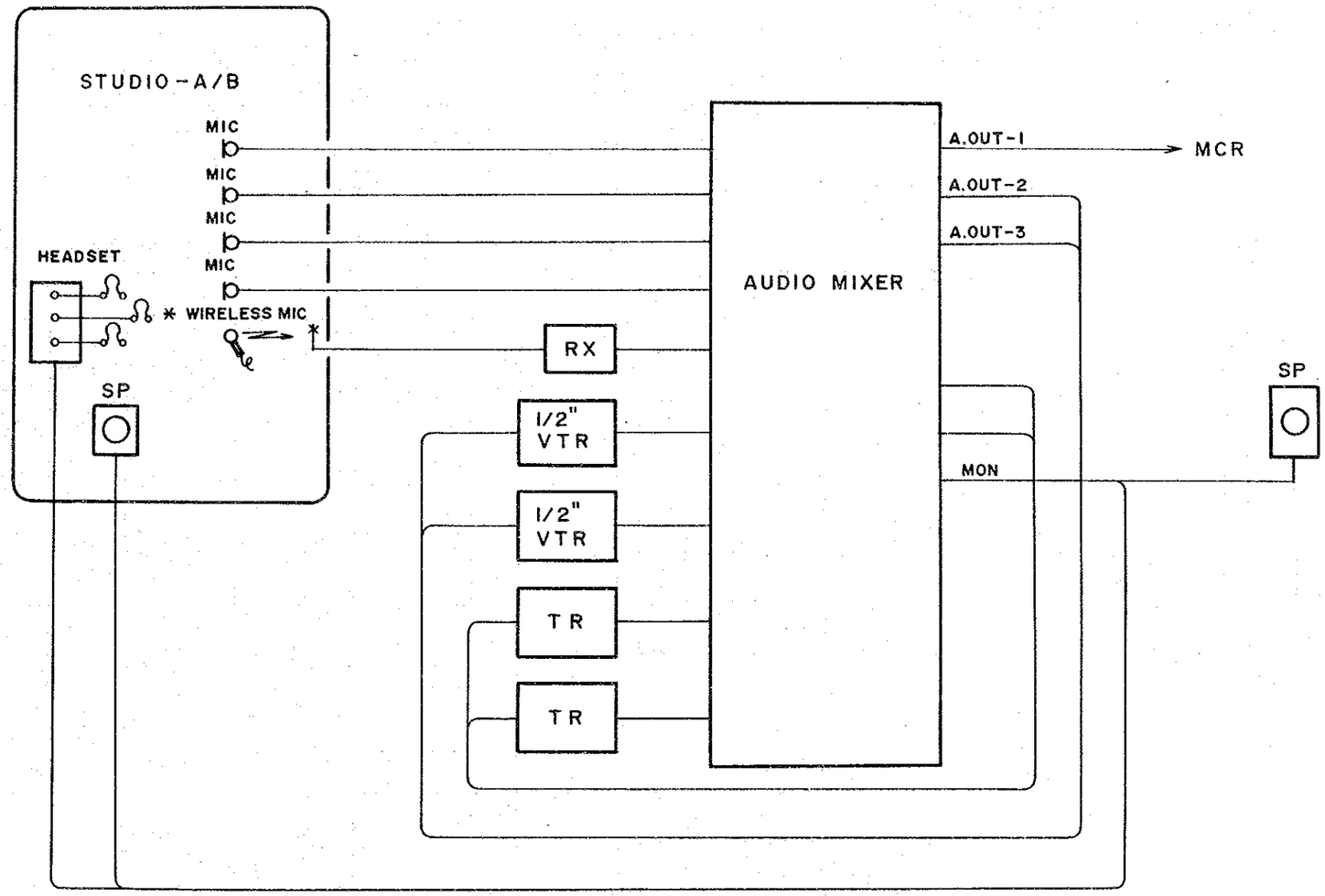
DRAWN BY	CHECKED BY	APPROVED BY	DATE

ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.

DRAWING NO. 1

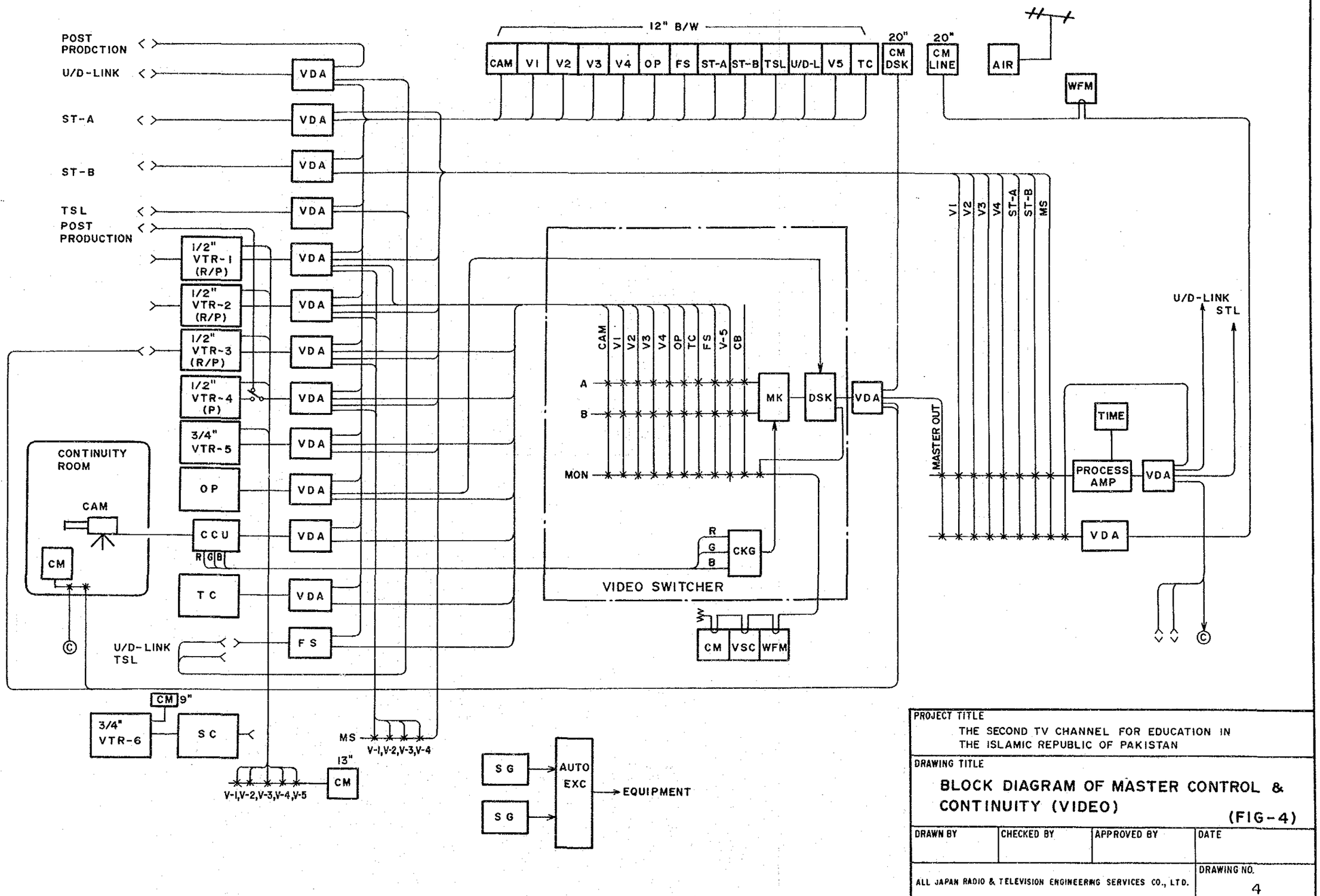


PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: BLOCK DIAGRAM OF STUDIO - A/B VIDEO SYSTEM (FIG-2)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 2

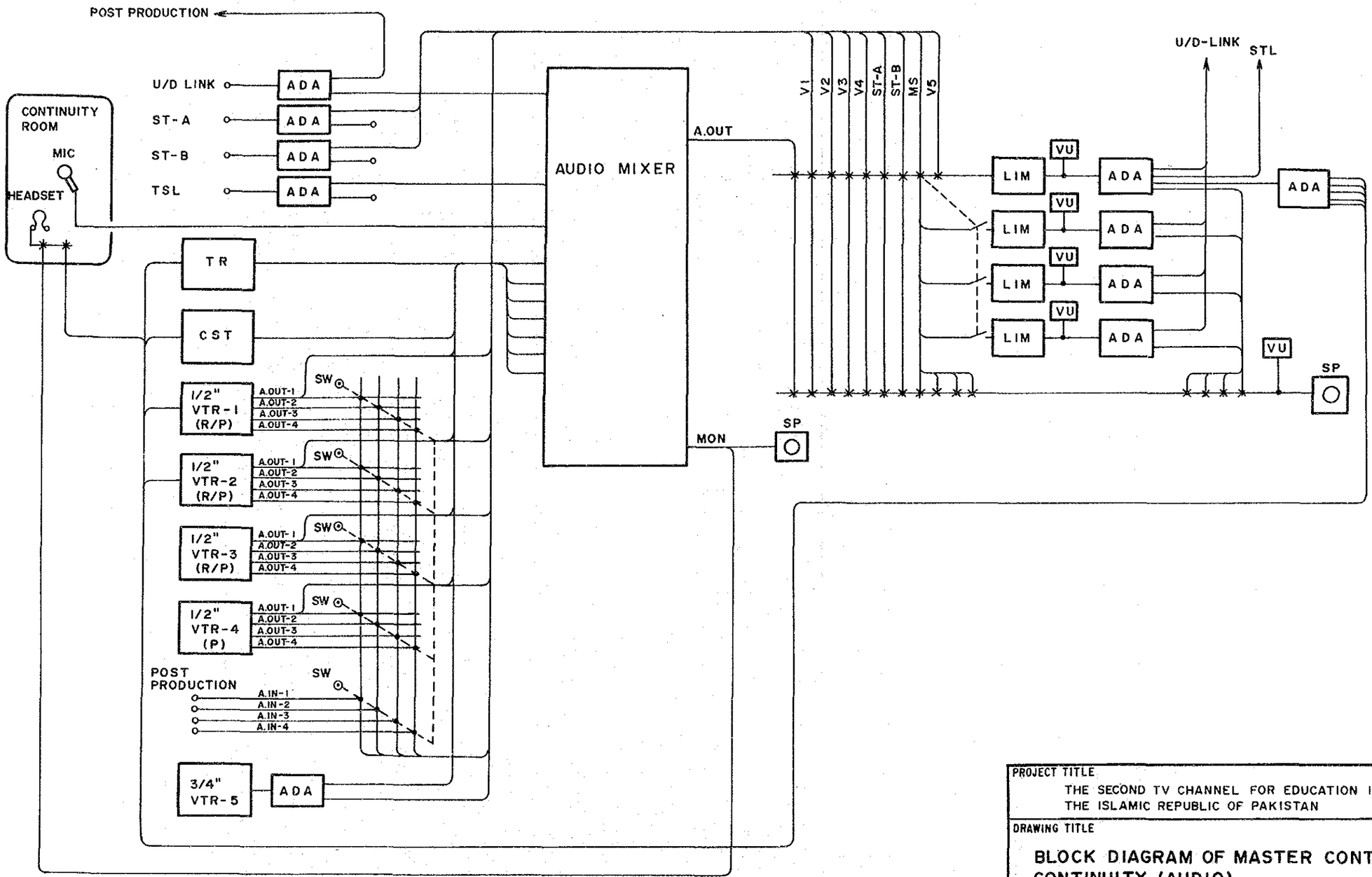


* EXCEPT
STUDIO - B

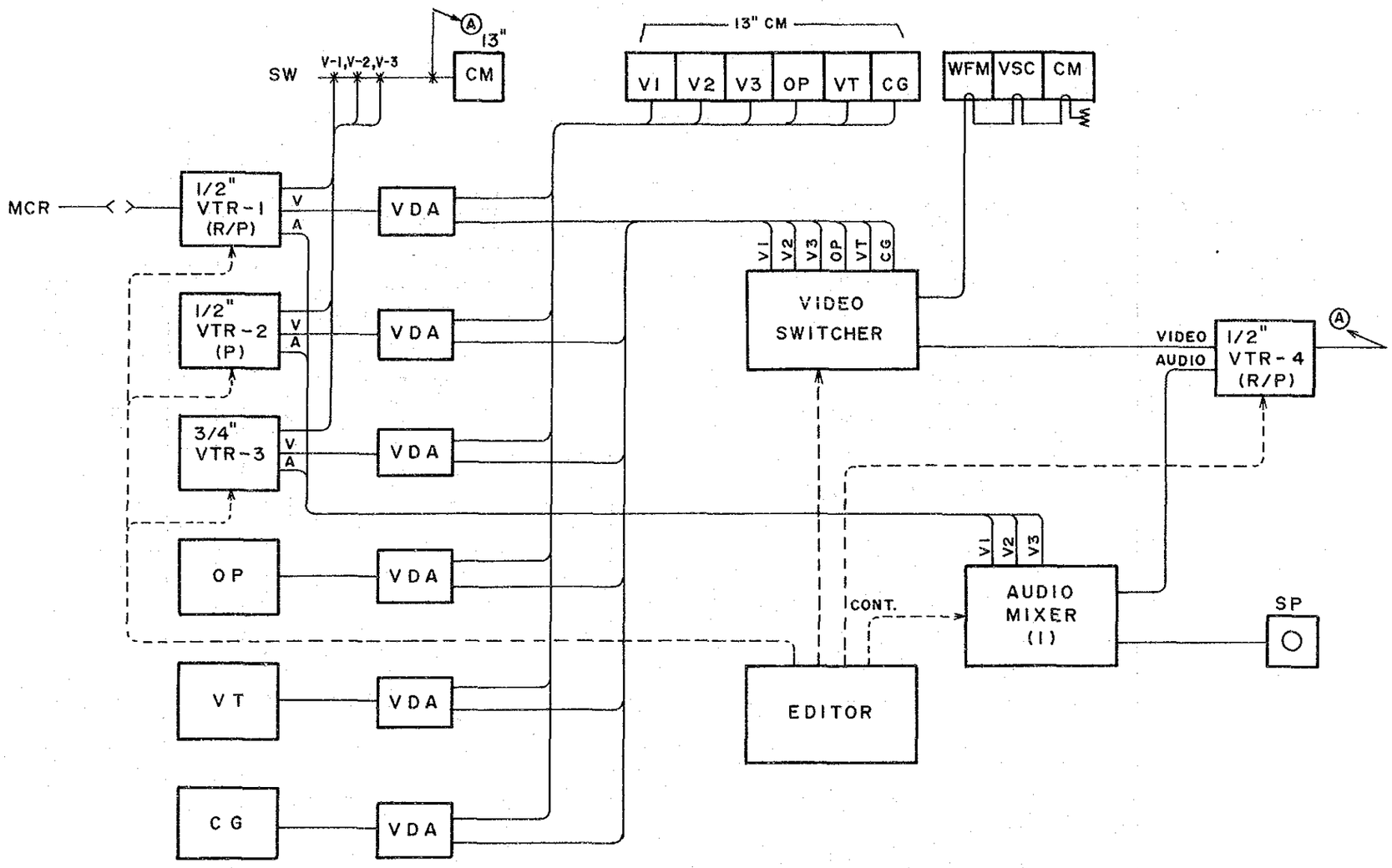
PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: BLOCK DIAGRAM OF STUDIO - A/B AUDIO SYSTEM (FIG-3)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 3



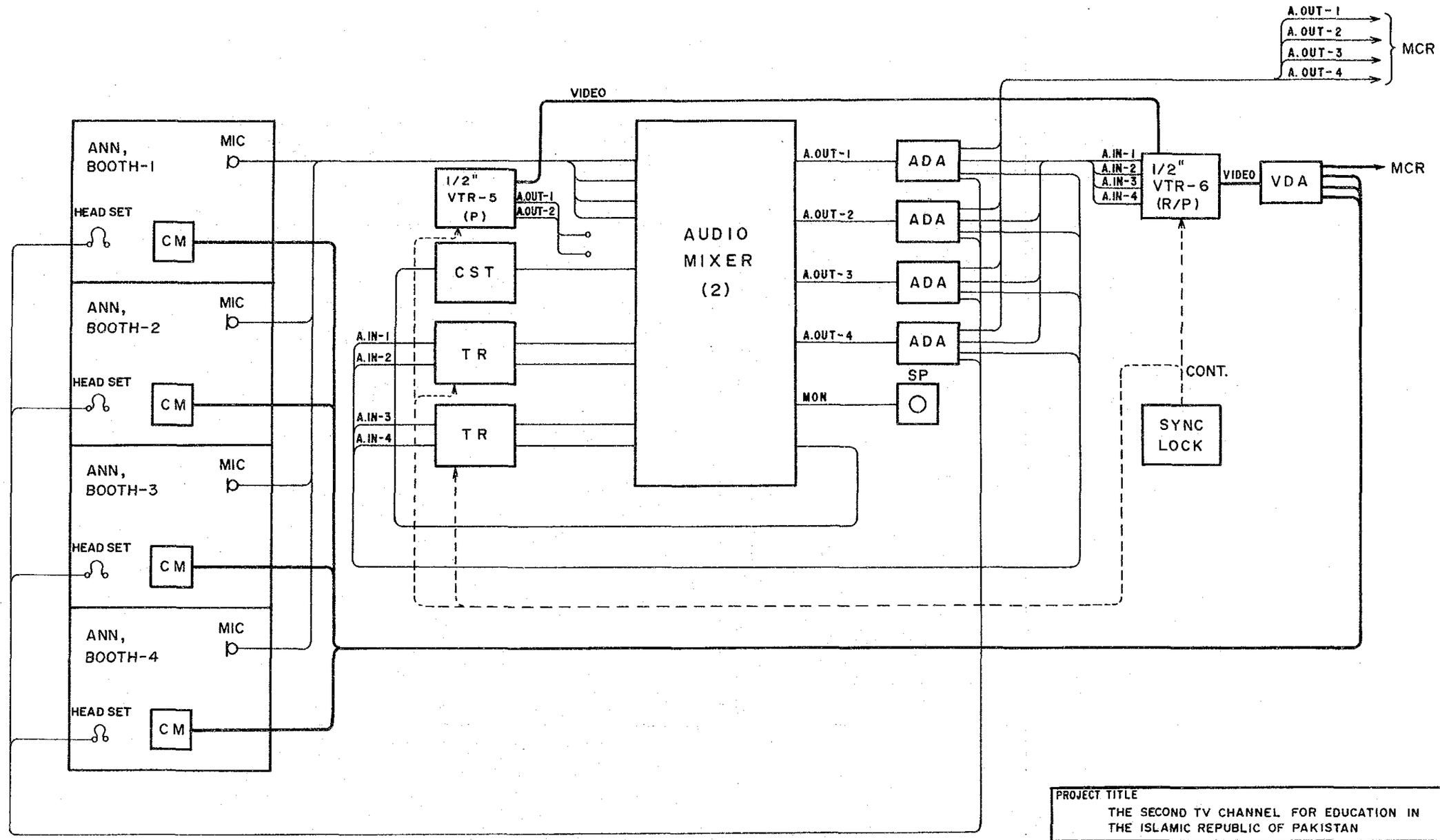
PROJECT TITLE	THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN
DRAWING TITLE	BLOCK DIAGRAM OF MASTER CONTROL & CONTINUITY (VIDEO) (FIG-4)
DRAWN BY / CHECKED BY / APPROVED BY / DATE	
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.	DRAWING NO. 4



