MINISTRY OF INFORMATION
THE PEOLE'S REPUBLIC OF BANGLADESH

No. 1

BASIC DESIGN STUDY REPORT ON THE PROJECT FOR REHABILITATION OF DHAKA TELEVISION IN THE PEOPLE'S REPUBLIC OF BANGLADESH

MAY 1997

Japan International Cooperation Agency
NHK Integrated Technology Inc.

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PREFACE

In response to a request from the Government of the People's Republic of Bangladesh, the Government of Japan decided to conduct a basic design study on the Project for Rehabilitation of Dhaka Television in the People's Republic of Bangladesh and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Bangladesh a study team from 10 March to 17 March 1997.

The team held discussions with the officials concerned of the Government of Bangladesh, and conducted a field study at the study area. After the team returned to Japan, further studies were made, and as this result, the present report was finalized.

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

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

May 1997

Kimio Fujita
President
Japan International Cooperation Agency

May 1997

LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for Rehabilitation of Dhaka Television in the People's Republic of Bangladesh.

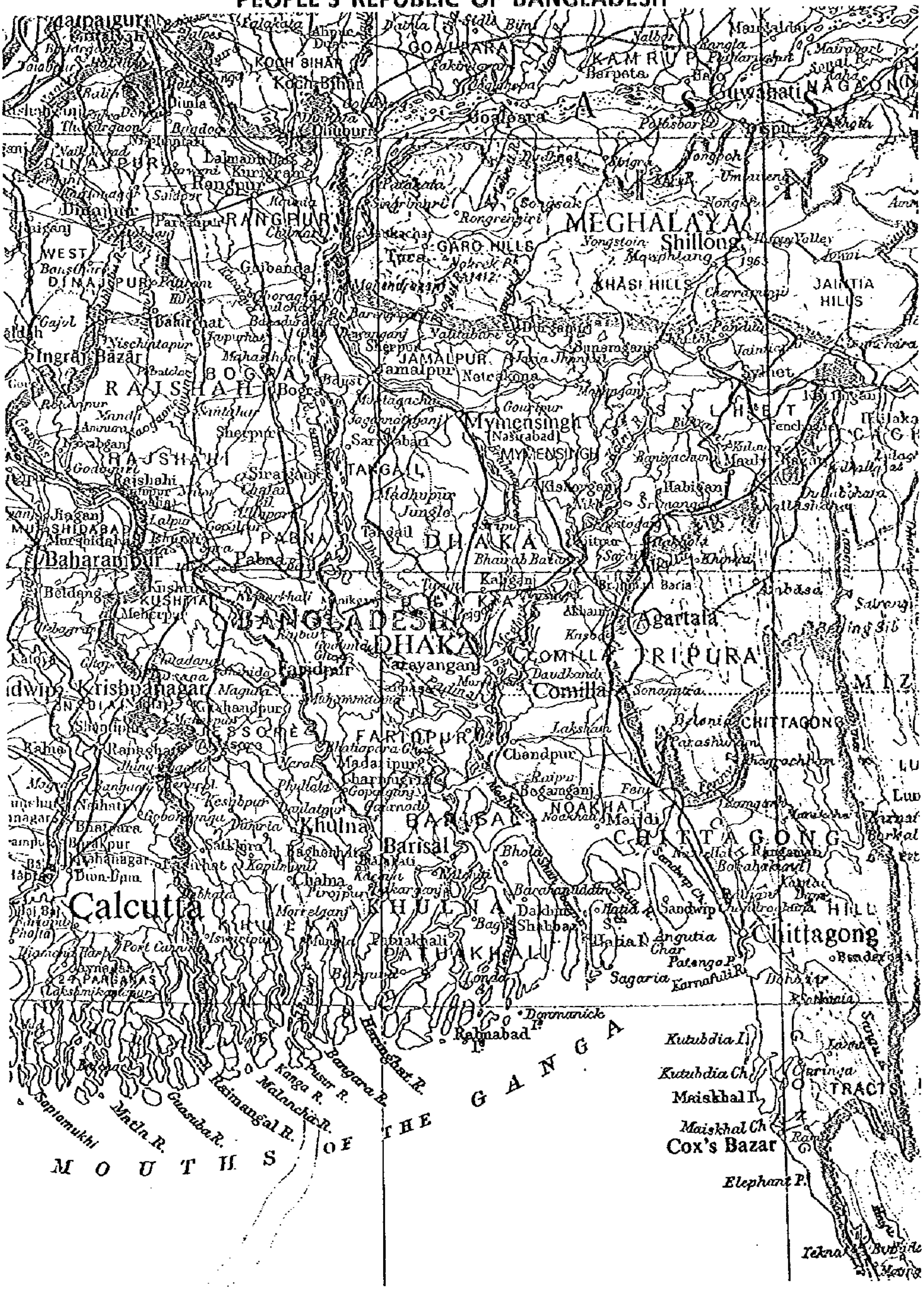
This study was conducted by NHK Integrated Technology Inc., under a contract to JICA, during the period from 26 February to 19 June 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Bangladesh and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,

Osamu Karasaki
Project manager
Study team on the Project for
Rehabilitation of Dhaka Television
NHK Integrated Technology Inc.

PEOPLE'S REPUBLIC OF BANGLADESH



ABBREVIATIONS

BTT	Bangladesh Telegraph & Telephone
BTV	Bangladesh Television
CCIR	International Radio Consultative Committee
ERD	Economic Relations Division
ITU	International Telecommunication Union
JIS	Japanese Industrial Standards
NBA	National Broadcasting Authority
RB	Radio Bangladesh

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Chapter 1

Background of the Project

Chapter 1 Background of the Project

1-1 Inception of the Project

Television broadcasting in the People's Republic of Bangladesh is entirely under the operation of Bangladesh Television (BTV) which is under the jurisdiction of the Ministry of Information, the National Broadcasting Authority. There are no commercial broadcasting stations. The television broadcasts in Bangladesh play an important role in education and the promotion of the government's development plans. Television broadcasts which appeal to the audio and visual senses are particularly effective in a country like Bangladesh which has a low literacy rate. The nation's fourth five-year plan emphasizes the importance of television broadcasts and makes it a major aim to maintain them.

Based on this policy, BTV put its energies into the construction of a new station building, including three studios, inside the Dhaka Television Centre (completed in 1990). Based on this same policy, BTV has made a request for grant aid assistance to the Government of Japan to help in the implementation of its expansion and rehabilitation plans designed to expand and recover the station's capacity through the establishment of new equipment as well as the rehabilitation of existing equipment in the old station building.

Based on this request, the Government of Japan decided to conduct a basic design study on the Project for the Rehabilitation of Dhaka Television through the renovation of its current equipment. Following this decision, the Japan International Cooperation Agency (JICA) dispatched a basic design study team to the People's Republic of Bangladesh to conduct investigations from 12 June to 2 July 1993.

The study team conducted its site survey by consulting with the ERD (Economic Relations Division, Ministry of Finance), Ministry of Information, Bangladesh Television and other relevant parties representing Bangladesh.

While conducting the site survey, the team listenend to and confirmed the background of the Project, beginning with its adoption and leading to the requests made for Japanese assistance, as well as the specific content of the request. Furthermore, the team examined the conditions of the current Dhaka Television Centre, which form the basis of the request, and conducted consultation on the specific scale and content for the implementation of the Project.

Following the site survey and return to Japan, the team conducted analyses and examination which confirmed the adequacy of the Project as a project for grant aid assistance, made basic designs for the facilities necessary and most appropriate for implementing cooperation, and drafted the final report. In order to explain and discuss on its contents, JICA dispatched another mission from 9 September to 18 September, 1993.

The Project was approved by the Government of the People's Republic of Bangladesh in May 1994. It has passed more than three years from submission of the Basic Design Study Report, and it is supposed that possibility of change of the request will occur. Hence, JICA decided to conduct a Study and sent the study team.

The member list of the stydy team, schedule of the survey, list of interviewees, minutes of discussions and other information are included in the data assembled in this report.

1-2 Outline of the Request

BTV planned a expansion and rehabilitation plan for increase of broadcasting hour and improvement of programme quality. The content of this plan is a large scale as follows (Table 1-2-1).

Table 1-2-1 First Request from BTV

Item	Name of Facilities	Number of sets	Remarks
1	New Studio Building Facilities		
1- 1	Drama Studio	1	
1- 2	Small Studio	1	
1- 3	News Studio	1	
1- 4	Post Production Room	2	
1- 5	VTR Editing Facilities	6	
1- 6	Audio Editing Facilities	1	
1- 7	Measuring Instrument	1	
1- 8	Power Supply Facilities	1	
1- 9	Telephone Exchange	1	
1-10	Elevator	1	
1-11	ENG Equipment	5	
1-12	Fire Fighting	1	
1-13	Spare Parts	1	
1-14	Air-Conditioning	1	
2	Existing Studio Building Facilities		
2- 1	Master Control Room	1	
2- 2	Drama Studio	1	audio and lighting only
2- 3	Small Studio	1	ditto
2- 4	News-Continuity Studio	1	2 cameras only
2- 5	U-Matic VTR for Studio	6	
2- 6	Video Monitors	1	
2- 7	Auditorium	1	4 cameras only

In response to this request, the Government of Japan decided to implement a basic design study, focusing on the rehabilitation of equipment within the existing station buildings. Following this decision, the Japan International Cooperation Agency (JICA) dispatched a basic design study team to Bangladesh for 21 days between 12 June 1993 and 2 July 1993.

The following is an outline of the study results and selected equipment for the Project (Table 1-2-1).

Table 1-2-2 Result of the Basic Design Study

Name of Facility	Number of Sets	Content
1. Master Control Room	1	This facility has three-channel programme transmission capacity. It manages the assignment and switching of programmes from outside stations, the assignment, switching and transmission of programmes produced within the station as well as the generation and distribution of standard sync. pulse signals.
2. Assignment Switcher	1	This facility consists primarily of the assignment switcher which selects the new or existing VTR and telecine devices and switches between recording and playback functions.
3. News Continuity Studio	1	This studio facility is for the production and transmission of news programmes.
4. Drama Studio Facility	1	This facility is for the production of drama programmes as well as music and other large-scale programmes.
5. Small-scale Studio Facility	1	This facility is for the production of small-scale music programmes, talk shows, educational programmes and other relatively small-scale programmes.

As the results of the Study, whole cameras and production switchers of three studios are digitized, the other equipment remains analog system.

Chapter 2

Contents of the Project

Chapter 2 Contents of the Project

In response to the request of the Government of the People's Republic of Bangladesh, in 1993, JICA implemented Basic Design Study on the Project for Rehabilitation of Dhaka Television. The Study Team had drawn up the Basic Design Study Report and submitted to both Governments. The project was approved by the Government of the People's Republic of Bangladesh in May, 1994. It had passed more than three years from submission of the Basic Design Study Report, and it is supposed that possibility of change of the request will be occurred.

Hence, JICA decided to conduct a Examination Study and sent the study team.

The purpose of the Study is to review the result of Basic Design Study on the Project for Rehabilitation of Dhaka Television in 1993, and verify the effect of the Project implementation and the pertinence of Japan Grant Aid Scheme.

And to make the Study Report on the basic design which is necessary and suitable contents and scale of equipment/facilities.

2-1 Objectives of the Project

Television broadcasting in Bangladesh play an important role in education, promotion of the government's development plans and other areas. The importance of television broadcasting is also emphasized in the nation's fourth five-year plan, in which one of the major aims is to provide for these facilities. BTV currently has only one station, the Dhaka Television Station, which performs programme production functions. In 1980, this station began to produce colour programmes, but not all of the equipment were converted for these purposes. The usable facilities (mainly audio equipment and lighting equipment) were used as they were. Now, even the new equipment has become over 17-years old and other equipment has become dysfunctional. For this reason, the facilities are not functioning at full capacity.

Although, studio facilities has completed in Chittagong Television Station, and programme production has started. But, these programmes are only for local broadcasting use.

The Project aims at rehabilitation of programme production function of BTV, increasing of programme production ability with effective production, and contributing to improve broadcasts qualities.

2-2 Basic Concept of the Project

2-2-1 Appropriateness and Necessity of the Project

In addition to the live news broadcasts, which are run six times a day, BTV currently broadcasts eight hours and 45 minutes on weekdays (Saturday to Thursday) and 13 hours and 45 minutes on holiday (Friday).

The studios and auditorium facilities are fully occupied. Since eight drama programmes are produced a month, the drama studio is used for production every day except Friday. A total of 12 educational and music programme are produced a week in the small studio. In spite of the superannuation of equipment and the occurrence of equipment failures, the programme production efforts of BTV are quite significant.

Due to a shortage of studios, the auditorium is used not only for programme open to the public, but also as a substitute for studios which are ordinarily used to produce programmes.

The BTV Dhaka Television Centre is in critical condition. The Project is designed to rehabilitate the facilities of the station in order to normalize its operations. The improvement in the quality of programme will contribute to improved service for viewers. BTV provides coverage to 80% of the population. This means that approximately 88 million of the nation's 109 million people will receive the benefits.

2-2-2 Component Factors of the Project

The Project focuses on the rehabilitation of equipment for the existing station building. Examinations were conducted prior to the site survey.

The content of the request is shown in detail below.

① Master control room
② Lighting equipment and audio equipment for the large and small studios.
③ Cameras for News-continuity studio
④ U-match VTR used for studio
⑤ Video monitor
⑥ Four colour cameras for Auditorium

These requests are for the unsystematic rehabilitation of superannuated equipment. This does not improve the functioning of the entire system. Taking item ③ above (Continuity studio) as an example, if only the camera is replaced and some kind of break down is occurred to the video and audio equipment within the sub-control room, the Continuity studio cannot functioned systematically. This would be an extremely ineffective investment.

The study team considered the rehabilitation of equipment systematically and proposed the following items.

① Master control room
② Assignment switcher
③ News-continuity studio
④ Large drama and small studios

Assignment Switcher consists of VTR Recording Switcher, VTR Playback Switcher and Telecine Switcher, and they will be installed VTR Room and Telecine Room respectively.

Recording and playback operation for VTRs, including existing 1-inch VTRs, 3/4-inch VTRs and newly equipped four 1/2-inch VTRs, will be controlled by this Switcher. Small capacity switcher is used currently.

Recently, we have learnt that the Bangladesh Television has requested the introduction of digital television technology in its system, which has been spreading widely in the world broadcasting industry.

The digitalized equipment has almost the same operation method as the conventional analog equipment. Furthermore, it has very flexible capability such as a complex and diverse picture processing by using advanced operation technique, the degradation of picture quality is minimum and it can maintain a settled performance for long period of time without a periodical adjustment.

Due to such superior characteristic as mentioned above, the digital technology has been introduced in the field of digital video effects and television system converter etc. which were difficult to realize by analog technology. The development of digital circuit design technology and IC manufacturing technology have made it possible to introduce the digital technology into studio system equipment such as Camera, Vision Switcher, Audio Mixer and VTR, and recently its advantage is being shown widely in daily operation of the broadcasting stations.

Considering the fact that the cost of digital equipment is recently becoming a degree of slightly higher than an analog equipment, the study team has made it a rule to judge whether the digital equipment be introduced or not and to what extent it will be introduced, based on the relation with the future plan and the fitness in present operation, after confirming firmly the request of the Bangladesh Television.

The site survey was done based on these items. Consultations were conducted and discussions were made with BTV representatives.

2-2-3 Basic Concept of the Project

The Dhaka Station is currently the only station producing programmes for BTV. Site surveys revealed that equipment had become more superannuated than originally imagined in Japan, and because spare parts could not be procured, some of equipment was left unable to be repaired. Since studios are operating constantly, the team decided it was essential to rehabilitate both drama studio and small studio facilities.

Exchange work of acoustic material in studios, which was not included in the request of BTV and as a result of discussion at the time of Basic Design Study the work will be done by BTV, should be implemented by Japan side. As a result of discussion at the time of explanation for draft final report is as follows:

1) BTV cannot control the implementation schedule by themselves, because of internal regulations BTV cannot place an order with civil company for an article. In this case the internal finishing work (exchange work) will delay sometime. BTV worry about this matter.

2) The exchange work should be done according to whole implement schedule. If the schedule delayed, not only whole schedule will delay but also operation term of temporary facilities will prolong. The operation term of temporary facilities should be kept as short as possible to prevent possibilities of occurrence of trouble and difficulty programme compilation.

As a result of mentioned above, the Study team concluded that it is the best way to implement the internal finishing work by Japan side. Therefore, the work will be include in the Project.

Such Digital Equipment as Cameras and Vision Switchers will be

introduced in three studios. These equipment have almost the same method in operation as the analog equipment and the advantage of long term stable operation will be realized. Moreover, it will be effective as the start point of digitization plan.

The study team also proposed the introduction of the Digital VTRs, but the Bangladesh Television indicated clearly the necessity of maintaining the interchangeability of recorded tapes with the Chittagong station where the VTRs, whose input and output signals were digital but tape format was analog, were introduced recently by the aid of France. After discussions, it was decided to introduce the analog VTRs.

2-3 Basic Design

2-3-1 Design Concept

BTV has enacted a rehabilitation plan based on future broadcasting plans.

The rehabilitation carried out through the Project plays a very important role in the fulfillment of this project.

Consideration will be given to the following points when making concrete plans.

① The structure of the existing station building will be investigated and facilities will be arranged in such a way as to maximize the functions of each facility.

② Master control room facility and assignment switcher facility will be designed with sufficient consideration to future expansion.

③ In determining the types and specifications for each facility, special emphasis will be placed on structural simplicity and durability and the availability of extra items and consumables.

④ In accordance with CCIR technical standards, equipment specifications will give consideration to electrical and mechanical safety and durability.

⑤ Consideration will be given to recent technology trends in the television industry. Facilities employing these new technologies will be introduces.

Based on the above design policy, the following new equipment will be introduces.

(1) Introduction of CCD camera

Charge Coupled Devices (CCD) are one type of solid-state pickup devices. These devices have made considerable technological progress in the last several years.

In comparison with the conventional image pickup tube method, these devices are smaller sized, lighter weigher and have similar picture quality. They are also easy to handle. The CCD element, in particular, can be used semi-permanently, so there is no need to change elements.

This makes the camera nearly maintenance free.

The CCD camera has replaced the image pickup tube-type camera as the most commonly used camera in the world.

(2) Introduction of the digital video production switcher

The digital video production switcher is used in many broadcasting station in the world, and it is easy to connect with digital camera and digital video effect. Moreover, it is effective to digitalize the switcher for adoption of digitalized equipment by BTV in near future.

(3) Introduction of the analog 1/2-inch VTR

Currently, BTV uses primarily 1-inch and 3/4-inch VTRs. 1/2-inch VTRs are the most commonly used in the world because they are small sized and lightweight in addition to having high quality and operability. Furthermore, the picture quality is not reduced as a result of repeated dubbings. Accordingly, the broadcasting station should be equipped with these 1/2-inch VTRs as a medium for programme exchange.

2-3-2 Examination of Design Conditions

In designing each system, sufficient consideration will be given to BTV operations and the following will be treated as main conditions.

(1) Master Control Room Facilities

1) The programme sending-out equipment requires three programme lines including those for local broadcasting, network line and satellite transmission. Two of these systems optimize the super imposition functions which are capable of simultaneously superimposing the time signals and stations logo signals.

2) There is a need for a system with an alternative emergency device which can quickly respond to system problems.

3) Consideration must be given to future expansion by ensuring that the number of sending-out switcher input is sufficient. Extra spaces

must be provided on the equipment racks for equipment to be installed future.

(2) Assignment Switcher Facility

1) Consideration must be given to future expansion by insuring that there is enough input number in the VTR recording switcher, playback switcher and telecine switcher.

2) Dubbing between each type of VTR can be carried out easily.

(3) Studio Facility

1) Drama studio (floor space 330m²) and small studio (floor space about 210m²)

These studios are used primarily for drama programmes and music and talk show programmes, respectively.

a) The number and specifications of cameras must enable free and rapid shooting of the stage and set.
b) Video production switcher must have special effects functions which are able to sufficiently express the intentions of the presentation directions.
c) Audio devices must have various mixing functions and the capacity to clearly collect sounds within a large studio.

