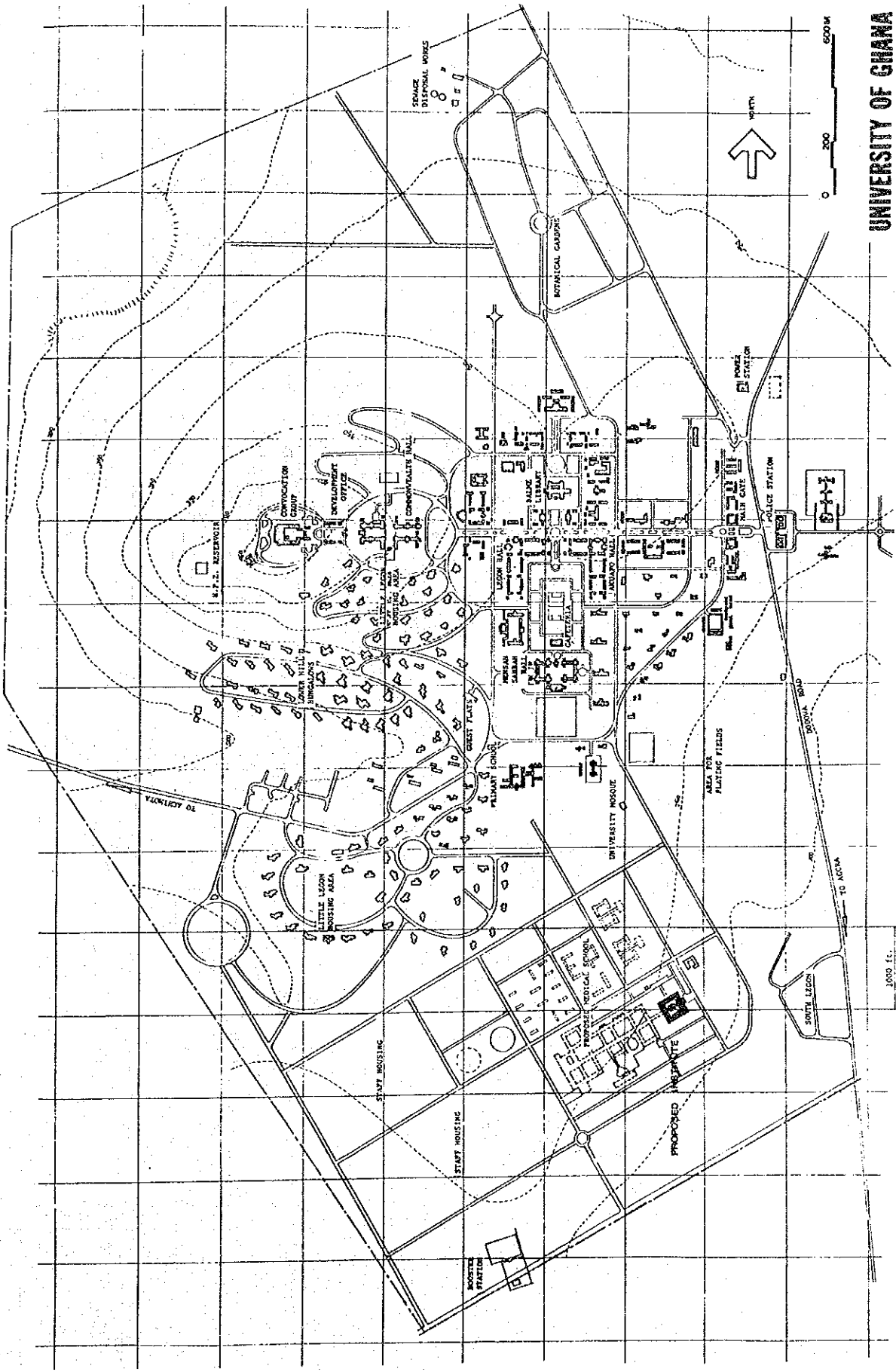


4 - 3 基本設計図

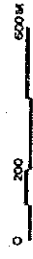
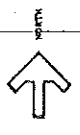
基本設計図は下記図面よりなる。

DWG.NO.	DWG. TITLE
1.	UNIVERSITY OF GHANA MASTER PLAN
2.	MEDICAL SCHOOL MASTER PLAN
3.	SITE PLAN
4.	FLOOR PLAN LEVEL 1
5.	FLOOR PLAN LEVEL 2
6.	ELEVATIONS & SECTIONS
7.	AIR CONDITIONING PLAN LEVEL 1
8.	AIR CONDITIONING PLAN LEVEL 2
9.	PLUMBING MASTER PLAN
10.	PLUMBING PLAN LEVEL 1
11.	PLUMBING PLAN LEVEL 2
12.	POWER SUPPLY & TELEPHONE MASTER PLAN
13.	POWER DISTRIBUTION DIAGRAM
14.	ELECTRICAL PLAN LEVEL 1
15.	ELECTRICAL PLAN LEVEL 2
16.	LABORATORY TYPICAL PLAN
17.	FLOOR AREA TABULATION OUTLINE OF BUILDING AND FINISHES