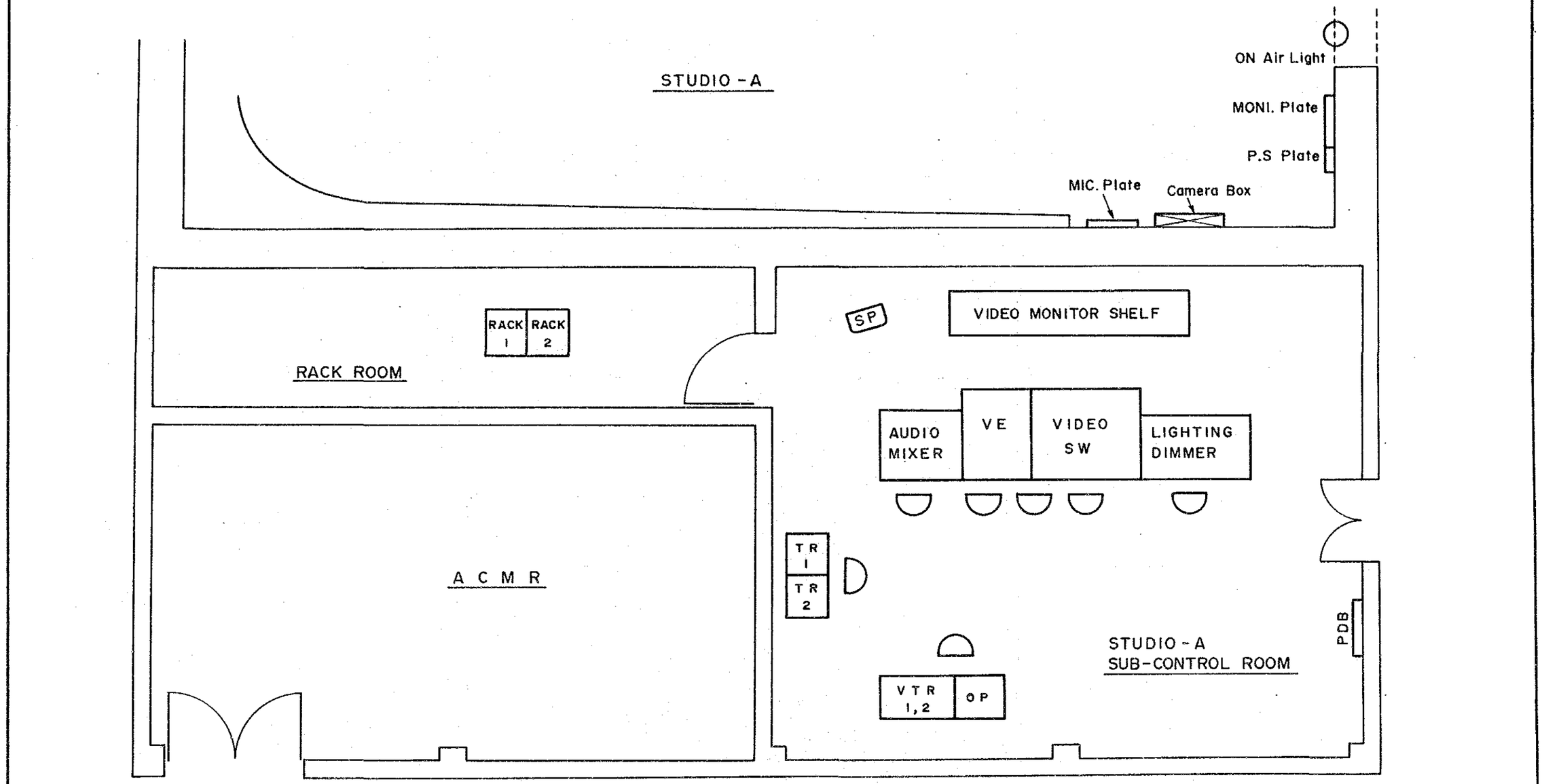
PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: BLOCK DIAGRAM OF MASTER CONTROL & CONTINUITY (AUDIO) (FIG-5)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 5



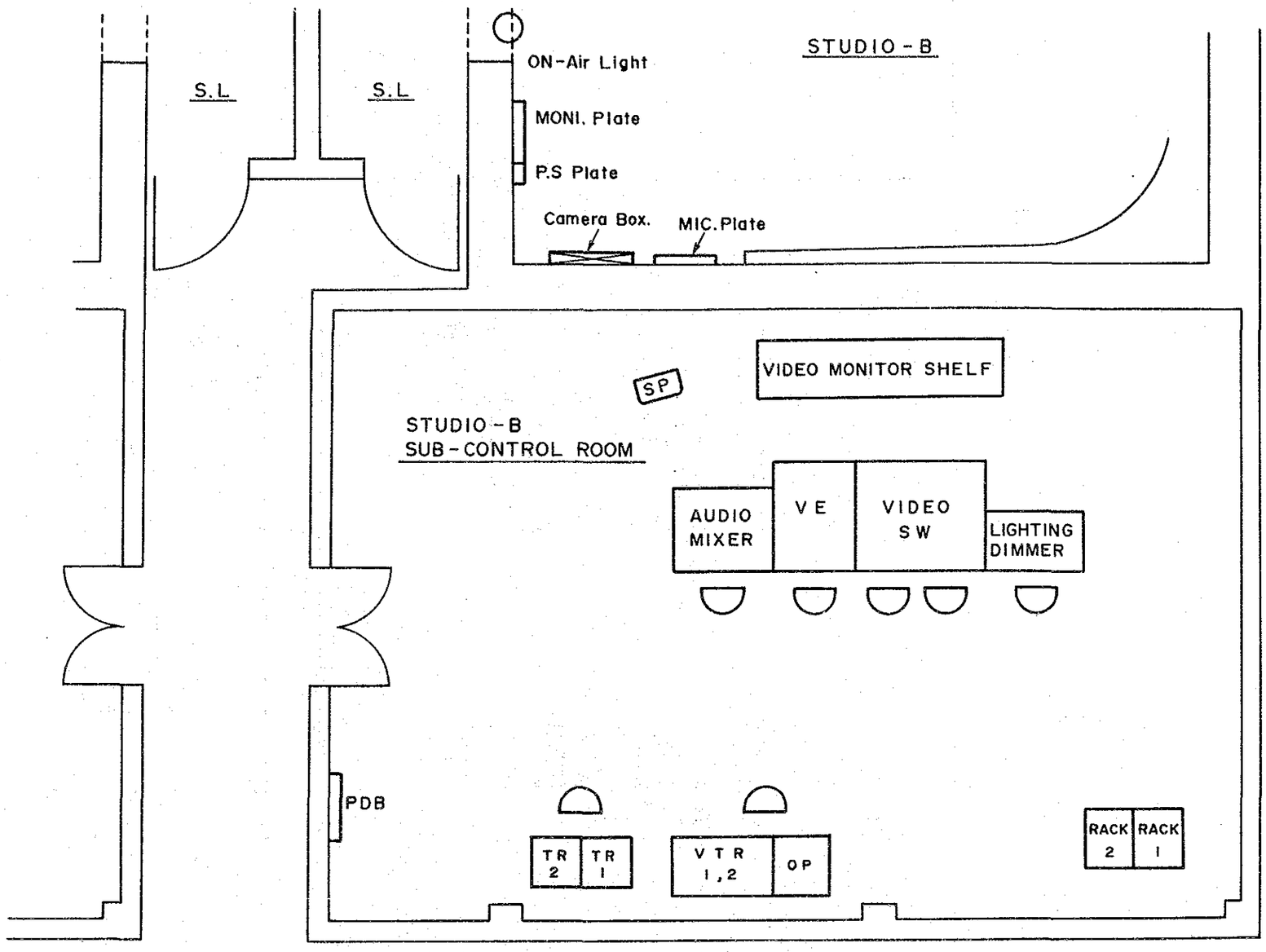
PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: BLOCK DIAGRAM OF POST PRODUCTION - 1/2 (FIG - 6)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 6



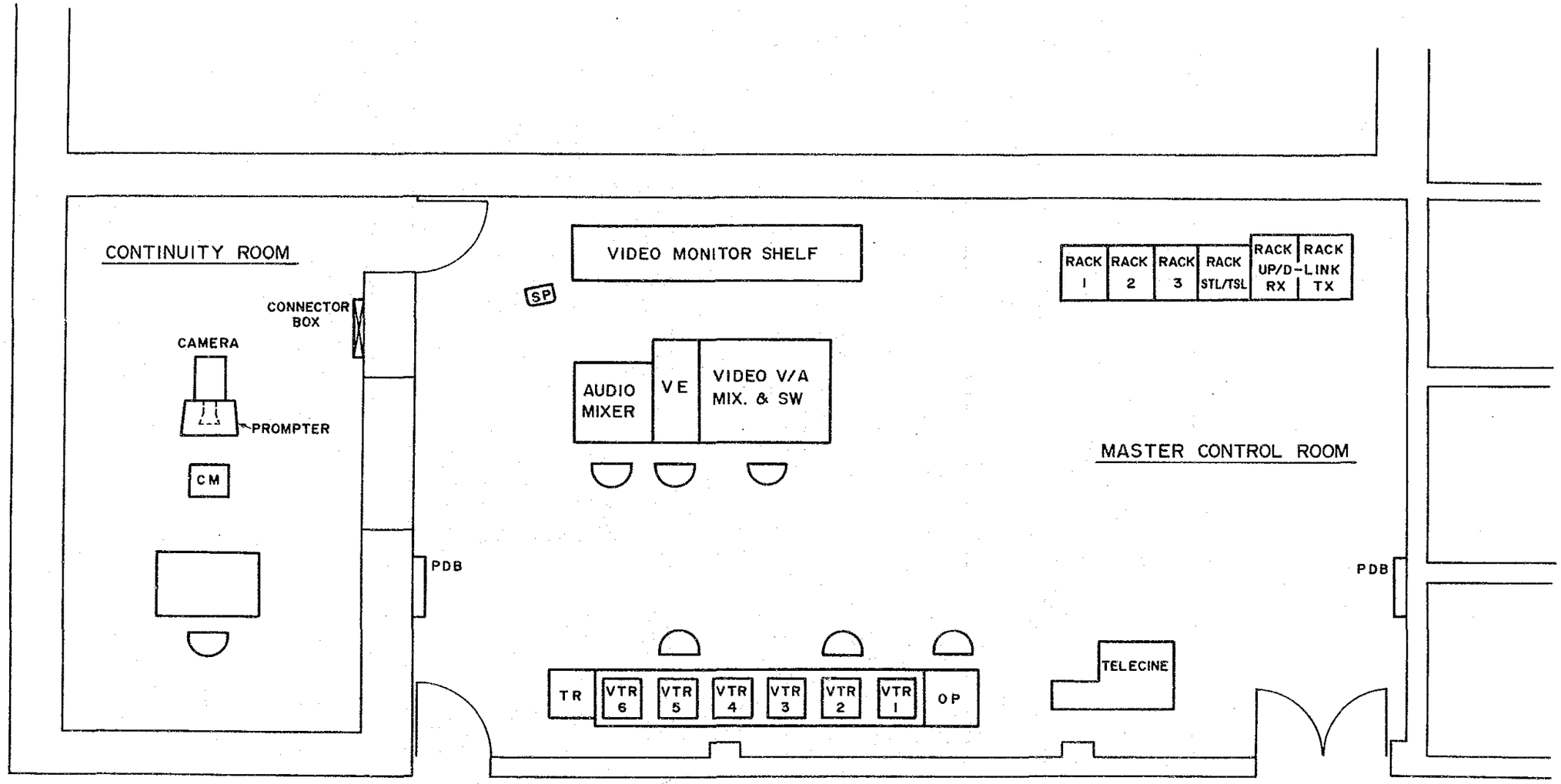
PROJECT TITLE	THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN
DRAWING TITLE	BLOCK DIAGRAM OF POST PRODUCTION - 2/2 (FIG-7)
DRAWN BY / CHECKED BY / APPROVED BY / DATE	
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.	DRAWING NO. 7



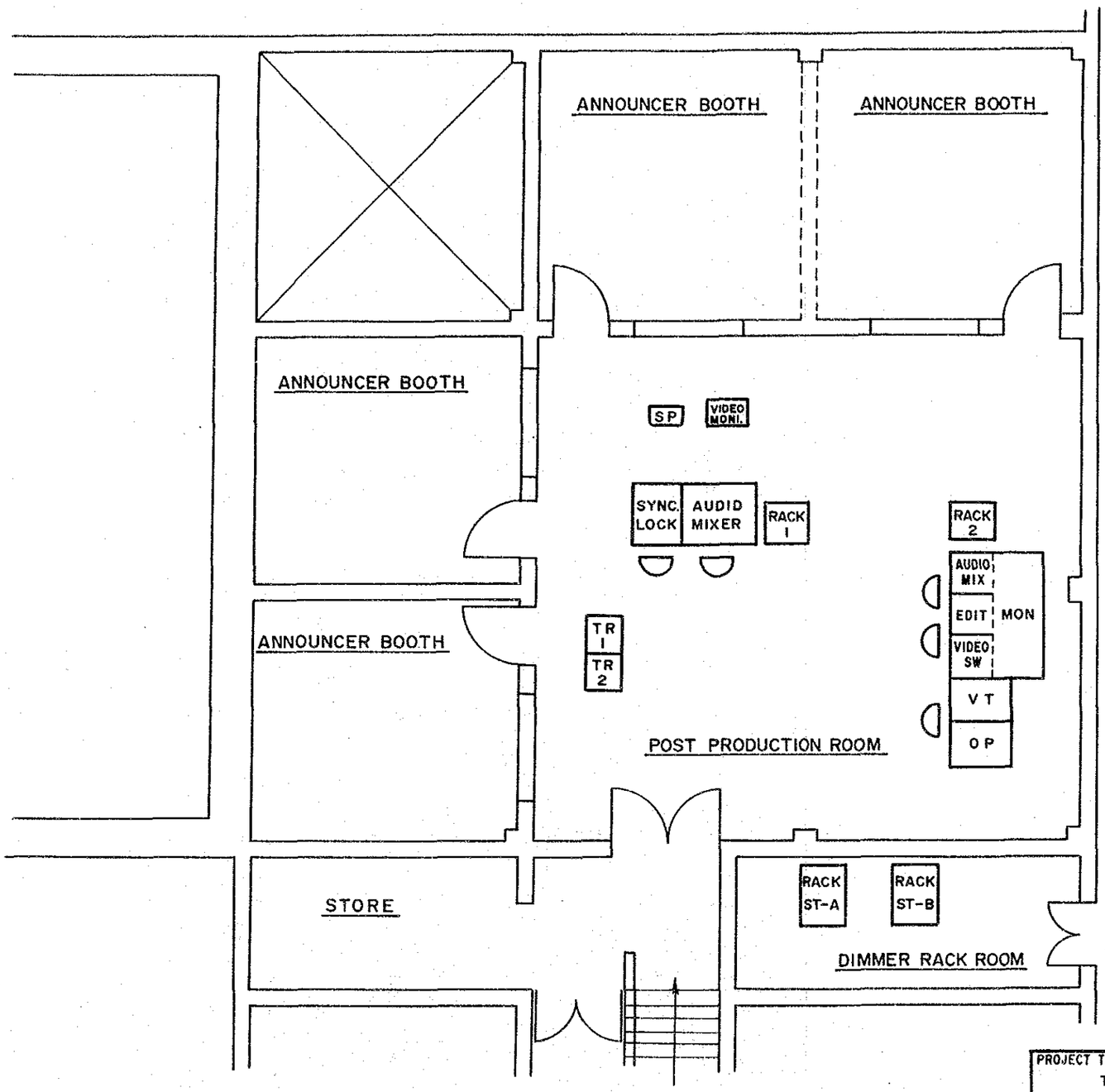
PROJECT TITLE	THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN
DRAWING TITLE	LAYOUT - DRAWING OF SUB - CONTROL ROOM (A) (FIG-8)
DRAWN BY / CHECKED BY / APPROVED BY / DATE	
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.	DRAWING NO. 8



PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: LAYOUT DRAWING OF SUB-CONTROL ROOM (B) (FIG-9)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 9



PROJECT TITLE: THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN			
DRAWING TITLE: LAYOUT DRAWING OF MASTER CONTROL & CONTINUITY ROOM (FIG-10)			
DRAWN BY	CHECKED BY	APPROVED BY	DATE
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.			DRAWING NO. 10



PROJECT TITLE	THE SECOND TV CHANNEL FOR EDUCATION IN THE ISLAMIC REPUBLIC OF PAKISTAN
DRAWING TITLE	LAYOUT DRAWING OF POST PRODUCTION ROOM (FIG-11)
DRAWN BY / CHECKED BY / APPROVED BY / DATE	
ALL JAPAN RADIO & TELEVISION ENGINEERING SERVICES CO., LTD.	DRAWING NO. 11

2-6 Practical Operation Plans for Audio Dubbing

The practical operation for audio dubbing is complicated and also it is the first trial in the world in terms of 4 different language dubbing at the same time. As a help of understanding for the practical operation for audio dubbing in an effective way, the details are described in this section.

(1) The functions of the post production room at Islamabad ETV Centre are as follows.

1) Picture framing and editing
   a) Introductory framing in front and rear of imported and four-language programmes.
   b) Superimposing subtitles in imported and four-language programmes.
   c) Picture editing of EFP programme

2) Copying of VTR work tape

3) Dubbing of imported programme (voice recording)

4) Dubbing of four-language programme (voice recording)

5) Audio recording for EFP programme

6) Final audio visual re-recording from dubbing-completed tape(s)

(2) The work process of picture framing and dubbing of imported and four-language programmes should be in the following order.

1) Picture framing and editing

2) VTR work tape copying

3) Audio (voice) recording

4) Final audio visual re-recording

(3) The following is detailed explanation on the work process.
First of all, as the prerequisite condition, the imported VTR tape of a programme is to be recorded with two-channel sound, total sound and music & effect sound (referred to as M/E hereafter).

1) Picture framing and editing

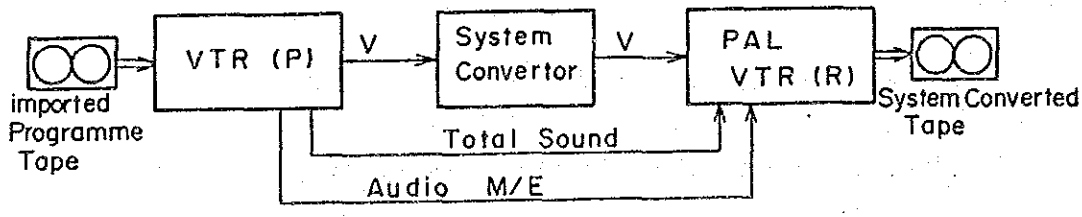
a) TV system conversion (to be made in the master control room)
An imported programme from a foreign country with a different TV system is to be converted to one with Pakistan's system, PAL, as shown Fig-1.

b) Picture framing and editing (to be made in the post production room as shown in Fig-2) using the system converted tape in the form of 1/2' component type VTR as the play back VTR tape.

In post production of a programme, the principle is to finish all picture framing and editing such as superimposing subtitles before audio recording.

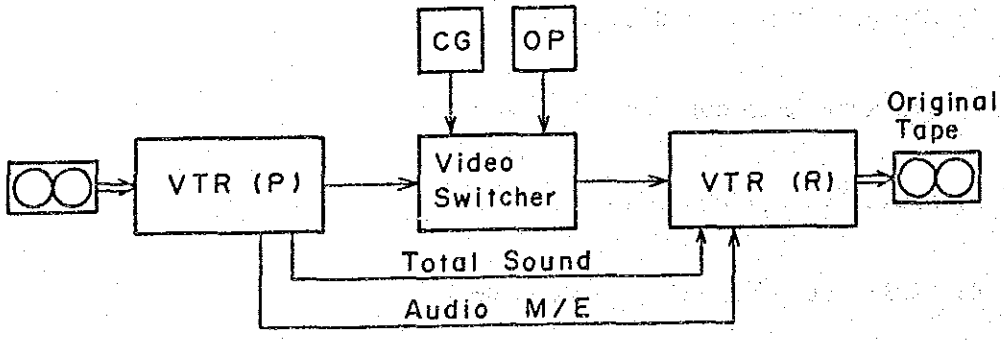
Note: The total sound and M/E are to be recorded respectively on the two sound tracks of the original VTR tape when system conversion and picture framing and editing are made.

TV. System Conversion



(Fig-1)

Picture Framing



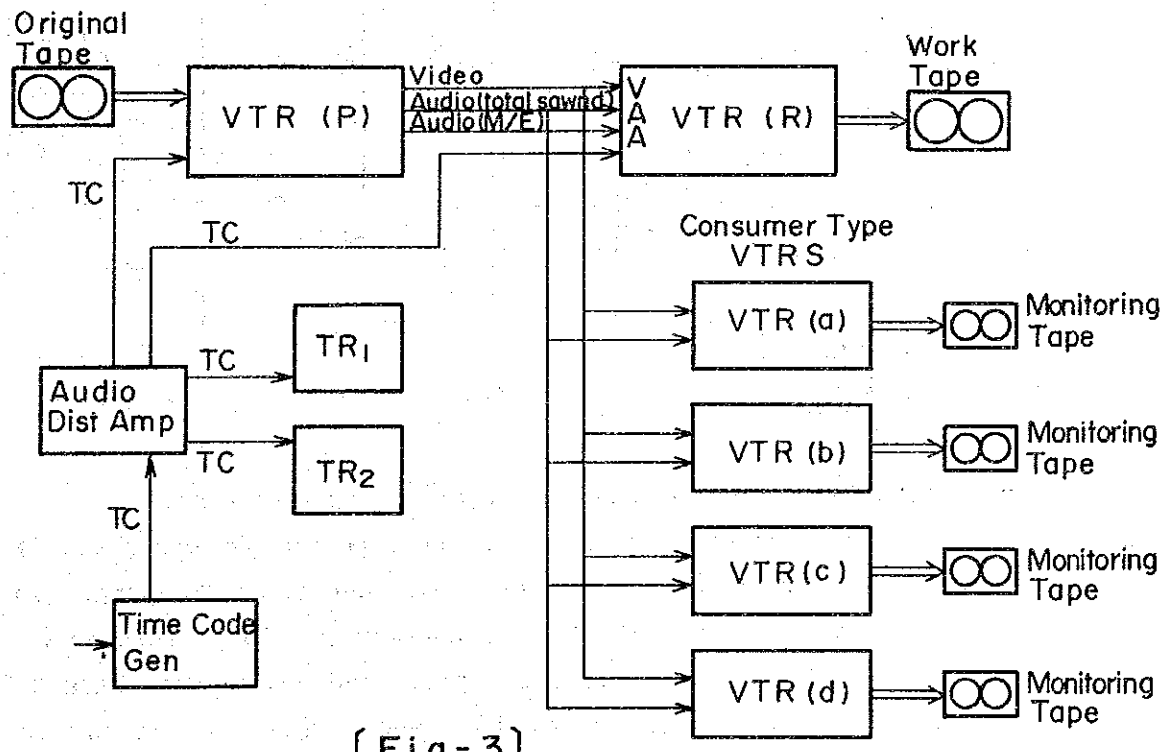
(Fig-2)

2) VTR work tape copying (to be made in the post production room using the equipment as shown in Fig 3)

The pictures, total sound, M/E and time-code signal are to be copied on a VTR (1/2' component VTR) tape (referred to as the VTR work tape hereafter) from the VTR tape (referred to as the original VTR tape hereafter) of which picture framing and editing has been finished. The work tape is to be replayed repeatedly for audio (voice) recording.