2) News continuity studio facility

The strengthening and improvement of news programme content and the expansion of broadcasting hours is an important issue for BTV.

In addition to the production of regular news programmes, this studio needs to have a function which makes it possible to insert live programmes from news scenes by OB-Van, and functions for producing simple information programmes and other functions. As a programme sending-out equipment, this facility forms the core of the station together with the master control room facility.

Required conditions are as follows.

a) This facility must have functions enabling simple VTR editing during non broadcasting hours.

b) A prompter equipment must be attached to the camera to increase presentation effects.

c) This facility must also have sufficient functions as an continuity studio.

2-3-3 Basic Plans

(1) Layout Plans of Equipment

New equipment installed according to this project must be arranged in the location as the existing equipment, which will first be removed. Accordingly, there will be no major changes in the placement of equipment. However, due to an absolute condition prohibiting the cancellation of broadcasts during construction, there is a need to change the position of the master control room equipment and assignment switcher equipment. This equipment, however, will remain in the same room as the existing equipment.

After installing the new equipment, making adjustments and beginning operations, a portion of the existing equipment will be removed. The positioning of the new equipment is shown in the equipment layout drawings.

(2) Outline of the Facilities and Equipment

1) Master Control Room Facility

The master control room facility consists of a video and audio sending-out switcher, playback-only 1/2-inch VTR, captions scanner, character generator, frame synchronizer, video processor, station logo generator, cassette tape recorder, video and audio remote switcher, clock system, intercom, TV In-house Monitor, and other equipment. There is a need for three independent programme lines, including a local broadcasting, network line and satellite transmission. For this reason, three sending-out switchers are required.

For two of these systems, the local broadcasting and the network line, a facility which improves super-imposition functions will be used.

The total number of input sources are 21 at present. In consideration of future expansion, however, there is a need for a

switcher capable of 28 inputs sources.

A reentry switcher is set up in the sending-out switcher output. If trouble is happened with the sending-out switcher, reentry switcher can be used as emergency switcher instead of sending-out switcher.

For inputting remote signals from outside of the station, four inputs are provided. In order to synchronize these remote signals with signals in the station, four frame synchronizers (F/S) are set up in each circuit.

This output is selected by the remote switcher and two lines each are assigned to the drama studio, small studio and news continuity studio.

This facility includes an intercom for communicating from the master control room to each studio, VTR, telecine room and maintenance room.

2) Assignment Switcher

Assignment switcher consists of VTR assignment switcher and telecine assignment switcher. These switchers are installed in the VTR room and telecine room, respectively.

Operations involving recording and playback of VTRs, including the existing 1-inch VTR, 3/4-inch VTR as well as the four 1/2-inch VTRs which will be established, are controlled entirely by this switcher. In consideration future expansion, the VTR and telecine switcher will be capable of expansion up to 32 inputs and 16 outputs. All of the cross-points of the switcher are audio follow video.

3) News-continuity Studio

In addition to producing regular news programmes, this studio also fulfills a role as a continuity studio. This studio is also capable of simple VTR editing operation during non-broadcasting hours.

After completing overall renovations of the existing facilities according to this project, operation involving VTR recording and playback will be entirely controlled by the assignment switcher. However, since this studio requires a variety of functions, three dedicated VTRs will be set up in the studio. Two of these will be the existing 1-inch B format VTRs and one will be a new 1/2-inch VTR.

Two cameras with prompter will be used to improve stage effects.

In order to enhance presentations, one digital video effect capable of three-dimensional special effects will be set up.

A 20-channel inputs mixer will be used for sound. In addition, two cassette tape recorder and one CD player will be set up.

In addition, video and audio monitors necessary for programme production and signal control will be provided.

4) Drama and Small Studio

These studios are used primarily for drama programmes and music and talk show programmes, respectively. Four new cameras will be installed in the drama studio and three in the small studio instead of the existing facilities. In the drama studio three large scale cameras with 7-inch view-finders and one small scale camera with high mobility will be used.

As noted in the section on the assignment switcher facility, the recording of programmes produced in the studio will be conducted entirely by the VTR which is selected by the assignment switcher. Accordingly, neither studio has a dedicated VTR.

The audio equipment in the drama studio require the capacity to clearly pick up sounds within a wide area. To achieve this, two large microphone boom stands which can be extended to a height of 4.5m will be set up. Lighting dimmer units for both studios will be mounted within the same equipment rack. These will be capable of efficient maintenance and control.

In addition, video and audio monitors necessary for programme production and signal control will be installed.

5) Measuring Instrument

One set of measuring instrument will be provided for the video and audio measurement. In the concrete, this consists of a television signal generator, wave form monitor, vectorscope, oscilloscope and a audio distortion meter/oscillator for audio measurement.

6) Others

- Spare parts consisting primarily of modules and units and lamps for lighting will be prepared.

- Seven new analog 1/2-inch VTRs will be set up.
  It is so difficult for BTV to procure the blank tapes for 1/2-inch VTR on the market that the lowest number of blank tapes are prepared to use for the time being.
- Acoustic materials for interior finishing work of studios are prepared because it is difficult to procure on the Bangladesh market.

(3) Determination of Design Conditions

The following design conditions have been drawn up to suit the purpose and operation of the facility. Asterisked equipment is changed after the Basic Design Study.

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
A. Master Control Room Equipment						
1.	Video equipment (including a portion of audio equipment)	Equipment for selecting and sending out programmes or commercials according to the broadcasting station's programming sequence. All broadcast television programmes are sent to the transmitter station and local broadcasting stations via this equipment. This making vital for the broadcasting station.	Video switcher (28 or more inputs, simultaneous switching of video and audio), with distributor, equalizer, delay line, pre-selection switcher, monitor switcher, remote switcher.	The programme switching equipment will have at present 21 inputs, consisting of 4 from the studio, 5 from VTRs, 4 from outside the station (such as from satellite transmissions or the OB-Van), 2 from the electronic character generator (for putting names on the screen, or for adding explanations in Bengali to foreign programmes), 1 from the caption scanner (device for generating text or graphics), and 1 for test or reference signals.	1 set	Sending-out sections are necessary three sets, that is, for network, for local station and for satellite.
2.	Synchronizing pulse generator	The "heart" of a broadcasting station, this device generates reference pulses for unifying all video equipment, will also be provided to other required locations in the station.	PAL colour system; automatically switches between active and spare; includes distributor	Shall be able to automatically switch to spare, to ensure stability	1 unit	
3.	Frame synchronizer	Device for synchronizing outside signals and in-house signals, thereby maintaining stability. Necessary when broadcasting different types of programmes.	Digital	Synchronizer that is stable and does not harm picture quality.	1 set	External broadcasts include satellite broadcasts and OB-Van broadcasts. 1 unit is required fir the broadcasting of outside broadcasts through stable switcher.
4.	Video processor	As the video signal standards for satellite is severe, video processor is necessary to adjust video level and sync. level.	With remote control function	As the equipment is installed in equipment rack, it is necessary to add remote control function.	1 set	
5.	VIT signal inserter	VIT signal is used to check the characteristic of transmission line. This equipment used for insert the VIT signal.	With VIT signal generator		2 units	The equipment is installed at the input of each transmission lines, one for network and another for satellite.
6.	Character generator	Device for digital generation of text for subtitles, required for putting titles on screen, or for adding Bengali explanations to foreign programmes.	Bengali; with disk memory; with monitor; TBC; console included	In the Bengal language because it is superimposed on screen. Characters can be freely selected from keyboard. Shall include disk memory, for continuously outputting character patterns input in advance.	2 units	Contents to be superimposed are different, one use for network output and another use for satellite output.
7.	Caption scanner	Device for generating text or graphics, for titles and other captions.	Includes console; with monitoring function	Shall include frame memory to enable continuous output	1 unit	

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
8.	Video timer	Device for inserting a time display on screen or in-between programme	Digital Display; can be positioned anywhere on screen		1 unit	
9.	Station logo generator	Device for putting the station logo onto the screen			1 set	
10.	Audio equipment	For carrying out various final refinements on the audio signal	Frequency bandwidth 20kHz or more, with distributor, limiter amp, jack panel, cassette tape recorder, CD Player	One set of audio equipment for the Master Control Room. Cassette tape recorders and CD players are used to add music or recorded narrations to station logo sequences, promotional content, or messages.	1 set	Number of limiter amplifier is 3 units according to the number of outputs of Master Control Room
11.	analog 1/2-inch VTR	analog video cassette recorder with a tape width of 1/2-inch, for recording and playing back programmes.	For playback only; with built-in TBC; with monitoring function	A TBC (Time Bases error Corrector) function shall be built-in, for correcting the deviation occurring between programmes during editing. VTR of professional grade.	2 units	At least two units are required to play back, switch between, and transmit recorded programmes with ease.
12.	Clock system	To indicate accurate time is necessary to operate the broadcasting station.	Master and slave clock system, two types of slave clock are available, one type is one second drive and another is 30 seconds drive.	One master clock drives 25 slave clocks.	1 set	10 one second drive and 15 thirty seconds drive slave clocks.
13.	Special interphone system	To connect from Master Control Room to each facility rooms directly.	Star-type connection is adopted.	Communication between each room is available.	1 set	
14.	Monitoring equipment	Monitoring and appraising video and audio quality.	PAL colour system video monitors with VE monitor, line monitor, TV signal receiver, waveform monitor, vectorscope, audio monitor, monitor rack.	Video monitors are for sources such as cameras or VTRs and number 26 in total. VE monitor, waveform monitor, vectorscope are for technical checks, line monitor is for monitoring studio output.	1 set	A quantity equal to the input/output number of video sources will be provided.
B. Assignment Switcher						
1.	Video equipment (including a portion of audio equipment)	Distribution switcher for VTR is used for select input and output signals of VTR which consist of the plural form and the plural number. Distribution switcher for Telecine is used for distribute the output signal of Telecine to other room.	Each distribution switcher is composed of 16 inputs and 16 outputs, and have expansive until 32 inputs. Audio follows video; including distribution amplifiers.	Existing switcher have 10 inputs and 13 outputs. Considering to expansion of VTRs and Telecines in near future, the switcher have expansive 32 inputs.	1 set	Consist of VTR recording, VTR play out, Telecine outputs distribution switcher and distribution amplifier.
2.	Audio equipment	The equipment is used for distribution of audio signals.	Audio distribution amplifier have 1 input and more than 2 outputs.		1 set	Necessary amount of distribution amplifiers for making up system to be included.
3.	Monitoring equipment	To observe input and output signals.	Including vectorscope, waveform monitor, video monitor, switcher for monitoring signal and audio speaker.	To satisfy checking function for input and output signal.	1 set	One for VTR and one for Telecine.

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
C. News-Continuity Studio						
1.	Colour cameras *	Equipment for shooting programme material in the studio	3CCD Portable type digital processing cameras with 14x zoom lens, pedestal dollies, cables (triaxial), and including tele-prompter.	Picture quality of 3CCD portable type cameras is good and the cameras are easy to handle. Camera performance significantly affects programme quality. Tele-prompter is necessary for production of news programme.	2 units	To switch between scenes with ease and produce news or information programmes of good quality, experience dictates at least two units are necessary.
2.	Video equipment *	Equipment for switching between video sources such as cameras or VTR. Used in the production studio to create programmes according to the director's designs.	digital video switcher (Model 2M/K, 18 or more inputs) with video distributor, jack panel, VE monitor switcher.	The 2M/K model will be used to enable switching of scenes to produce informative programmes with abundant content. Input consists of 2 cameras, 3 VTRs, 1 caption scanner, 1 character generator, from each studio, 2 telecines, and 2 remote signals. VE monitor switcher is used for technical checks.	1 set	
3.	Digital video effect	Equipment for rotating picture for special effect.	3 Dimensional type	To make 3 dimensional special effect processing	1 set	
4.	Audio equipment	Mixing audio signals such as those from the microphones, and including these in programmes. Used to produce programmes according to the director's design.	Audio mixing amp with a frequency band range of 20kHz or more (20 inputs or more), with distribution amp, cassette tape recorders, CD players, microphones, mike stands, jack panel	At least 20 mixer inputs are required, namely 3 microphones, 3 VTRs, 2 cassette tape recorders, and 1 CD player from each studio, 2 telecines and 2 remote signals. Cassette tape recorders are, like tape recorders and CD players, indispensable as audio equipment.	1 set	
5.	Monitoring equipment	Monitoring and appraising video and audio quality.	PAL colour system video monitors with VE monitor, line monitor, TV signal receiver, waveform monitor, vectorscope, audio monitor, monitor rack.	Video monitors are for sources such as cameras or VTRs and number 20 in total. VE monitor, waveform monitor, vectorscope are for technical checks, line monitor is for monitoring studio output.	1 set	A quantity equal to the input/output number of video sources will be provided.
6.	Intercoms	Equipment that allows the staff involved in programme production to communicate with each other.	Studio intercoms with mono headphones	Serves as a communication line between cameramen, producers on the studio floor and sub-control staff. Includes studio talk-back function (allowing the studio floor to be contacted from the sub-control room directly).	1 set	
7.	analog 1/2-inch VTR	For playing back pre-recorded programme material, during programme recording or on location	For both recording and play back; with built-in TBC; includes monitoring function	A TBC (Time Bases error Corrector) function shall be built-in, for correcting the deviation occurring between programmes during editing. VTR of professional grade.	1 unit	1 unit for recording and playback.

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
8.	Synchronizing pulse generator	Equipment which generates signals for controlling video equipment. Serves as a standard for synchronizing studio video signals.	PAL colour system; includes distributors.	Pulse for standardizing video equipment is generated and distributed to various equipment. Reference signal (BB) from master control room is received and synchronized with main synchronizing pulse in the station.	1 set	
9.	Character generator	Equipment for generating Bengali characters to be superimposed on the screen.	In Bengali; with disk memory; includes console; with monitor	In the Bengal language because it is superimposed on screen. Characters can be freely selected from keyboard. Shall include disk memory, for continuously outputting character patterns input in advance.	1 unit	
D. Drama Studio Equipment						
1.	Colour cameras *	Equipment for shooting programme material in the studio	3CCD type digital processing cameras with 18× zoom lens, pedestal dollies, cables (triaxial)	Picture quality of 3CCD portable type cameras is good and the cameras are easy to handle. Camera performance significantly affects programme quality. 1 of 4 camera is portable type.	4 units	To switch between scenes with ease and produce drama programmes of good quality, experience dictates at least three units are necessary.
2.	Video equipment *	Equipment for switching between video sources such as cameras or VTR. Used in the production studio to create programmes according to the director's designs.	digital video switcher (Model 2M/K, 18 or more inputs) with video distributor, jack panel, VE monitor switcher.	The 2M/K model will be used to enable switching of scenes to produce drama programmes with abundant content. Input consists of 4 cameras, 2 VTRs, 1 caption scanner, 1 character generator and 1 telecine etc. VE monitor switcher is used for technical checks.	1 set	
3.	Audio equipment	Mixing audio signals such as those from the microphones, and including these in programmes. Used to produce programmes according to the director's design.	Audio mixing amp with a frequency band range of 20kHz or more (16 inputs or more), with distribution amp, cassette tape recorders, open reel tape recorders, CD players, microphones, mike stands, jack panel	At least 16 mixer inputs are required, namely 9 microphones, 1 VTR, 2 cassette tape recorders, 2 CD players, 1 telecine and 2 remote signals. Cassette tape recorders are, like tape recorders and CD players, indispensable as audio equipment.	1 set	To variegate programme production, 4 microphones of each type will be provided.
4.	Monitoring equipment	Monitoring and appraising video and audio quality.	PAL colour system video monitors with VE monitor, line monitor, TV signal receiver, waveform monitor, vectorscope, audio monitor, monitor rack.	Video monitors are for source such as cameras or VTRs and number 15 in total. VE monitor, waveform monitor, vectorscope are for technical checks, line monitor is for monitoring studio output.	1 set	A quantity equal to the input/output number of video sources will be provided.
5.	Intercoms	Equipment that allows the staff involved in programme production to communicate with each other.	Studio intercoms with mono headphones	Serves as a communication line between cameramen, producers on the studio floor and sub-control staff. Includes studio talk-back function (allowing the studio floor to be contacted from the sub-control room directly).	1 set	

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
6.	Synchronizing pulse generator	Equipment which generates signals for controlling video equipment. Serves as a standard for synchronizing studio video signals.	PAL colour system; includes distributors.	Pulse for standardizing video equipment is generated and distributed to various equipment. Reference signal (BB) from master control room is received and synchronized with main synchronizing pulse in the station.	1 set	
7.	Character generator	Equipment for generating Bengali characters to be superimposed on the screen.	In Bengali; with disk memory; includes console;	In the Bengal language because it is superimposed on screen. Characters can be freely selected from keyboard. Shall include disk memory, for continuously outputting character patterns input in advance.	1 unit	
8.	Lighting equipment	Equipment for illuminating the studio. Dimmer required for obtaining effect suited to design of programme.	Total output 160kW	Lighting is to be effectively used for adding depth to flat screen and making the picture easier to view.	1 set	Set lighting at 500W per 1m², bringing total for 320m² to 160kW.
E. Small Studio Equipment						
1.	Colour cameras *	Equipment for shooting programme material in the studio	3CCD Portable type digital processing cameras with 16× zoom lens, pedestal dollies, cables (triaxial)	Picture quality of 3CCD portable type cameras is good and the cameras are easy to handle. Camera performance significantly affects programme quality.	3 units	To switch between scenes with ease and produce small composition traditional music programmes of good quality, experience dictates at least three units are necessary.
2.	Video equipment *	Equipment for switching between video sources such as cameras or VTR. Used in the production studio to create programmes according to the director's designs.	digital video switcher (Model 2M/K, 18 or more inputs) with video distributor, jack panel, VE monitor switcher.	The 2M/K model will be used to enable switching of scenes to produce small scale programmes with abundant content. Input consists of 3 cameras, 1 VTR, 1 character generator, 1 telecine and 2 remote signals. VE monitor switcher is used for technical checks.	1 set	
3.	Audio equipment	Mixing audio signals such as those from the microphones, and including these in programmes. Used to produce programmes according to the director's design.	Audio mixing amp with a frequency band range of 20kHz or more (16 inputs or more), with distribution amp, cassette tape recorders, open reel tape recorders, CD players, microphones, mike stands, jack panel	At least 15 mixer inputs are required, namely 8 microphones, 1 VTR, 2 cassette tape recorders, 2 CD players, 1 telecine and 2 remote signals. Cassette tape recorders are, like tape recorders and CD players, indispensable as audio equipment.	1 set	To variegate programme production, 4 microphones of each type will be provided.
4.	Monitoring equipment	Monitoring and appraising video and audio quality.	PAL colour system video monitors with VE monitor, line monitor, TV signal receiver, waveform monitor, vectorscope, audio monitor, monitor rack.	Video monitors are for sources such as cameras or VTRs and number 14 in total. VE monitor, waveform monitor, vectorscope are for technical checks, line monitor is for monitoring studio output.	1 set	A quantity equal to the input/output number of video sources will be provided.