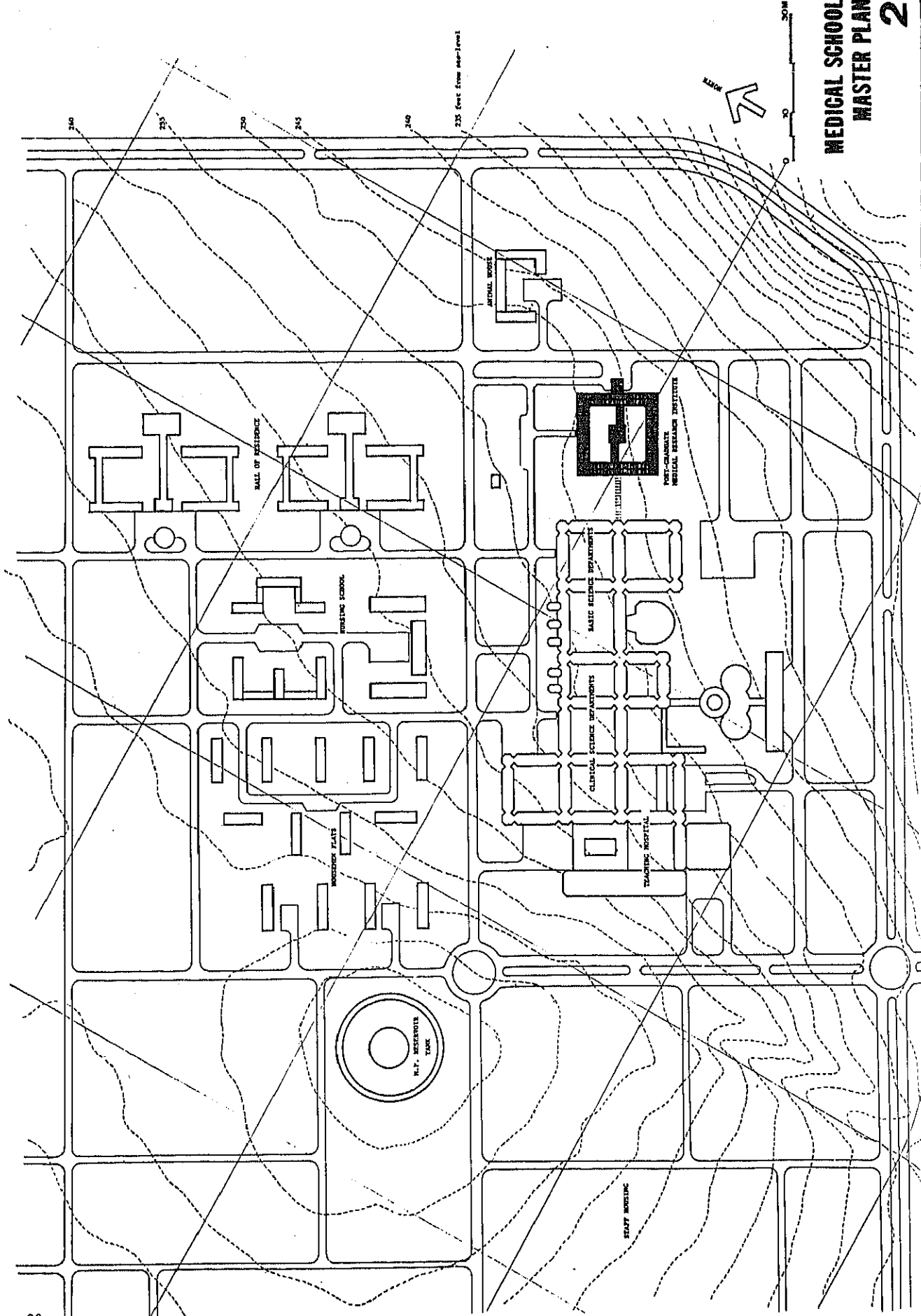


**UNIVERSITY OF GHANA
MASTER PLAN**

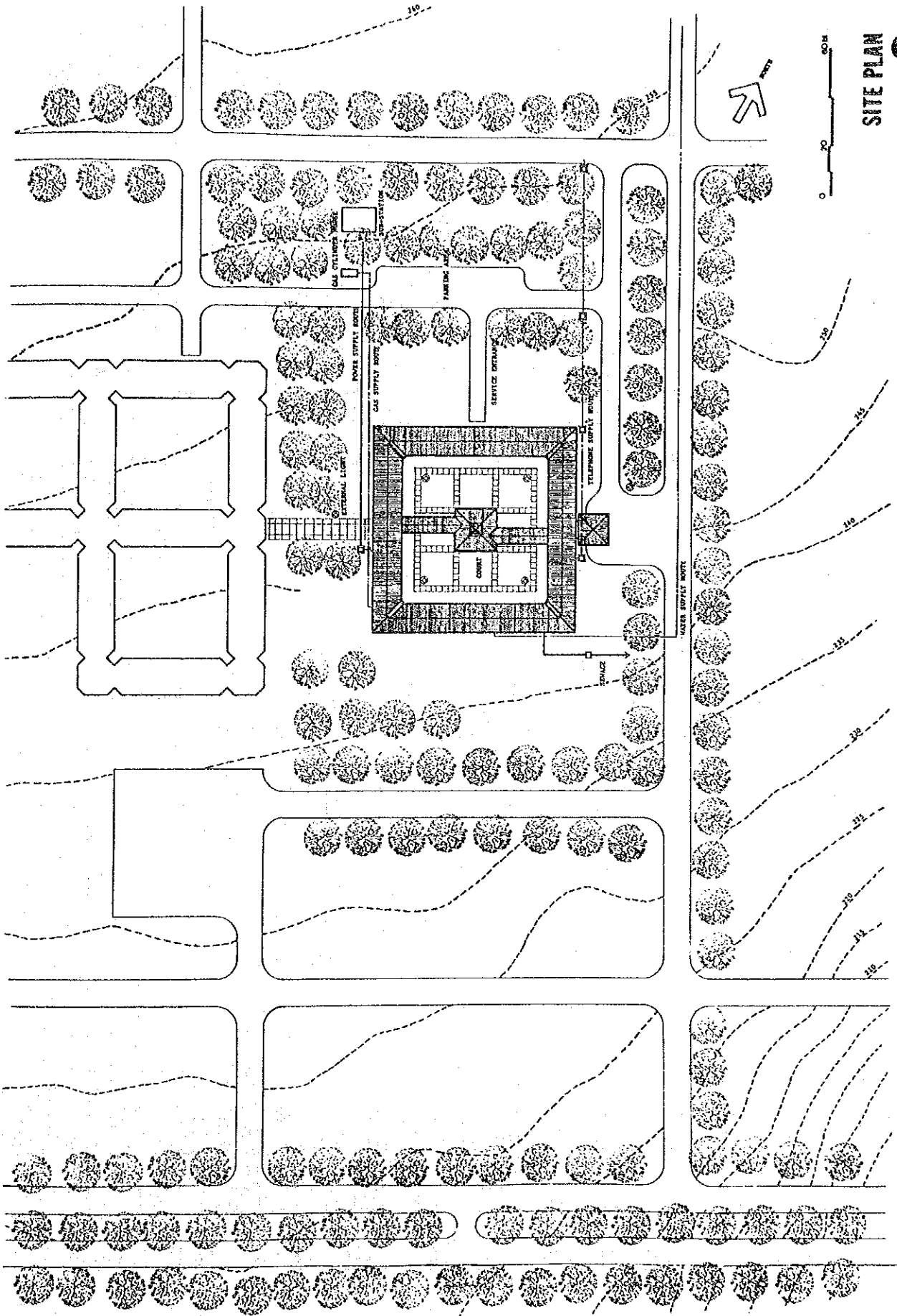
1



1:1000 ft.