A series of time code signal generated by the time code generator is to be recorded on the original VTR tape and on two two-channel audio tapes simultaneously. The audio tape recorder is equipped with two-sound channel tracks and a time-code track in between the two sound tracks.

And at the same time, four consumer type VTR tapes are to be copied from the original VTR tape (with only pictures and the total sound.) These copied tapes will be used for script writer's purpose and actors' dubbing practice.



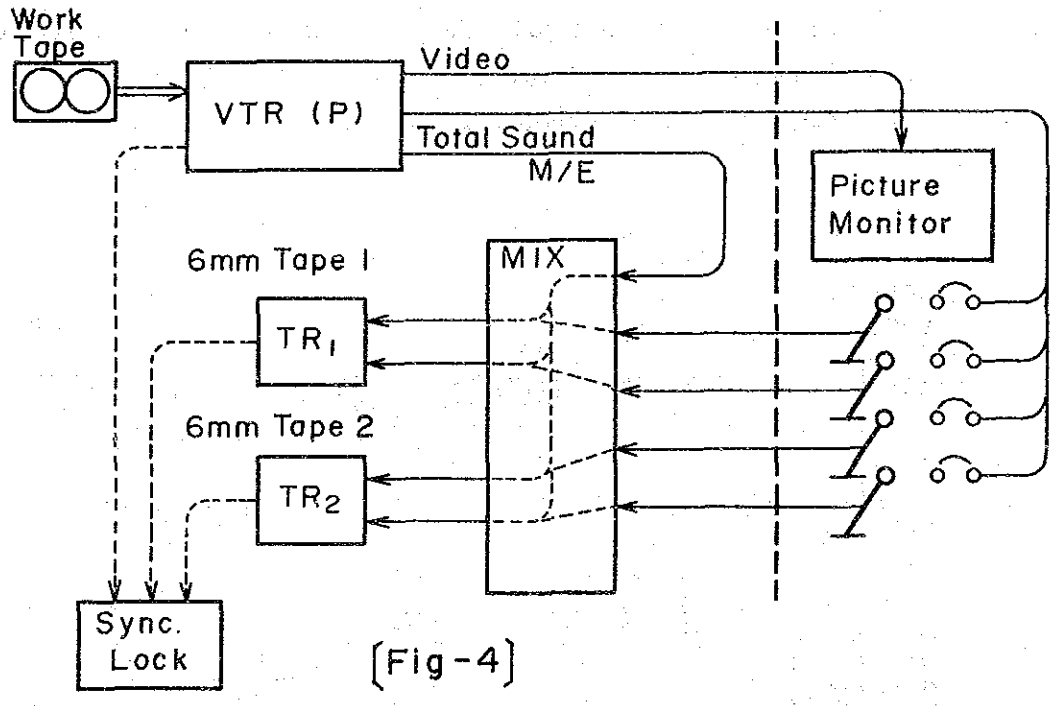
[Fig-3]

3) Audio (voice) recording (to be made in the post production room using the equipment as shown in Fig.-4 and Fig.-7 (Page 82))

a) Four language programme

Four narrators, each in a separate recording booth, make respective dubbing in four languages, viewing the pictures and listening through headphone to the total sound from the work VTR tape. Then, their voices are recorded on the two two-channel audio tapes (total 4 tracks) with time-code, in the respective channel with M/E mixed.

(The work VTR tape and two audio tapes are driven in synchronization under the control of sync lock system)



[Fig-4]

- Monitoring of the recorded sound after the recording.

Since the narrator himself is the best person who can check if the recorded sound is proper or not, during 4 language voices recording, he can stop at some certain portion, preferably at a pause in the sound of all the tapes, then rewind them back to the starting position and replay the tapes, while he listens to the recorded contents and checks them.

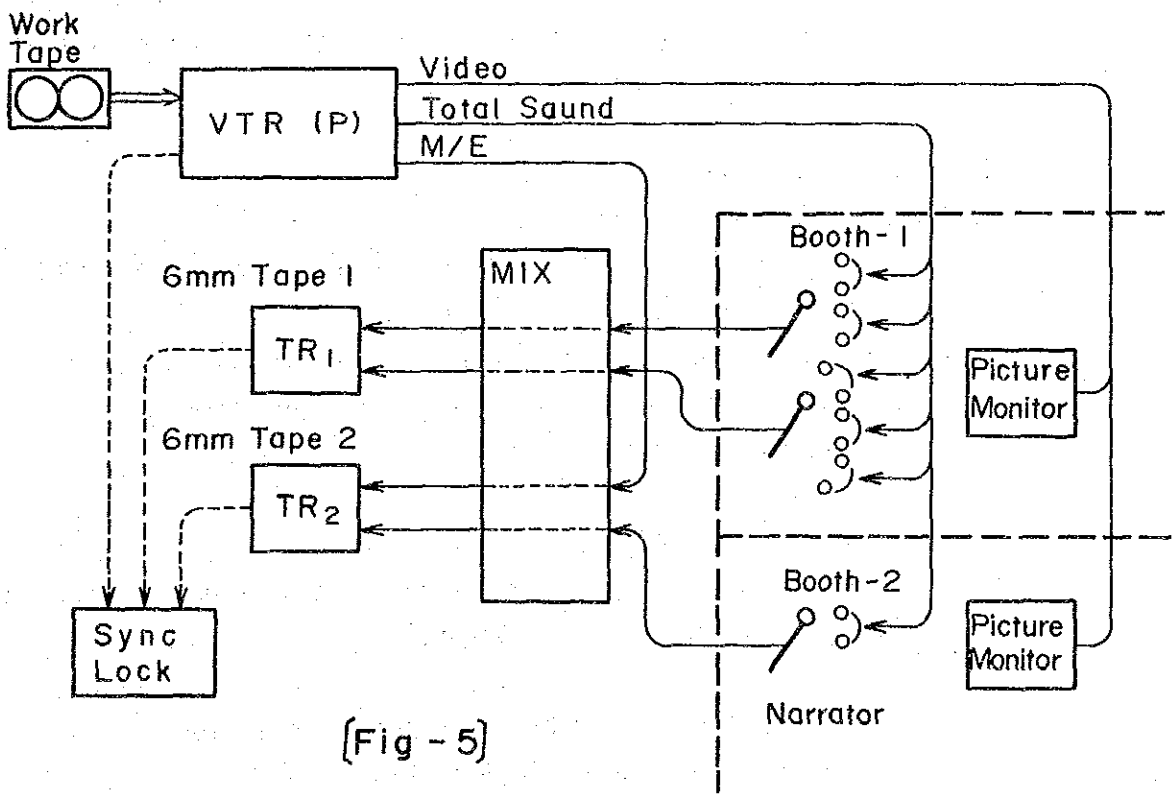
b) Imported programme

Voice actors and actresses make dubbing in the national language, viewing the pictures and listening through headphone to the total sound from the work VTR tape. They have no need to be in separate booths. Though the actors may vary in number from two to five, two microphones are enough for recording.

Then, their voices are recorded on the two two-channel audio tapes with time-code. All four channels are to be used effectively, for instance, in the manner of two microphone voices on the two channels (No. 1 and No. 2), M/E on channel three and narration on channel four.

(The work VTR tape and two audio tapes are played in sync.)

The dubbing system is shown in Fig-5.



(Fig - 5)

Note:

1) Narration is desirably made in a separate booth.
2) Since audio (voice) recording of an imported dramatic programme often takes time, actors tend to get tired and

make mistakes. When something wrong happens, they may stop the recording and take a rest. In re-starting the recording, they can utilize the sync system of the work VTR tape and two audio tapes, for instance, by the following process:

--- rewinding all the tapes back up to a little bit ahead of the mistaken part
--- starting all the tapes again
--- waiting for the synchronized operation of all the tapes
--- re-starting the dubbing and recording, wiping off the mistaken part

The alternative to deal with a mistake effectively will be to finish with the recording anyway and make corrections afterward, rather than to stop halfway as a mistake is made. Most of imported programmes are dramatic in kind and nonstop recording is advisable in view of continuity of actors' emotions.

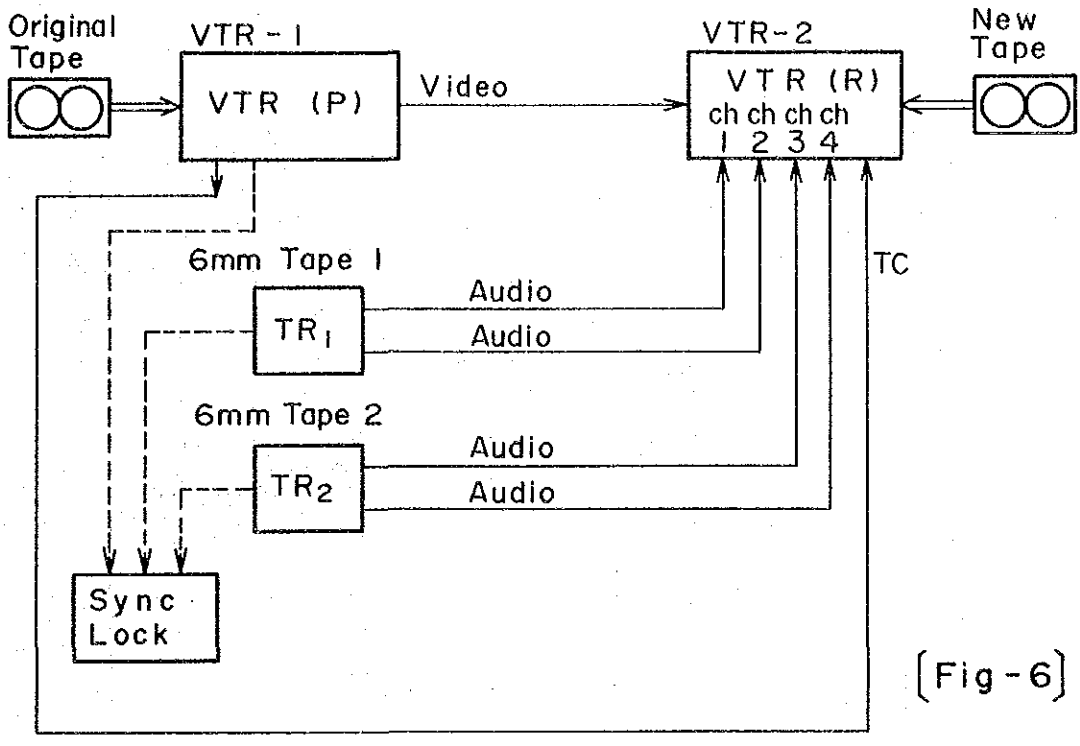
4) Final audio visual re-recording

The work process is as follows.

To load a new VTR tape in VTR 2 (1/2 inch component type VTR)
To load the original VTR tape in VTR 1
To load one of the two audio-(voice)-recorded-tapes in TR 1
To load the other audio (voice) recorded tape in TR 2
To set all the tapes at the start

a) Four-language programme (to be made in the post production room; if necessary, to be made in the master control room using the system shown in Fig 6.)

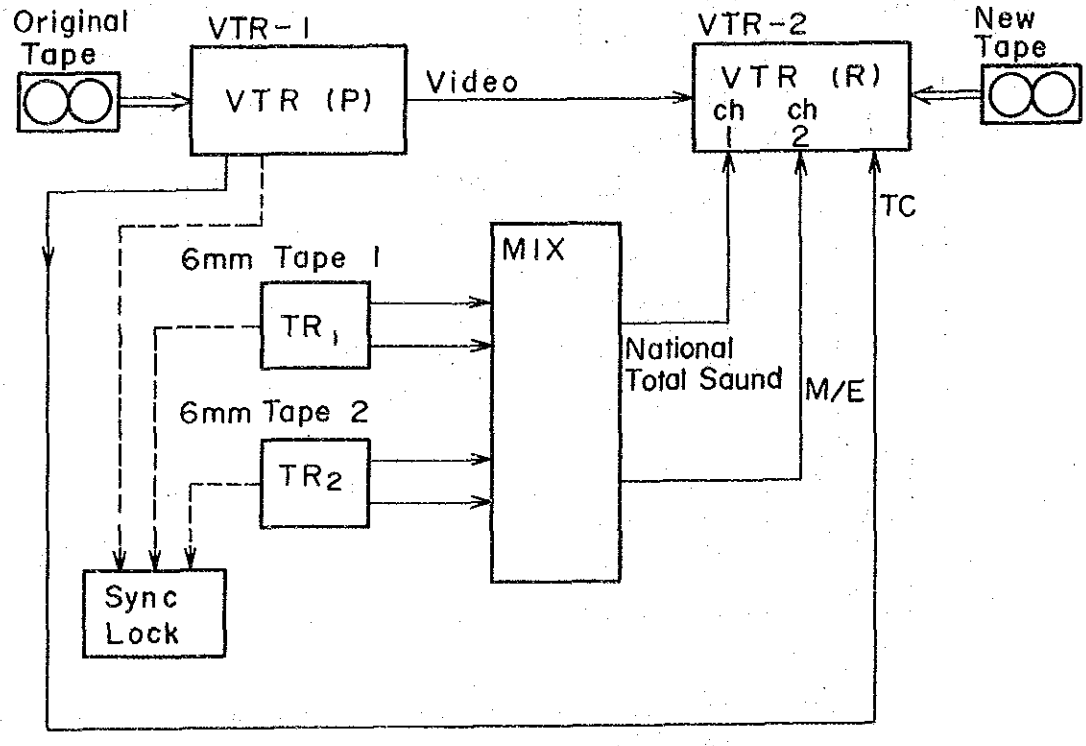
VTR 1, TR 1 and TR 2 are set in synchronized operation.
Then, the pictures from the original VTR tape in VTR 1 are recorded on the new VTR tape in VTR 2.
Simultaneously, the four-language dubbing voices with M/E mixed from the two two-channel audio recorded tapes in TR 1 and TR 2 are recorded on the new VTR tape in VTR 2.
Hereby, all the work process of programme production is finished.



[Fig-6]

Note: Half-inch component VTR tape is capable of four-channel audio recording with one-channel picture recording.
No. 1 and No. 2 sound tracks are normal longitudinal ones and No. 3, No. 4 channels are recorded with FM signals being comprised in the video signal recorded.

b) Imported programme (to be made in the post production room)
VTR 1, TR 1 and TR 2 are set in synchronized operation.
Then, the pictures from the original VTR tape in VTR 1 are recorded on the new VTR tape in VTR 2.
Simultaneously, the two microphone voices from one of the two two-channel audio recorded tapes in TR 1, and M/E and the narration from the other audio recorded tape in TR 2 are all mixed and recorded on the No. 1 channel track of the new VTR tape in VTR 2 as shown in Fig 7. M/E would be better to be recorded in the channel No. 2 simultaneously.
Hereby, all the work process of programme production is finished.



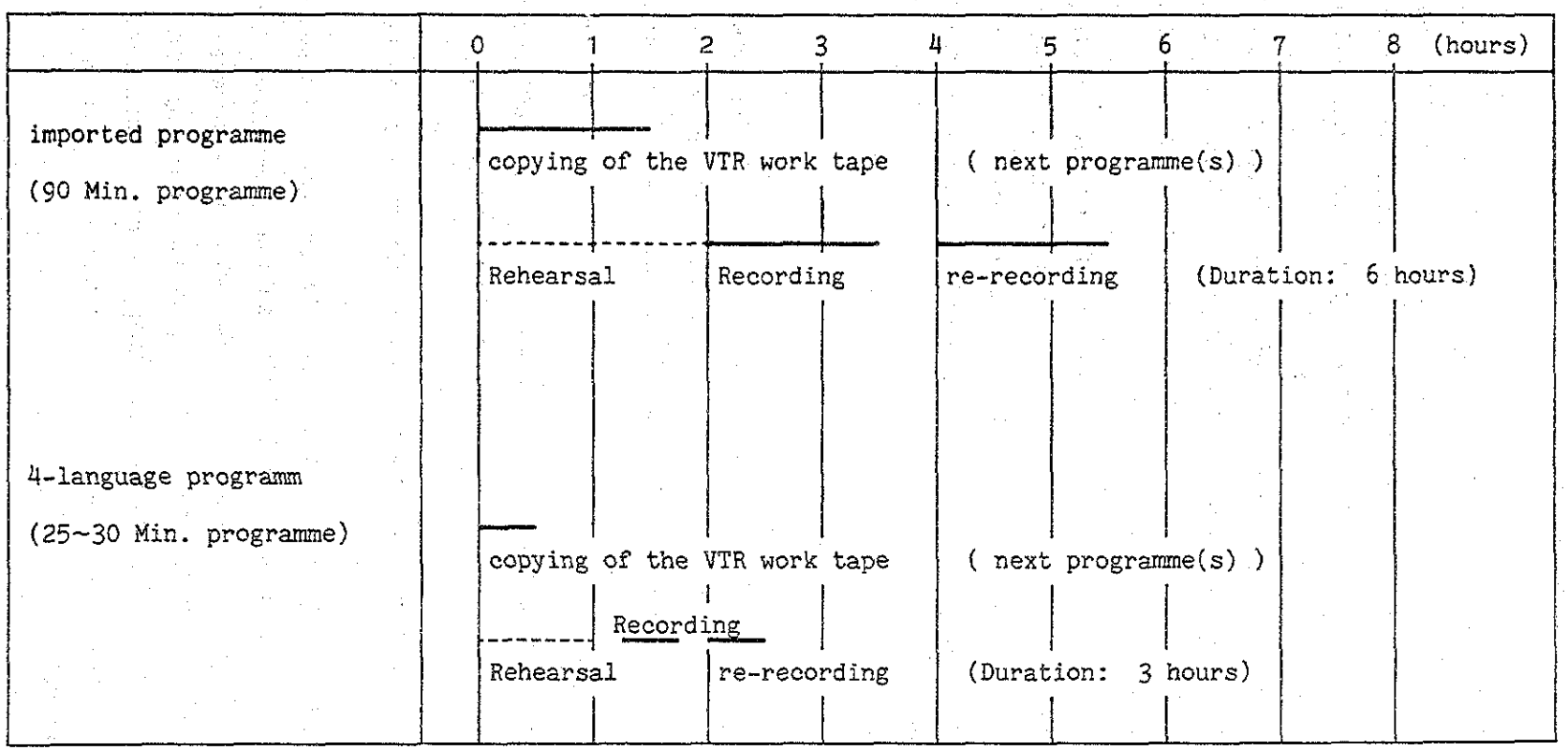
〔Fig-7〕

Note:

1) The reason why the time-code signal is also recorded on the new VTR tape is for convenience of revising audio recording in case of need.
2) The reason why M/E is also recorded on the new VTR tape is a precaution for later possible use.

Table 2-2 Basic Assignment Plan for Post Production for Dubbings

Basic assignment plan for post production room for ⟨ imported programme / 4-language programme ⟩ dubbings



Note: Before hand the dubbing work

- System conversion is to have already been made in the master control room.
- Picture framing and editing must have already been made in the post production room, whenever the equipment are available even though the sound dubbing is in recording in the same room.

CHAPTER 3 Building Plan

3-1 Outline of the Building Plan

The establishment of an educational TV network necessitates construction of an office block to accommodate the headquarters organizations and of ETV Centres for production and transmission of educational programmes. The Headquarters Office Building will be built in the capital city of Islamabad and the Centres at Islamabad, Lahore and Karachi. PTV has already purchased a site over 20,000m² in area in Sector H-9 of Islamabad for the Headquarters Office Building and the Islamabad ETV Centre but the sites at Lahore and Karachi are as yet undecided.

This chapter describes on the outline of the new building plan for the Headquarters and the ETV Centres. Extensions and alternations will be required at the existing broadcasting stations and at the existing PTV centres upon establishment of the ETV, however, these are dealt with in a separate Chapter.

3-1-1 Initial Plan

In the Initial Plan from 1990 to 1992, 2 buildings of the Headquarters Building and Islamabad ETV Centre will be constructed. The followings are the reasons why only the one ETV Centre at Islamabad will be built in the initial stage.