No.	Equipment	Usage	Specifications	Specification Grounds	Quantity	Quantity Grounds
5.	Intercoms	Equipment that allows the staff involved in programme production to communicate with each other.	Studio intercoms with mono headphones	Serves as a communication line between cameramen, producers on the studio floor and sub-control staff. Includes studio talk-back function (allowing the studio floor to be contacted from the sub-control room directly).	1 set	
6.	Synchronizing pulse generator	Equipment which generates signals for controlling video equipment. Serves as a standard for synchronizing studio video signals.	PAL colour system; includes distributors.	Pulse for standardizing video equipment is generated and distributed to various equipment. Reference signal (BB) from master control room is received and synchronized with main synchronizing pulse in the station.	1 set	
7.	Character generator	Equipment for generating Bengali characters to be superimposed on the screen.	In Bengali; with disk memory; includes console; with monitor	In the Bengal language because it is superimposed on screen. Characters can be freely selected from keyboard. Shall include disk memory, for continuously outputting character patterns input in advance.	1 unit	
8.	Lighting equipment	Equipment for illuminating the studio. Dimmer required for obtaining effect suited to design of programme.	Total output 100kW	Lighting is to be effectively used for adding depth to flat screen and making the picture easier to view.	1 set	Set lighting at 500W per 1m², bringing total for 200m² to 100kW.
F. Measuring Instruments						
1.	Oscilloscopes	For maintaining and servicing the video systems.	Measurement frequencies: 0-100MHz; dual channel type; with cart	Specifications required for video system checks. The waveform at two locations in one system is compared. Considerations are made to enable easy movement between measuring locations.	2 units	1 unit each is required for the broadcasting station and the transmitter station.
2.	TV test signal generator	Device for producing the various different test signals required for diagnosing the condition of equipment and maintaining the quality of the TV signal.	PAL colour system: 10 or more types of test signal	To test the TV system from the studio to the transmitter output, a test signal will be generated at the broadcasting station, and the signal will be checked at each of the points using oscilloscopes or waveform monitors.	1 unit	1 unit is required for the broadcasting station.
3.	Low-frequency characteristics measuring instrument	Instrument necessary for diagnosing the condition of audio equipment and maintaining the quality of audio systems.	Frequencies measured: 20Hz - 200kHz	Such parameters as the output level, signal-to-noise ratio, and harmonics distortion within this range will be measured.	1 unit	To be shared between the studios and transmitter station.
4.	Circuit testers	For everyday maintenance.	Standard testing device for measuring voltage, current, and resistance	To be used for everyday maintenance.	5 units	1 each for the OB-Van and transmitter station, and 3 for the broadcasting station.
5.	Vector scope	For measuring the colour composition of video signals.	PAL colour system	Of the same type as Bangladesh's broadcasting system.	1 unit	to be used where necessary for everyday maintenance.

(4) Equipment Plan

As a result of the examination of the design policies and conditions the compositions of the main equipment to be provided in each function room and its specifications are as follows.

1) Master Control Room

a) Video Equipment

① Programme Sending-out Switcher	3 sets	28-inputs, with audio switcher
② Monitor Switcher	1 set	28-inputs, with audio switcher
③ Remote Switcher	1 set	4-inputs or more, 6-outputs matrix switcher
④ Re-entry Switcher	1 set	4-inputs, 1-output, with audio switcher
⑤ Video distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑥ Video Equalizing Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑦ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.
⑧ Video Jack Field	1 set	20-inputs/outputs

b) Sync. Pulse Generating Equipment

① Sync. Pulse Signal Generator	2 sets	With test signal generator
② Automatic Changeover Switcher	1 set	
③ Pulse Signal Distribution Amplifier	1 set	Necessary amount of amplifiers for making

		up system to be included.
c) Frame Synchronizer (F/S)	4 sets	Digital system
d) Video Processing Amplifier	1 set	With remote control function
e) VITS Signal Inserter	2 sets	With VITS signal generator
f) Character Generator	2 sets	With TBC & monitor, Bengali.
g) Caption Scanner	1 set	With frame memory function, monitor
h) Video Timer	1 set	Display any position in the picture
i) Station Logo Generator	1 set	
j) Audio Equipment		
① Monitor Switcher	1 set	28-inputs or more
② Remote Switcher	1 set	28-inputs or more
③ Re-entry Switcher	1 set	4-inputs, 1-output
④ Audio Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑤ Limiting Amplifier	3 sets	
⑥ Audio Jack Field	1 set	
⑦ Cassette Tape Recorder	3 sets	
⑧ CD Player	1 set	
k) 1/2-inch VTR	2 sets	analog playback only, with monitor
l) Monitoring Equipment		
① Video Monitor	23 sets	

② 20-inch Video Monitor	3 sets	
③ Video Monitor	1 set	Precision type
④ TV Receiver	1 set	
⑤ Waveform Monitor	1 set	
⑥ Vectorscope	1 set	
⑦ Audio Monitor	1 set	With power amplifier
⑧ Monitor Shelf	1 set	

m) Clock System

① Master Clock Device	1 set	
② 1-second Slave Clock	10 sets	
③ 30-second Slave Clock	15 sets	

n) Room to Room Interphone	1 set	Star connection
o) TV In-house Monitor	1 set	
p) Operation Console	1 set	
q) Rack Assembly	4 sets	
r) Video Transformer	1 lot	
s) Power Distribution Board	1 set	
t) Installation Materials	1 set	

2) Assignment Switcher

a) Video Equipment

① VTR Recording Switcher	1 set	16-inputs, 16-outputs possible to expand up to 32-inputs
② VTR Playback Switcher	1 set	16-inputs, 16-outputs possible to expand up to 32-inputs
③ T/C Switcher	1 set	4-inputs, 16-outputs
④ Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making

		up system to be included.
⑤ Video Jack Field	1 set	20-inputs/outputs
b) Audio Equipment		
① VTR Recording Switcher	1 set	16-inputs, 16-outputs
② VTR Playback Switcher	1 set	16-inputs, 16-outputs
③ T/C Switcher	1 set	4-inputs, 16-outputs
④ Audio Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑤ Audio Jack Field	1 set	20-inputs/outputs
c) Monitoring Equipment		
① Monitor Switcher	1 set	Audio follow video, 3-inputs, 1-output
② Video Monitor	2 sets	
③ Waveform Monitor	2 sets	
④ Vectorscope	2 sets	
⑤ Audio Monitor	2 sets	With power amplifier
d) 1/2-inch VTR	4 sets	analog, Play/Rec, with monitor
e) 1-inch VTR	5 sets	Existing equipment
f) 3/4-inch VTR	1 set	Existing equipment
g) T/C Equipment	3 sets	Existing equipment
h) Operation Console	1 set	
i) Rack Assembly	4 sets	
j) Power Distribution Board	2 sets	
k) Installation Materials	1 set	

3) News-Continuity Studio

a) Colour Camera *

① Camera Head	2 sets	3-FIT CCD portable type digital processing camera, with viewfinder
② Zoom Lens	2 sets	More than 14 times
③ Pedestal	2 sets	
④ Camera Control Unit	2 sets	
⑤ Prompter	2 sets	Self stand type

b) Video Production Equipment

① Video Production Switcher *	1 set	Digital switcher, More than 18-inputs, 2-M/K
② Digital Video Effect	1 set	3 Dimension
③ Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
④ Video Jack Field	1 set	More than 20-inputs/ outputs
⑤ Character Generator	1 set	Bengali; with computer, TBC & monitor
⑥ Caption Scanner	1 set	With monitor
⑦ Delay Line	1 set	Necessary amount of amplifiers for making up system to be included.

c) Sync. Pulse Generating Equipment

① Sync. Pulse Signal Generator	1 set
② Pulse Signal Distribution Amplifier	1 set

d) Audio Equipment

① Audio Mixer	1 set	More than 20-inputs
② Cassette Tape Recorder	2 sets	
③ CD Player	1 set	

④ Audio Distribution Amplifier	1 set	
⑤ Audio Jack Field	1 set	More than 20-inputs/outputs
⑥ Microphones	6 sets	
Comprising;		
• Uni-directional Condenser Mic	2 sets	
• Uni-directional Dynamic Mic	2 sets	
• Uni-directional Cavalier Mic	2 sets	
⑦ Microphone Stand	4 sets	Desk stand
⑧ Cough-box	2 sets	
⑨ Desk	2 sets	
e) Monitoring Equipment		
① Video Monitor	16 sets	
② 20-inch Video Monitor	4 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	
⑤ Vectorscope	1 set	
⑥ Audio Monitor	2 sets	With power amplifier
⑦ Monitor Shelf	1 set	
f) 1/2-inch VTR	1 set	analog Play/Rec, with monitor
g) 1-inch VTR	2 sets	Existing equipment
h) Studio Intercom	1 set	
i) Studio Lighting Equipment	1 set	Lantern and Accessory
j) Switcher/PD Console	1 set	
k) Rack	3 sets	
l) Power Distribution Board	1 set	
m) Installation Materials	1 set	

4) Drama Studio

a) Colour Camera *

① Camera Head	4 sets	3-FIT CCD digital processing camera, with viewfinder. One set out of four is portable type.
② Zoom Lens	4 sets	More than 18 times
③ Pedestal	4 sets	
④ Camera Control Unit	4 sets	

b) Video Production Equipment

① Video Production Switcher *	1 set	Digital switcher, More than 18-inputs, 2-M/K
② Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
③ Video Jack Field	1 set	More than 20-inputs/ outputs
④ Character Generator	1 set	Bengali; with computer, TBC & monitor
⑤ Delay Line	1 set	Necessary amount of amplifiers for making up system to be included.

c) Sync. Pulse Generating Equipment

① Sync. Pulse Signal Generator	1 set	
② Pulse Signal Distribution Amplifier	1 set	

d) Audio Equipment

① Audio Mixer	1 set	More than 16-inputs
② Cassette Tape Recorder	2 sets	
③ CD Player	1 set	
④ Audio Distribution Amplifier	1 set	

⑤ Audio Jack Field	1 set	More than 20-inputs/ outputs
⑥ Microphones	12 sets	
Comprising;		
• Uni-directional Condenser Mic	3 sets	
• Uni-directional Dynamic Mic	2 sets	
• Omni-directional Condenser Mic	3 sets	
• Omni-directional Dynamic Mic	2 sets	
• Uni-directional Cavalier Mic	2 sets	
⑦ Microphone Stand	10 sets	Desk stand, Floor stand, Boom stand (small)
⑧ Microphone Boom Dolly	2 sets	Length of arm 1.2~4.5m
e) Monitoring Equipment		
① Video Monitor	10 sets	
② 20-inch Video Monitor	5 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	
⑤ Vectorscope	1 set	
⑥ Audio Monitor	2 sets	With power amplifier & cart
⑦ Monitor Shelf	1 set	
f) Studio Intercom	1 set	
g) Studio Lighting Equipment		
① Suspension Devices	1 set	
② Lighting Control Equipment	1 set	Capacity: 160kW
③ Lantern and Accessory	1 set	
h) Switcher/PD Console	1 set	
i) Rack	2 sets	
j) Power Distribution board	1 set	
k) Installation Materials	1 set	

5) Small Studio

a) Colour Camera *

① Camera Head	3 sets	3-FIT CCD portable type digital processing camera, with viewfinder
② Zoom Lens	3 sets	More than 16 times
③ Pedestal	3 sets	
④ Camera Control Unit	3 sets	

b) Video Production Equipment

① Video Production Switcher *	1 set	Digital switcher, More than 18-inputs, 2-M/K
② Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
③ Video Jack Field	1 set	More than 20-inputs/ outputs
④ Character Generator	1 set	With TBC & monitor
⑤ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.

c) Sync. Pulse Generating Equipment

① Sync. Pulse Signal Generator	1 set
② Pulse Signal Distribution Amplifier	1 set

d) Audio Equipment

① Audio Mixer	1 set	More than 16-inputs
② Cassette Tape Recorder	2 sets	
③ CD Player	1 set	
④ Audio Distribution Amplifier	1 set	
⑤ Audio Jack Field	1 set	More than 20-inputs/ outputs
⑥ Microphones Comprising;	10 sets	

• Uni-directional Condenser Mic	2 sets	
• Uni-directional Dynamic Mic	2 sets	
• Omni-directional Condenser Mic	2 sets	
• Omni-directional Dynamic Mic	2 sets	
• Uni-directional Cavalier Mic	2 sets	
⑦ Microphone Stand	8 sets	Desk stand, Floor stand, Boom stand (small)

e) Monitoring Equipment

① Video Monitor	9 sets	
② 20-inch Video Monitor	5 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	
⑤ Vectorscope	1 set	
⑥ Audio Monitor	2 sets	With power amplifier & cart
⑦ Monitor Shelf	1 set	

f) Studio Intercom	1 set	

g) Studio Lighting Equipment

① Suspension Devices	1 set	
② Lighting Control Equipment	1 set	Capacity: 100kW
③ Lantern and Accessory	1 set	

h) Switcher/PD Console	1 set	
i) Rack	2 sets	
j) Power Distribution board	1 set	
k) Installation Materials	1 set	

6) Measuring Equipment

a) Oscilloscope	2 sets	2-channel, with cart

b) TV Test Signal Generator	1 set	Colour bar, Multi-burst, Window, staircase
c) Waveform Monitor	1 set	
d) Vectorscope	1 set	
e) Audio Distortion Meter/Oscillator	1 set	Frequency response, Noise, Distortion
f) Multi Meter	5 sets	
g) Hand Tool Set	5 sets	
7) Raw Tapes for 1/2-inch VTR	1 set	20 minutes, 60 minutes, 90 minutes, metal tape
8) Spare Parts	1 set	
9) Acoustic Material for three Studios	1 set	Glass Wool

(5) Drawings

The following drawings are given herewith:

Figure 2-3-1 Dhaka TV Station, Floor Plan
Figure 2-3-2 Equipment Layout of Master Control Room
Figure 2-3-3 Equipment Layout of News-Continuity Studio
Figure 2-3-4 Equipment Layout of Drama/Small Studio
Figure 2-3-5 Equipment Layout of Assignment Switcher
Figure 2-3-6 Schematic Diagram of TV Studio Bangladesh Television, Dhaka
Figure 2-3-7 Schematic Diagram of Video System for Master Control
Figure 2-3-8 Schematic Diagram of Audio System for Master Control
Figure 2-3-9 Schematic Diagram of Video System for Assignment Switcher
Figure 2-3-10 Schematic Diagram of Audio System for Assignment Switcher
Figure 2-3-11 Schematic Diagram of Video System for News-continuity Studio
Figure 2-3-12 Schematic Diagram of Audio System for News-continuity Studio
Figure 2-3-13 Schematic Diagram of Video System for Drama Studio
Figure 2-3-14 Schematic Diagram of Audio System for Drama Studio
Figure 2-3-15 Schematic Diagram of Video System for Small Studio
Figure 2-3-16 Schematic Diagram of Audio System for Small Studio