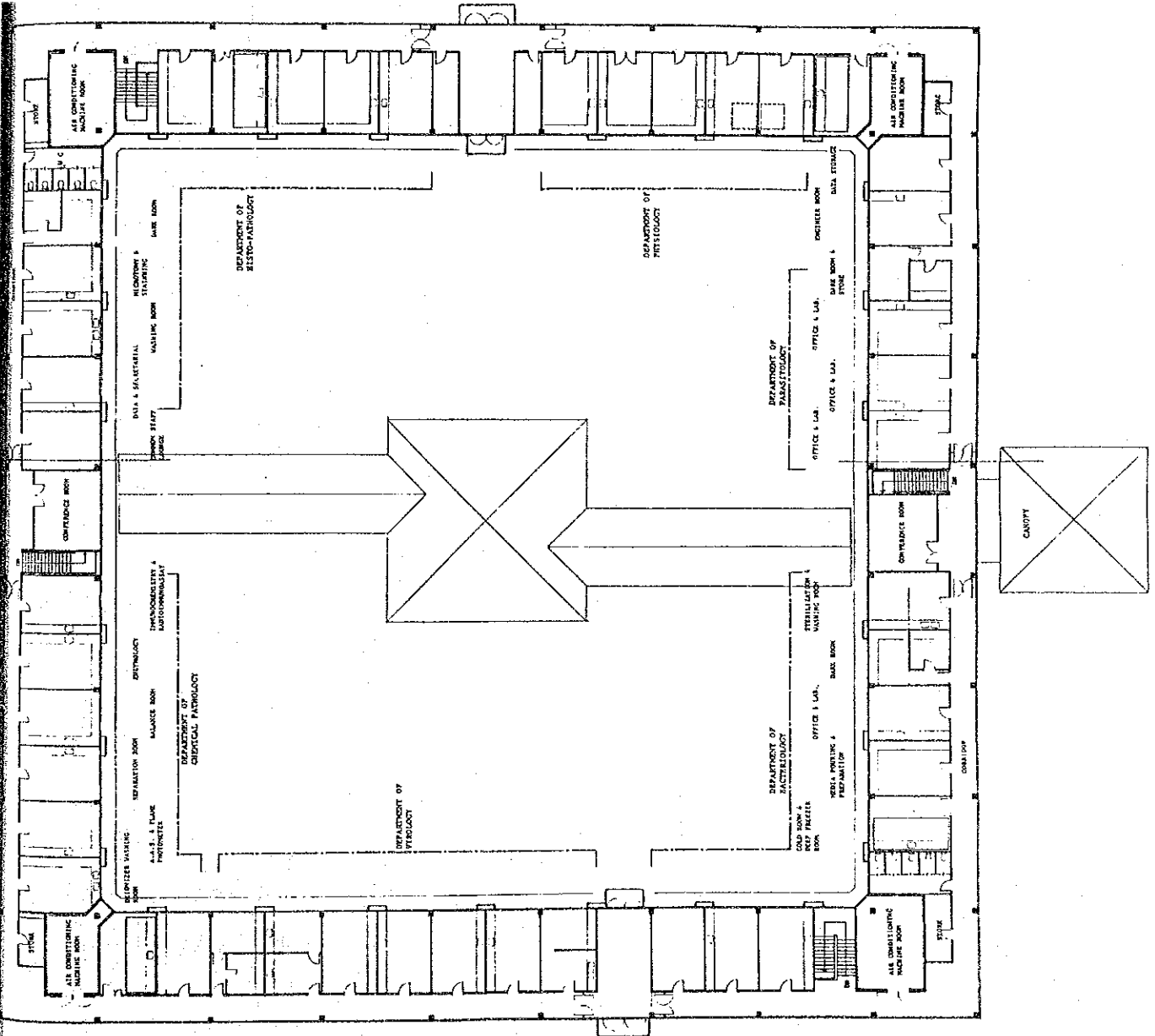
**MEDICAL SCHOOL
MASTER PLAN
2**



SITE PLAN
3

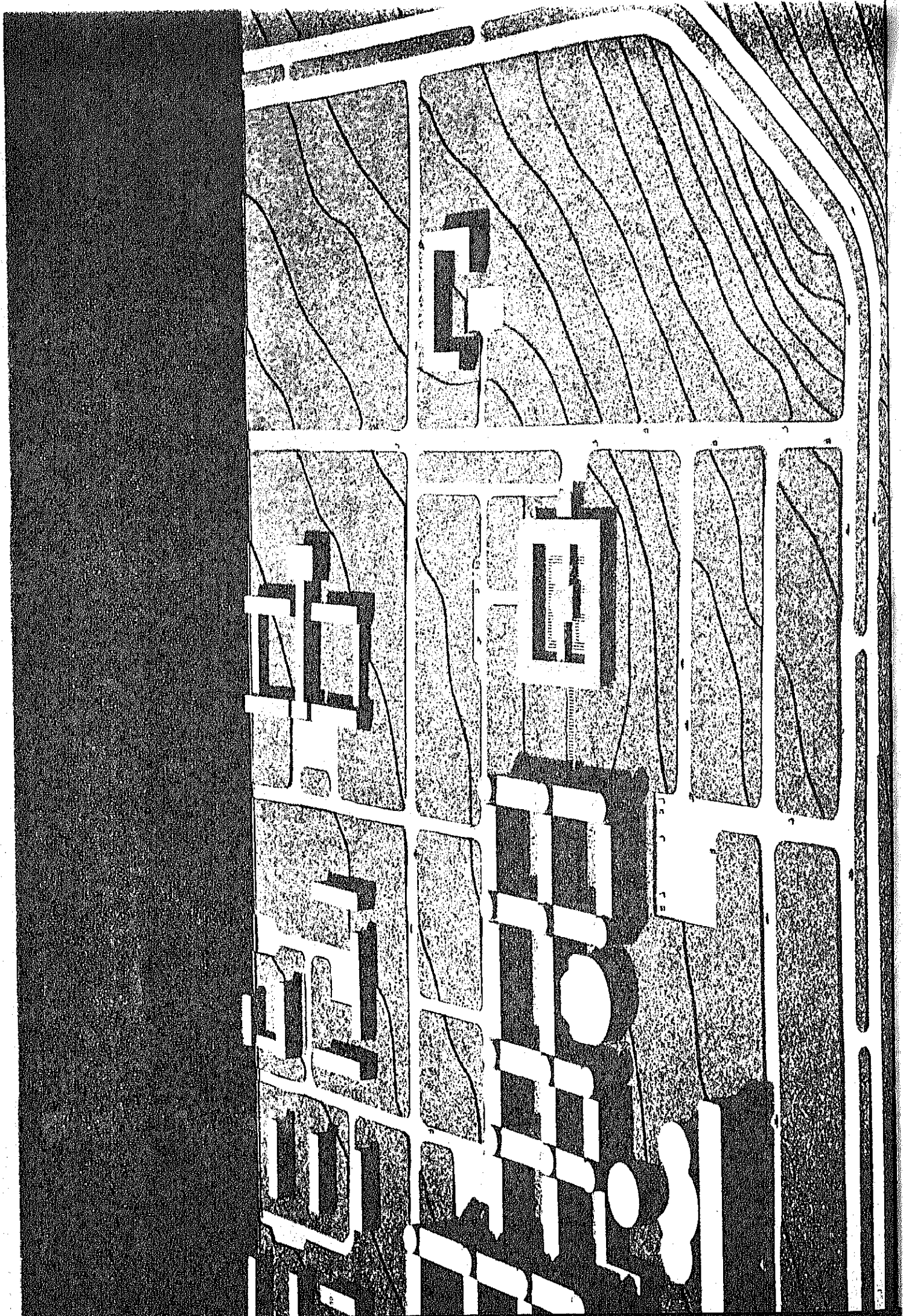
**FLOOR PLAN
LEVEL 2
5**

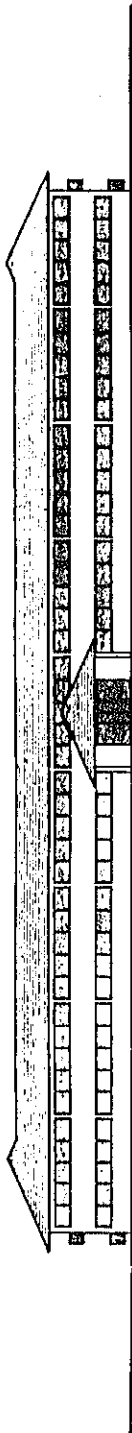
0 2 4 6 8 10 M



COLD ROOM & DEEP FREEZER ROOM
DATA/RECORDIAL
CONFERENCE ROOM
TIEING CHAIRS ROOM
OFFICE & LAB.
OFFICE & LAB.
INTERVIEW ROOM
OFFICE & LAB.
RECEPTION & PREPARATION ROOM
STONE
STONE
OFFICE & LAB.
OFFICE & LAB.
STONE
OFFICE & LAB.
OFFICE & LAB.