(1) 2 studios (1 medium-size and 1 small) will be sufficient for the production of 90 minutes of studio-produced programmes.

(2) Dubbing of imported programmes requires only minimal facilities.

The Headquarters Office Building will be designed to accommodate 625 people, in accordance with 3-3-3 in this Section. Designing the building as a normal office block, an area of 10m² will be allocated per person (approx. 6,300m² or 70,000 sq. ft. in total), including staff offices, meeting rooms, reception rooms, machinery rooms, corridors, stairs, toilets, kettle rooms, etc. Outline of Islamabad ETV Centre is described in the next Section.

3-1-2 Later Plan

Extension works on studios and other facilities will be required in the later stage of the 5-year plan from 1992 to 1995. Since Lahore and Karachi cities are major cultural and commercial centres, where there are large numbers of performers and production staff and, furthermore, emphasis on the locality and equal treatment of the provinces are matters of importance for the Pakistani Government, these two Centres will be very important facilities. The scale of the facilities, however, will not be the same as that at Islamabad. The studios will be designed to have capacities that will suffice for the production of one 45-minute programme per day in accordance with the Programming Plan in 3-2-1, mentioned later.

3-2 Outline of the ETV Centres

ETV Centres are very essential facilities for the Project. This Section states functions required of each ETV Centre and the outlines of the same, mainly for the Centre at Islamabad.

3-2-1 Functions Required of ETV Centres

(1) Programming Plan and Scale of Buildings

It is planned that the number of PTV-originated programmes should increase in proportion with the production capacity. The Centres will be built to cater for the scale of production as shown below.

	(1992)	(1995)
ETV Originated Programmes		
Studio Production (medium) Islamabad	40 min.	40 min.
〃 (small) Islamabad 25×2	50	50
〃 (medium+small) Lahore	—	45
〃 (medium+small) Karachi	—	45
Field Production Islamabad	30	30
〃 Lahore	(60~90 GTV, Irregular)	45
〃 Karachi	(60~90 GTV, Irregular)	45
〃 Peshawar	—	30
〃 Quetta	—	30
Total	120	360
AIOU Programmes	60	60
Imported Programmes (Dubbing)	60	90
Repeat Programmes	240	90
Total (Broadcasting hours per day)	480 min. = 8 hours	600 min. = 10 hours

Note: 1) Production of full-scale dramas and shows requiring large studios are not planned at the ETV Centres.

2) Classification of the studio-produced programmes in the table above is as follows.

a) medium

drama sketches requiring no more than 3 cameras, programmes requiring simple sets, programmes involving a considerable number of participants

b) small

lectures using no more than 2 cameras, programmes involving a small number of participants, so-called talk programmes

(2) Functions Required of Islamabad ETV Centre

The functions and facilities required of the ETV Centre at Islamabad will be as follows.

1) Studios capable of producing a 40-minute "medium" programme and a 50-minute "small" programme per day and related sub-control rooms (SCR)
2) Editing and post production (PP) for field-production programmes for the Islamabad Centre
3) Dubbing of imported programmes
4) Multiplex recording in 4 languages
5) Receivng and recording field production programmes transmitted from Lahore, Karachi, Peshawar and Quetta and repeat programmes transmitted from the existing centre at Islamabad (ST link between the existing centre at Islamabad and ETV Centre)
6) Arrangement of above items in 1) to 5) (including continuity studio), satellite transmission of programmes (uplink)
7) Functions ancillary to the above

(3) Functions Required of Lahore and Karachi ETV Centres

The functions and facilities required of the ETV Centres at Lahore and Karachi are as follows.

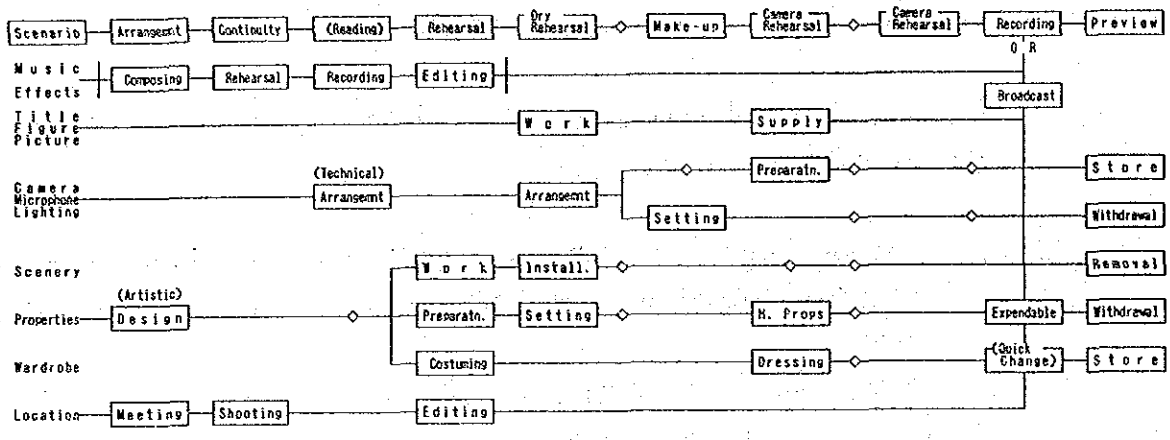
1) Recording, editing and PP of field-production programmes
2) Studios capable of producing a 45-minute programme per day and related sub-control rooms
3) Transmission of above programmes or ST link to a transmission centre

3-2-2 Outline of Principal Facilities Required of Islamabad ETV Centre

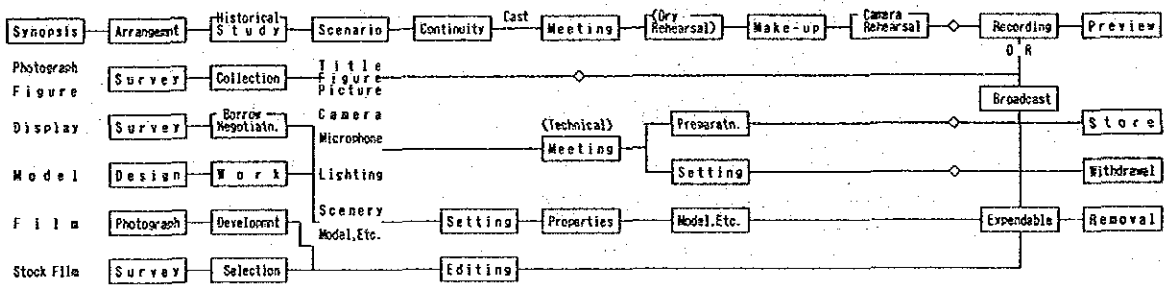
(1) Procedure for Programme Production

The standard procedures for production of TV programmes are outlined below.

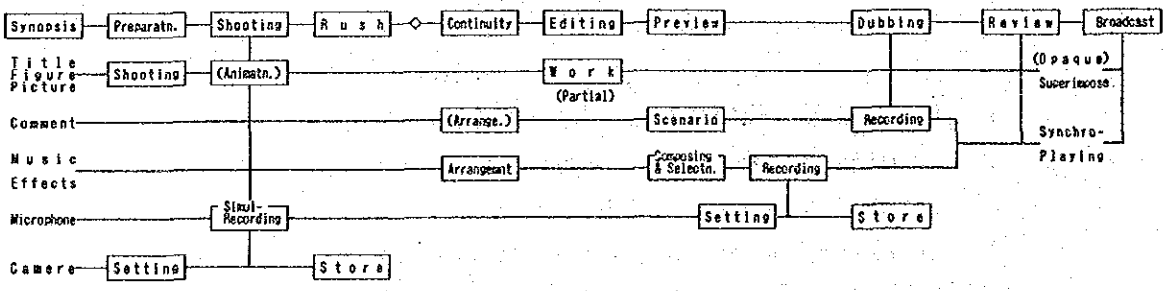
Drama



Dialogue/Lecture



Field Production Programme



(2) Preliminary Consultations

Preliminary consultations between the staff and the performers take up the greatest amount of time in the production of programmes. Some examples are given below.

Programme	Dialogue/Lecture (A)		Dialogue/Lecture (B)		Drama (A)		Drama (B)	
Attendance / Theme	Person Hour	PWAGTAREM	Person Hour	PWAGTAREM	Person Hour	PWAGTAREM	Person Hour	PWAGTAREM
Scenario	2	1 1	3	2 1	2 hrs×3	2 1	α	
Cast	3	1 10	4 hrs×2	1 7	2 hrs×3	2 5	2	2 (1)
Technique	1	2 6	1	2 12 1	3	2 7	3	4 8
Art	1	1 2	2	2 1	2	1 2	3	4
Effect	1	1 2	2	2 1	2	1 2	3	2 1 1
Music			2	2 1	2	1 1	3 hrs×2	2 1 1
Shooting	2	1 1	1	1 1	2	3 1	2	4 4

(Legend) P: Producer, W: Writer, AC: Actor, T: Technician, AR: Artist, E: Effect Man, M: Musician, C: Cameraman

The figures above can be rearranged according to the types of programme as shown below.

	Total Number of Meetings	Total Number of Participants	Average Number of Participants Per Meeting	Total Meeting Time (hours)	Average
Dialogue or Lecture (A)	6	29	4.8	10	1.7
Dialogue or Lecture (B)	8	45	5.6	19	2.4
Drama (A)	11	51	4.6	23	2.1
Drama (B)	7	39	5.6	19	2.7

Although the amount of time taken up in these meetings is related not so much to the length of the programme as to the number of performers, the type of programme and the policy of the producer, if, for the purpose of discussion, we take the above figures as a standard and suppose that one dialogue/lecture programme each of types (A) and (B) and an average drama of type (A) or (B) are to be produced every day, the figures will be as follows.

Number of Meetings per Day	:	23
Total Number of Participants	:	119
Total Time Spent in Meetings	:	50 hours
Average Number of Participants per Meeting	:	5.2
Average Time per Meeting	:	2.2 hours

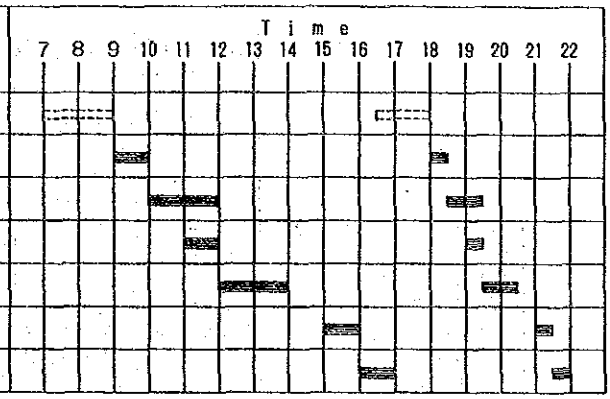
If these meetings are to be held within the working hours of 8 a.m. to 8 p.m., an average of 4+ groups of 5+ people each will be engaged in discussions at any given time. Meetings involving 2 or 3 people can be held at the producers' desks, but if the number of people are raised to 4 or more, waiting area, conference room or canteens (outside meal times) will have to be used. As there will be meetings on field-production programmes on top of these, sufficient space for meetings will be needed at the Centre.

The field production requires for bigger amount of time than the studio production as for the use of the equipment, because a considerable part of the meetings will be held at the location site.

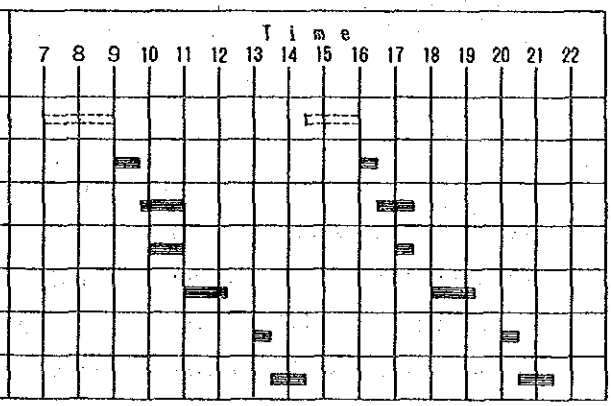
(3) Use of Studios

According to the basic resource allocation plan as described in 1-6 of this chapter, duration of studio use during production can be approximated as follows.

Drama Sketch (Approx. 40 + 25 minutes)	S	P	A
Scenery Installation	1	–	10
Dry Rehearsal	14	20	5
Equipment Setting	9	–	6
Make-up	1	20	10
Camera Rehearsal	14	20	6
Recording	14	20	6
Set Removal	6	–	10



Talk Programme (Approx. 25 minutes x 2)	S	P	A
Scenery Installation	1	–	10
Dry Rehearsal	6	30	3
Equipment Setting	6	–	3
Make-up	1	30	5
Camera Rehearsal	12	30	6
Recording	12	30	6
Set Removal	6	–	10



(Legend) S : Staffs, P : Performers, A : Assistants

The studio corresponding to the upper table will subsequently referred to as "Studio A" and that corresponding to the lower table as "Studio B".

(4) Area of Studios

The standard areas required for studios and ancillary rooms are as shown below.

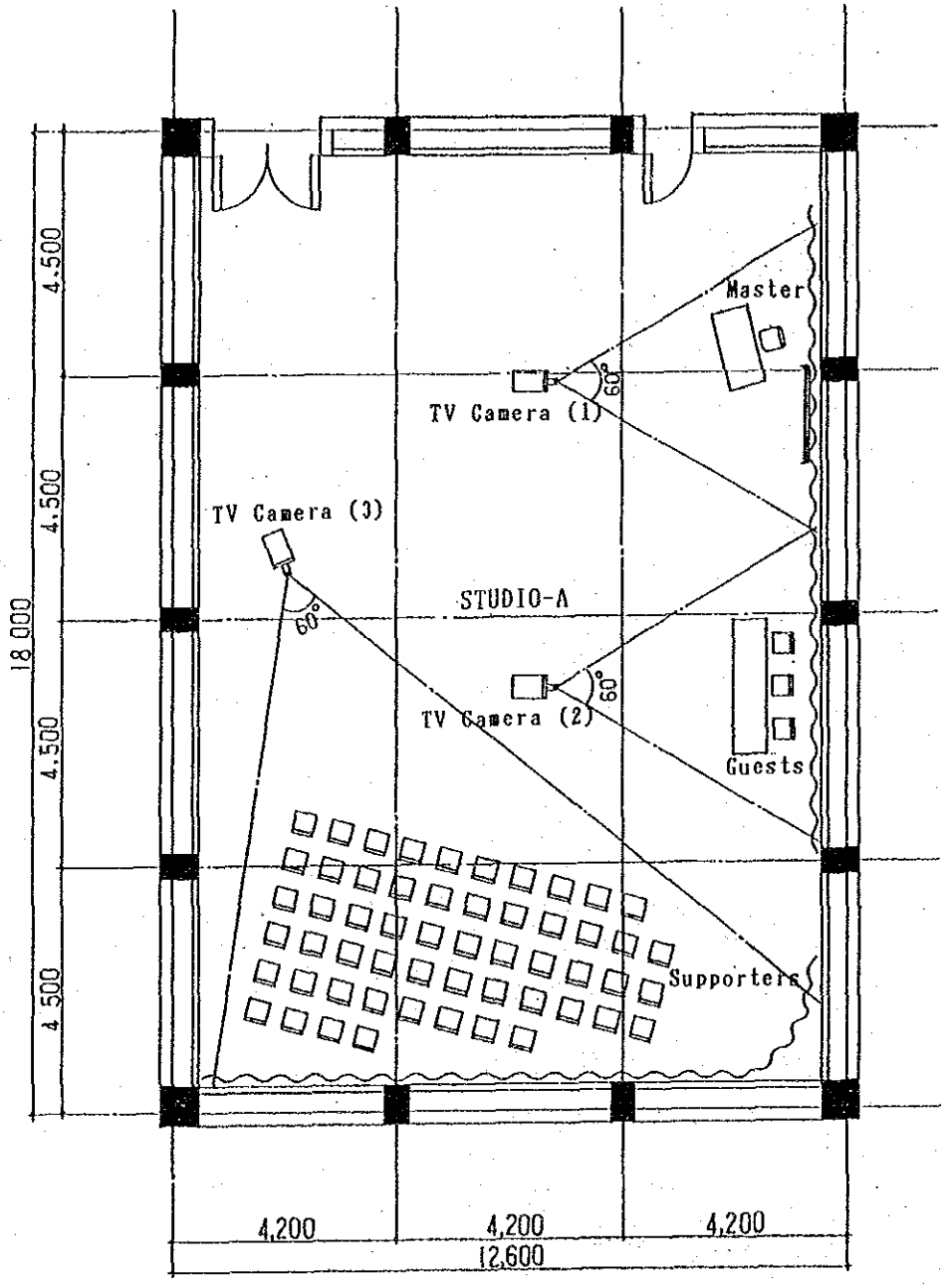
Classification on Television Studio	Television Studio						
	Small Sized	Medium Sized		Large Sized			
	Announcement	Dialogue /Lecture	Experiment / Cooking	Music	Dramma	Show /Dance	Public Recording
Areas (m²)	15~ 50	100~ 200	150~ 300	300~ 600	400~ 600	400~1200	1000~
Cyclorama Height (m)	3 ~ 4	4 ~ 5	4 ~ 5	6 ~ 8	7 ~ 9	7 ~ 12	10~
(Ancillary Rooms)							
Sound Lock	Required	(Required)	–	(Required)	(Required)	(Required)	–
Control Room	Approx.25 m²	25 ~ 80m²	30 ~ 80m²	45 ~ 90m²	45 ~ 90m²	70 ~ 100m²	70 ~ 100m²
Sub Studio	–	10 ~ 20m²	10 ~ 30m²	Approx.30 m²	Approx.30 m²	Approx.30 m²	Approx.30 m²
Equipment Store	–	40 ~ 60m²	50 ~ 60m²	70 ~ 100m²	80 ~ 100m²	80 ~ 150m²	100 ~ 150m²
Musical Instrument Store	–	40 ~ 60m²	–	50 ~ 70m²	50 ~ 70m²	50 ~ 100m²	70 ~ 100m²
Hand Props. Store	–	–	–	–	(Required)	(Required)	(Required)
Scenery Area	–	40 ~ 100m²	50 ~ 120m²	100 ~ 140m²	240 ~ 300m²	140 ~ 300m²	200 ~ 300m²

The areas and the layout of the ETV studios which are to be constructed can be determined through layout review on paper, in accordance with the following conditions concerning programme production and building requirements which are expected to be applicable.(See Figures in the following pages)

1) Studio A will be used for production of simple dramas requiring sets of no more than 2 or 3 backgrounds and household furniture, discussions involving several participants or quiz programmes attended by 20 to 30 supporters. Fullscale dramas, shows and performances by orchestras are not being planned. Studio A will, accordingly, be designed on a minimum scale required as an ordinary medium-size studio with a capacity for use of simple sets and 3 cameras.
2) Programmes to be produced in Studio B will make use of no greater sets than simple backgrounds, blackboards, display boards and lecterns and will be programmes in the nature of lectures,

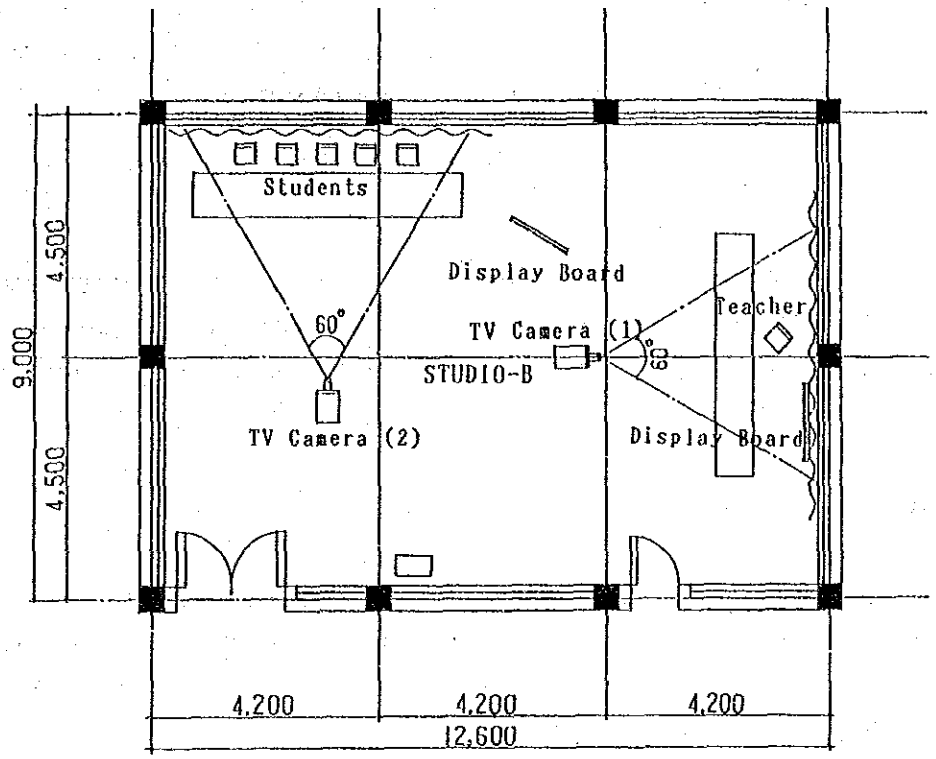
discussions by 2 to 3 participants and educational programmes involving 1 teacher and 3 to 4 students. Studio B will accordingly be designed on the scale similar to that of news studios with facilities for commentators and weather forecasts and on a minimum scale required for use of 2 cameras.