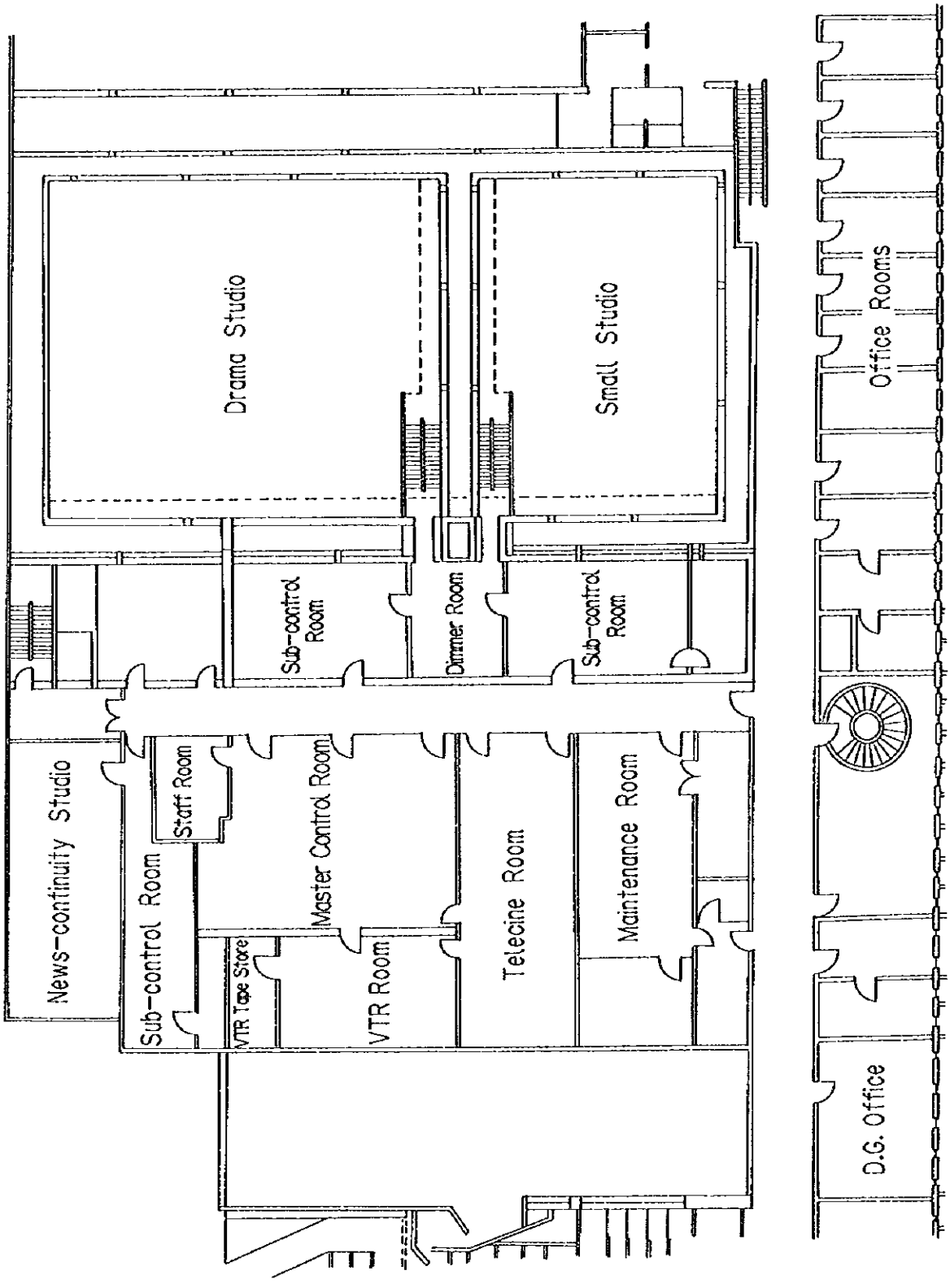


Figure 2-3-1 Dhaka TV Station, Floor Plan

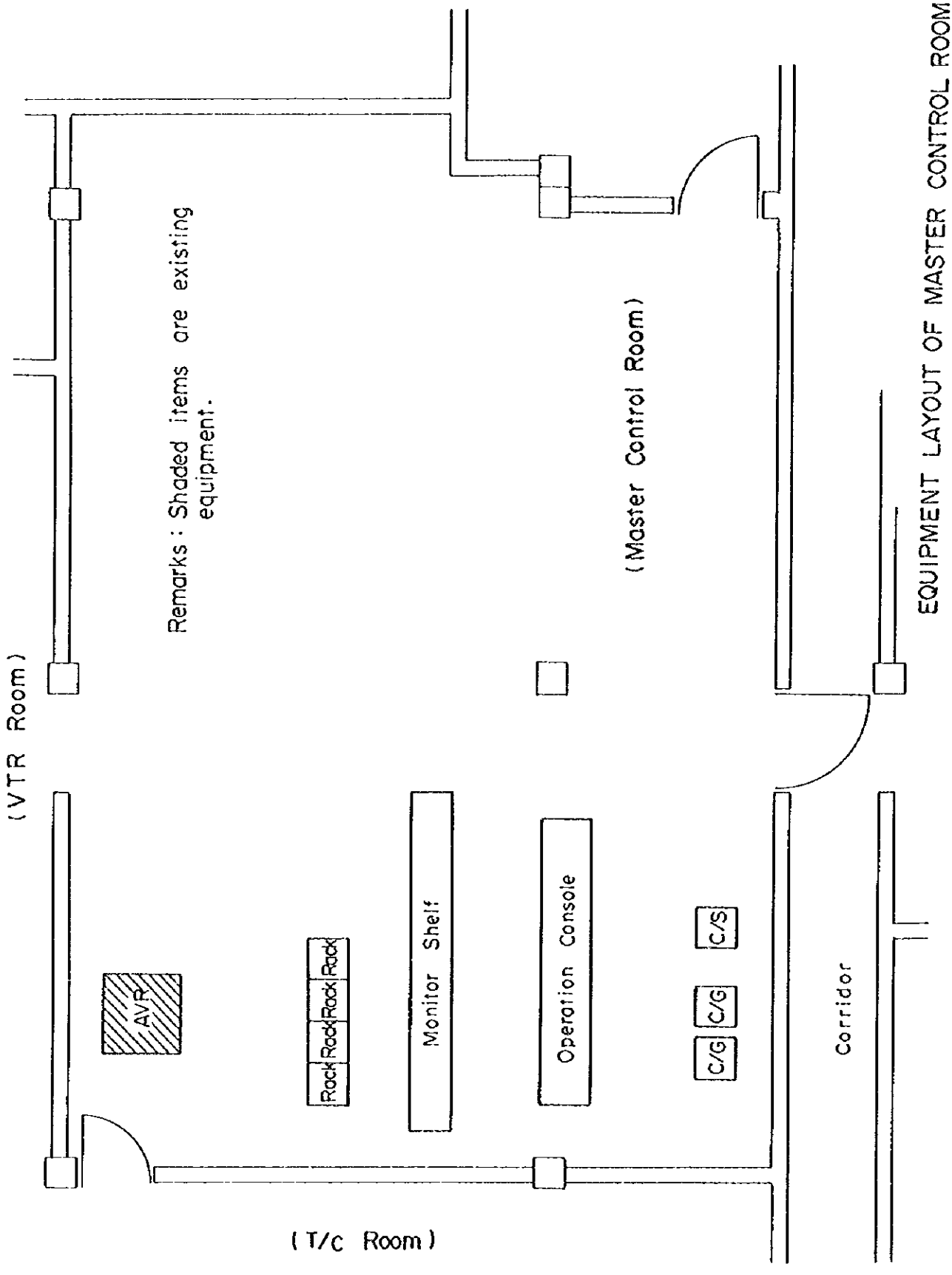


Figure 2-3-2 Equipment Layout of Master Control Room

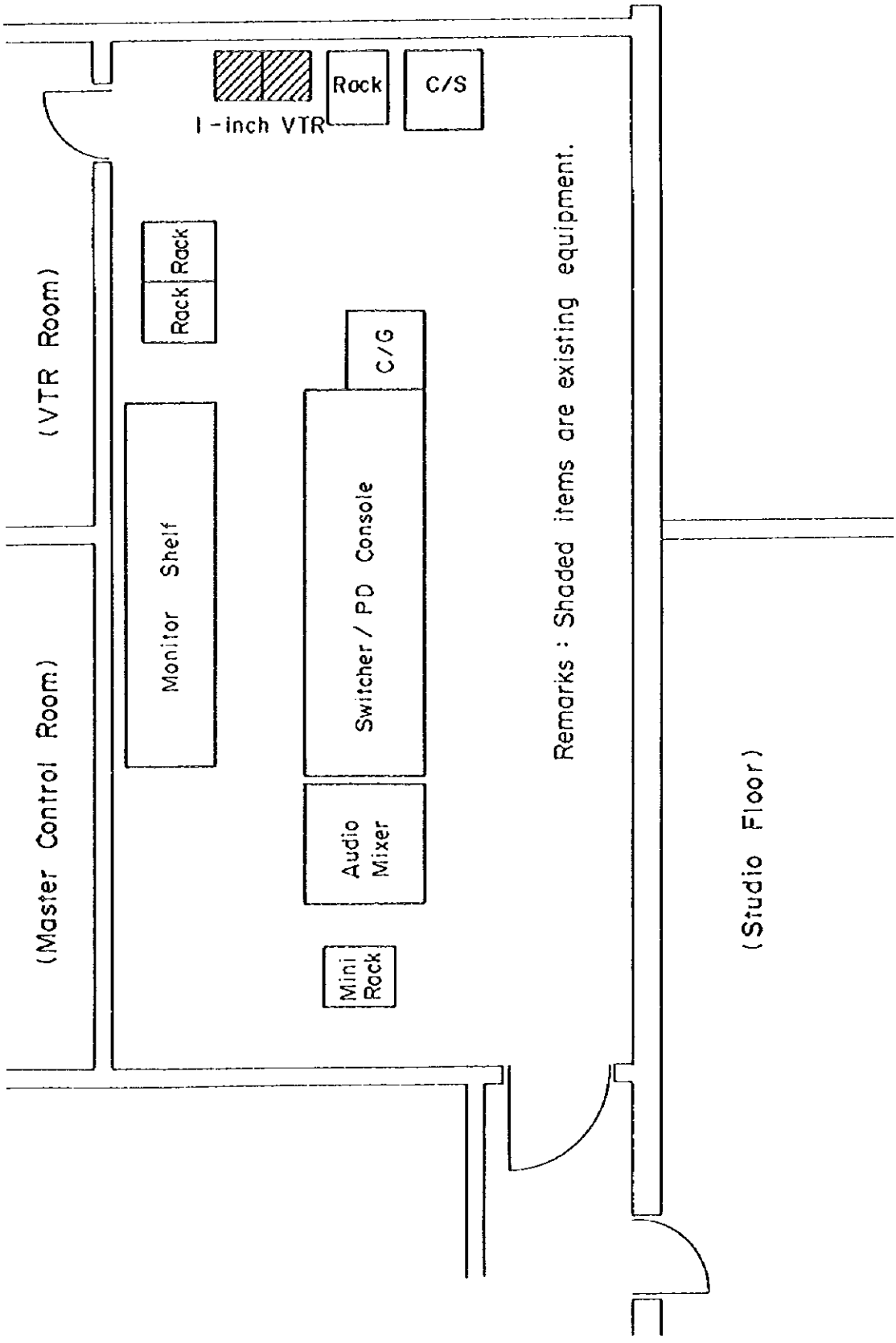


Figure 2-3-3 Equipment Layout of News-continuity Studio

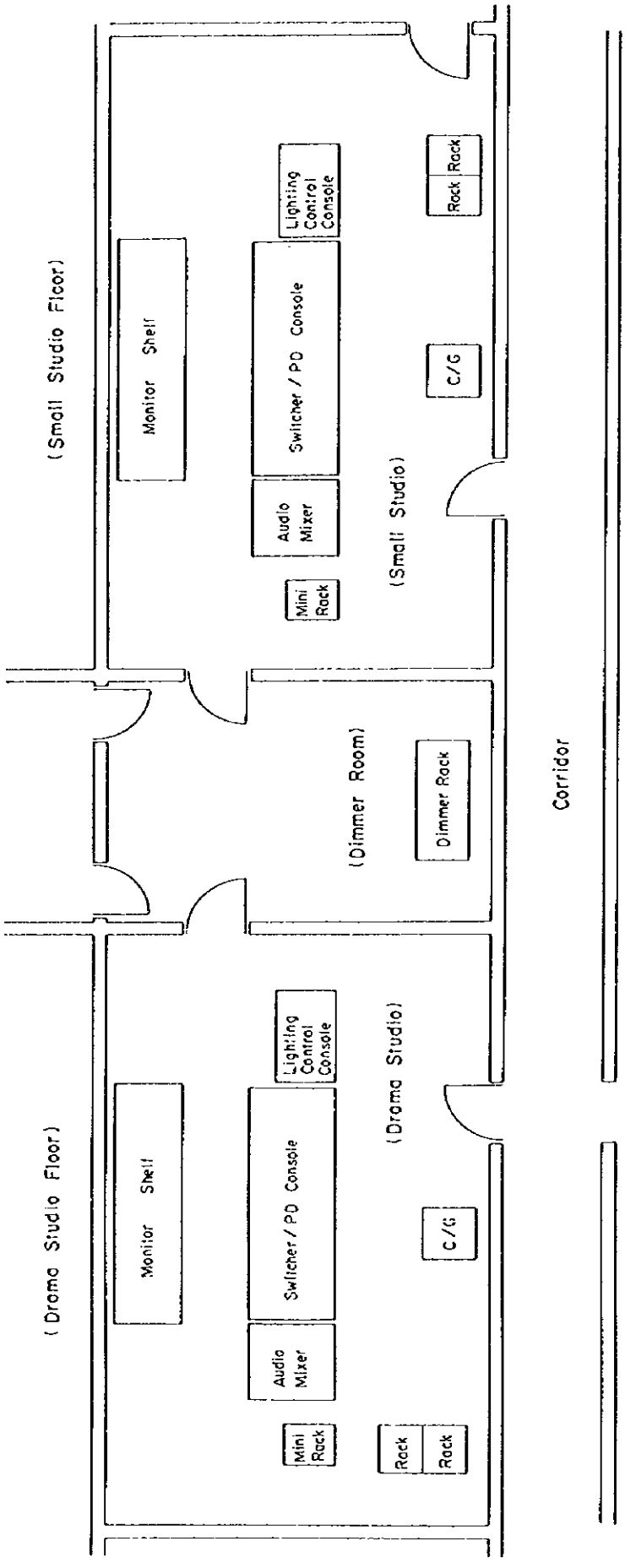


Figure 2-3-4 Equipment Layout of Drama/Small Studio

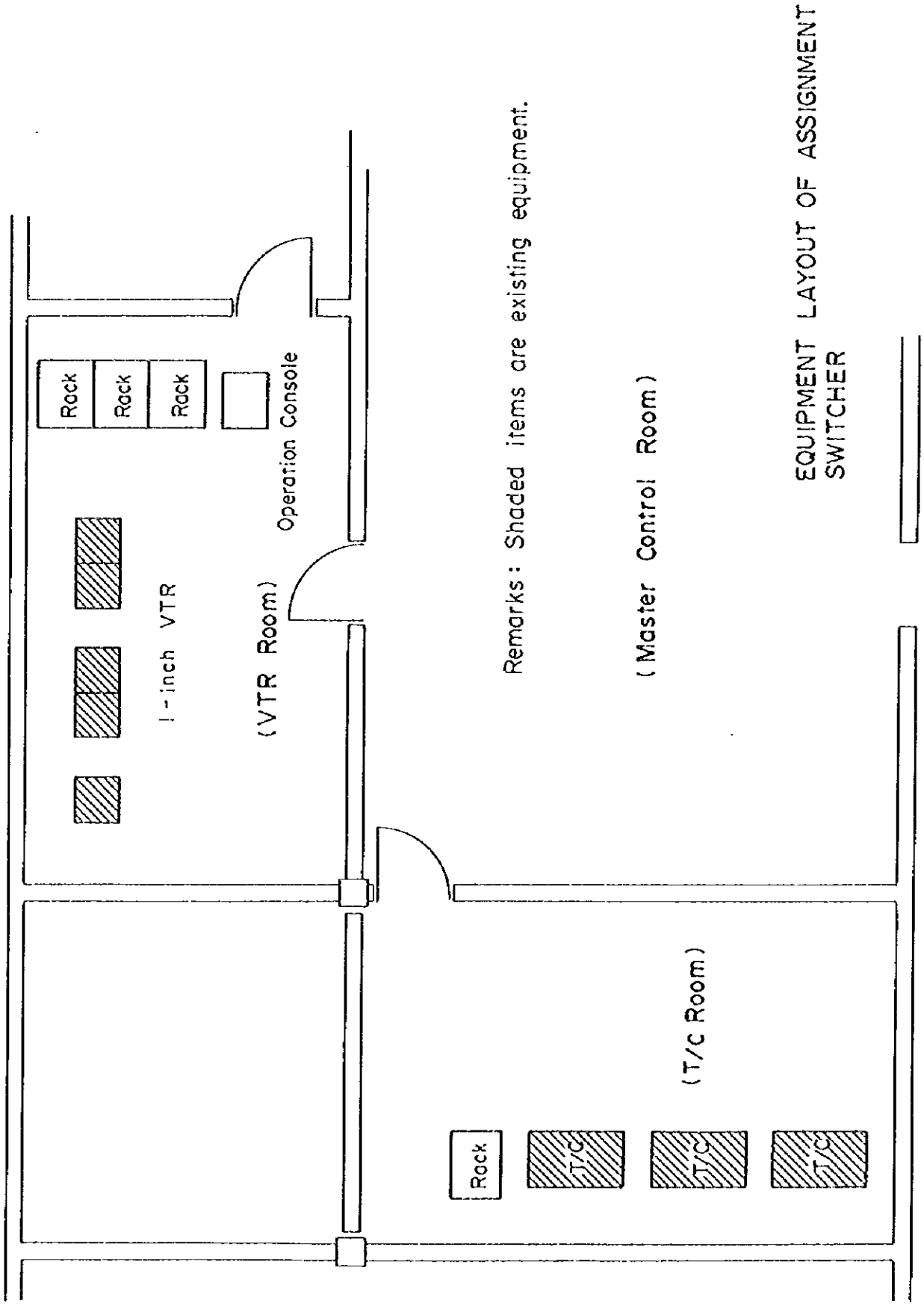


Figure 2-3-5 Equipment Layout of Assignment Switcher

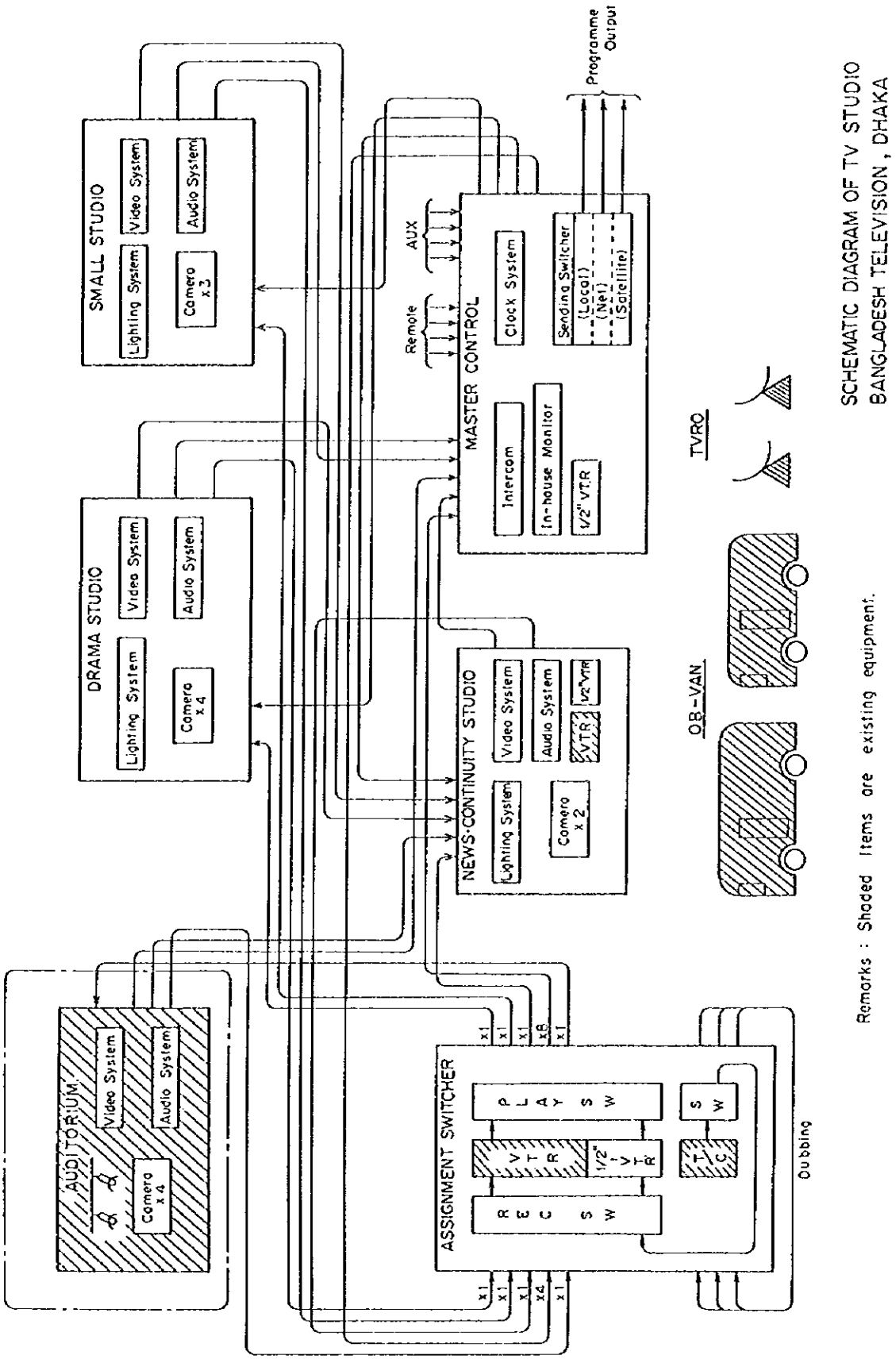


Figure 2-3-6 Schematic Diagram of TV Studio Bangladesh Television, Dhaka

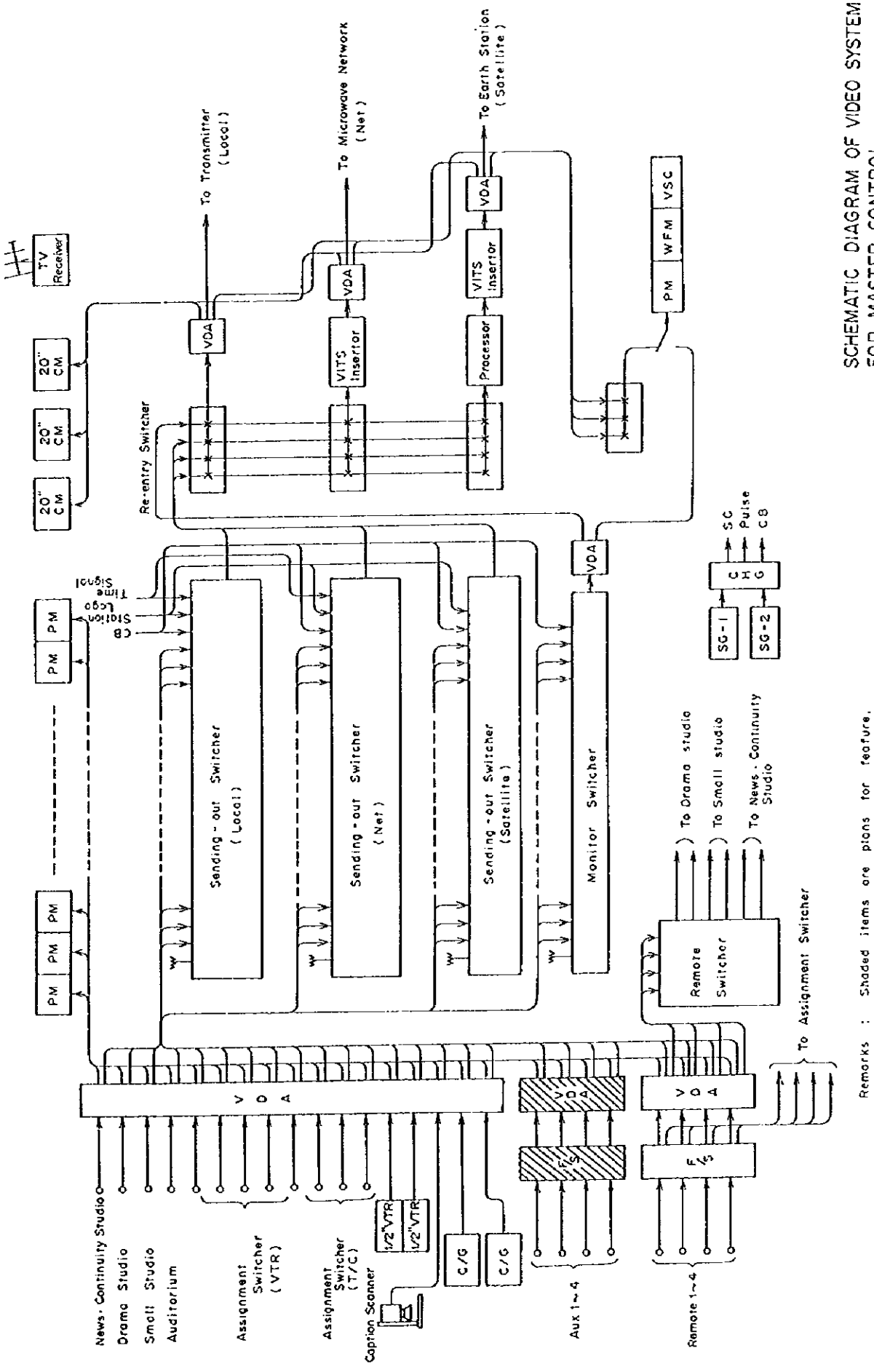


Figure 2-3-7 Schematic Diagram of Video System for Master Control

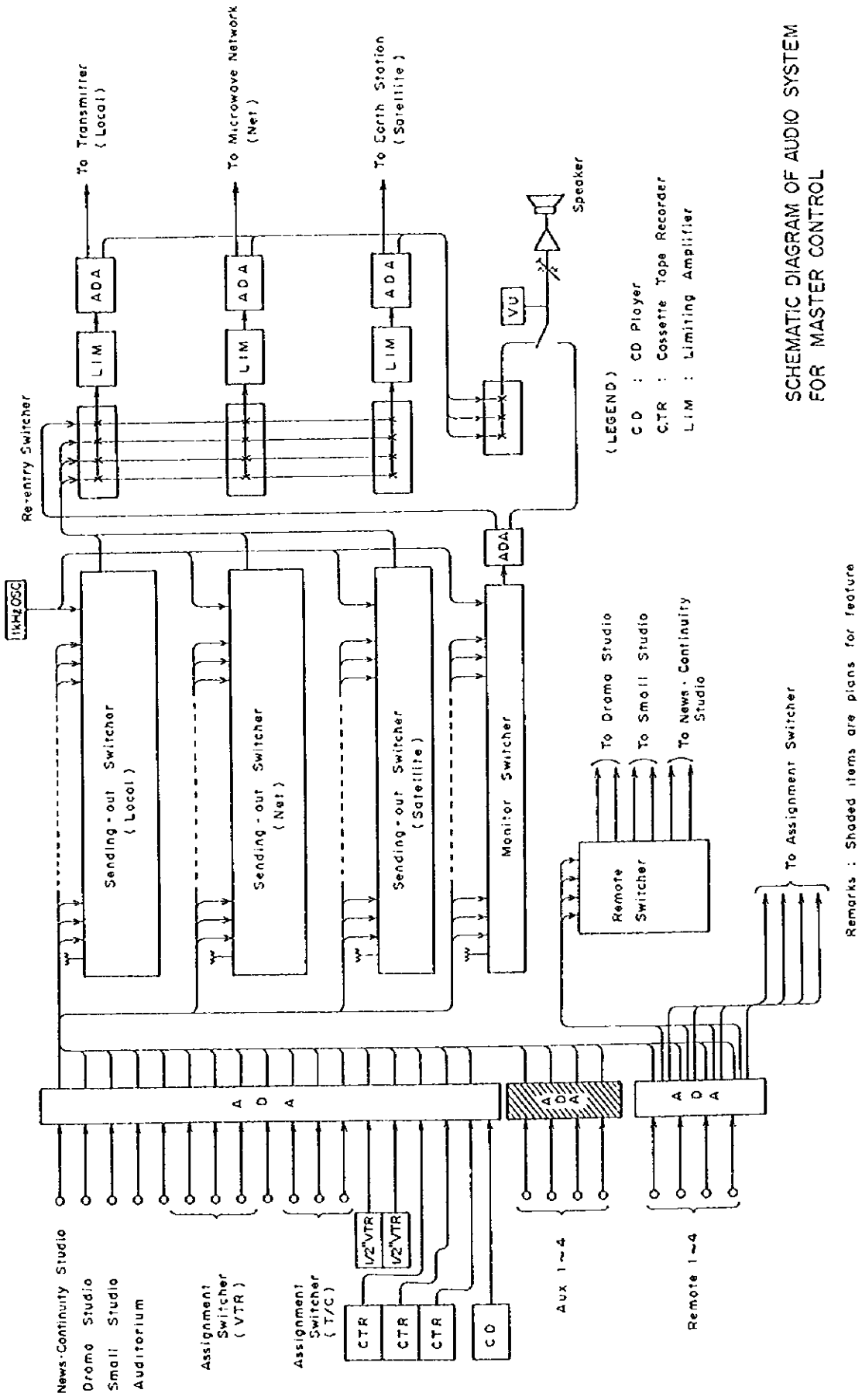


Figure 2-3-8 Schematic Diagram of Audio System for Master Control

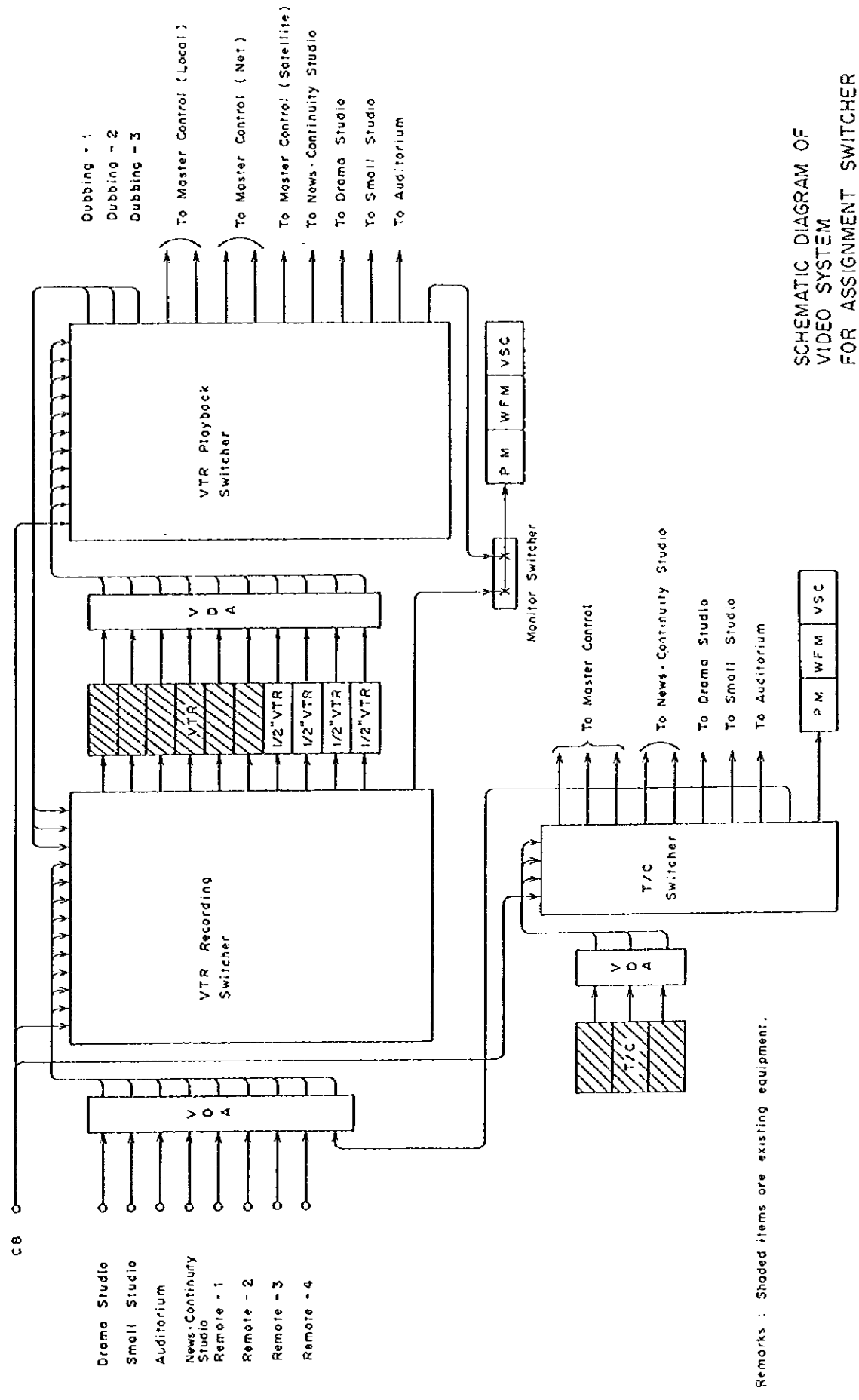


Figure 2-3-9 Schematic Diagram of Video System for Assignment Switcher

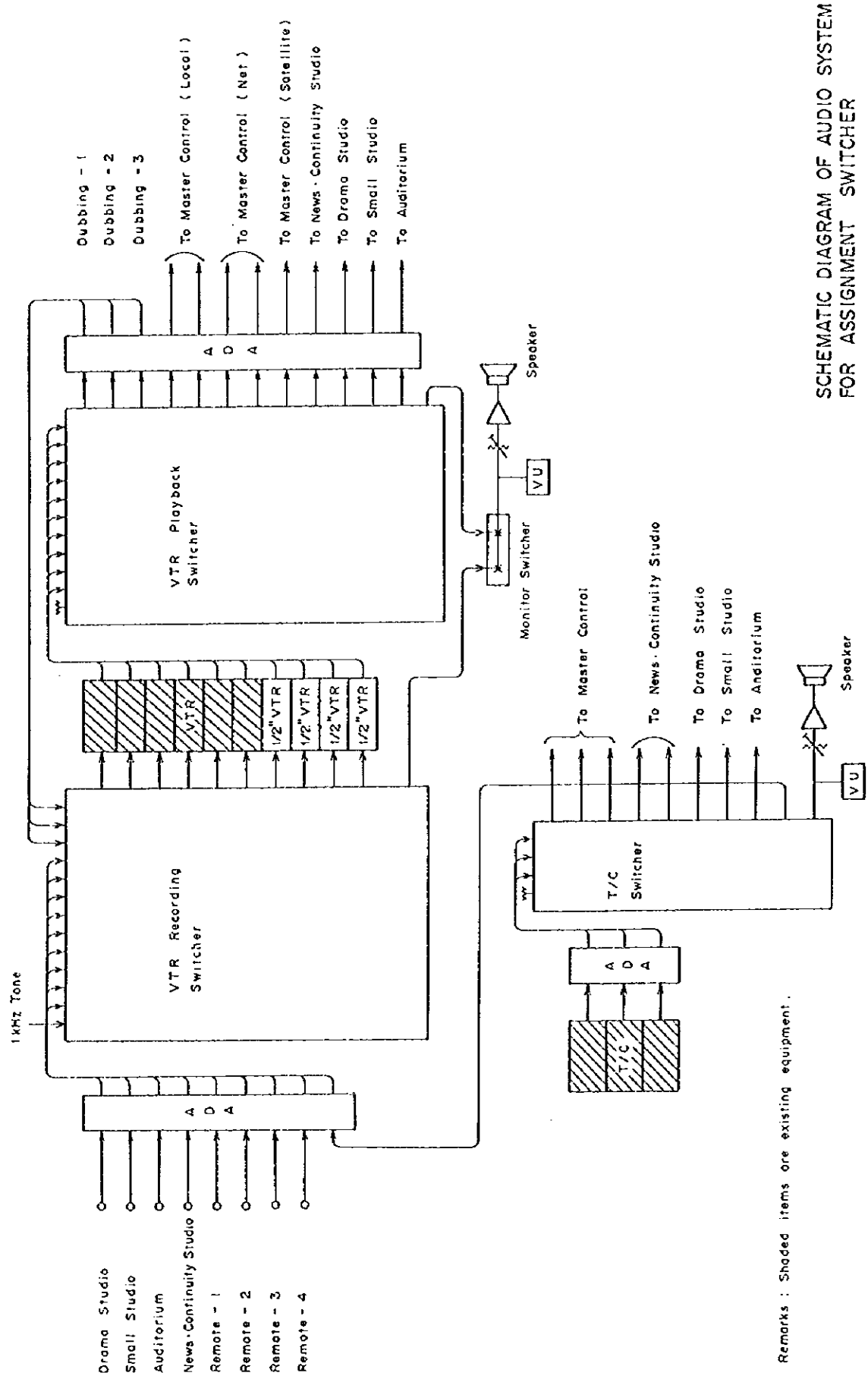


Figure 2-3-10 Schematic Diagram of Audio System for Assignment Switcher

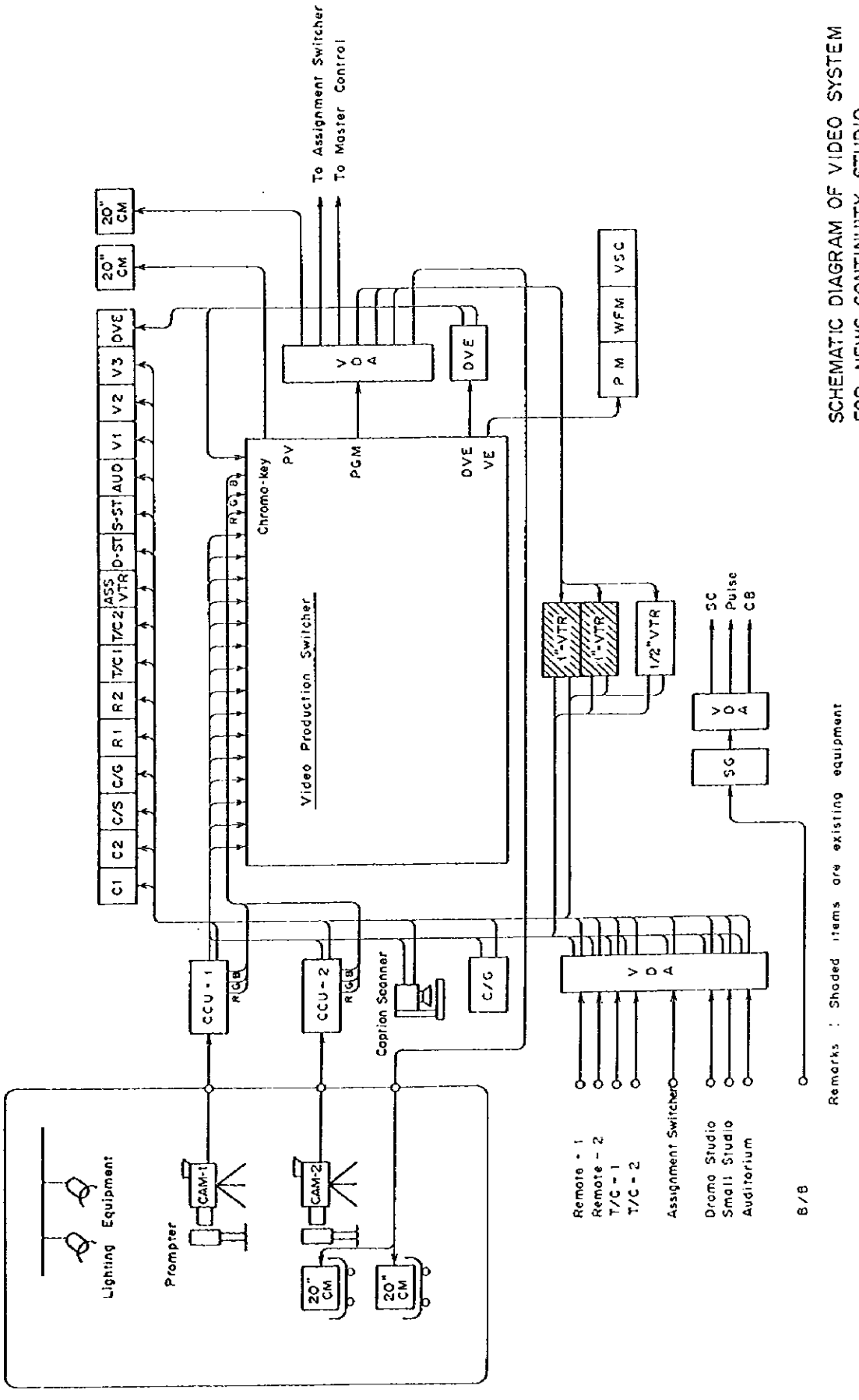


Figure 2-3-11 Schematic Diagram of Video System for News-continuity Studio

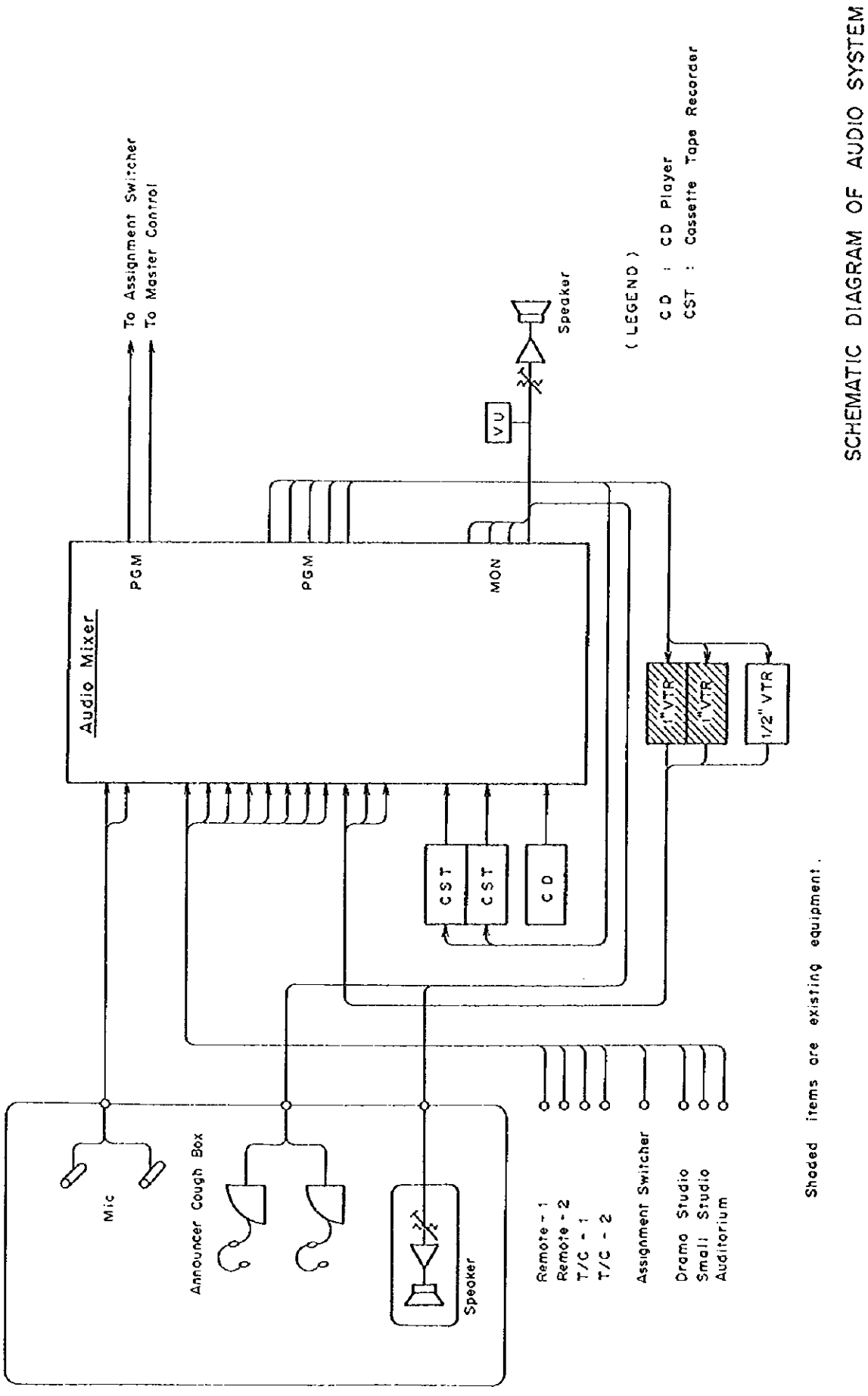


Figure 2-3-12 Schematic Diagram of Audio System for News-continuity Studio

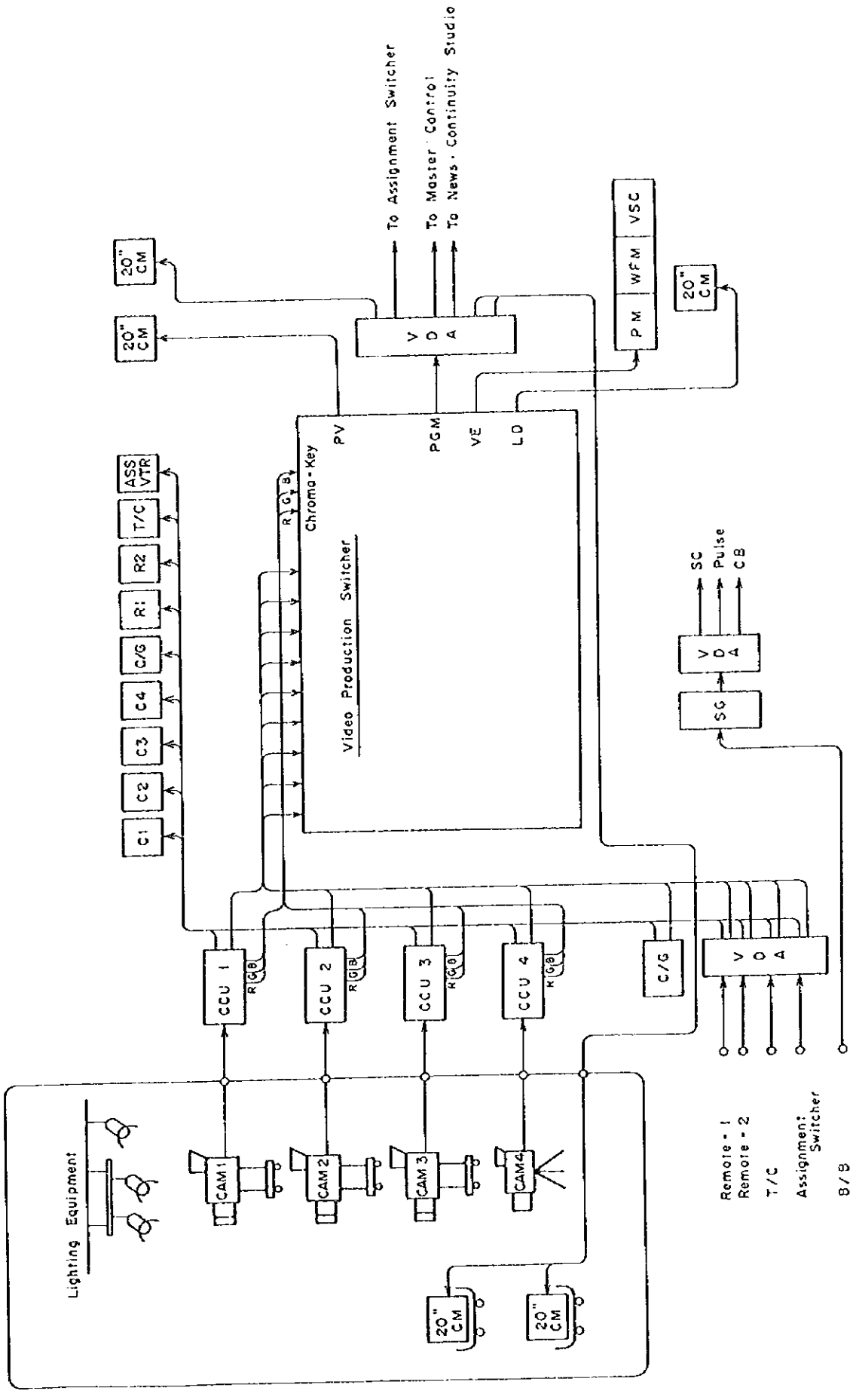


Figure 2-3-13 Schematic Diagram of Video System for Drama Studio

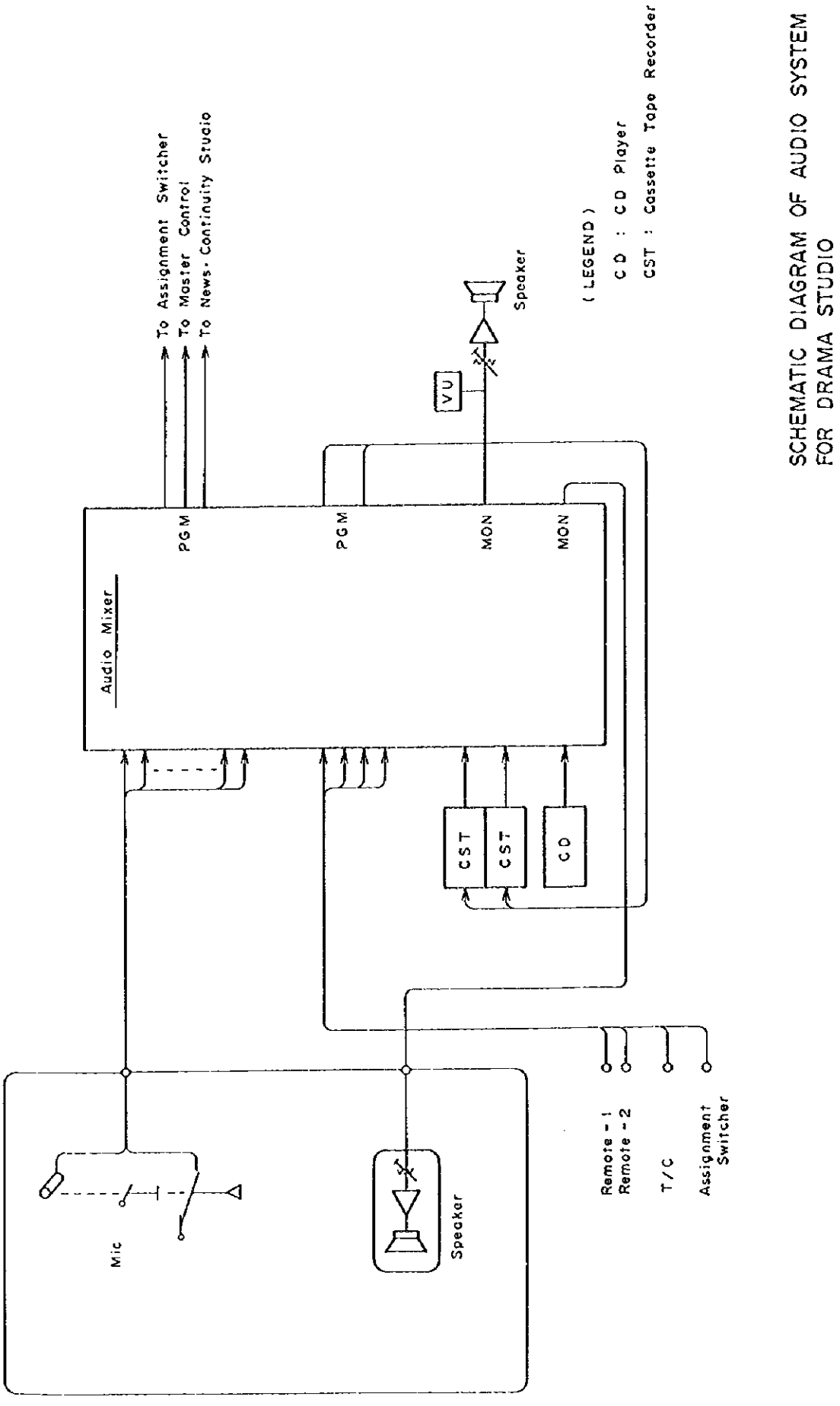


Figure 2-3-14 Schematic Diagram of Audio System for Drama Studio

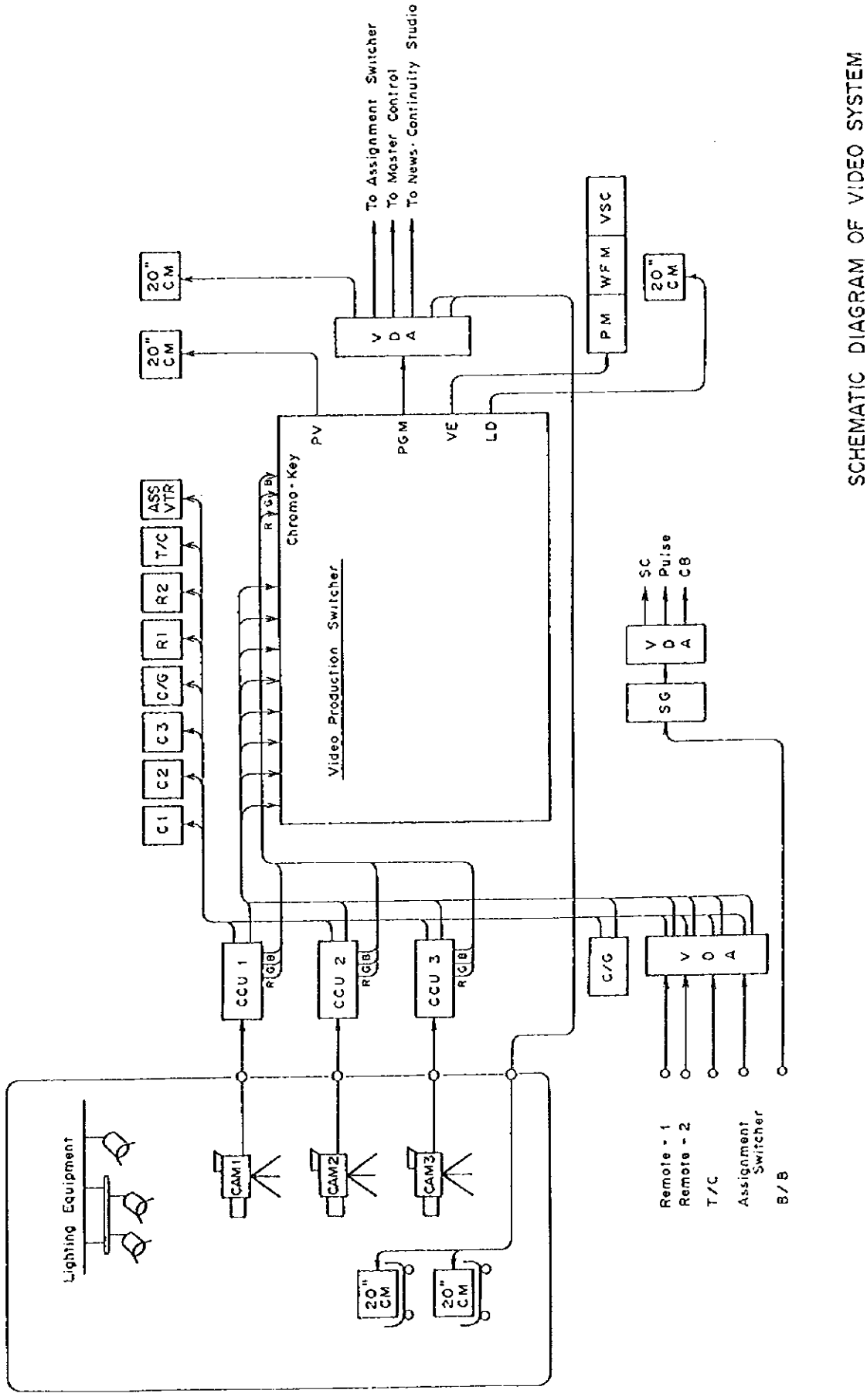


Figure 2-3-15 Schematic Diagram of Video System for Small Studio

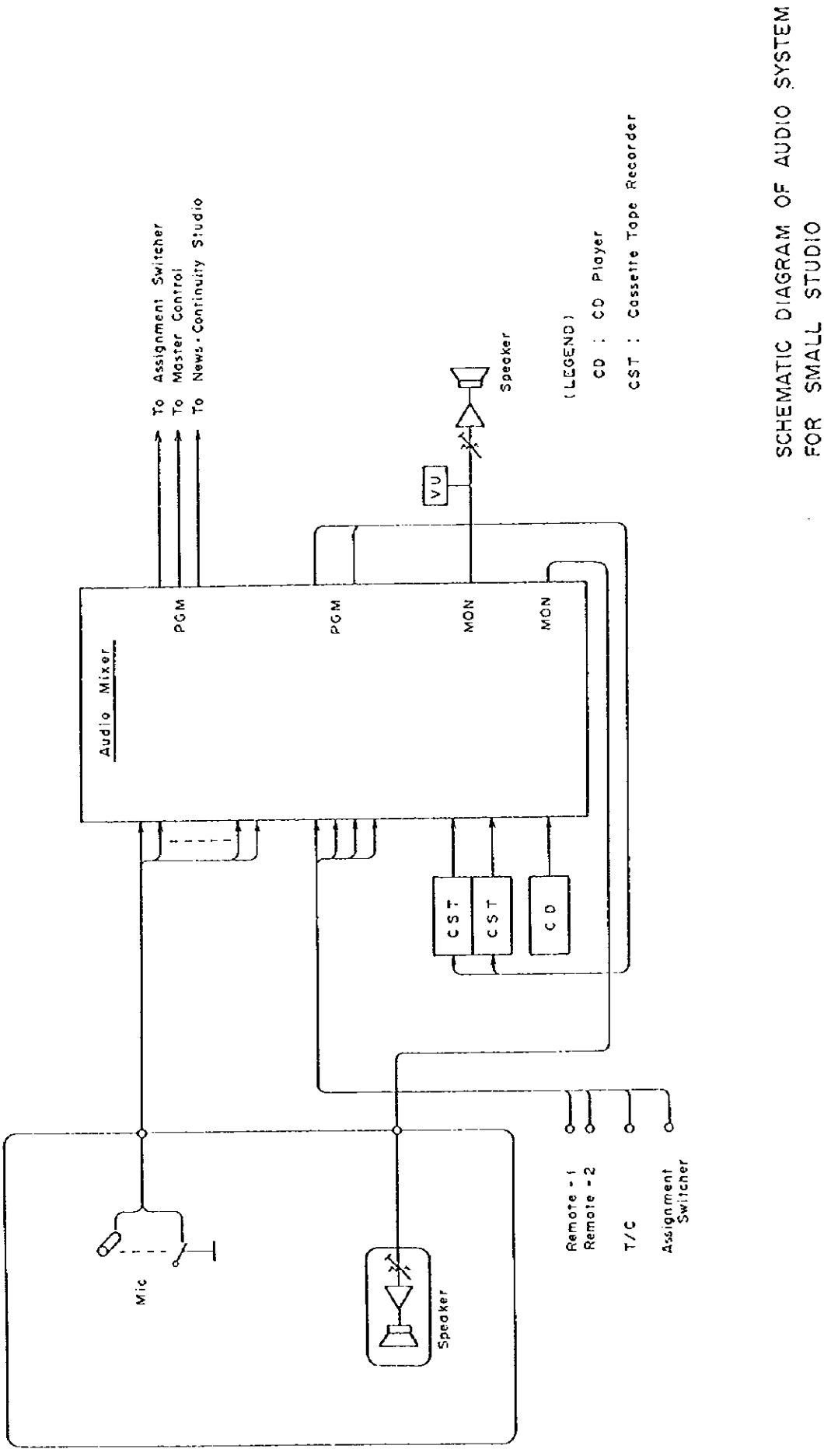


Figure 2-3-16 Schematic Diagram of Audio System for Small Studio

Chapter 3

Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

The body carrying out this project is Bangladesh Television (BTV). In order that the project is carried out smoothly and without delays, it is vital that there are no differences between various departments regarding the implementation schedule and the scope of authority of each department. Hence BTV should select the counterparts (i.e. contacts) to liaise with the consultant's project manager regarding work supervision before the commencement of work. The consultants and their counterparts will inspect and revise particular work processes, work schedules, and technical specifications. They will also maintain close links with governmental officials in charge of the project in each country. Additionally they shall offer suggestions and advice swiftly and appropriately to the contractors carrying out the work, in order to ensure the smooth progression of the project.

After interior finishing of the studio and equipment room by BTV are completed, the project is to make nearly overall renovations of existing facilities.

The most efficient method of equipment installation is to remove the relevant existing facilities all at once and replace them with new facilities and equipment. However, this method requires that broadcasts be temporarily halted. Accordingly, in order to implement the equipment installation while continuing broadcasts, the following construction methods need to be taken. First, construction should be undertaken in the small studio. This small studio should be provisionally operated as a master control. Following this other existing facilities are to be removed, new equipment is to be installed and adjustments are to be made. Construction must be based on this kind of complex order of operations.