TRASH COLLECTOR ROOM
COLD ROOM & DEEP FREEZER ROOM
STEPS-CORRIDOR
OFFICE
RECEPTION & PREPARATION
STONE
STONE
PREPARATION ROOM
GENERAL LAB.
C.V.I./R.L.
PLATING-POSTMOUNT
STAFF ROOM
COLD ROOM & DEEP FREEZER ROOM

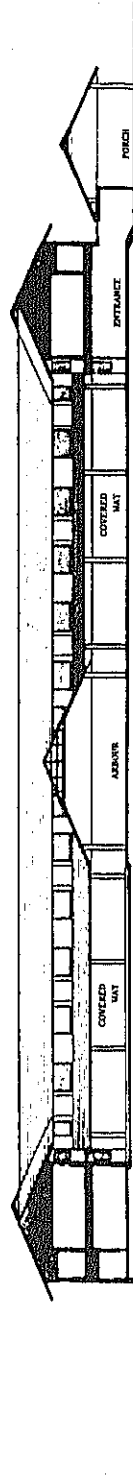




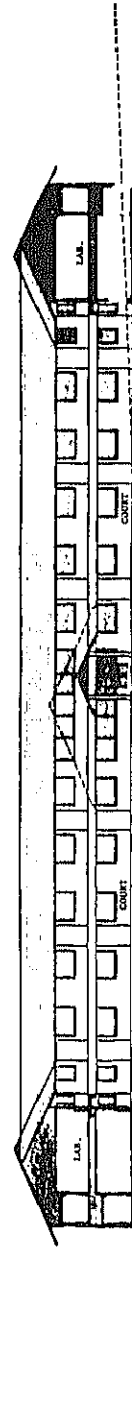
NORTH-EAST ELEVATION



SOUTH-EAST ELEVATION



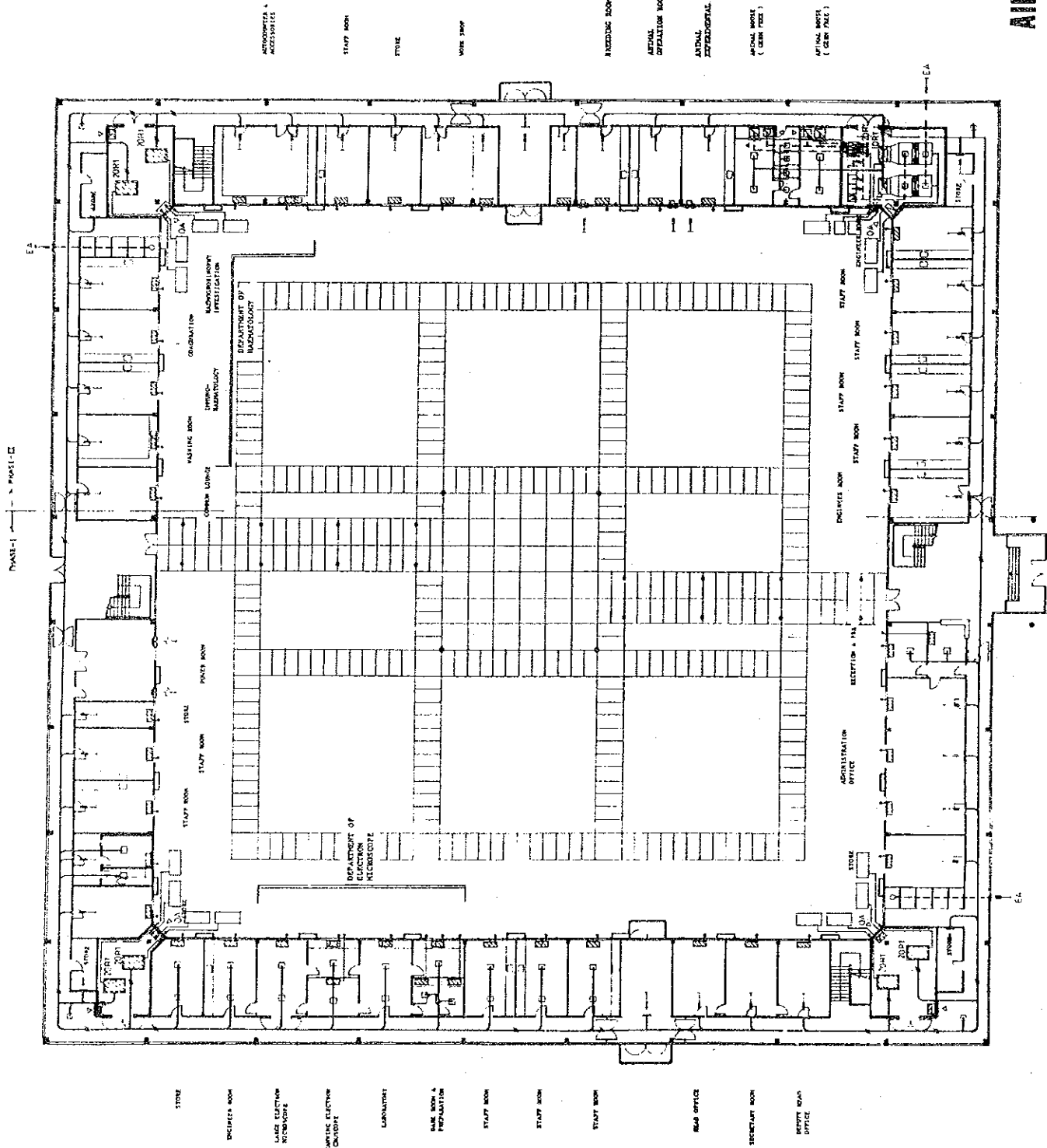
SECTION 1



SECTION 2

ELEVATION
& SECTION
6

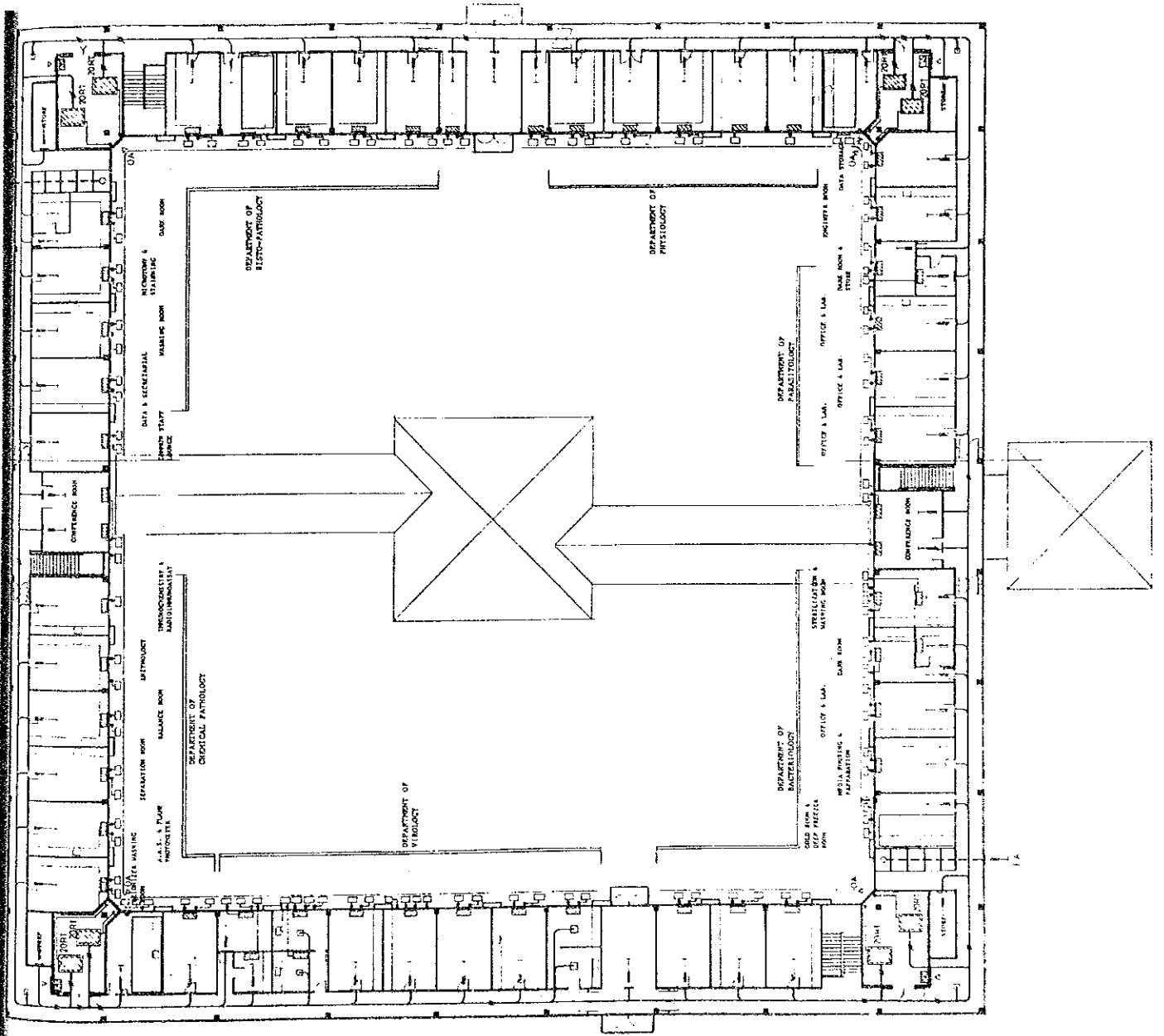
AIR CONDITIONING PLAN LEVEL 1



LEGEND

SYMBOL	DESCRIPTION
[Symbol: Box with diagonal lines]	AIR COOLED REMOTE CONDENSER
[Symbol: Box with horizontal lines]	SPLIT TYPE AIR CONDITIONERS