Working Layout in Studio-1

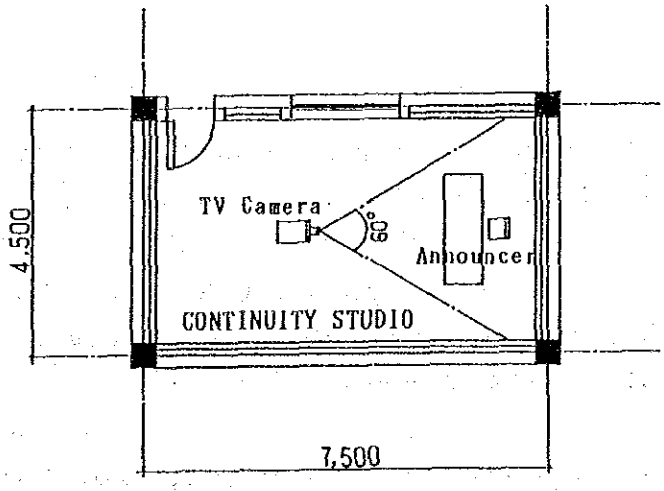


* Remark : The figure shows an example of a quiz programme.

Working Layout in Studio-2



* Remark : The figure shows an example of a lecture programme.



* Remark : The studio will be used for "shots" between programme.

(5) Sub-Control Room (SCR)

The area and the layout of the sub-control room can be determined in accordance with the equipment layout plan. Considerations will also be made for future extensions on a reasonable scale.

(6) Field Production

Although some of the field production programmes involve recordings in the studios, the time for studio use in field production programmes will be ignored in the facilities plan, as the amount of time is small.

(7) Editing Room

For editing tapes of field-production programmes, 2 sets of equipment will be provided. Two small rooms will be provided accordingly.

(8) Post-Production Room

This room will be used for insertion of titles and acknowledgements, insertion of subtitles, comments and narration and recording of background music. Equipment for recording and controls as listed in the following section will also be installed at the Islamabad Centre.

(9) Announcer Booth

Equipment for simultaneous recordings in a maximum of 4 languages will be installed at Islamabad Centre as follows.

1) So-called "off-tube" recording which allows announcers speaking in 4 languages to commentate while watching the same picture at national or sporting events.

2) Simultaneous dubbing of foreign programmes into 4 languages by "off-tube" recording of comments or through simple narration involving merely reading out the translated texts.

3) Dubbing into 1 language of imported programmes or dramas in a specified language.

4 announcer booths accommodating 2 or 3 announcers or commentators each will be built adjacent to the PP Room. 2 out of the 4 booths will also be designed to allow joint use as one room, since item (3) above requires several dubbing artists working together. No cameras will be used in the booths.

(10) Continuity Studio

This studio will be used during transmission for shots between programmes when the announcer introduces the next programme. It will be a small studio with 1 camera and fixed lighting and will be built adjacent to the MCR mentioned in the next section.

(11) Master Control Room (MCR)

Transmission/reception equipment for uplink and ST link and control panel for the continuity studio etc. will be installed in this room.

3-2-3 Outline of Principal Facilities at Lahore and Karachi ETV Centres

The later stage of the project will include the construction of 1 studio each at the Centres in Lahore and Karachi, which will be an ordinary studio equivalent to Studio A at Islamabad and will be used for both "medium" and "small" programmes. These studios will each be used for the production of one 45-minute programme per day. Meeting space, SCR and MCR will be on the same scale as at Islamabad Centre. 1,600m^2 floor areas will be expected for each the Centre.

3-3 Design Conditions of ETV Centre

This Section states design conditions of ETV Centre comprising site conditions, building regulations and personel to be acommodated, and studies sizes of principal rooms. Sites for the Centres at Lahore and Karachi are not dealt with here, as these sites have not yet been selected, and the conditions not yet fixed.

3-3-1 Site Conditions

(1) Situation at Project Site

The project site is located in Sector H-9 of Islamabad city, adjacent to the existing PTV Academy, and forms a rectangle approximately 100m by 200m (See Site Layout Plan). The site is almost flat and its shorter side faces on to a road approximately 28m wide. There is ample space within the site and it is appropriate for the Project.

There are as yet few buildings in the surrounding and the next sites other than that of the PTV Academy are unoccupied, while the site across the road (northern half of Sector H-9) is under cultivation. Sectors G-10 and H-10 in the vicinity are also undeveloped. The road in front of the site has been paved only at the central parts but the traffic is minimal with an occasional car passing by so that the site at present is no more than a quite field.

(2) Soil Conditions

Based on the boring test which was carried out during the survey, it has been confirmed that the bearing capacity of subsoil is 12 tons/m^2. Soil conditions are good for the construction and an ordinary direct foundation will be designed for the Centre.

(3) Infrastructures

1) Electricity

The capacity of the power line running through the road in front of the site being inadequate, a new line will need to be installed between the site and the grid station for Sector I-10 approximately 3km away. The line will be laid by the WAPDA upon request by the PTV (PTV defrayment : Rs 1.2 to 1.5 million).

2) Water Supply

At present, there is no water supply around the site, and the PTV Academy on the adjacent site relies on well water for its supply. In the project for the ETV Centre, too, therefore, excavation of wells will be needed.

3) Drainage

a) Waste Water Drainage

Drainage of waste water comes under the jurisdiction of the CDA (Capital Development Authority). According to the CDA drawings, there must be a concrete pipe, 6 inches in diameter and with a 0.75% grade, running underneath the road 7 feet away from the boundary of the project site and there must be manholes every 250 feet along the pipe. However, some of the manholes can not be found at the site, and the pipes are actually not used by the PTV Academy. A septic tank and a dry well may need to be installed under the project.

b) Stormwater Drainage

There is a pipe on the other side of the road. It is filled with mud but may be used after cleaning.

4) City Gas

Installation of the pipes including that within the premises is to be wholly carried out by Sui Northern Gas Pipelines Ltd. There are, however, no gas pipeline installed in the road in front of the site, so that gas will not be used for heating and where necessary, such as in the canteen, LNG cylinders will be used as at the PTV Academy. Even where gas pipline is available as at the Karachi TV Centre, electric power is used for hot water supply.

(4) Outside Noise Level

An outside noise level for acoustic design will be established for noise from airplanes and noise that might be expected in the future from the road traffic in front of the site (See 3-4-6, Acoustic Plan for Studios).

3-3-2 Building Regulations

In pakistan, building standards are laid down by the Capital Development Authority (CDA) and the Karachi Development Authority (KDA) respectively. Both standards follows British Standards (BS). Building regulations and matters related to building permits are handled by the CDA. The followings are the main related items for the construction.

(1) Road Plan

There are plans to increase the width of the road in front of the site from existing 28m to 45m but the project site will not be affected, as the plan is to extend the road to the opposite side.

(2) Building Regulations for Sector H-9

1) Building Setback

Distance from Road : no less than 12.2m (40ft)
Distance from Boundary : no less than 6.1m (20ft)

2) Number of Storeys

No more than 2 storeys

3) Building Coverage

Each floor area of the building must not exceed 40% of the site area. The total floor area must not exceed 80% of the site area.

4) Basement

To be examined separately depending on site conditions

5) Regulations on Use

Use of the building is strictly regulated sector by sector, and Sector H-9 is reserved for special institutions related to education and research. It has been confirmed that this will cause no hindrance to the construction of the studios (ETV Centre) and the office (Headquarters Office Building).

6) Minimum Dimensions of Habitable Room

3 × 3m (10 × 10ft., 100sq. ft)

7) Minimum Height of Ceiling

2.6m (8' 6")

8) Maximum Height of Building

9.1m (30ft.), except water tank on roof and staircase

Note: Where there is a need for the building to exceed the permitted height, each case is reviewed and permission granted by the CDA. Since studios are to be included in this project, the building is expected to exceed this height and a big antenna for uplink will be installed on the roof. Permission for these will have to be obtained

upon submission of the drawings to the CDA, but no problems are expected.

9) Restrictions on Buildings in Setback Area

Only guard posts not exceeding 2.5 × 2.5m (8' × 8') in area and 2.3m (7' 6") in height are permitted.

10) Height of Boundary Wall

not to exceed 2.5m (8')

(3) Restrictions due to Aviation Acts

International regulations will be observed as no specific restrictions are imposed in Pakistan.

Note: There is an airport approximately 8km to the southeast of the project site but desk study revealed that there will be no problems with structures of up to approximately 120m. The top of the antenna to be installed under this project will be approximately 25m above ground.

(4) Regulations on Structure and Electrical and Mechanical Works

There are no applicable regulations.

(5) Application Documents to CDA

1) Floor plan (each floor)
2) Elevation (2 sides)
3) Section (1 direction)
4) Detail of foundation
5) Certificates regarding soundness and stability by the architect and the structural engineer
6) Block plans showing the service lines of sewage, storm water drainage and water supply
7) Structural drawings

8) Application forms
   a) A-1 Owner Application
   b) A-2 Proof of qualifications for architect and structural engineer
9) Bank draft in favour of the CDA for 500 Rs in account of scrutiny fee
10) Photo copy of allotment/possesion letter of the site

(6) Designer Qualification

Qualification for carrying out the design may be obtained through registration with the CDA. Certificates for university degrees in architecture is sufficient for registration. There being no department responsible for examination of design at the CDA, the entire responsibility for the design is entrusted to the qualified designer.

3-3-3 Personnel to be Accommodated

Personnel to be accommodated in the Islamabad ETV Centre under the ETV-HQ Personnel Plan is limited to the staff who are directly involved in the production and transmission of programmes at the Centre and the remainder are to be accommodated in the office block which will be built on the same site.

Classification of personnel will be in accordance with the following table. Numbers only of the staff are indicated for the headquarters office block, while the number of staff and their workplaces are given for the Islamabad Centre. The numbers after the "+" sign indicate the numbers of personal secretaries and are not included for the purpose of calculating office areas. The maximum number of people to be accommodated at one time will be 150 allowing for 30 or so visitors.

Table 3-1 Personnel to be Accommodated in Headquarters Office Building and Islamabad ETV Centre

(1/2)

Staff/Duty	Number of Staff			Staff in Centre			Workplace in Centre
	(Total)	HQ	Centre	On Duty per Day	Shifts	Maximum at one time	
Chairman	-	-	-	-	-	-	PTV-HQ
ETV Managing Director	1+4	1+4	-	-	-	-	-
Special Adviser	1+3	1+3	-	-	-	-	-
Director							
Imported Prog.	1+4	1+4	-	-	-	-	-
Gen.Affairs Dept.							
Director	1+3	1+3	-	-	-	-	-
Personnel Officers	2+2	2+2	-	-	-	-	-
Section Chiefs	7+2	5+1	2+1	2+1	-	2+1	Staff Room
Telephone Ex.	6	3	3	2	/2	1	PBX
General Services	8	5	3	2	/2	1	Reception
Purchase	10	10	-	-	-	-	-
Transpt.Care Taker	40	37	3	2	/2	1	Reception
Mail Store	20	20	-	-	-	-	-
Security	10	6	4	3	/3	1	Entrance Hall
Finance Dept.							
Director	1+3	1+3	-	-	-	-	-
Managers	2+2	2+2	-	-	-	-	-
Prog.Account	10+2	10+2	-	-	-	-	-
Report Ledger	5	5	-	-	-	-	-
Sales Sec.	10	10	-	-	-	-	-
Engineering Dept.							
Director	1+3	1+3	-	-	-	-	-
Managers	10+5	3+2	7+3	4+2	-	4+1	Staff Room
Section Chief	10+3	3+1	7+2	4+2	-	4+1	Eqpt.Maint.Rm Staff Rom.
Studio	64	-	64	40	/2	20	SCR-A, B
EFP, PP	16	-	16	10	/2	5	PP Room EFP Store
TOC (MCR)	48	-	48	30	/3	10	MCR
Building	24	14	10	9	/3	3	Bldg.Maint.Rm

(2/2)

Staff/Duty	Number of Staff			Staff in Centre			Workplace in Centre
	(Total)	HQ	Centre	On Duty per Day	Shifts	Maximum at one time	
ETV Prog.Dept.							-
Director	1+3	1+3	-	-	-	-	
ETV Chief Prodcs.	34+10	17+5	17+5	11+3	-	11+2	Staff Room
Asst.Producers	68+10	34+5	34+5	21+3	-	21+2	Staff Room
Script Writers	34	34	-	-	-	-	-
Cameramen	33	-	33	20	/2	10	Studios
Designers	33	33	-	-	-	-	-
Make Up, Wardrobe	20	-	20	12	/2	6	Make-up Room, Wardrobe
Decor Make	30	-	30	19	/2	9	Workshop, Props Store
Video Library	5	-	5	3	/2	2	Tape Library
Total	566+59	260+43	306+16	194+11		111+7	
Total Staff	625	303	322	205		118	

3-3-4 Sizes of Principal Rooms

(1) Studio

Studio A, Studio B and the Continuity Studio will have sufficient floor areas, respectively, to accommodate 3 cameras (enabling use for light dramas), 2 cameras (lectures etc.) and 1 camera (shots). Referring to the figures in 3-2-2 (4), useful floor areas will be 200m², 90m² and 20m², respectively.

(2) Announcer Booth

Each Announcer Booth will have the minimum area necessary (approx. 20m²) for accommodating a desk and a monitor TV as well as a total of 3 people (announcers and commentators). The separation between 2 out of the 4 booths will be removable so that the 2 booths may be used as 1 room for dubbing of dramas by several dubbing artists.

(3) Studio Equipment Rooms

Areas of the SCR-A, Rack Room, SCR-B, Dimmer Rack Room, MCR, PP Room and Editing Room will be determined by the allocation of machinery.

(4) Rooms for Scenery and Props

At other facilities in Pakistan, the rooms for scenery and props take up the same amount of space as the total area of the studios, but it is thought that less space will be required at the ETV Centre because of the nature of the programmes which are to be produced there. Rooms for scenery and props normally take up approximately a half of the total area of the studios used for production of dialogues, lectures and dramas in Japan. The area taken up at the ETV Centre will be approximately a half ($180m^2$) of the total area of Studios A and B. In accordance with the normal custom in Pakistan, a part of the room will be separated and used as the store for props.

Workshops are not normally found at broadcasting stations in Japan but there is a necessity in Pakistan because the sets are self-made. The area of the workshop will be approximately $70m^2$, allowing for installation of a desk and woodwork machinery (circular saw, planer etc.), for handling and storage of wood and plywood boards 3m or so in length and for woodwork and painting.

(5) Wardrobe and Make Up Room

These are necessary rooms but their areas will be kept minimal as the Centre will not be used for production of full-scale dramas. The wardrobe and the make-up room will each take up approximately $20m^2$ and male and female parts will not be separated. Considerations will be made in the design to allow for smooth movement of people from the locker to make-up, taking out costumes, changing, locker again and stage and from the stage to changing, returning costumes, taking off make up, locker and exit and minimum equipment necessary for these will be installed.

(6) Rehearsal Room

A rehearsal room will be provided to raise the efficiency of studio use for production of dramas and musical performances. Although it is desirable to have the use of rehearsal rooms similar in size to the studios themselves, considering the nature of programmes produced at the ETV Centre, an area about one third of that of Studio A ($65m^2$) will be secured allowing only for reading out of the scrips and standing practices for light dramas.

(7) Rooms for Storage of Studio Equipment and for Maintenance

The Camera Store, EFP Store and Equipment Maintenance Room will each have areas of about $20m^2$, allowing for installation of storage racks, working surfaces and desks.

(8) Tape Library

Of the 600 minutes of programmes to be broadcast beginning in 1996, 510 minutes are expected to be made up of new productions.

Recording loss will be considered as being made up of the time taken up by connection between programmes and abandoned programmes.

Recording time per 1/2" tape is 90 minutes.
Tape size is 187 × 104 × 25 mm.

If ready-made steel shelves, 920 (width) × 2,000 (height) × 280 (depth)mm, are used, placing them facing each other with a 800mm space between them, the floor area per shelf will be, approx.
0.7 × 1 × 1.2 (loss ratio) = $0.84m^2$.

Taking 880mm as the width of the inside of the shelf, 35 (= 880/25) tapes can be accommodated in a row and the height of 2,000mm will allow for 8 (= 2,000/250) rows. The total number of 280 (= 35 × 8) tapes can be accommodated on 1 shelf.

If the tapes are to be kept for 5 years, the required floor area is ;
(510 min. × 365 days × 5 years × 0.84m²)/(90 min. × 280 tapes)
= 31.0m²

Making allowances for layout and installation of a desk, 40m² will be secured.

(9) Staff Rooms

Considering the 4.5m² floor area per people, Approximately 189m² (4.5m² × 42 people) will be secured in total.

(10) Conference Room

Conferences for decisions on production policy, programming, allocation of responsibilities and appraisal will take place in the office building. Meetings on such matters as allocation of studios and EFP machinery only are expected to take place in the ETV Centre. Allowing for meetings involving 15 manager-class personnel, 45m² (3m² × 15) will be secured.

(11) Meeting Room

According to calculation, 4 meetings, each involving an average of 5 people, are expected to be in progress at any given time, excluding meetings on field production programmes. (There is no leeway for the full 12 hours every day.) In reality, however, since the number of people in each group (2 to 15), time taken and number of groups vary greatly and meetings involving only 2 or 3 people will be carried out at the producers' desks, it is difficult to determine the bases for calculating the space required.

For the permanent meeting room, an area of 45m² (3m² × 15) will be secured allowing for either 3 meetings involving 5 people each or 1 large meeting involving 15 people. Since it is difficult to adjust the times of meetings, sufficient extra space needs to be secured.

The Conference Room and, when necessary, the Waiting Area will be used.

(12) Rooms for Building Equipment

Areas for Substation, Engine Generator Room, Electricity Room, Pump Room, Airconditioning Machine Rooms and Building Maintenance Room will depend on the machinery installed. Approximately 20m^2 will be secured for the Building Maintenance Room allowing for installation of control boards for electrical, airconditioning, water supply and drainage equipment (switches and displays) and alarm boards for the fire-alarm equipment, as well as shelves for storage of maintenance machinery and tools and desks (for 3 people).

3-4 Basic Design for ETV Centre

This section states basic design only for Islamabad ETV Centre. Descriptions on the Headquarters Office Building and the Centres at Lahore and Karachi are ommitted as the former's planning will be entrusted to the local consultants by PTV and the latter's sites have not yet been selected.

3-4-1 Site Layout Plan

(1) The area of the site is more than enough for construction of Islamabad ETV Centre. However, since the ETV Headquarters Office Building is also to be planned in the same site, the Centre will be laid out leaving ample space for the Headquarters.

(2) The ETV Centre will be located on the side closer to the front road because a large number of visitors and traffic of scenery are anticipated.

(3) The studios will be laid out in such a way as to facilitate extension work in future.

(4) The entrance to the site will be located on the side facing the centre of the city and the front of the building, too, will be made to face the centre of the city. The building alignment will be set back to the setback line and ample space for parking and a back yard for various works will be provided within the premises.

3-4-2 Floor Plan

(1) The two studios and the rooms ancillary to them will be centrally located in the building, considering their mutual functional relationship and noise insulation.

(2) Since the other rooms have the same floor heights as office rooms and will not be airconditioned, they will be placed on the outside of the studio block to allow natural ventilation. The building will be two-storeyed in accordance with the building code mentioned above.

(3) A clear circulation plan (for corridors and stairs) will be provided. Escape routes in two directions will be secured by placing the stairs at ends of the corridor.

(4) An ST link aerial and an Uplink aerial for communication with satellites will be installed on the roof above the studio block. This layout will allow good access to the Master Control Room, prevent aerial obstruction and be effective in the light of the security.

The rooms required at the Islamabad ETV Centre, their areas and ancillary equipment are listed as follows.