In order to smoothly implement this complex construction, there is a need for the individuals in charge from Japan and BTV to have close discussions, create a detailed plan for the implementation process and implement construction.

3-1-2 Implementation Conditions

As mentioned previous chapter, this project have to carrying out removal of existing equipment on operation without interruption of broadcasting. As a basic implementation policy for this project, the consultant must fully recognize the distinctive characteristics of the installation at these sites and put together a personnel plan which is in line with the grant aid assistance principles of the Government of Japan and consistent throughout implementation. The consultant is expected to reside at the site, not only during the implementation period, but also before if necessary. Furthermore, while maintaining close communication with all personnel involved, the consultant shall accurately adapt opinions and lead, supervise and advise in such a way as to smoothly implement installation without interfering with broadcasting. The consultant shall be involved in all aspects of the plan and work toward its completion.

Especially, during installation work, the capacity of programme production will decrease. Therefore, it is necessary to produce the stored programme before starting of the work, or to make alternation in programme plan for rebroadcasting.

3-1-3 Scope of Works

The scope of work to be borne by Japan and Bangladesh in relation to the implementation of this project is as follows.

(1) Work Undertaken by the Japanese Side

1) Manufacture, installation and adjustment of equipment included in this project (including the procurement of acoustic materials necessary for the interior finishing work of studios).

2) Equipment (measuring instruments, spare parts and others) necessary for protecting and maintaining the above equipment and facilities.

3) The transportation of equipment and facilities from Japan to the project site in Bangladesh (including the transportation of acoustic materials).

4) Exchange work of acoustic materials in studios.

(2) Construction Work Undertaken by the Bangladesh Side

It is necessary to complete the following items before commencement of installation work.

① Interior finishing work of studios and control rooms excluding exchange work of acoustic materials in studios.
② Removal of existing equipment and cleaning.
③ Remodeling of station building as the need arises in terms of equipment installation.
④ Preparation of additional facilities such as electricity, air-conditioning, water supply and drainage.

The following items are expenses to be borne by Bangladesh.

① Provision of materials and information necessary for detailed design surveys.
② Procurement of all licensing necessary for the implementation of this project.
③ To bear advising commissions of the Authorization to Pay (A/P) and payment commission to the Japanese foreign exchange bank for banking services based upon the Banking Arrangement (B/A).
④ To ensure prompt unloading, tax payment and custom clearance of the materials and equipment for the Project at port of disembarkation.
⑤ To accord Japanese Nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Bangladesh and stay therein for the performance of their work.