[Symbol: Circle with a dot]	EXHAUST FAN
[Symbol: Arrow]	V. D.
[Symbol: T-junction]	OUTLET
[Symbol: D-shape]	INLET
[Symbol: Rectangle with a dot]	ROOMPOINT

- ANTHROPOMETER ACCESSIBLE
- STAFF ROOM
- PTWC
- WHS SHIP
- RECEIVING ROOM
- ACTUAL OPERATING ROOM
- ACTUAL REPRODUCTION ROOM
- ACTUAL WORK (GEN. FILE)
- ACTUAL WORK (GEN. FILE)

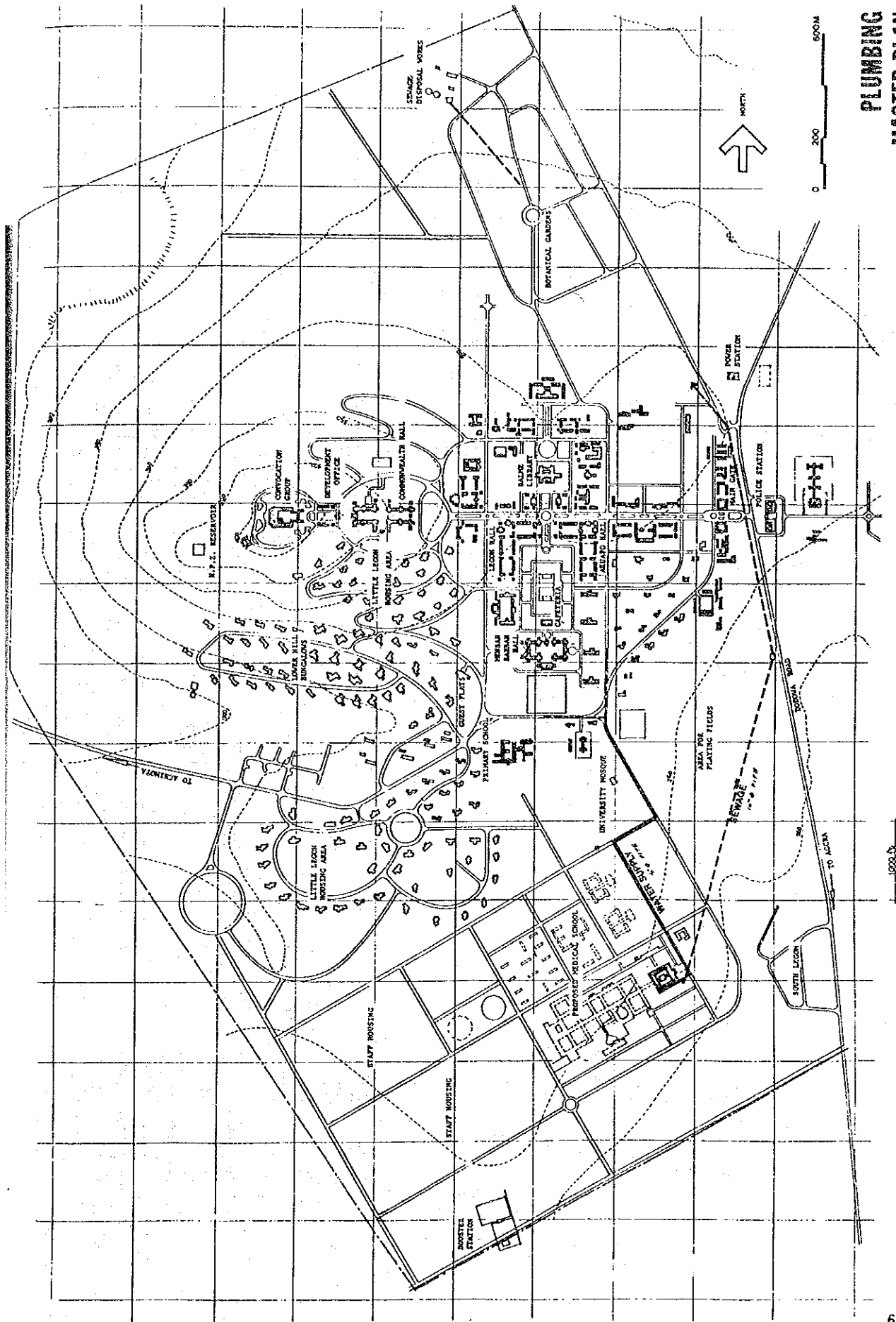


- WASTE CULTURE ROOM
- DIAPY ROOM
- HYDROCHLORIC ACID
- STORAGE
- RECEPTION & PREPARATION
- TRAY
- STAIN
- PREPARATION ROOM
- CENTRAL LAB
- C.A.S. P.A.S.
- EXTRA-CELLULAR PREPARATION
- STAFF ROOM
- WASH ROOM & DRY AREA