Table 3-2 Rooms, Areas and Equipment at Islamabad ETV Centre (1)

(Floor)	(Room)	(Area (m^2))	(Ancillary Equipment)
Ground	Studio A	233.58	horizontal cyclorama,fixed grid pipes for lighting, ladders
	Sound Lock A	6.00	sound-proof door
	Studio B	118.20	horizontal cyclorama, buttons for lighting
	Sound Lock B	6.0	sound-proof door
	Sub-Control Room (SCR)A	69.15	wiring trenches
	Rack Room	19.80	
	Sub-Control Room (SCR)B	85.20	wiring trenches
	Scenery Area	146.94	
	Props Store	33.98	
	Workshop	66.38	power sources for woodworking marchinery
	Camera Store	17.98	
	Meeting Room	45.45	
	Make-up Room	22.73	make-up counter, mirrors, wash basins,
	Wardrobe	22.73	changing booths
	Waiting Area	22.73	
	Building Maintenance Room	22.89	alarm boards, control panels
	EFP Store	22.73	
	Rehearsal Room	65.73	
	Equipment Maintenance Room	23.84	
	Store	15.21	
	Airconditioning Machine Room (ACMR) (1)	47.70	foundation for equipment
	Electricity Room	41.11	
	Pump Room	25.27	foundation for pumps
	Entrance Hall	51.50	reception counter, information desplay board
	PBX	6.11	
	Lavatory (1)	31.81	toilet booths, mirrors, wash basins
	Tea Kitchen (1)	10.81	stainless steel basin,shelf
	Corridors (1)-(3)	143.14	
	Exterior Stairway	11.34	
	Substation (separate building)	31.78	foundation for equipments wiring trenches
	Engine Generator Room (separate building)	31.78	foundation for E/G service tank, wiring & piping trenches
(Total Ground Floor Area)		1,499.60m^2	

Talbe 3-2 Rooms, Areas and Equipment at Islamabad ETV Centre (2)

(Floor)	(Room)	(Area (m^2))	(Ancillary Equipment)
First	Master Control Room	102.90	wiring trenches
	Continuity Studio	33.75	curtain, viewing window
	Post Production Room	75.60	
	Announcer Booth (1)-(4)	77.58	viewing windows, sliding wall
	Editing Room (1)-(2)	22.50	
	Dimmer Rack Room	17.14	wiring trenches
	Tape Library	27.19	
	Staff Rooms (1)	45.78	
	Staff Rooms (2)	68.18	
	Staff Rooms (3)	68.18	
	Conference Room	42.85	
	ACMR (2)	228.38	foundation for equipment
	ACMR (3)	34.64	foundation for equipment
	Store (1)	19.25	
	Store (2)	15.21	
	Lavatory (2)	31.81	toilet booths, mirrors, wash basins
	Tea Kitchen (2)	11.92	stainless steel basin, shelf
	Corridors (4)-(5)	131.79	
	Staircase	15.50	
	Exterior Stairway	11.34	
(Total First Floor Area)		1,081.49m^2	
Roof	Staircase	18.35	
	Store	11.23	
(Total Roof Floor Area)		29.58m^2	
(Total Floor Area)		2,610.67m^2	
(Building Area)		1,565.88m^2	

3-4-3 Elevation and Section Plan

(1) Because of their functions, the studios and their ancillary rooms will be required to have storey heights bigger than that of normal

office rooms. In Studio A, the height of the cyclorama, which will be used as the backdrop for filming, will be 5m. Above that will come the grid pipes for suspension of lighting and the ceiling, and more over, the space for airconditioning ducts and structural beams are necessary, giving a total height of 11.5m.

(2) The composition of the tall studio block and the block of the rooms at heights of normal office will make a special feature of the building. The rooms at normal height placed at the front of the building will compose the facade while concealing the inhuman height of the studio block.

(3) The elevation of the building will be given with a direct expression suitable for a centre handling high level technology and machinery, while adding elements of the traditional art. The exterior finish will be given a high technology expression combined with the normal style of finish used in Pakistan. Aesthetic and economic epoxy resin splay-coat will be applied.

(4) The space around the entrance will be provided with an appropriate appearance and spatial composition, considering the large number of visitors that would be expected at a centre for production of educational TV programmes.

3-4-4 Structural Plan

(1) Standards for Structural Design

No standards specific to Pakistan have been established. Although Pakistan, located on the Eurasia seismic zone, is subject to earthquakes, the CDA has no definite standards for structural design. The KDA recommends the use of Uniform Building Code (UBC, 1982) as a basis for calculations related to seismic forces. In the structural design for the Centre, the UBC will be used in calculations concerning seismic forces, while those concerning wind pressure and soil bearing capacity are based on actual data in Islambad and the site.

(2) Design Loads, External Forces

1) Dead Load

Besides the weight of the building itself, a total of approximately 5 tons for the antenna to be installed on the roof will be included as a special dead load.

2) Live Load

Appropriate values will be established for each room on the basis of the Standard for Structural Calculations of Reinforced Concrete laid down by the Architectural Institute of Japan and the weight of the broadcasting equipment which are to be actually installed within the facilities.

3) Wind Load

Taking note of the record instantaneous wind speed of 89mph (approx. 39.6m/s, recorded in July 1970) in Islamabad in the past 33 years, a design wind speed of 40m/s will be adopted for calculations of wind load.

4) Seismic Load

Standard shear factor will be calculated on the basis of the UBC specifications as encouraged by the KDA. A standard shear factor of Co = 0.10 is obtained from the zonal factor Z = 3/8 as published by the KDA.

5) Bearing Capacity of Soil

The design bearing capacity of sub-soil will be 12 tons/m^2 on the basis of the data obtained by boring test at the site.

(3) Type of Structure

A rigid frame structure of reinforced concrete, which is the commonest type in Pakistan, will be adopted. Walls other than the bearing walls will be of brick. Use of steel beams will be considered for the roof of Studio A to cover its large spans. The foundation will be of direct and ordinary footings.

3-4-5 Building Equipment Plan

(1) Electrical Installation

1) Power supply

The equipment to counter the effect of the instability of commercial power supply will be installed as follows.

a) The substation within the premises, which will be under the control of the WAPDA, will be built as a separate building where a 600 KVA power source transformer and the main switch will be installed for reception of power supply (primary, 3 phase, 3 wire, 11 kV, 50Hz). Power on the secondary (low voltage) side of the transformer (3 phase, 4 wire, 400/230 V) will be transmitted to the Electricity Room in the main building.

b) A main switchboard will be installed in the Electricity Room to supply power to the broadcasting equipment, studio lighting, socket outlets, lighting for rooms, airconditioning, water supply and drainage equipment.
Power supply to the principal equipment of the TV Centre will be made via the automatic voltage regulator (AVR), the insulation transformer and the uninterruptible power supply (UPS) system.

c) The switchboards will be of a cubicle type with a view to increase reliability and safety, as well as to facilitate installation and maintenance.

2) Emergency Power Supply

A diesel engine generator (3-phase, 4-wire, 400/230 V, 50Hz, 200KVA, with automatic battery starting and automatic switching device) will be installed in the Engine Generator Room. Power from the generator will be supplied to important equipment that cannot tolerate long stoppage of power supply, such as the broadcasting equipment including those in the MCR and the Continuity Studio, lighting for the foregoing, part of the airconditioning system and pumps.

3) Wiring of Mains

The main lines will be classified into those for general lighting and socket outlets, those for broadcasting equipment, those for studio lighting and those for airconditioning, water supply and drainage. Metallic conduits or cable racks will be used in the wiring to ensure durability, economy and facility of work. Utmost care will be taken to avoid these power mains contacting or crossing broadcasting equipment and their wiring to prevent electrical noise and interference.

4) Lighting

For reasons of colour rendition and economy, fluorescent lighting will be used in the main and the illumination of each room will be as outlined below in accordance with JIS specifications.

Office Rooms, Rehearsal Room, Control Rooms, Makeup Room, etc.	----- 400 lux
TV Studios, Scenery Area & Workshop, Building Equipment Rooms, Tape Library, etc	----- 200 lux
Corridors, Staircases, Toilets, Stores, etc.	----- 100 lux

In order to secure the emergency escape route, emergency lighting will strategically be installed, which make use of storage

batteries to constantly store power and switch on automatically on emergencies.

5) Socket Outlets

Socket outlets for general use and for airconditioning will be properly installed. Their shapes and specifications will correspond to those in general use in Pakistan.

6) Fire Alarms

A fire alarm system will be installed in view of the importance of the production and transmission centre of TV programmes. Heat or smoke detectors will be installed in all the rooms except for lavatories. Manual fire alarms and alarm bells will be located at strategic points such as on the corridors and the control panel will be installed at a location which will be usually attended.

7) Telephones

In order to enable telephone installations in each room, conduit will be installed between the terminal box and telephone outlets.

8) Earthing

Earthing for building equipment and broadcasting equipment will be carried out according to the following scheme with required terminal boxes and wiring. Lightning protection system will be installed to protect the antenna and the building.

High-Voltage Equipment (11 kV)	10Ω or less
Low-Voltage Equipment (400/230V)	10Ω or less
Broadcasting Equipment	10Ω or less
Telephone Lines	100Ω or less

(2) Plumbing

1) Water Supply

Water will be supplied by gravity method using a bored well, submerged pump, underground grit chamber (functioning also as reservoir), lifting pump and roof-top tank. The design water supply (reservoir volume) will be 35m³ based on the followings.

Daily Water Use	:	150 people × 100ℓ/person.day = 15,000ℓ/day (15m³/day)
Water for Fire Hydrant	:	4.5m³(1,000 British Gallons)
Reservoir Volume	:	15m³/day × 2days + 4.5m³ = 34.5m³ ≒ 35m³

2) Hot Water Supply

An electric instantaneous water boiler will be installed for the basins in the Make-up Room and an electric storage type water heater in the Tea Kitchens.

3) Drainage

A septic tank and a seepage tank may need to be constructd for treatment of waste water. Drains for stormwater will be connected to the existing drains on the road in front of the site.

4) Sanitary Facilities

Western and Asian style water closets will be used and water taps will be installed in the booths.

5) Fire Fighting Facilities

Indoor fire hydrants (water outlets for use by firemen) will be located at strategic positions. 1,000 (British) gallons of water supply for fire fighting requested by the fire brigade will be included in the capacity of the storage tank mentioned in Section

1). Carbon dioxide and dry chemical fire extinguishers suited for fighting electrical and general fires will be suitably positioned.

(3) Airconditioning System

1) Airconditioning

Pakistan is situated in a high-temperature zone and the temperature sometimes rises to above 45°C in summer. Airconditioning equipment is of vital importance in maintaining an environment suitable for production of programmes and use of broadcasting equipment.

Peculiarities of a studio centre include such features as use of rooms at irregular times, rooms equipped with lighting and equipment that generate large quantities of heat, need to prevent noise and vibration and the liability of long stoppages of airconditioning to cause major impediment to broadcasting. In consideration of these features, air-cooled type package airconditioners with single ducts are installed in separate systems, will be adopted for such reasons as its adaptability to partial operation, reliability, economy and facility of maintenance which means that no specialist engineers are needed.

More than one airconditioner will be installed in each of the studios, which show high levels of heat generation, to prevent total stoppages. Because dust is generated at times in the studios, the fans in the systems for studios will be adaptable to use for exhaust and switches for this will be installed in the Sub-Control Rooms. Operation of the airconditioners in the system for studios and alarms in case of malfunction are monitored in the Building Maintenance Room.

There will be no airconditioning and ventilation in the Corridors, Stairs, Entrance hall and the Reception.

2) *Design Conditions of Airconditioning*

Design conditions for airconditioning have been determined as follows on the basis of data from the Pakistan Meteorological Department (PMD), materials on design conditions of the Capital Development Agency (CDA) and the design standards of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

a) Outdoor Temperature and Humidity

Summer : 42.2°C D.B., 26.7°C W.B.
Winter : 3.3°C D.B., 1.1°C W.B.

b) Indoor Temperature and Humidity

Summer : 27±3°C D.B., 50±10% R.H.

c) Heat Load by the Lighting, Equipment and Personnel

Floor	Room	Broadcasting Machinery	Number of People
Ground	Studio A	Lighting : 100.0 kVA Equipment : 0.5 kVA	40
	Studio B	Lighting : 50.0 kVA Equipment : 0.5 kVA	20
	SCR-A	Equipment : 8.5 kVA	7
	SCR-B	Equipment : 11.5 kVA	9
	Make-up Room		8
First	MCR	Equipment : 19.5 kVA	11
	Continuity Studio	Lighting : 10.0 kVA Equipment : 0.5 kVA	4
	PP Room	Equipment : 10.0 kVA	8
	Announcer Booth (1)-(4)	Equipment : 2.0 kVA	12
	Editing Room (1)-(2)	Equipment : 6.0 kVA	6
	Dimmer Rack Room	Equipment : 15.0 kVA	not considered
	Tape Library		3

3) Rooms to be Airconditioned

Ground Floor : Studio A, Studio B, SCR-A, SCR-B, Make-up Room

First Floor : MCR, Continuity Studio, PP Room, Announcer Booth (1)-(4), Editing Room (1)-(2), Dimmer Rack Room, Tape Library

4) Ventilation

Considerations will be made in the architectural design to allow maximum use of natural ventilation in order to save energy. Rooms faced to outside air will not be air-conditioned. To counter the heat in summer, however, fixed ceiling fans will be installed and allowance will be made in the design for future installation of individual airconditioners. Mechanical ventilation will be applied for the rooms where heat, dust, smell or moisture arises.

a) Mechanical Ventilation Fans

Rooms to be equipped with mechanical ventilation, the method and the air changes per hour will be as follows.

Room	Ventilation Method	Air Changes
Workshop	A	8 times/hour
Scenery Aera	A	8 times/hour
Props Store	A	5 times/hour
Pump Room	A	5 times/hour
Electricity Room	A	8 times/hour (※)
Tea Kitchen	C	5 times/hour
Lavatories	C	$30m^3/m^2$
Wardrobe	B	5 times/hour
Sound Locks	C	5 times/hour
Camera Store	C	5 times/hour
Rack Room	A	5 times/hour (※)
Substation (separate building)	A	8 times/hour (※)
Engine Generator Room (separate building)	A	8 times/hour (※)

note

A : Class 1 ventilation (supply & exhaust)
B : Class 2 ventilation (supply)
C : Class 3 ventilation (exhause)
(※) : Heat generation will be considered in the final design but maximum 50°C.

b) Fixed ceiling fans

Fixed ceiling fans will be installed in the following rooms.

Ground Floor : Meeting Room, Rehearsal Room, Waiting Area, Equipment Maintenance Room, Building Maintenance Room and EFP Store

First Floor : Staff Rooms (1)-(3), Conference Room

3-4-6 Acoustic Plan for Studios

(1) Noise Conditions

1) Outside Noise Level

Since the project site is relatively close to the Islamabad International Airport and there are occasions when airplanes fly over the site, the noise level from these aircraft will be integrated in the conditions for acoustic design.

For the type of aircraft, large 4-engine jet planes whose next destinations are far away and at between N 296° and N 186° may veer to the right immediately after takeoff and fly above the vicinity of the project site.

As for the road traffic, a situation where a large lorry passes along the road in front of the site creating a mechanical noise will be imagined. For the purpose of calculations the noise source is assumed to be located along the line of the pavement of the road nearest the site.

2) Indoor Noise

Noise from carpentry work in the Workshop, the Airconditioning Machine Rooms, the Engine Generator Room and the Electricity Room, which are thought to be the principal sources of noise within the building, will be taken into account. The noise control between studios will also be considered.

(2) Design Conditions

The values to be aimed at are as follows.

Rooms	Desired NC Value	Desired Reverberation Time
Studios A & B	25-30	As short as possible (no more than 0.7 sec.)
Continuity Studio	〃	Approx. 0.3 sec.
Announcer Booths	〃	Approx. 0.2 sec.
SCR, PP, Editing Rooms	30-35	Not considered (sound absorption finish)
MCR	35-40	Not considered (sound absorption finish)
Others	40-45	Not considered

(3) Acoustic Design

Detailed calculations will be made at the Stage of detailed design but the following finish have been planned.

(Studios A & B)

Ceiling : reinforced concrete slabs, suspended ceiling (gypsum boards, glass wool on top, sound absorption finish on bottom)

Walls : double brick walls (cavity wall) with mortar on both sides and absorption finish

Doors : sound-proof

(Announcer Booths, Continuity Studio)

Ceiling : reinforced concrete slabs, suspended ceiling (gypsum boards, glass wool on top, sound absorption finish on bottom)

Walls : brick with mortar on both sides, acoustic wall with light gauge steel furrings on inside

Doors : sound-proof

(SCR, MCR, PP, Editing Rooms)

Ceiling : reinforced concrete slabs, acoustic suspended ceiling

Walls : brick with mortar on both sides

Doors : airtight

3-4-7 Materials Plan

The Islamabad ETV Centre is expected to have so much traffic of people and equipment. Interior finishing materials having sufficient durability and wear resistance will be used for finishing work of the Centre. In the studios and the rooms ancillary to them, interior finishing materials having high efficiency of sound absorption, will be selected considering their funcitons. As for exterior finishing, durable materials will be adopted taking the weather in Islamabad into account.

As a rule, finishing materials available on the local market will be used to reduce building costs and facilitate maintenance, so long as there are no problems with regards to their quality and supply.

(1) Structural Members

Columns, beams, floors and stairs: reinforced concrete (Steel structure is used for the stairs and a part of the beams in Studio A.)

Wall : brick

(2) Exterior Finishing Materials

Roof : reinforced concrete, asphalt waterproofing with cement tile finish

Exterior finish : spray-on epoxy resin coat on primary mortar coating

Doors & windows : aluminium and steel

(3) Interior Finishing Materials (Main Rooms only)

1) Studio A, Studio B, Continuity Studio and Announcer Booths

Floors : vinyl tile
Walls : acoustic finish (See 3-4-6 (3))
Ceiling : acoustic finish (See 3-4-6 (3))

2) SCR, MCR, PP Room and Editing Room

Floors : vinyl tile
Walls : paint finish
Ceiling : acoustic finish (See 3-4-6 (3))