⑥ In order to exempt Japanese Nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Bangladesh with respect to the supply of the products and services under the verified contracts, the cost of duties, internal taxes and other fiscal levies to be imposed under the Bangladesh Regulations shall be borne by the relevant Ministry/Agency concerned with the Project for which necessary budget provision shall be made by them.

⑦ To maintain and use properly and effectively that the facilities constructed and equipment purchased under the verified contracts.

⑧ To bear all the expenses other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.

3-1-4 Consultant Supervision

(1) Basic Policy Regarding Supervision

The consultant must understand the concept of the basic design, put together a project team for the comprehensive management of the detail design and installation work, coordinate the opinions of all parties concerned, and aim for the completion of the project. The basic policy regarding supervision is as follows:

1) Utmost efforts must be made so that delays are avoided and no discord arises between those handling equipment installation work; close links must be maintained throughout.

2) Close links must be maintained and reports delivered to government officials of both countries, and installation contractors must be given appropriate and swift advice and suggestions, so that work proceeds smoothly.

3) An attitude conducive to the transfer of technology must be maintained regarding installation methods and techniques, so that maximum effect is derived from the implementation of the grant aid programme.

(2) Supervisor Duties

In order to facilitate the progress of this project, there is a need to give consideration to and advance the following points during the implementation stages.

1) Detailed Design

a) Facilities will be arranged in order to coordinate with the existing station building.

b) Consideration will be given to BTV operation and an appropriate sized system will be designed.

2) To pay careful attention to implementation of a fair tender.

3) Contract

To examine conditions of contract without omission.

4) Approval of the Drawings

a) Systems will be checked

b) A check will be conducted to determine whether or not the number of staff and capacity of the equipment meets specifications.

5) Factory inspections

A check will be conducted to determine whether or not the capacity of the equipment meets specifications under conditions which are as close as possible to the on-site installation conditions.

6) Supervision of on-site installation work

a) The utmost consideration will be given to maintaining close communication with those involved and not interfering with broadcasts.

b) The transfer of technology will be sufficiently implemented on-site.

7) Acceptance inspection on the installation site

Condition will be given to refunctioning of factory inspection data.

8) Completion of construction work

A check will be conducted to determine whether operations are running smoothly under the new system.

(3) Supervisory Personnel

Equipment installation work will proceed in two times separately. Because, the work have to carrying out without interruption of broadcasting. Therefore, the consultant have to stay in Dhaka during the work, and it is necessary to advise to the client and to instruct to the installation contractors. The consultant in charge of work supervision chosen for the job must have extensive experience and decision-making capability, as well as a wide perspective and the ability to handle problems as they arise.