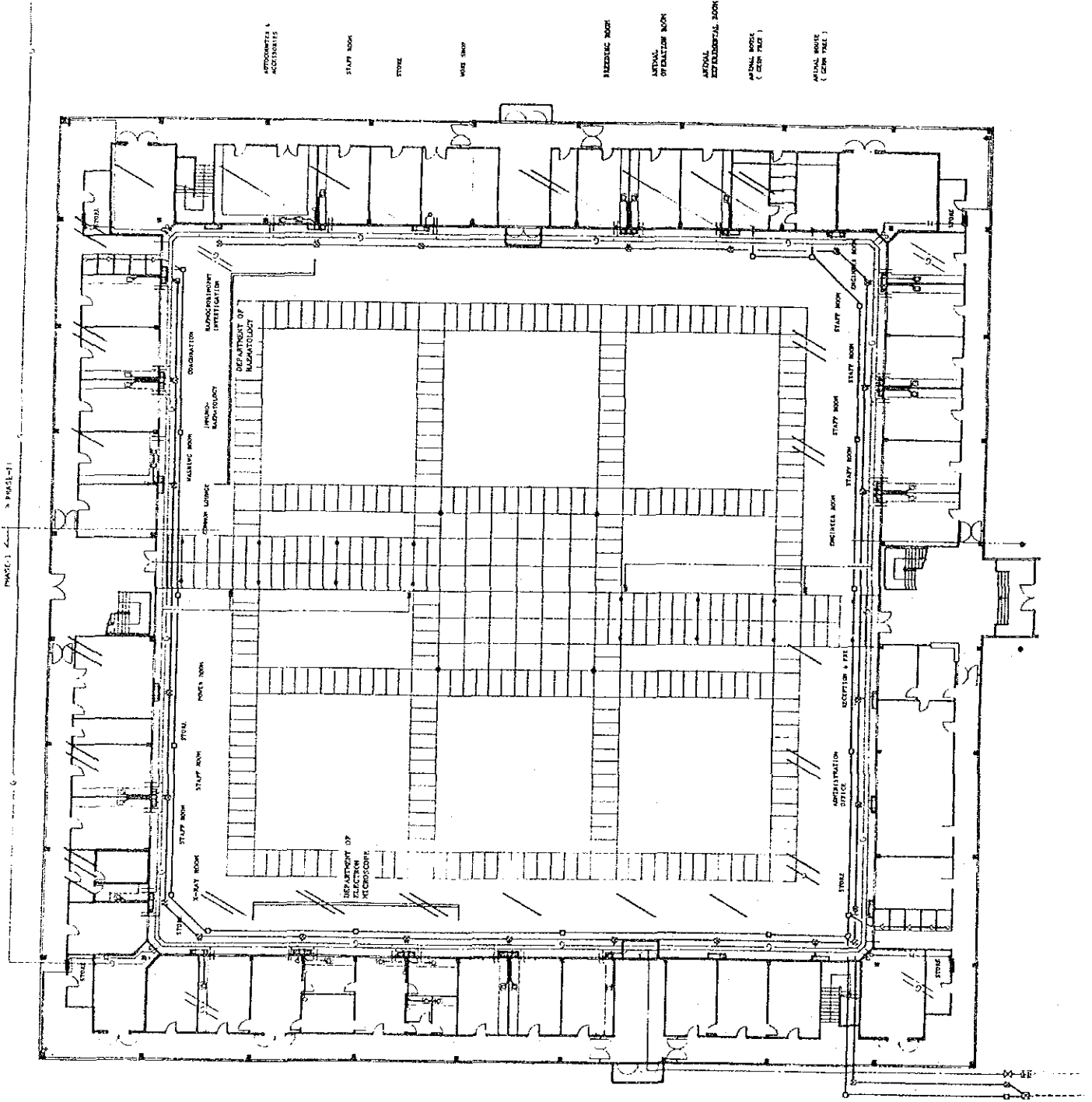
SYMBOL	DESCRIPTION
[Symbol]	AIR COOLED REFRIG. CONDENSER
[Symbol]	SPLIT TYPE AIR CONDITIONERS
[Symbol]	EXHAUST FAN
[Symbol]	V. D.
[Symbol]	OUTLET
[Symbol]	INLET
[Symbol]	EQUIPMENT

AIR CONDITIONING PLAN LEVEL 2 8

- OLD ROOM & DEEP FREEZER ROOM
- DATA/STORAGE
- CONSTANT TEMPERATURE ROOM & DRY ROOM
- TISSUE CULTURE ROOM
- OFFICE & LAB.
- OFFICE & LAB.
- ENTRANCE ROOM
- OFFICE & LAB.
- STERILIZATION & MASTER ROOM
- STOVE
- OFFICE & LAB.
- OFFICE & LAB.



**PLUMBING
MASTER PLAN
9**



LEGEND

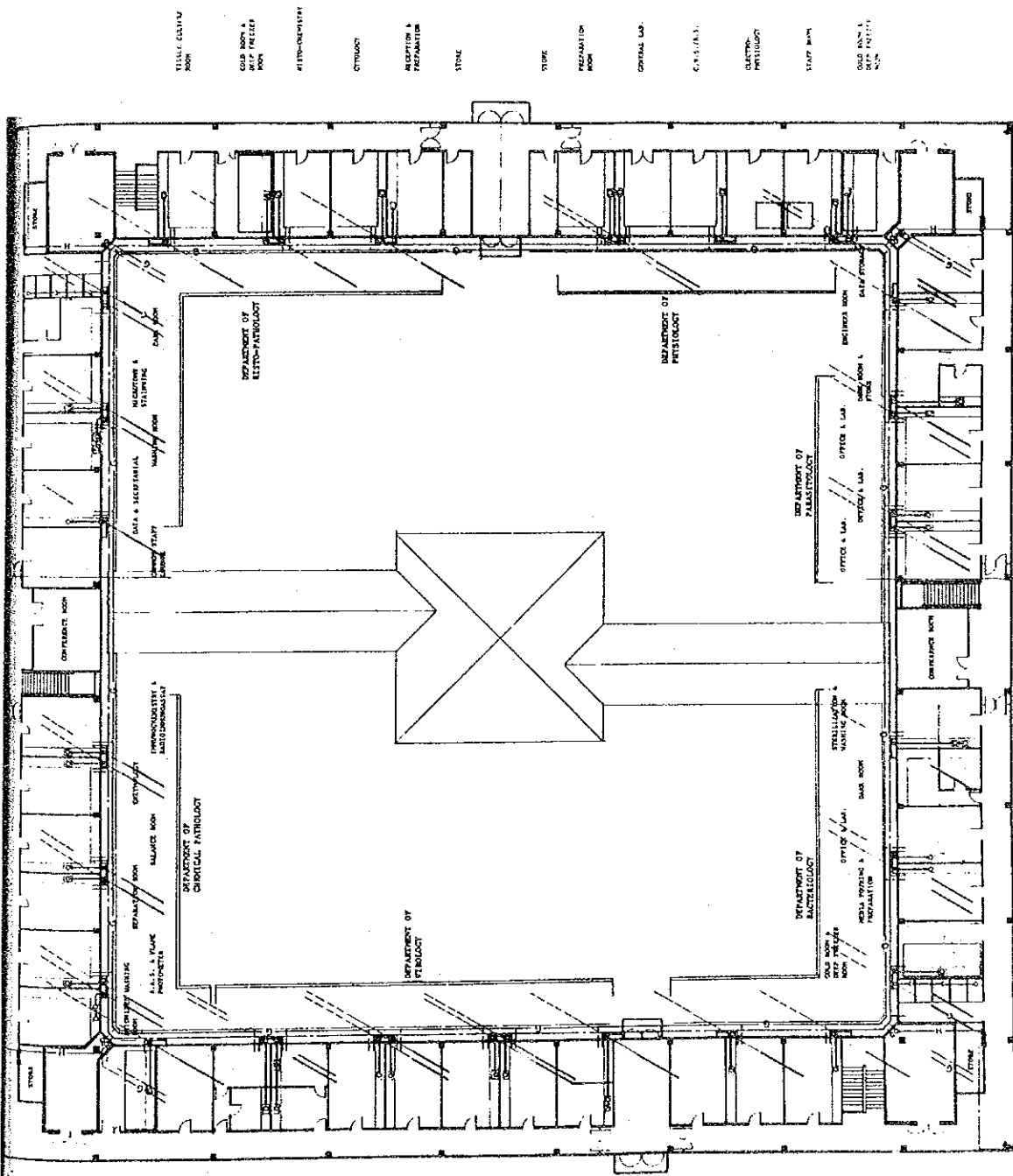
SYMBOL	DESCRIPTION
—	WATER PIPE
—	FIRE MAIN
—	DRAIN PIPE
—	SOIL PIPE
—	VENT PIPE
—	CHEMICAL SPOOL PIPE
—	RAINWATER PIPE
—	GAS PIPE (LPG)
—	GATE VALVE
—	CHECK VALVE
—	FAUCET
—	FLUSH VALVE
—	FLOOR CLEAN-OUT
—	FLOOR DRAIN
—	UNDER HOSE VALVE
—	SEWER PIT
—	SEWAGE PIT
—	FIRE HYDRANT CABINET