3) Rehearsal Room, Conference Room and Meeting Room

Floors : vinyl tile
Walls : paint finish
Ceiling : acoustic board

4) Entrance Hall

Floors : stone finish
Walls : paint finish
Ceiling : paint finish

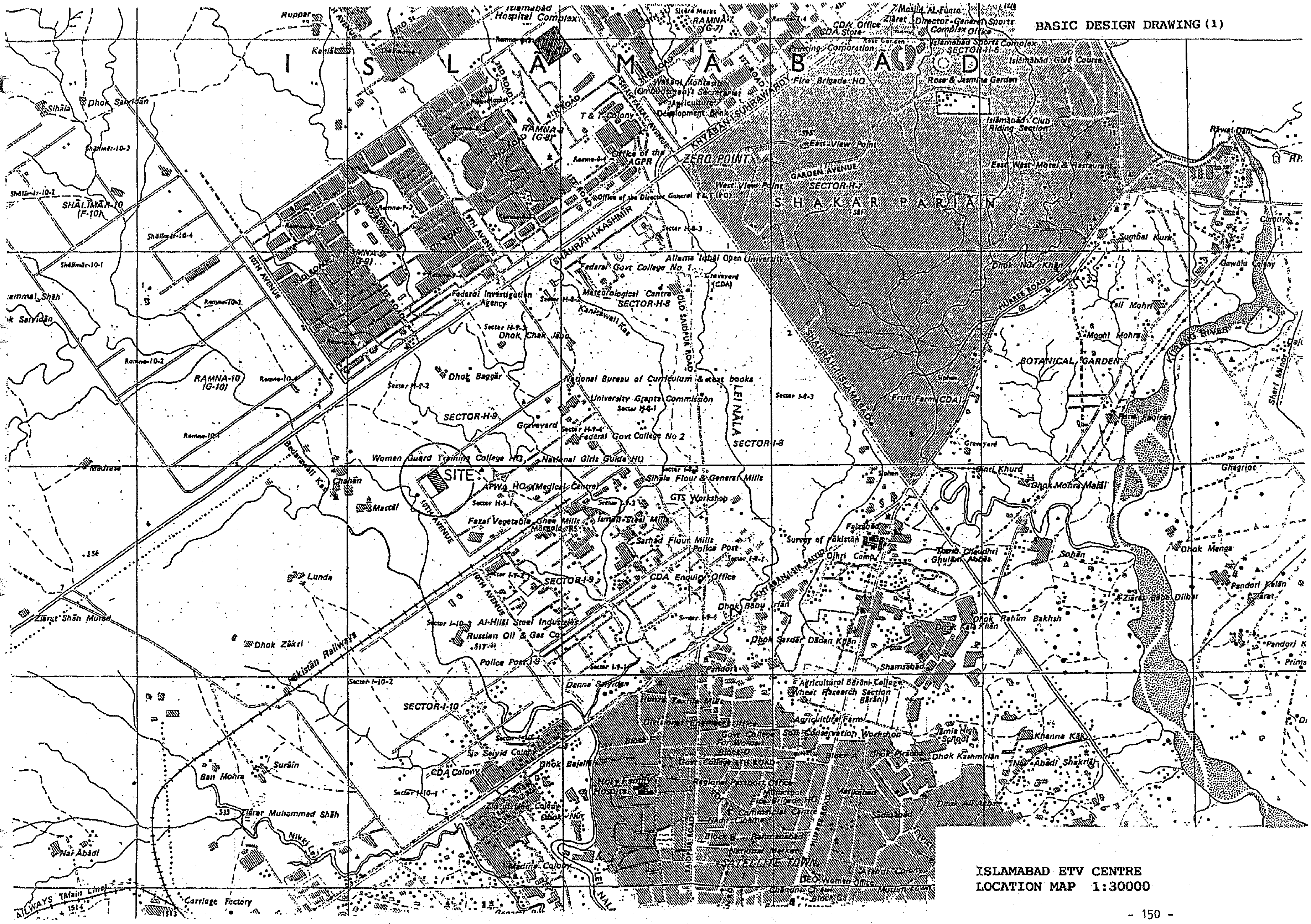
5) Corridor

Floors : vinyl tile
Walls : paint finish
Ceiling : acoustic board

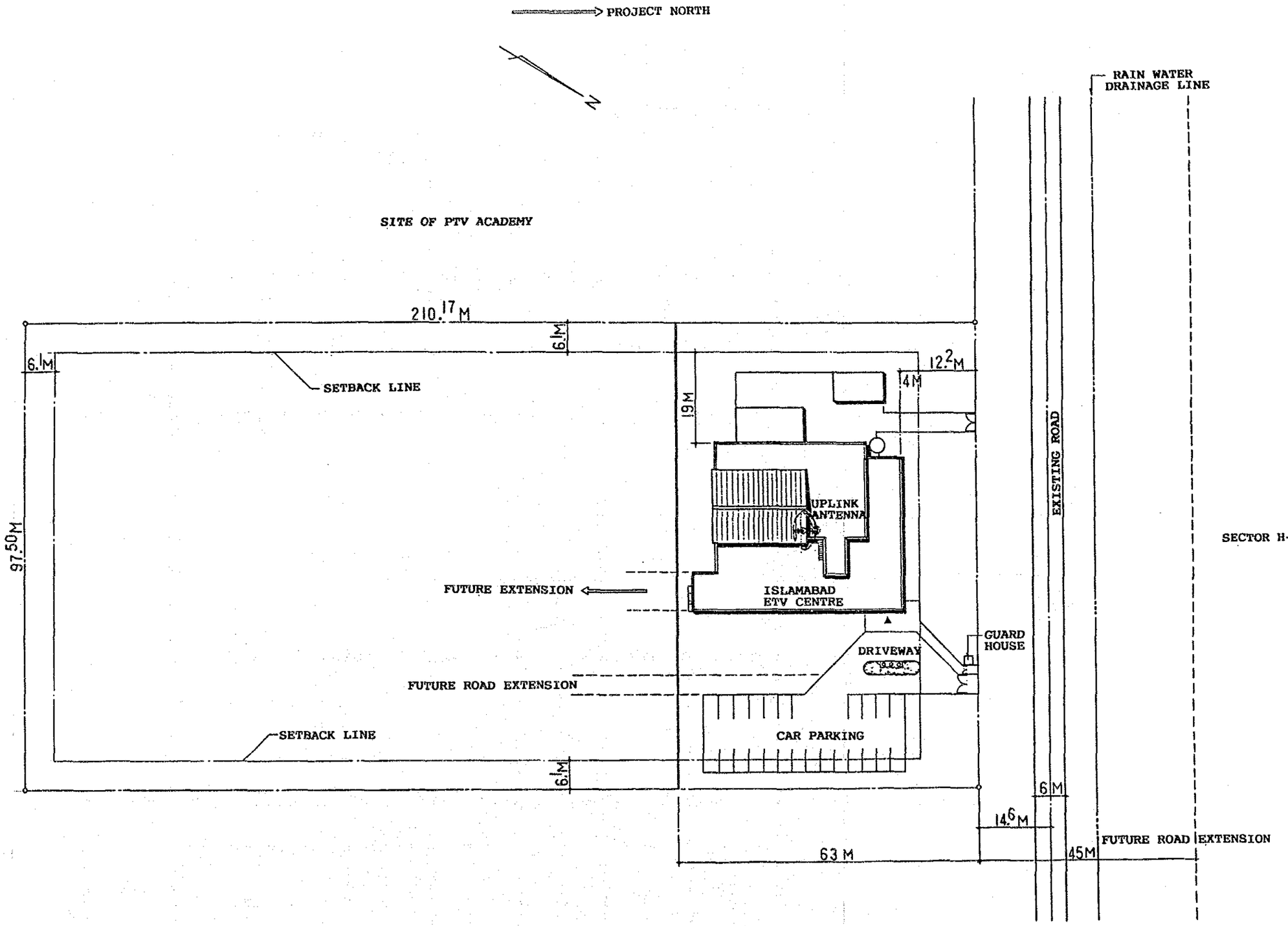
3-4-8 Basic Design Drawings

(1) Location Map
(2) Site Layout Plan
(3) Ground Floor Plan
(4) First Floor Plan
(5) Roof Plan
(6) Elevation
(7) Section
(8) Sequence Diagram of Electrical Installation
(9) Schematic Diagram of Airconditioning System
(10) Schematic Diagram of Plumbing

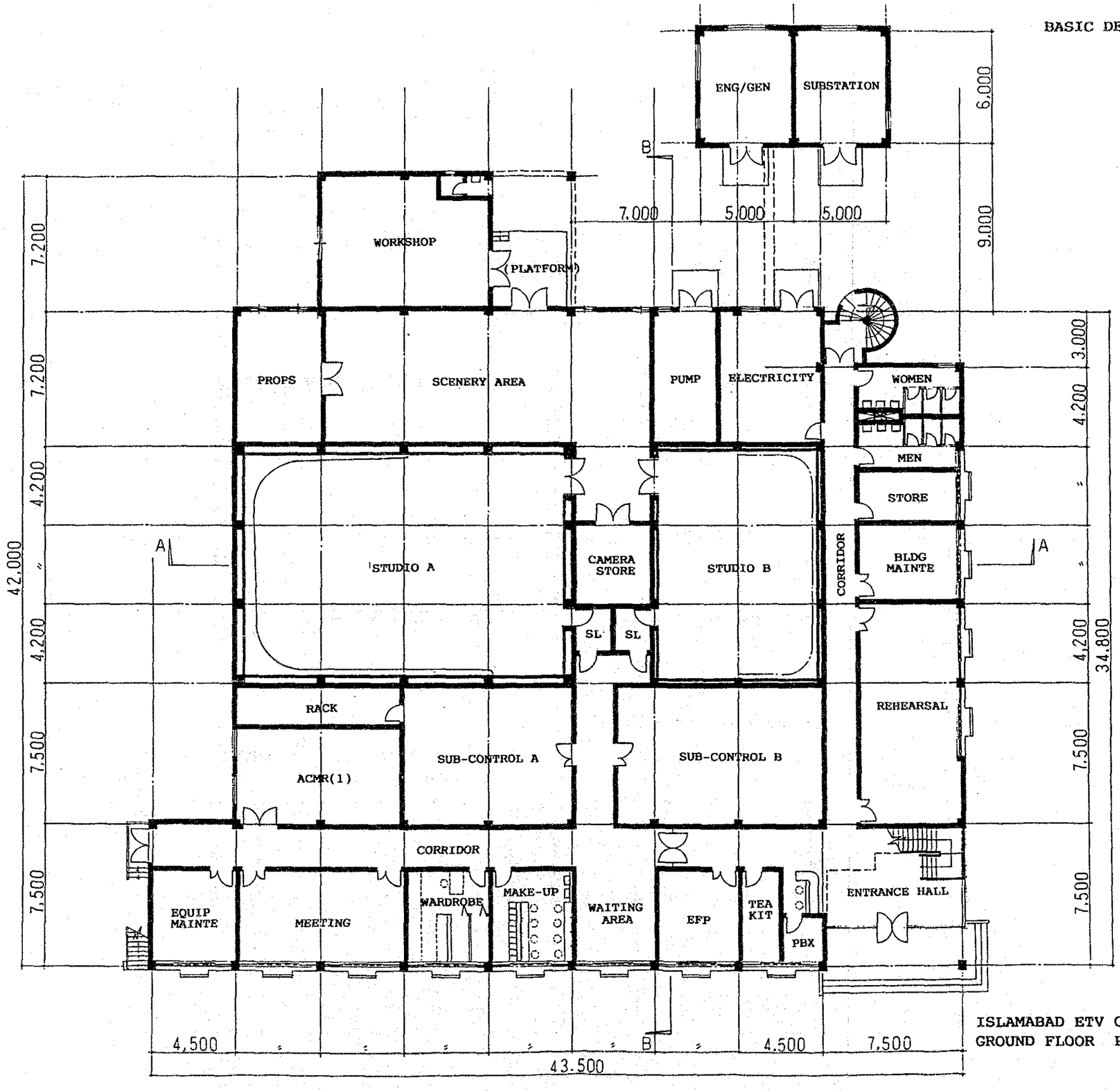
BASIC DESIGN DRAWING (1)



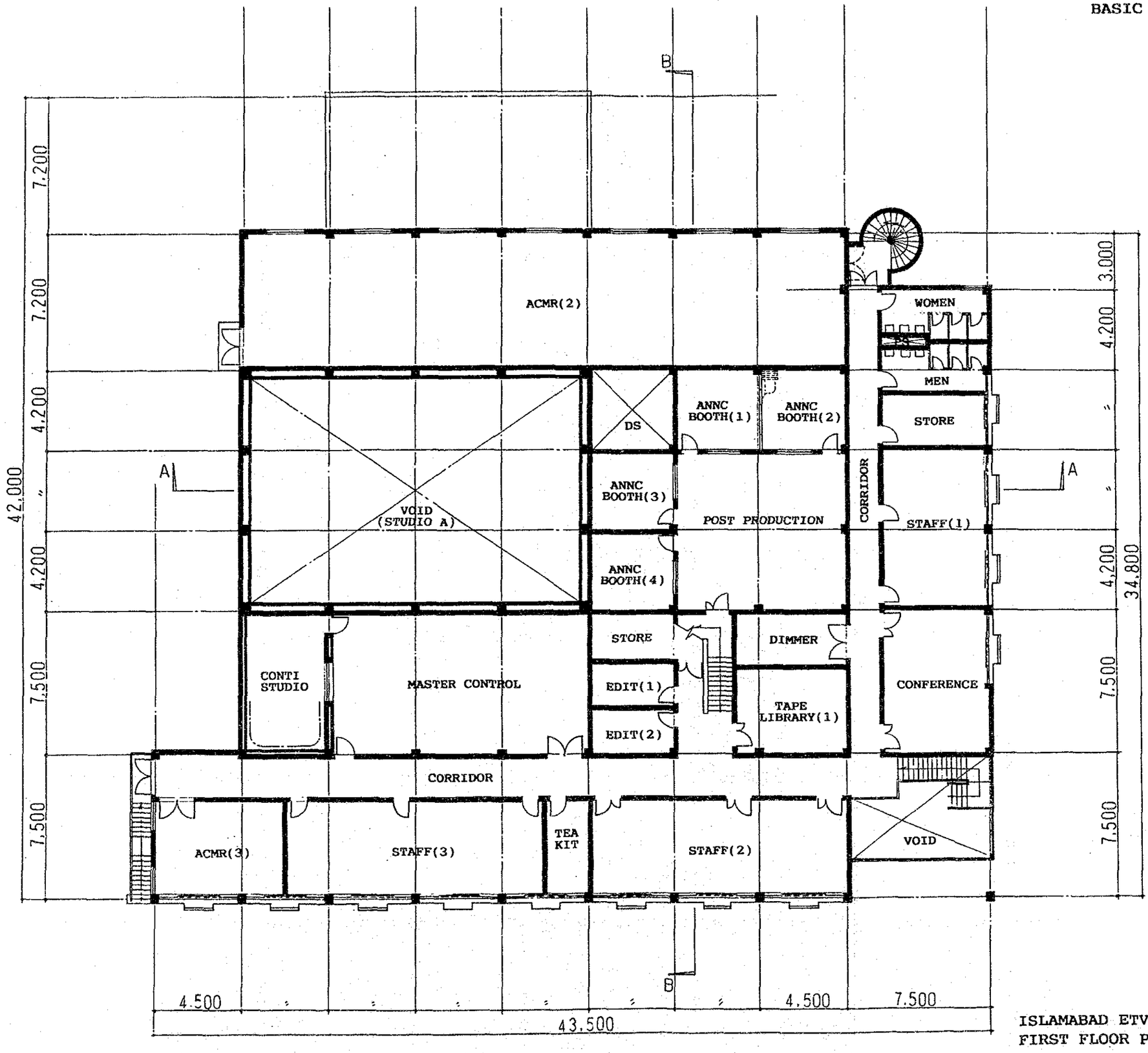
ISLAMABAD ETV CENTRE
LOCATION MAP 1:30000



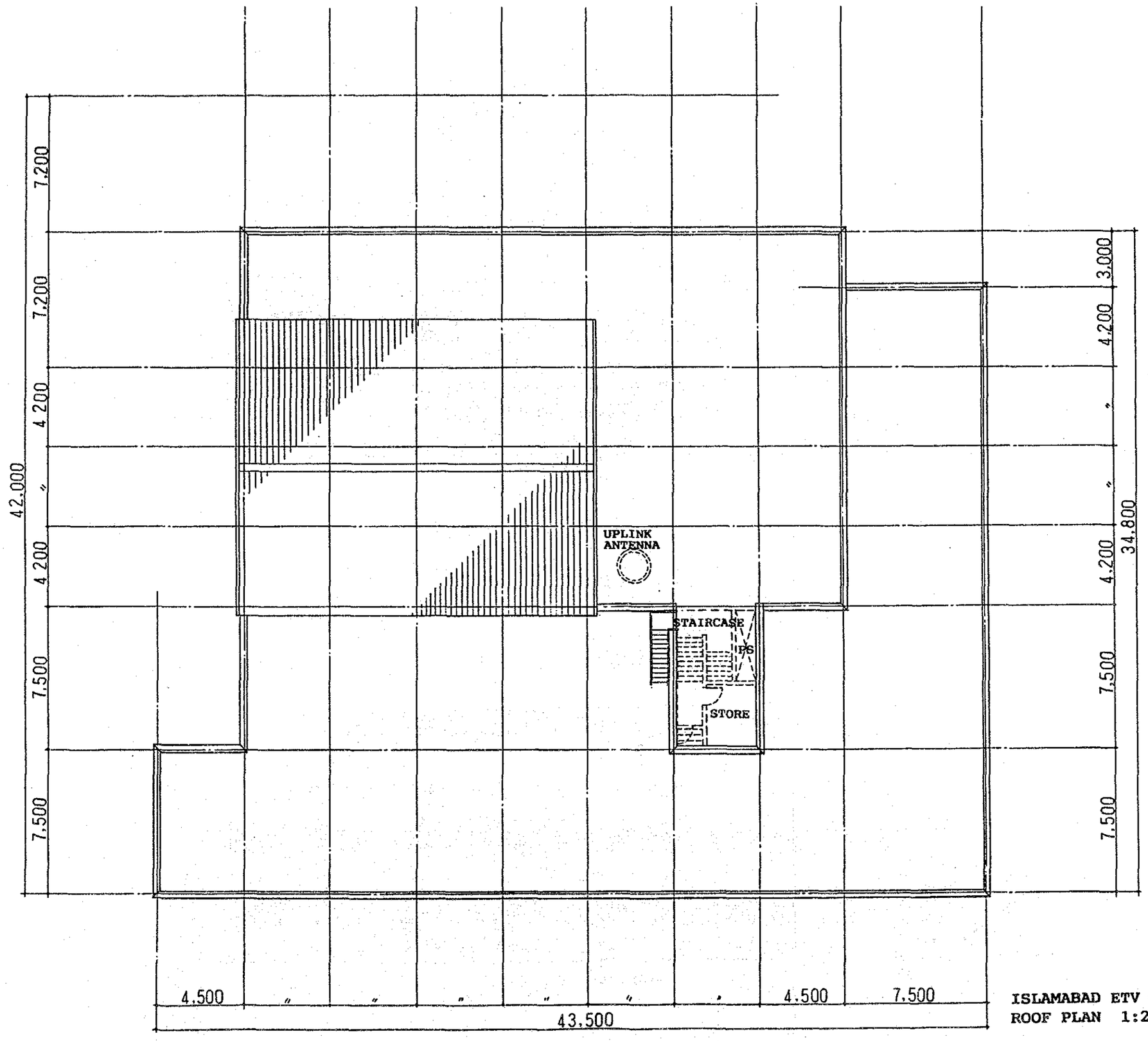
ISLAMABAD ETV CENTRE
SITE LAYOUT PLAN 1:800



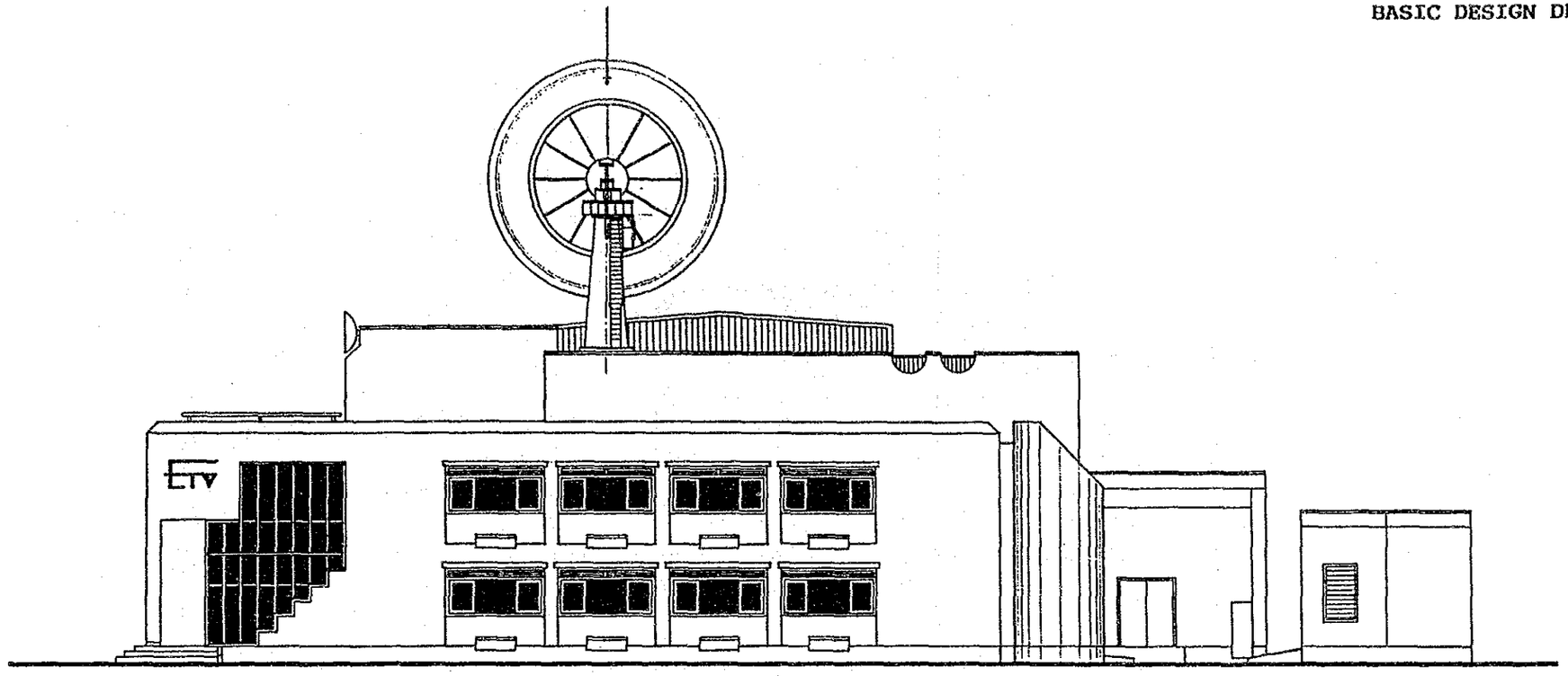
ISLAMABAD ETV CENTRE
GROUND FLOOR PLAN 1:200