3-1-5 Equipment Procurement Plan

(1) Equipment Procurement Plan

Equipment to be procured shall be Japanese-made, because it is recognized worldwide that it performs well and is reliable. Moreover, this is also in accordance with BTV's wishes.

When determining the models and specifications of equipment, emphasis shall be placed on simplicity of construction, durability, and ease of obtaining spares or supplies. Equipment specifications shall conform to the CCIR technical standards, and shall be electrically and mechanically safe, and of sturdy construction.

Cameras shall be 3CCD, which require only simple maintenance and which last long. Taking into consideration compatibility, number of models are reduced as far as circumstances permit.

Currently, four types of video tape recorders are used by BTV, and a fifth will be added under this project. The format that will be introduced is the 1/2-inch type, of broadcasting quality, and will help not only improve the picture quality of programmes produced by BTV, but also the exchange of programmes with other broadcasting organizations.

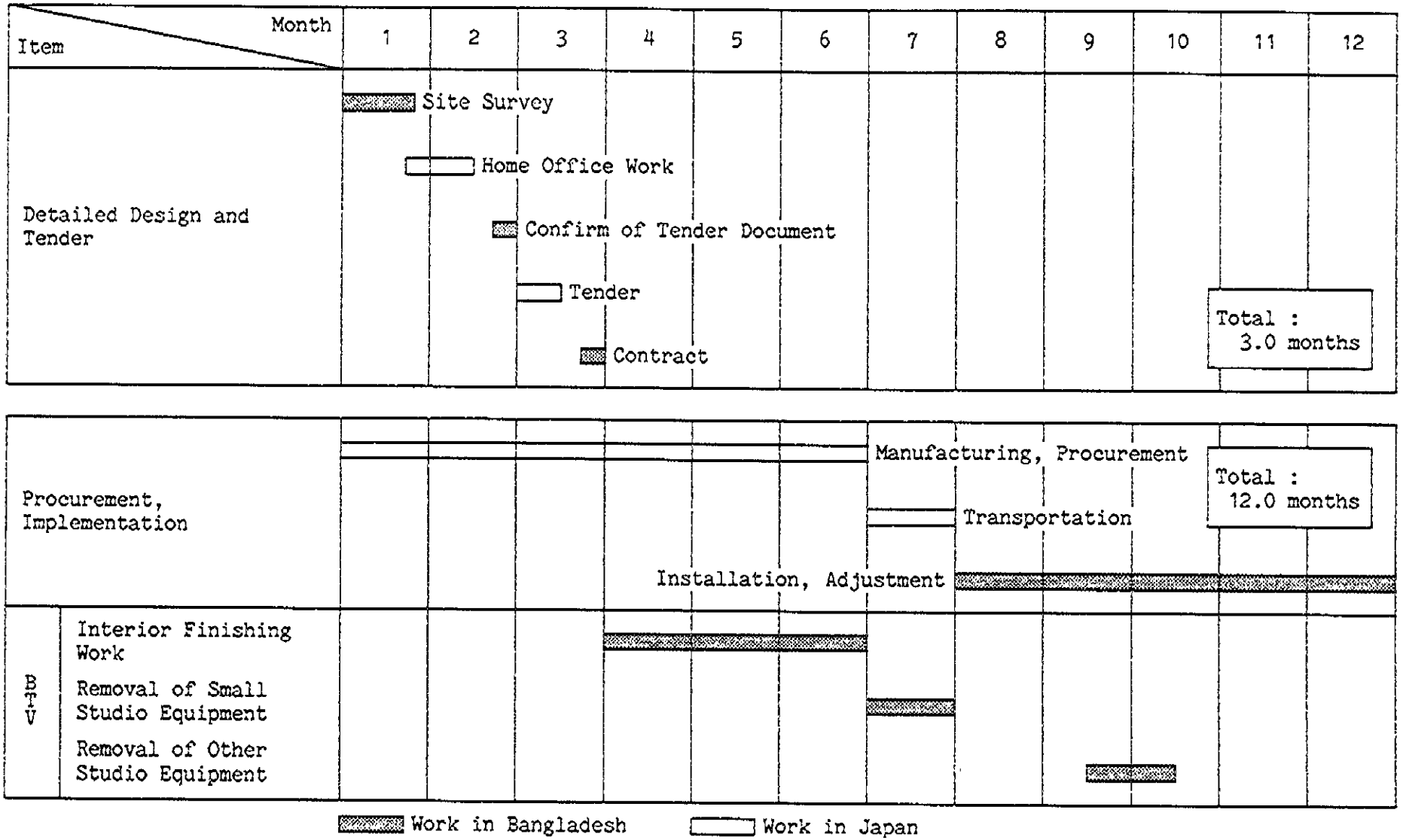
(2) Equipment Transportation Plan

Usual transportation route from Japan to Dhaka, Bangladesh, is unloading the shipment at Chittagong, in the south of Bangladesh, and transporting the equipment from there to Dhaka by land.

3-1-6 Implementation Schedule

The implementation schedule is shown in next page.

Table 3-1-1 Tentative Implementation Schedule



3-1-7 Obligation of Recipient Country

1) Obtaining all legal approvals concerning construction and renovations

2) Preparing payment authorizations and paying bank charges required for amending these documents

3) All other duties to be incurred by the aid recipient country, as specified in the agreements exchanged

3-2 Operation and Maintenance Plan

The principal components of operational and maintenance costs are personnel costs, programme production costs, expenses related to news gathering, and costs for maintaining, improving, and repairing equipment.

(1) Personnel Costs

Currently BTV employs 1,520 persons. Total personnel costs in 1995~1996 is 885.27 lakh TK (approximately 234 million Japanese Yen).

This figure is about 30.5% of total expenditures. BTV giving it a health financial situation.

Table 3-2-1 Profit and Loss

(Figure in thousand TK, 1TK=2.64¥)

		1993/1994	1994/1995	1995/1996
Income	TV License Fee Revenue	170,210	178,078	151,085
	Commercial Service Revenue	336,582	416,175	408,539
	Other Income	1,860	1,253	1,161
	Total Income	508,652	595,506	560,785
Expenditure	Wages Expense	68,906	79,938	88,527
	Programme Section	69,803	72,402	123,012
	Programme Production Expense	49,235	43,688	100,898
	Programme Purchases	17,433	24,062	19,565
	Other Expense	3,135	4,652	2,549
	News Section	9,961	10,705	10,543
	Reporting Expense	9,177	9,542	9,906
	Other Expense	784	1,163	637
	Engineering Section	152,157	40,840	34,494
	Equipment Investment	147,770	35,507	30,489
	Maintenance Expense	2,037	1,844	2,093
	Other Expense	2,350	3,489	1,912
	Administration Section	45,002	44,585	33,390
	Stationery Expense	175	146	148
	Electric Power Expense	11,923	11,778	11,385
	Gas/Water Charge Expense	641	736	1,765
	Telephone/Telex Expense	30,695	29,599	18,818
	Other Expense	1,567	2,326	1,274
	Undistributed Profit	162,823	347,036	270,819
	Total Expensiture	345,829	248,470	289,966
Grand Total		508,652	595,506	560,785

(2) Programme Production Costs and Expenses related to News Gathering

In the balance sheet of BTV, programme production costs and servicing, maintaining and repairing equipment costs is in the same item. Although, it is not sure the amount of programme production costs, the amount of programme production costs and others is 1,405.50 lakh TK (approximately 400 million Japanese Yen), the ratio for total expenditures is 46.9%.

But, as shown in profit and loss sheet, these expenses are itemized. Sum of programme production expense, programme purchase expense and reporting expense is 130.37 million TK, and this value is 45% of total expenditure.

(3) Servicing, Maintaining and Repairing Equipment

Regarding the servicing, maintaining and repairing equipment, this report is drafted considering the following items.

1) The equipment to be provided in this project is rehabilitating existing equipment which is superannuated, and there is almost nothing to be added.

2) On regard of the type and specifications for the equipment which will be provided in the project, special emphasis will be placed on structural simplicity and durability and the availability of extra items and consumables.

3) As 1/2-inch VTR will be provided, it is necessary to purchase 1/2-inch VTR blank tape. But, total material purchase fee will not increase, because purchase of 1-inch VTR tape will reduce. As a result, the budget for servicing, maintaining and repairing equipment will the same.

4) Judging from consultant's experience, it is necessary that budget for servicing, maintaining and repairing equipment is approximately 3% of total equipment cost.

The maintenance expense in 1995/1996 is 2.09 million TK, this is about 0.7% of total equipment cost which will be provided in the

Project. But, BTV operating the budget with flexibility, moreover undistributed profit is sufficient. Therefore, BTV will prepare necessary budget for maintenance expense.

Considering above items, the budget of BTV have no problem about shortage of servicing, maintaining and repairing equipment.

Chapter 4

Project Evaluation and Recommendation

Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

Current Status and Problem	Measures taken in this Project	Predicted Effects of Measures, Degree of Improvement
• BTV was established in 1971 as only one TV station in Bangladesh. Since then, BTV has been carrying out important role as one of mass media informing news and information programme, social education and progress of culture etc. • As existing equipment is operating since 1980, when the station started broadcasting in colour, the equipment is superannuated and programme production competence is deteriorated.	• It is possible to improve programme sending out function with large and multiple functioned master control room, and this function make it possible to send out 3 channels at all times. • Adoption of VTR assignment switcher make VTR editing easy, and improve verity of operation of VTR. • By rehabilitation of news-continuity studio equipment, it is possible to send out live news programmes 6 times per day. • By rehabilitation of drama studio equipment, it is possible to produce 8 large scale drama programmes per month. • By rehabilitation of small studio equipment, it is possible to produce 12 music programmes and talk programmes per week.	• It is possible to produce high quality programme such as news, drama, entertainment and education programme etc. As a result, BTV will be able to contribute to raising Bangladesh people's educational level. • In consequence of rehabilitation, stability and reliability of equipment will be raised, so it is possible to produce and broadcast good quality programme for long time. • Approximately 92% of Bangladesh people, about 100 million people, will be able to view, under good conditions, programmes and information designed to improve their quality of life.

The circumstances of diffusion of TV sets in Bangladesh are approximately 500,000 sets officially in 1997. Population coverage is approximately 92%. This means that there is the possibility that about 100 million people out of the total population of 117 million will be able to watch television.

This supports the notion that in Bangladesh television is a powerful means of providing wholesome entertainment and useful information.

Carrying out this project of rehabilitating Dhaka TV station will contribute significantly to the enhancement of the Bangladesh public's cultural awareness and education, by allowing attractively assembled programmes produced using the latest electronics equipment to be broadcast with good audio and video quality.

This project is intended to benefit now only the television-viewing audience directly, but also, by contributing to improvements in life-style and culture, the Bangladesh nation in its entirety. This project is thus deemed appropriate as being carried out by Grant Aid from the Japanese Government.

4-2 Recommendation

BTV is a well-developed organization with over 20 years of broadcasting experience. The technical level and capacity for programme production are high. Accordingly, if equipment is provided through the Project, the Dhaka TV station has sufficient capacity to produce high quality programmes.

Moreover, as mentioned before, operational and maintenance cost is enough to continue high quality programme production.

In order to enhance the effectiveness of the Project, the study team proposes to continue implementing maintenance related to plans for the rehabilitation of the visibly superannuated auditorium, post-production functions (VTR editing functions) and other facilities which were not addressed by the Project.

4-3 Agreement made with the Government of Bangladesh

As noted in the minutes of discussions between the study team and the Government of Bangladesh (refer to Appendix 4), the relevant parties decided on the following matters to facilitate the implementation of the Project.

1) The consulting firm that was selected by JICA as per their set procedure and takes charge of the Basic Design work will be employed in principle as a project implementing consultant for smooth implementation of the Grant Aid Project.

2) Procuring products and services for implementing the Grant Aid Project shall be executed in accordance with "GUIDELINE FOR PROCUREMENT UNDER THE JAPANESE GRANT, 1991, JICA".

3) Necessary measures described in ANNEX-IV of the minutes of discussions will be taken by the Government of Bangladesh for smooth implementation of the Project.

Appendices

1. Member List of Survey Team

1. Member List of Study Team

Name	Assignment	Present Post
Mr. Naoya KUWAHARA	Team Leader	Counselor, Trainig Division, Emigration Centre, JICA
Mr. Osamu KARASAKI	Chief Consultant/ Facility Plan	Chief Engineer, International Division, NHK ITEC
Mr. Toshioki TANAKA	Equipment Plan	Chief Engineer, International Division, NHK ITEC

2. Survey Schedule

2. Survey Schedule

No	Date (1997)	Contents
1	Mar. 10 (Mon)	Arrive in Dhaka. Courtesy call on Embassy of Japan, JICA office
2	Mar. 11 (Tue)	Courtesy call on ERD Courtesy call on the Ministry of Information Courtesy call on Bangladesh Television Site Survey (Television Bhaban, Rampura) Meeting with chief Engineer & other officials at Rampura
3	Mar. 12 (Wed)	Meeting with Chief Engineer & other officials Site Survey
4	Mar. 13 (Thu)	ditto, In the Afternoon visit to NIMC
5	Mar. 14 (Fri)	Internal meeting
6	Mar. 15 (Sat)	Discussion on Minutes of Discussion (M/D)
7	Mar. 16 (Sun)	Discussion on Minutes of Discussion (M/D) Signing of Minutes of Discussion (M/D)
8	Mar. 17 (Mon)	Report to Embassy of Japan and JICA Office Leave Dhaka

3. List of Party Concerned in Bangladesh

3. List of Party Concerned in the People's Republic of Bangladesh

Ministry of Finance

Mr. M. Azizul Islam	Deputy Secretary, Economic Relations Division (ERD) Ministry of Finance
Mr. Muhammad Saifullah	Senior Assistant Secretary, Economic Relation Division (ERD) Ministry of Finance
Mr. Fakrul Ahsan	Deputy Chief Economic Relations Division (ERD) Ministry of Finance

Ministry of Information

Mr. M. A. Quader	Joint Secretary, Ministry of Information
Md. Jalal Uddin	Deputy Chief Ministry of Information
Mr. Tayeb Ahmed	Assistant Chief Ministry of Information
Md. Saiful Islam	Second Secretary (Customs) National Board of Revenue

Bangladesh Television (BTV)

Mr. Shahryar Z. R. Iqbal	Director General, Bangladesh Television (BTV)
Mr. Mustafa Kamal Soyed	Deputy Director General, Programme/News Bangladesh Television (BTV)
Mr. M. Monwaruh Islam	Coordination Officer, Office of the Director General Bangladesh Television (BTV)

Mr. S. D. Khan	Chief Engineer, Bangladesh Television (BTV)
Mr. M. A. Wahed	Additional Chief Engineer, Bangladesh Television (BTV)
Mr. Nawazish Ali Khan	General Manager, Dhaka TV Station Bangladesh Television (BTV)
Mr. Anisur Rahman	Additional Chief Engineer, Bangladesh Television (BTV)
Md. Matiur Rahman	Senior Engineer, Operation & Maintenance Bangladesh Television (BTV)
Mz. Latifa Chowdhury	Engineering Manager, Dhaka TV Station Bangladesh Television (BTV)
Mr. Kutubudd Ahmed	Director Finance, Account & Finance Bangladesh Television (BTV)
Mr. Rafiqul Islam Sarkar	Chief News Editor, News Department Bangladesh Television (BTV)
Md. Moyeedul Hoq Choudhury	Senior Engineer, Bangladesh Television (BTV)
Mr. Enamul Hoq Choudhury	Controller, Engineering Department Bangladesh Television (BTV)

National Institute of Mass Communication (NIMC)

Mr. Takeshi Satoh	JICA Expert, National Institute of Mass Communication (NIMC)
Mr. M. Lokman Ahmed	Additional Director General National Institute of Mass Communication (NIMC)
Mr. A. K. M. Abdul Aziz	Director, National Institute of Mass Communication (NIMC)

4. Minutes of Discussions

MINUTES OF DISCUSSIONS
THE STUDY ON THE PROJECT
FOR
REHABILITATION OF DHAKA TELEVISION
IN
THE PEOPLE'S REPUBLIC OF BANGLADESH

In response to a request from the Government of the People's Republic of Bangladesh, the Government of Japan decided to conduct a Study on the Project for rehabilitation of Dhaka Television (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as JICA) succeeding to the study results of "Basic Design Study on the Project for Rehabilitation of Dhaka Television in the People's Republic of Bangladesh" which had been conducted by JICA in 1993.

In order to confirm the final components of the Project, JICA sent to Bangladesh a study team, which is headed by Mr. Naoya KUWAHARA, Training Division, Emigration Center, JICA and is scheduled to stay in the country from 10th to 17th of March, 1997.

The team held a series of discussions with the relevant officials of Bangladesh and conducted a field survey at the study area.

As a result of discussions and field survey, both sides have confirmed the main items described in the attached sheets.

The team will proceed to further works and prepare the Study report.

Dhaka, March 16, 1997

Mr. Naoya KUWAHARA
Leader
Study Team
JICA

Mr. Fakrul Ahsan
Deputy Chief
Economic Relations Division
Ministry of Finance

Md. Jalal Uddin
Deputy Chief
Ministry of Information

Mr. S. D. Khan
Chief Engineer
Bangladesh Television

ATTACHMENT

1. OBJECTIVE

The objective of the Project is to rehabilitate the facilities of Dhaka Television.

2. PROJECT SITE

The site of the Project is the Dhaka Television Center (shown in ANNEX-I), Rampura.

3. EXECUTING AGENCY

Bangladesh Television, Ministry of Information is responsible for the administration and execution of the Project.

4. ITEMS REQUESTED BY THE GOVERNMENT OF BANGLADESH

As a result of the series of discussions, the following items were finally requested by the Bangladesh side.

(1) One set of Master Control equipment
(2) One set of Drama Studio equipment
(3) One set of News Studio equipment
(4) One set of small Studio equipment
(5) One set of Assignment Matrix Switcher
(6) Necessary Spare parts for above equipment

The schematic diagram of the Project are shown in ANNEX-II and the detail list of equipment in ANNEX-III.

In the detail list, the equipment attached † mark means changed request from the results of Basic Design conducted in 1993.

However, the final detail components of the Project will be decided after further studies.