PLUMBING PLAN
LEVEL 1
10

PLUMBING PLAN LEVEL 2

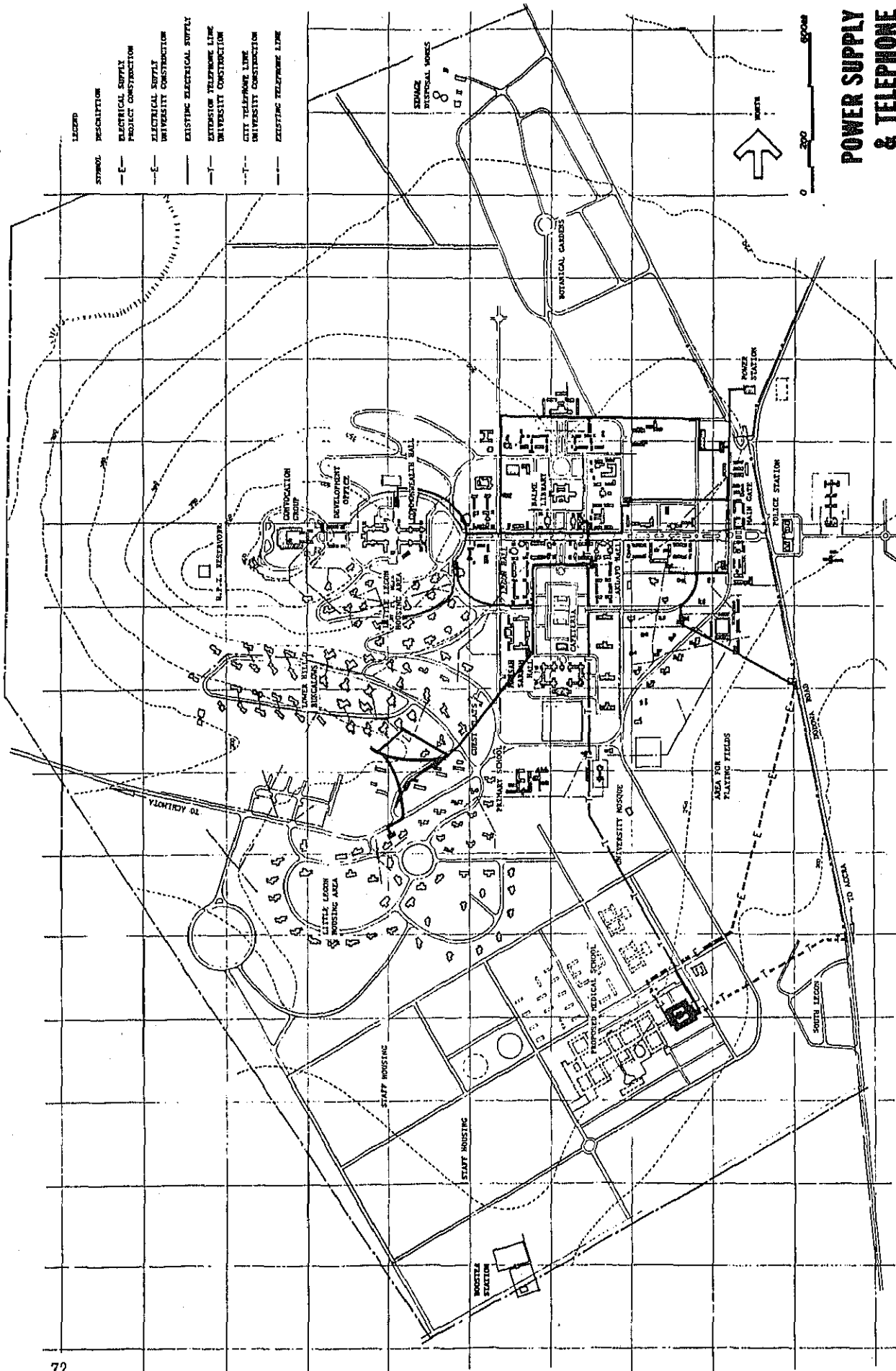
11

SYMBOL	DESCRIPTION
—	WATER PIPE
—H—	FIRE MAIN
—D—	DRAIN PIPE
—S—	SOIL PIPE
—V—	VENT PIPE
—C—	CHEMICAL SEWER PIPE
—R—	RAINWATER PIPE
—G—	GAS PIPE (LPG)
—M—	GATE VALVE
—V—	CHECK VALVE
□	FAUCET
●	FLUSH VALVE
⊕	FLOOR CLEAN OUT
⊙	FLOOR DRAIN
⊞	GARDEN ROSE VALVE
⊚	SEWER FIT
⊛	SLAG PIT
⊜	FIRE HYDRANT CABINET



COLD ROOM & DEEP FREEZER ROOM
 TISSUE CULTURE ROOM
 MICROBIOLOGY & IMMUNOLOGY LAB
 BALANCE ROOM
 REPAIR ROOM
 WASH & FLASK WASHING
 DEPARTMENT OF VIROLOGY
 DEPARTMENT OF BACTERIOLOGY
 MEDIA PREPARATION & STORAGE ROOM
 DEPARTMENT OF HISTOLOGY
 OFFICE & LAB.
 OFFICE & LAB.
 DEPARTMENT ROOM
 OFFICE & LAB.
 MICROBIOLOGY & IMMUNOLOGY LAB
 STAIR
 OFFICE & LAB.
 OFFICE & LAB.

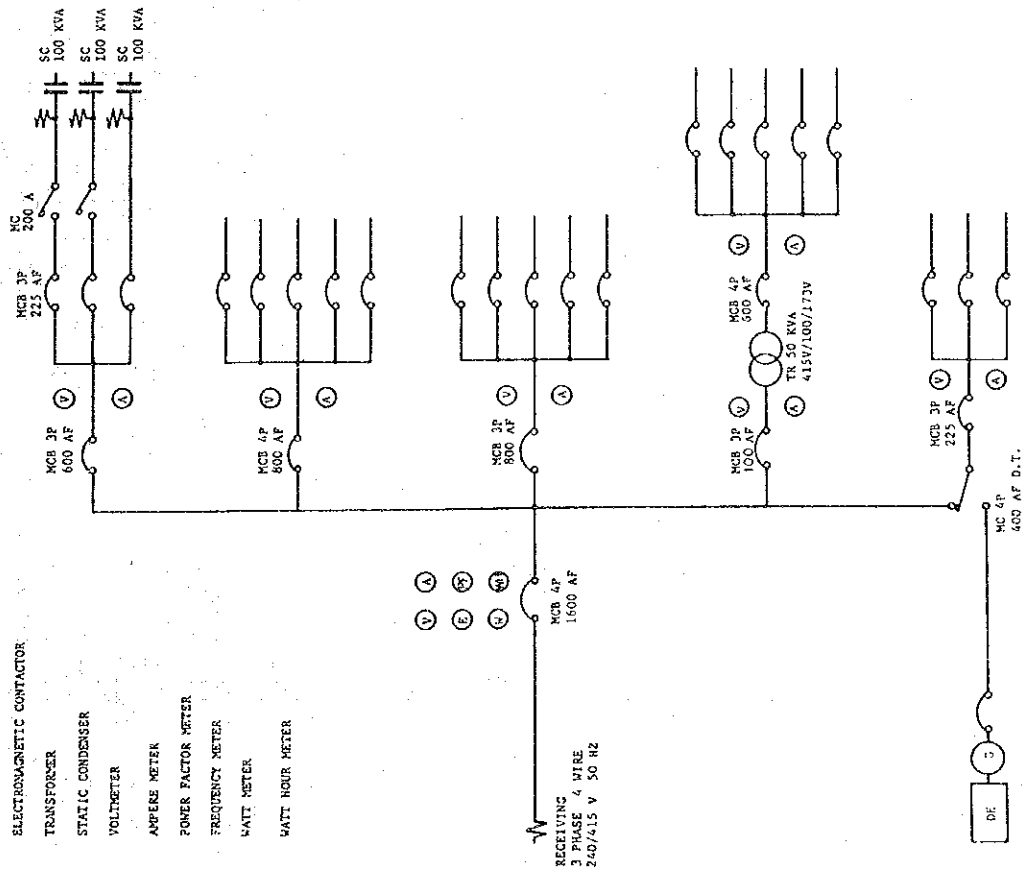
SYMBOL	DESCRIPTION
—E—	ELECTRICAL SUPPLY PROJECT CONSTRUCTION
—E—	ELECTRICAL SUPPLY UNIVERSITY CONSTRUCTION
—	EXISTING ELECTRICAL SUPPLY
—T—	EXTENSION TELEPHONE LINE UNIVERSITY CONSTRUCTION
—T—	CITY TELEPHONE LINE UNIVERSITY CONSTRUCTION
—T—	EXISTING TELEPHONE LINE