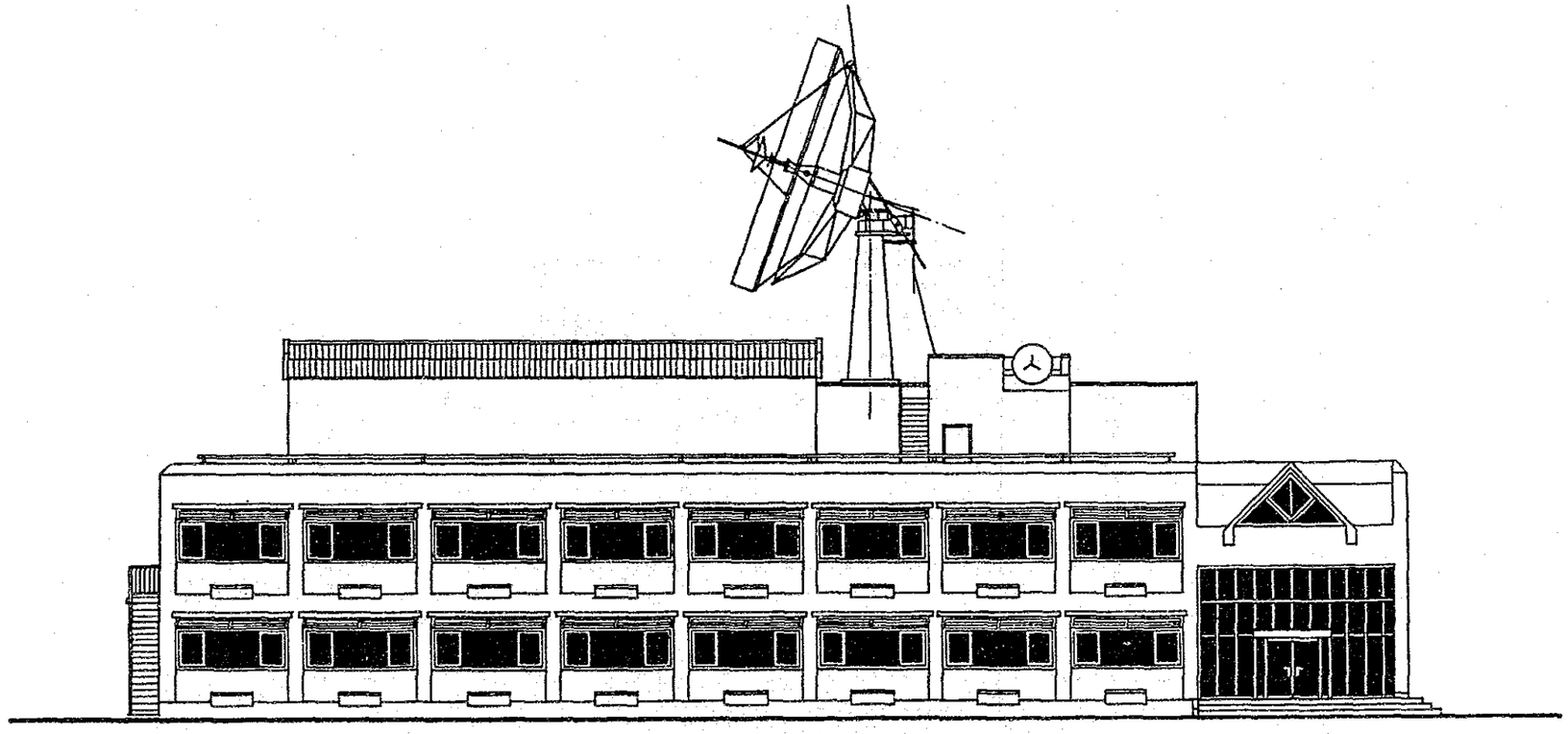
ISLAMABAD ETV CENTRE
FIRST FLOOR PLAN 1:200



ISLAMABAD ETV CENTRE
ROOF PLAN 1:200

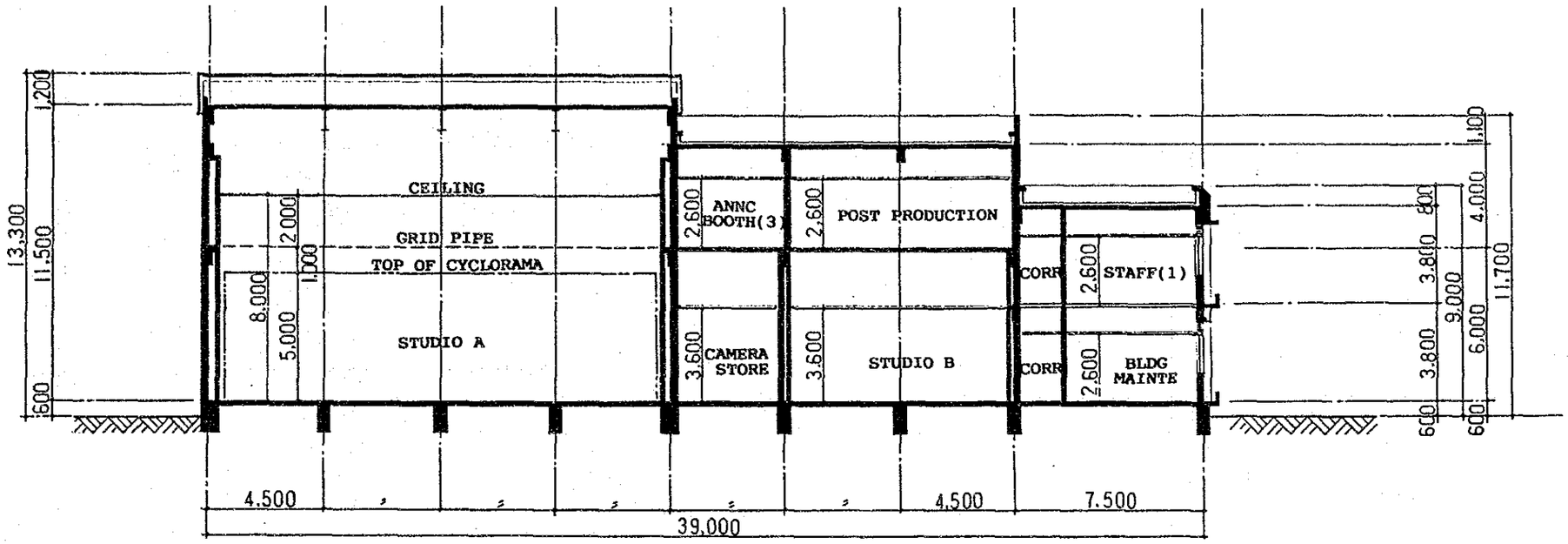


NORTH ELEVATION

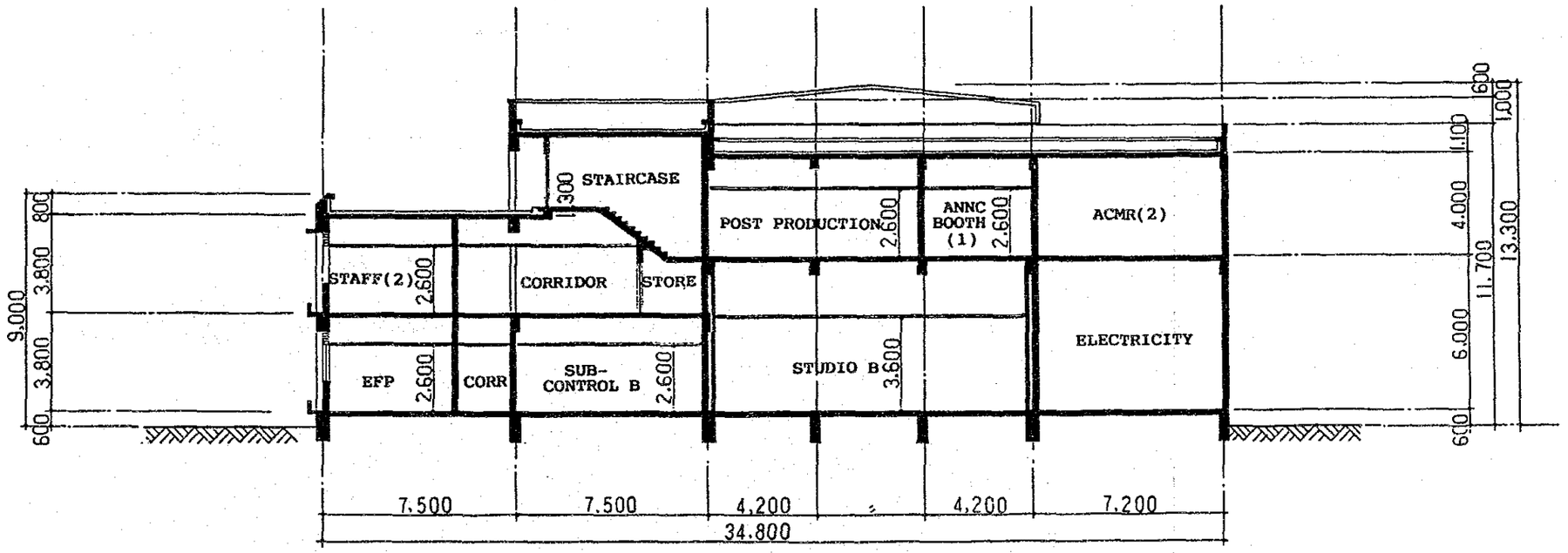


EAST ELEVATION

ISLAMABAD ETV CENTRE
ELEVATION 1:200

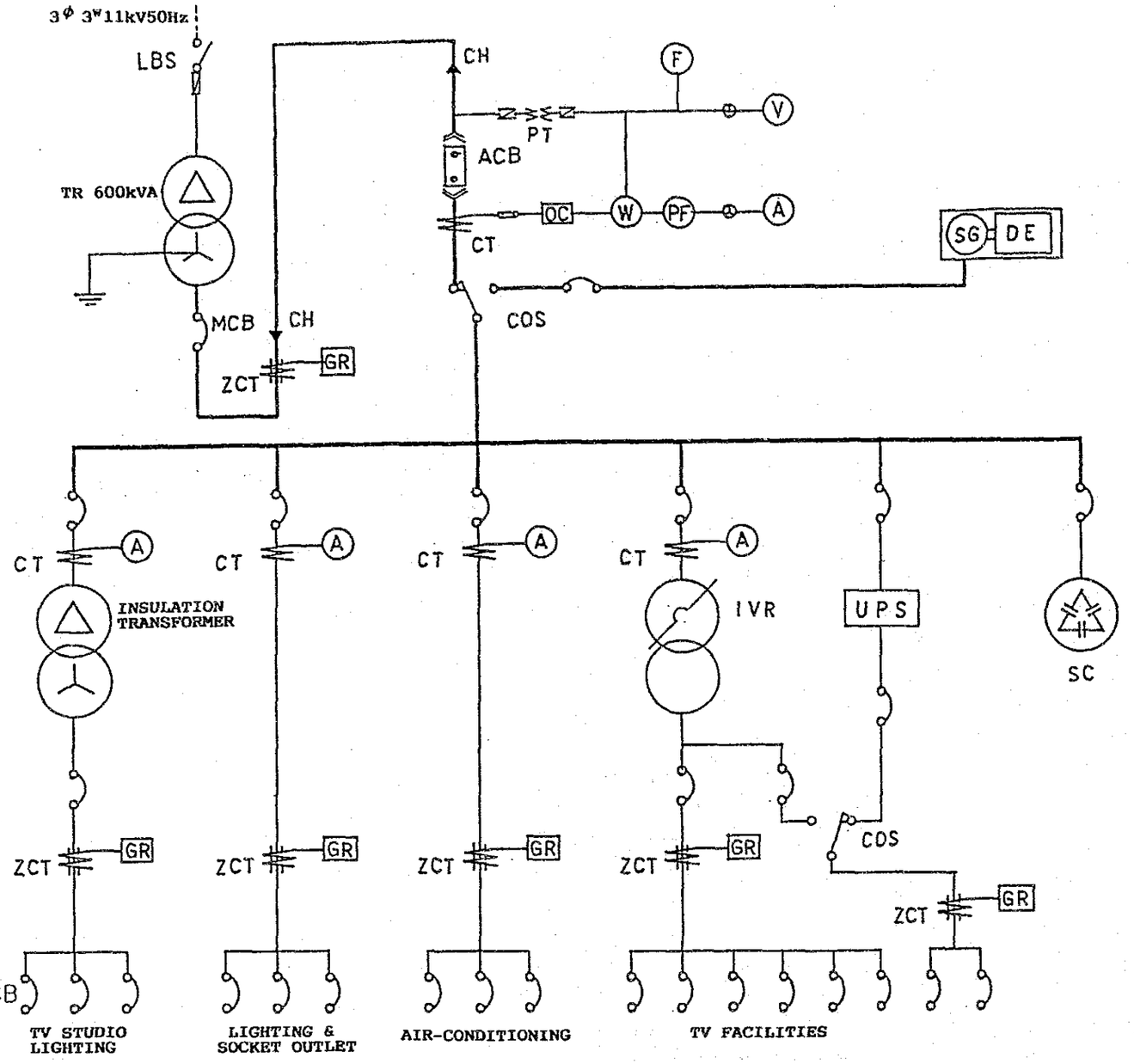


SECTION A-A



SECTION B-B

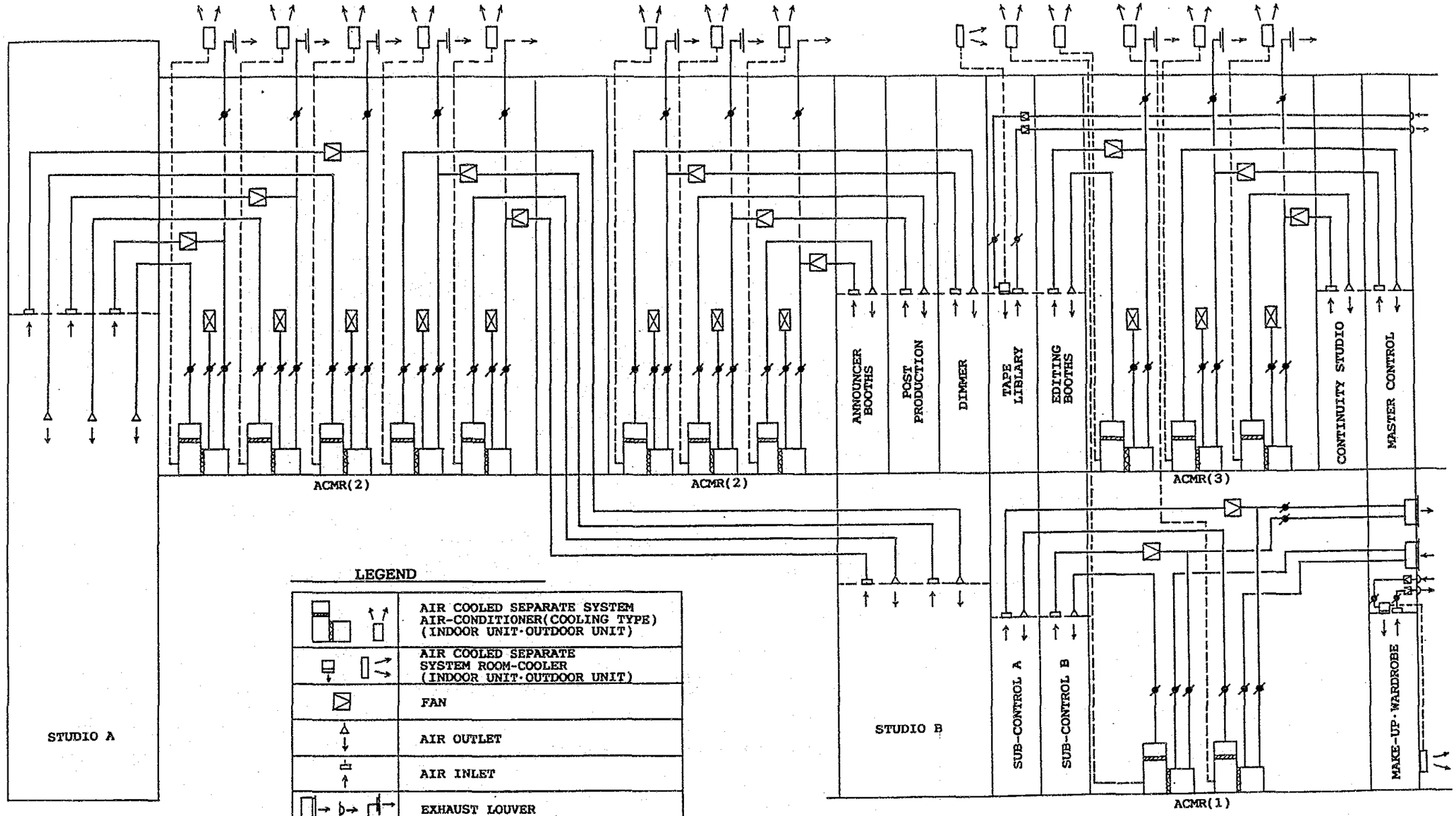
ISLAMABAD ETV CENTRE
SECTION 1:200



LEGEND

CH	CABLE HEAD
ZCT	ZERO PHASE-SEQUENCE CURRENT TRANSFORMER
TR	TRANSFORMER
PT	POTENTIAL TRANSFORMER
ACB	AIR CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
OC	OVER CURRENT RELAY
W	WATT METER
PF	POWER FACTOR METER
F	FREQUENCY METER
V	VOLT METER
A	AMMETER
MCB	MOLDED CASE CIRCUIT BREAKER
GR	GROUND RELAY
AS	PHASE CHANGE OVER SWITCH FOR AMMETER
VS	PHASE CHANGE OVER SWITCH FOR VOLTMETER
COS	CHANGE OVER SWITCH
LBS	LOAD BREAK SWITCH
IVR	INDUCTION VOLTAGE REGULATOR
SG	SYNCHRONOUS GENERATOR
DE	DIESEL ENGINE

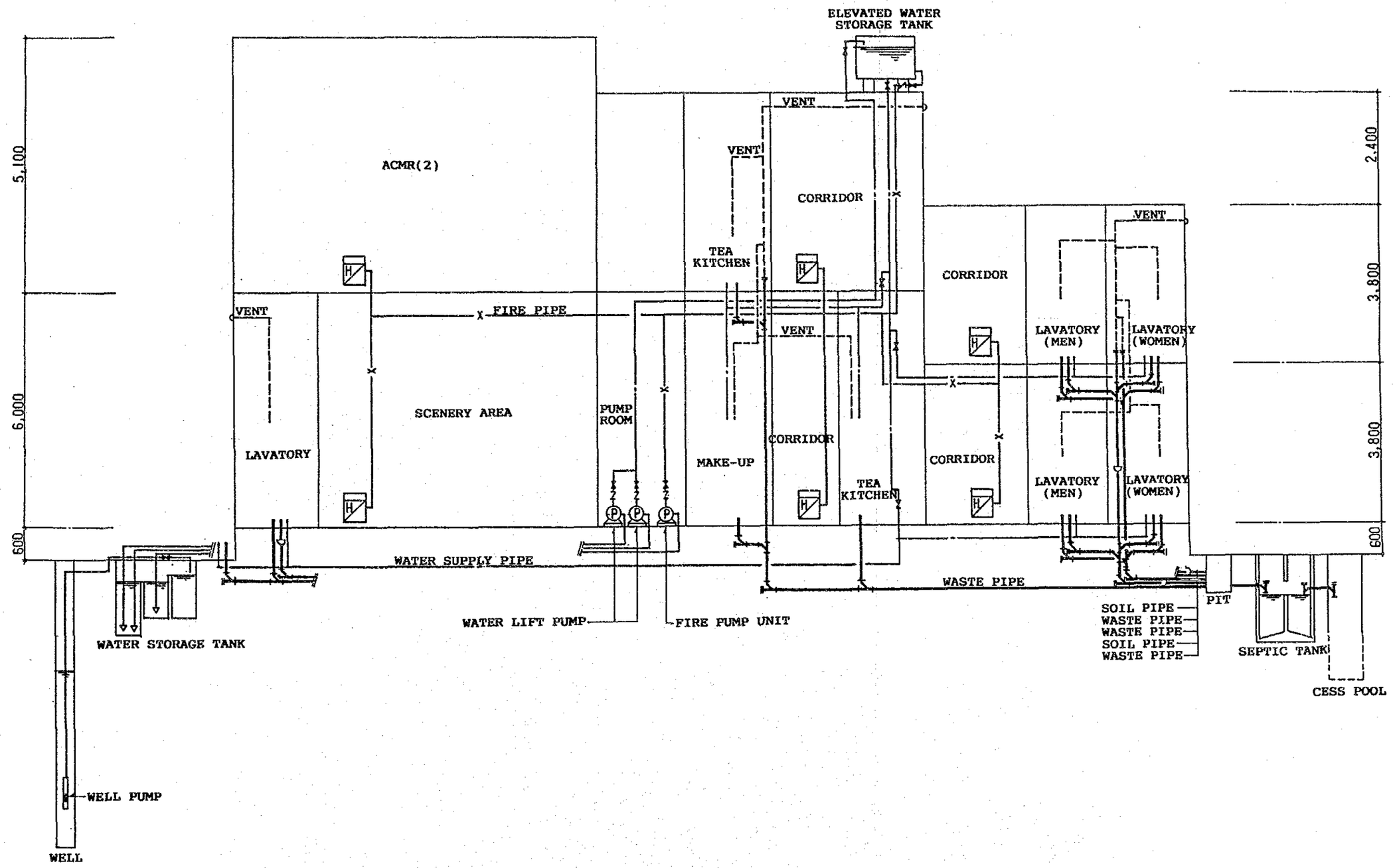
SEQUENCE DIAGRAM OF ELECTRICAL INSTALLATION



LEGEND

	AIR COOLED SEPARATE SYSTEM AIR-CONDITIONER(COOLING TYPE) (INDOOR UNIT·OUTDOOR UNIT)
	AIR COOLED SEPARATE SYSTEM ROOM-COOLER (INDOOR UNIT·OUTDOOR UNIT)
	FAN
	AIR OUTLET
	AIR INLET
	EXHAUST LOUVER
	AIR INTAKE LOUVER
	DAMPER
	DUCT
	REFRIGERANT PIPE

SCHEMATIC DIAGRAM OF AIR-CONDITIONING SYSTEM



SCHEMATIC DIAGRAM OF PLUMBING