5. JAPAN GRANT AID SYSTEM

The Government of Bangladesh have understood the system of Japan's Grant Aid explained by the team. (ANNEX-IV)

6. NECESSARY MEASURES TO BE TAKEN BY THE BANGLADESH SIDE

The Government of Bangladesh will take necessary measures described in ANNEX-V for smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

7. THE SCHEDULE OF THE STUDY

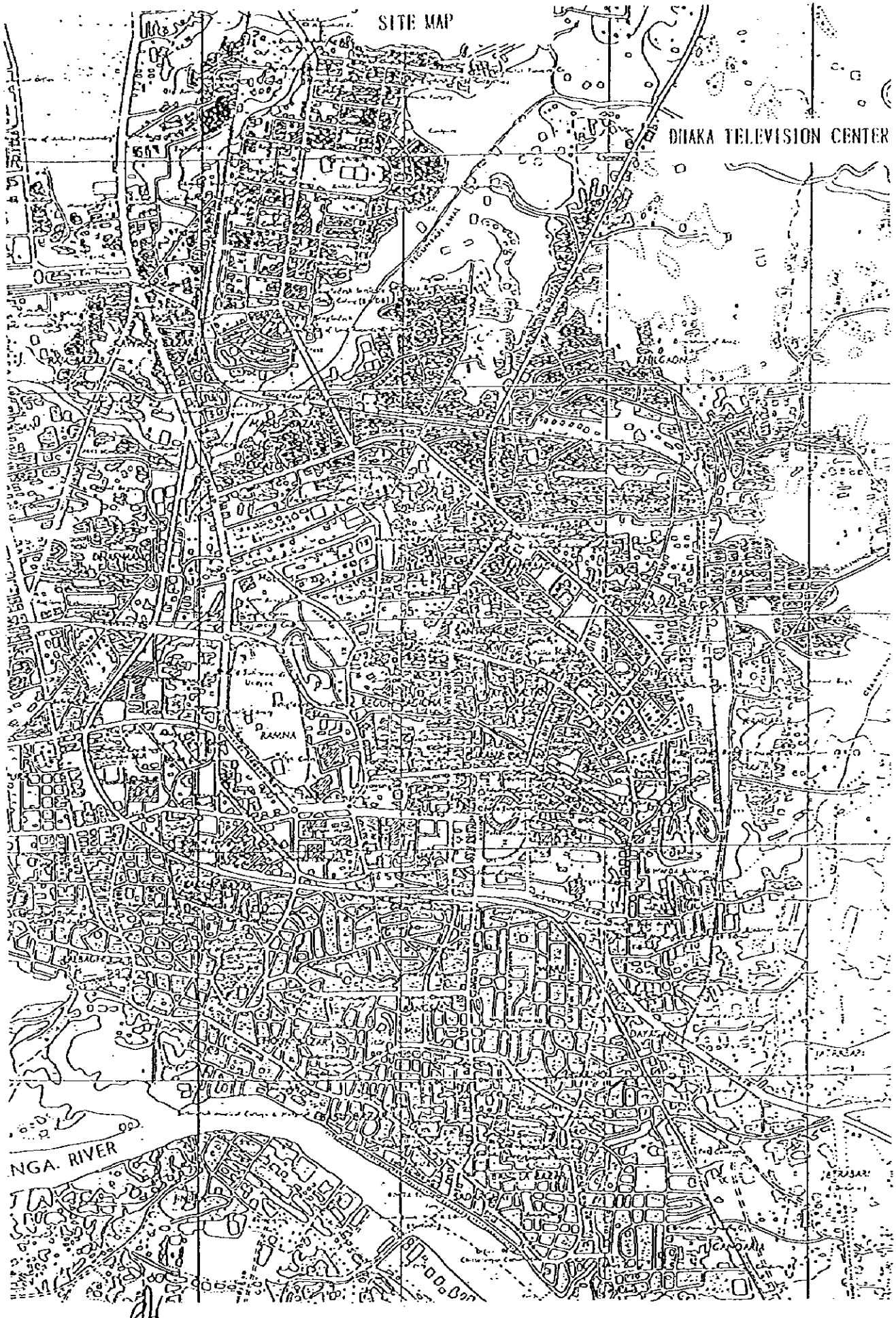
(1) Based on the results, JICA will prepare the Draft Study Report in English and forward it to the Bangladesh side by the end of April 1997 in order to confirm the contents.

(2) In case that the contents of the above report is accepted in principle by the Government of Bangladesh, JICA will complete the Study report and forward it to the Bangladesh side by the end of June 1997.

8. OTHER RELEVANT ISSUES

The government of Bangladesh shall provide all necessary information and data in case that the Study team request.

ANNEX I



ANNEX- II

SCHEMATIC DIAGRAM OF TV STUDIO
BANGLADESH TELEVISION, DHAKA

Remarks : Shaded items are existing equipment.

LIST OF EQUIPMENT

(1) Master Control Room

1) Video Equipment

① Programme Sending-out Switcher	3 sets	28-inputs, with audio switcher
② Monitor Switcher	1 set	
③ Remote Switcher	1 set	
④ Re-entry Switcher	1 set	
⑤ Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑥ Video Equalizing Amplifier	1 set	
⑦ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.
⑧ Video Jack Field	1 set	20-inputs/outputs

2) Sync. Pulse Generating Equipment

① Sync. Pulse Signal Generator	2 sets	With test signal generator
② Automatic Changeover Switcher	1 set	
③ Pulse Signal Distribution Amplifier	1 set	

3) Frame Synchronizer (F/S)	4 sets	
4) Video Processing Amplifier	1 set	
5) VITS Signal Inserter	2 sets	With VITS signal generator
6) Character Generator	2 sets	With TBC & monitor
7) Caption Scanner	1 set	With monitor
8) Video Timer	1 set	
9) Station Logo Generator	1 set	

10) Audio Equipment

① Monitor Switcher	1 set	
② Remote Switcher	1 set	
③ Re-entry Switcher	1 set	
④ Audio Distribution Amplifier	1 set	
⑤ Limiting Amplifier	3 sets	
⑥ Audio Jack Field	1 set	
⑦ Cassette Tape Recorder	3 sets	
⑧ CD Player	1 set	
11) 1/2-inch VTR	2 sets	Playback only, with monitor

12) Monitoring Equipment

① Video Monitor	23 sets	
② 20-inch Video Monitor	3 sets	
③ Video Monitor	1 set	Precision type
④ TV Receiver	1 set	
⑤ Waveform Monitor	1 set	
⑥ Vectorscope	1 set	
⑦ Audio Monitor	1 set	With power amplifier
⑧ Monitor Shelf	1 set	

13) Clock System

① Master Clock Device	1 set
② 1-second Slave Clock	10 sets
③ 30-second Slave Clock	15 sets
14) Room to Room Interphone	1 set
15) TV In-house Monitor	1 set
16) Operation Console	1 set
17) Rack Assembly	4 sets
18) Video Transformer	1 lot
19) Power Distribution Board	1 set
20) Installation Materials	1 set

(2) Assignment Switcher

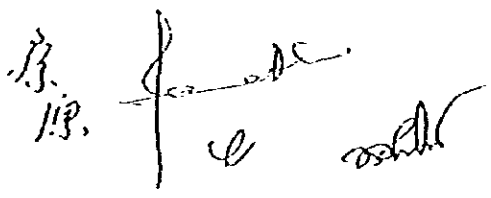
1) Video Equipment

① VTR Recording Switcher	1 set
② VTR Playback Switcher	1 set
③ T/C Switcher	1 set

④ Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
⑤ Video Jack Field	1 set	20-inputs/outputs
2) Audio Equipment		
① VTR Recording Switcher	1 set	
② VTR Playback Switcher	1 set	
③ T/C Switcher	1 set	
④ Audio Distribution Amplifier	1 set	
⑤ Audio Jack Field	1 set	
3) Monitoring Equipment		
① Monitor Switcher	1 set	Audio follow video
② Video Monitor	2 sets	
③ Waveform Monitor	2 sets	
④ Vectorscope	2 sets	
⑤ Audio Monitor	2 sets	With power amplifier
4) 1/2-inch VTR	4 sets	Play/Rec, with monitor
5) 1-inch VTR	5 sets	Existing equipment
6) 3/4-inch VTR	1 set	Existing equipment
7) T/C Equipment	3 sets	Existing equipment
8) Operation Console	1 set	
9) Rack Assembly	4 sets	
10) Power Distribution Board	2 sets	
11) Installation Materials	1 set	

(3) News-Continuity Studio

* 1) Colour Camera		
① Camera Head	2 sets	CCD, with viewfinder
② Zoom Lens	2 sets	More than 14 times
③ Pedestal	2 sets	
④ Camera Control Unit	2 sets	
⑤ Prompter	2 sets	



2) Video Production Equipment		
* ① Video Production Switcher	1 set	More than 18-inputs, 2-M/K
② Digital Video Effect	1 set	3-dimension
③ Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
④ Video Jack Field	1 set	20-inputs/outputs
⑤ Character Generator	1 set	With computer, TBC & monitor
⑥ Caption Scanner	1 set	With monitor
⑦ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.
3) Sync. Pulse Generating Equipment		
① Sync. Pulse Signal Generator	1 set	
② Pulse Signal Distribution Amplifier	1 set	
4) Audio Equipment		
① Audio Mixer	1 set	More than 20-inputs
② Cassette Tape Recorder	2 sets	
③ CD Player	1 set	
④ Audio Distribution Amplifier	1 set	
⑤ Audio Jack Field	1 set	
⑥ Microphones	6 sets	
Comprising ;		
·Uni-directional Condenser Mic	2 sets	
·Uni-directional Dynamic Mic	2 sets	
·Uni-directional Lavalier Mic	2 sets	
⑦ Microphone Stand	4 sets	Desk Stand
⑧ Cough-box	2 sets	
⑨ Desk	2 sets	
5) Monitoring Equipment		
① Video Monitor	16 sets	
② 20-inch Video Monitor	4 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	

	⑤ Vectorscope	1 set	
	⑥ Audio Monitor	2 sets	With power amplifier
	⑦ Monitor Shelf	1 set	
6)	1/2-inch VTR	1 set	Play/Rec, with monitor
7)	1-inch VTR	2 sets	Existing equipment
8)	Studio Intercom	1 set	
9)	Studio Lighting Equipment	1 set	Lantern and Accessory
10)	Switcher/PD Console	1 set	
11)	Rack	3 sets	
12)	Power Distribution Board	1 set	
13)	Installation Materials	1 set	

(4) Drama Studio

* 1)	Colour Camera		
	① Camera Head	4 sets	CCD, with viewfinder One set out of four is handy type.
	② Zoom Lens	4 sets	More than 18 times
	③ Pedestal	4 sets	
	④ Camera Control Unit	4 sets	
2)	Video Production Equipment		
*	① Video Production Switcher	1 set	More than 18-inputs, 2-M/K
	② Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
	③ Video Jack Field	1 set	20-inputs/outputs
	④ Character Generator	1 set	With computer, TBC & monitor
	⑤ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.

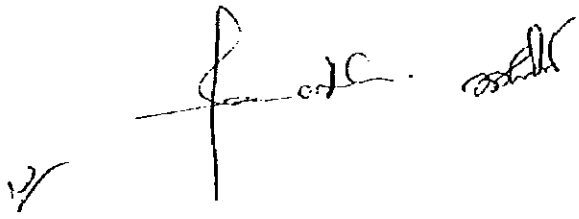
3) Sync. Pulse Generating Equipment			
① Sync. Pulse Signal Generator	1 set	
② Pulse Signal Distribution Amplifier	1 set	
4) Audio Equipment			
① Audio Mixer	1 set	More than 16-inputs
② Cassette Tape Recorder	2 sets	
③ CD Player	1 set	
④ Audio Distribution Amplifier	1 set	
⑤ Audio Jack Field	1 set	
⑥ Microphones	12 sets	
Comprising ;		
· Uni-directional Condenser Mic	3 sets	
· Uni-directional Dynamic Mic	2 sets	
· Omni-directional Condenser Mic	3 sets	
· Omni-directional Dynamic Mic	2 sets	
· Uni-directional Lavalier Mic	2 sets	
⑦ Microphone Stand	10 sets	Desk Stand, Floor Stand, Boom Stand (small)
⑧ Microphone Boom Dolly	2 sets	Length 1.2~4.5m
5) Monitoring Equipment			
① Video Monitor	10 sets	
② 20-inch Video Monitor	5 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	
⑤ Vectorscope	1 set	
⑥ Audio Monitor	2 sets	With power amplifier & cart
⑦ Monitor Shelf	1 set	
6) Studio Intercom	1 set	
7) Studio Lighting Equipment			
① Suspension Devices	1 set	
② Lighting Control Equipment	1 set	
③ Lantern and Accessory	1 set	
8) Switcher/PD Console	1 set	
9) Rack	2 sets	
10) Power Distribution Board	1 set	
11) Installation Materials	1 set	

(5) Small Studio

* 1)	Colour Camera		
	① Camera Head	3 sets	CCD, with viewfinder
	② Zoom Lens	3 sets	More than 16 times
	③ Pedestal	3 sets	
	④ Camera Control Unit	3 sets	
2)	Video Production Equipment		
*	① Video Production Switcher	1 set	More than 18-inputs, 2-M/K
	② Video Distribution Amplifier	1 set	Necessary amount of amplifiers for making up system to be included.
	③ Video Jack Field	1 set	20-inputs/outputs
	④ Character Generator	1 set	With TBC & monitor
	⑤ Delay Line	1 set	Necessary amount of delay lines for making up system to be included.
3)	Sync. Pulse Generating Equipment		
	① Sync. Pulse Signal Generator	1 set	
	② Pulse Signal Distribution Amplifier	1 set	
4)	Audio Equipment		
	① Audio Mixer	1 set	More than 16-inputs
	② Cassette Tape Recorder	2 sets	
	③ CD Player	1 set	
	④ Audio Distribution Amplifier	1 set	
	⑤ Audio Jack Field	1 set	
	⑥ Microphones	10 sets	
	Comprising ;		
	·Uni-directional Condenser Mic	2 sets	
	·Uni-directional Dynamic Mic	2 sets	
	·Omni-directional Condenser Mic	2 sets	
	·Omni-directional Dynamic Mic	2 sets	
	·Omni-directional Lavalier Mic	2 sets	

⑦ Microphone Stand	8 sets	Desk Stand, Floor Stand, Boom Stand (small)
5) Monitoring Equipment		
① Video Monitor	9 sets	
② 20-inch Video Monitor	5 sets	With cart
③ Video Monitor	1 set	Precision type
④ Waveform Monitor	1 set	
⑤ Vectorscope	1 set	
⑥ Audio Monitor	2 sets	With power amplifier & cart
⑦ Monitor Shelf	1 set	
6) Studio Intercom	1 set	
7) Studio Lighting Equipment		
① Suspension Devices	1 set	
② Lighting Control Equipment	1 set	
③ Lantern and Accessory	1 set	
8) Switcher/PD Console	1 set	
9) Rack	2 sets	
10) Power Distribution Board	1 set	
11) Installation Materials	1 set	
(6) Measuring Equipment		
1) Oscilloscope	2 sets	2-channel, With cart
2) TV Test Signal Generator	1 set	Colour Bar, Multi-burst, Window, Staircase
3) Waveform Monitor	1 set	
4) Vectorscope	1 set	
5) Audio Distortion Meter/Oscillator	1 set	Frequency Response, Noise, Distortion
6) Multi Meter	5 sets	
7) Hand Tool Set	5 sets	
(7) Raw Tapes for 1/2-inch VTR	1 set	

(8) Spare Parts		1 set	
(9) Acoustic Material for three Studios		1 set	Glass Wool



Japan's Grant Aid

1 Japan's Grant Aid System

(1) Grant Aid Procedures

1) Japan's Grant Aid Programme is executed through the following procedures.

Application	(request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Government of Japan and the recipient country

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan will assign JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firms(s).

Thirdly, the Government of Japan appraises the Project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the Project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

① Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation

② Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view

③ Confirmation of items agreed on by both parties concerning the basic concept of the Project

④ Preparation of a basic design of the Project

⑤ Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed

by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firms(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

(3) Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Programme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services(engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant

Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.
When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.
However the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"
The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

6) Undertakings required of the Government of the Recipient Country
In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

① To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.

② To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.

③ To secure buildings prior to the procurement in case the installation of the equipment.

④ to ensure prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.

⑤ To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.

⑥ To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

⑦ "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

⑧ "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

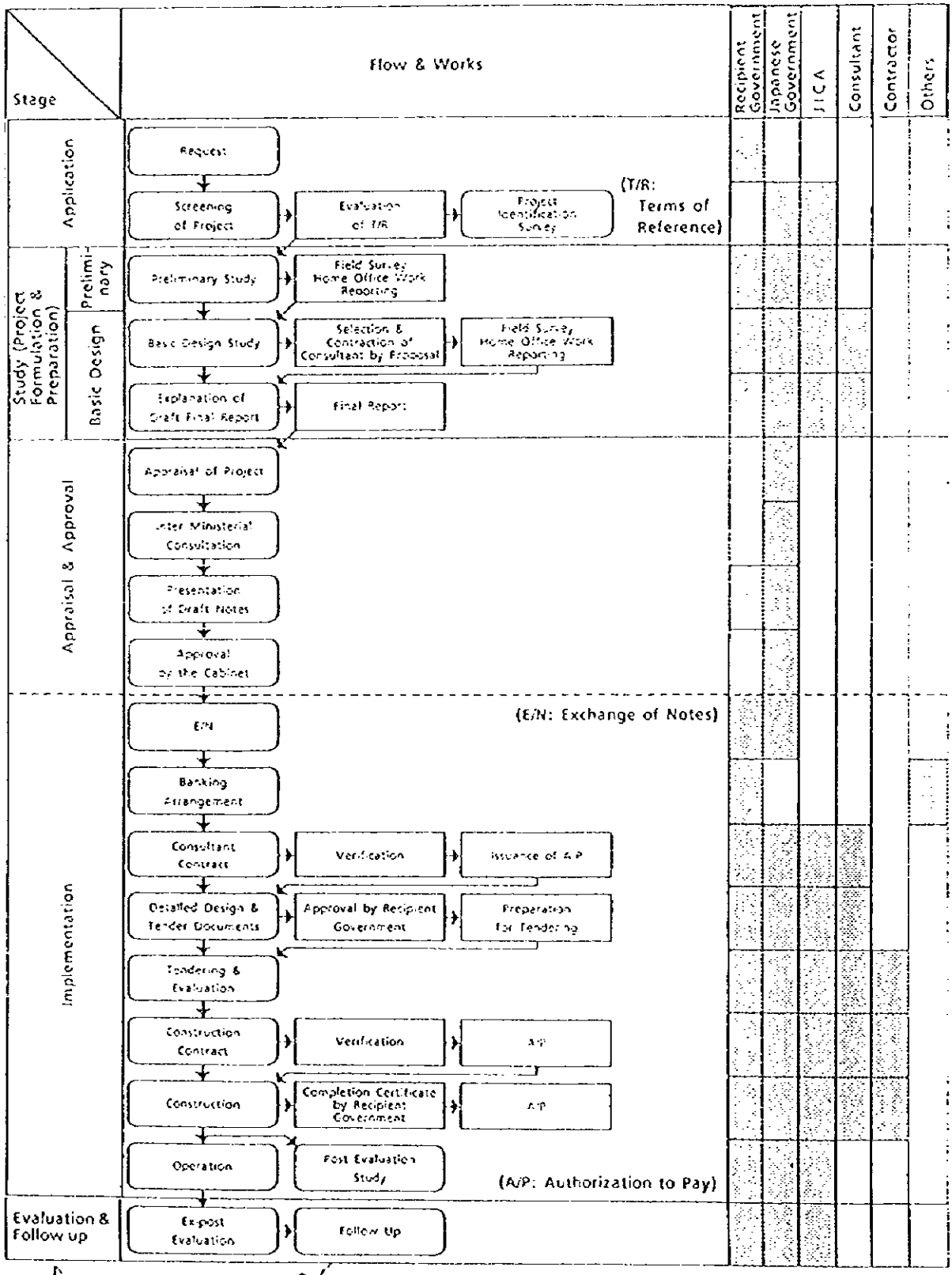
⑨ Banking Arrangements (B/A)

ⓐ The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank of Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

ⓑ The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

2 Grant Aid Procedures

Flow Chart of Japan's Grant Aid Procedures



Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1.	To secure land		●
2.	To clear, level and reclaim the site when needed		●
3.	To construct gates and fences in and around the site		●
4.	To construct the parking lot	●	
5.	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6.	To construct the buildings	●	
7.	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8.	To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the E/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9.	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient county	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10.	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
11.	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		●
12.	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant.		●
13.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		●

ANNEX-V

Necessary measures to be taken by the Government of Bangladesh:

1. To demolish existing facilities and remove existing equipment, if required and agreed by both parties for the execution of works.

2. To complete interior finishing work of necessary facilities prior to the commencement of the equipment installation.

3. To provide facilities for distribution of electricity and other incidental facilities at the Project site.

4. To bear advising commissions of the Authorization to Pay(A/P) and payment commission to the Japanese foreign exchange bank for banking services based upon the Banking Arrangement(B/A).

5. To ensure prompt unloading, tax payment and custom clearance of the materials and equipment for the Project at port of disembarkation.

6. To accord Japanese Nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Bangladesh and stay therein for the performance of their work.

7. In order to exempt Japanese Nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Bangladesh with respect to the supply of the Products and services under the verified contracts, the cost of duties, internal taxes and other fiscal levies to be imposed under the Bangladesh Regulations shall be borne by the relevant Ministry/Agency Concerned with the Project for which necessary budget provision shall be made by them.

8. To maintain and use properly and effectively that the facilities constructed and equipment purchased under the verified contracts.

9. To bear all the expenses other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.

5. Cost Estimation Borne by the People's Republic of Bangladesh

5. Cost Estimation Borne by the People's Republic of Bangladesh

Approximate project cost to be covered by the Bangladesh side is estimated at about 100.6 lakh TK as shown below.

① Removal of existing equipment	2.5 lakh TK
② Interior finishing work in all studio	105.4 lakh TK
Total	105.4 lakh TK