**POWER SUPPLY
& TELEPHONE
MASTER PLAN
12**

LEGEND

- MCB MOLDED CASE CIRCUIT BREAKER
- MC ELECTROMAGNETIC CONTACTOR
- TR TRANSFORMER
- SC STATIC CONDENSER
- V VOLTMETER
- A AMPERE METER
- PF POWER FACTOR METER
- F FREQUENCY METER
- W WATT METER
- WH WATT HOUR METER



VOLTAGE	MCB	LOAD CAPACITY
3 PHASE 4 WIRE 240/415 V FOR LABORATORIES' LIGHTING SOCKET OUTLET AIR CONDITIONER ELECTRIC BOILER	AP 225 AF	PHASE I LEVEL I 100 KVA
	"	PHASE I LEVEL II 100 KVA
	"	PHASE II LEVEL I 100 KVA
	"	PHASE II LEVEL II 100 KVA
	AP 225 AF	SPARE

3 PHASE 3 WIRE 415 V FOR POWER	JP 225 AF	PHASE I LEVEL I 70 KW
	"	PHASE I LEVEL II 70 KW
	"	PHASE II LEVEL I 70 KW
	"	PHASE II LEVEL II 70 KW
	JP 225 AF	SPARE

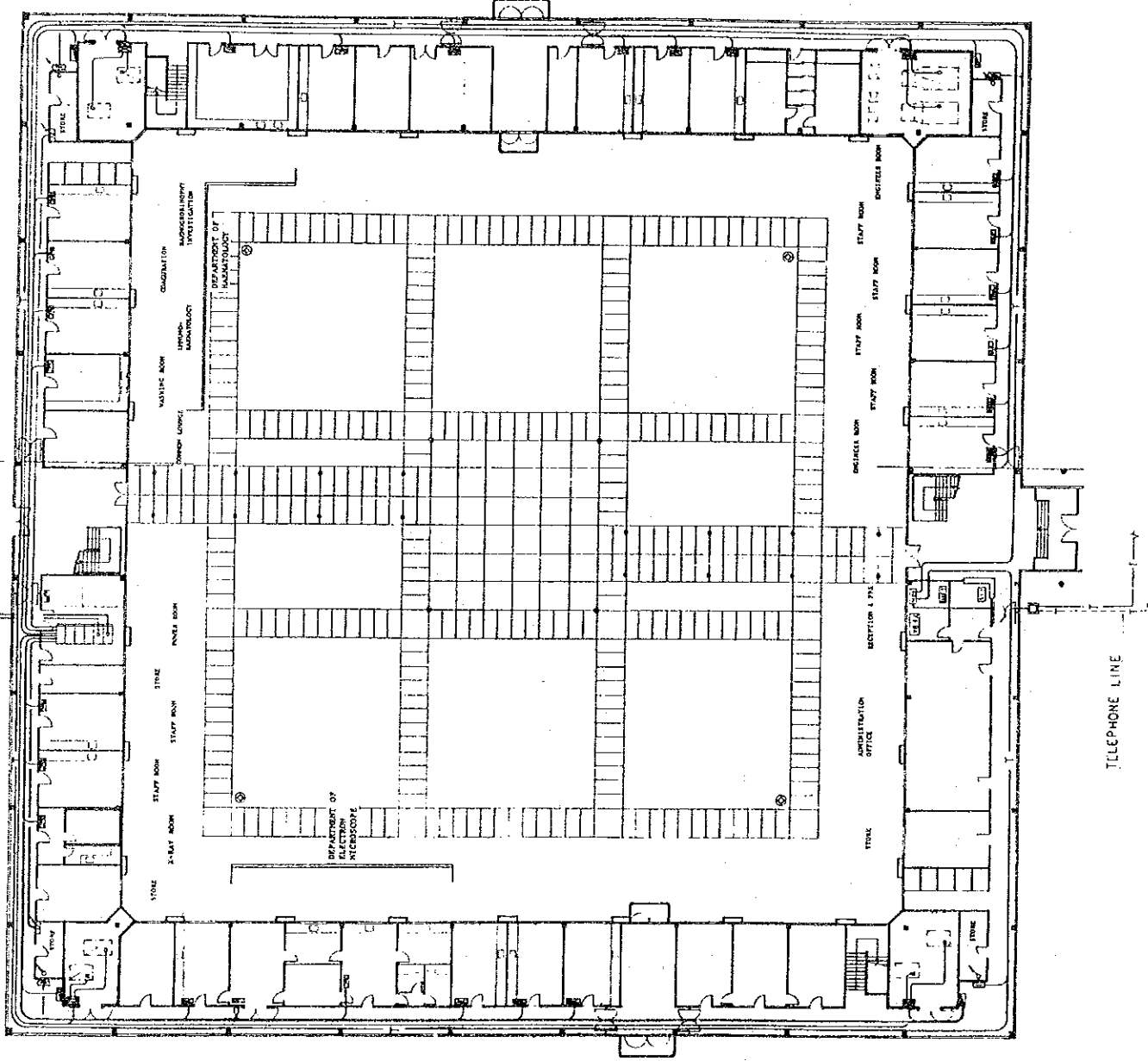
3 PHASE 4 WIRE 100/173 V FOR 100 V EXPERIMENT	AP 100 AF	PHASE I LEVEL I 12.5 KVA
	"	PHASE I LEVEL II 12.5 KVA
	"	PHASE II LEVEL I 12.5 KVA
	"	PHASE II LEVEL II 12.5 KVA
	AP 100 AF	SPARE

3 PHASE 3 WIRE 415 V FOR EMERGENCY POWER	JP 225 AF	PHASE I LEVEL I, II 50 KW
	"	PHASE II LEVEL I, II 50 KW
	JP 100 AF	SPARE

POWER DISTRIBUTION
DIAGRAM
13

SKELETON DIAGRAM OF
METAL ENCLOSED LOW-TENSION DISTRIBUTION PANEL

PHASE II
POWER SUPPLY



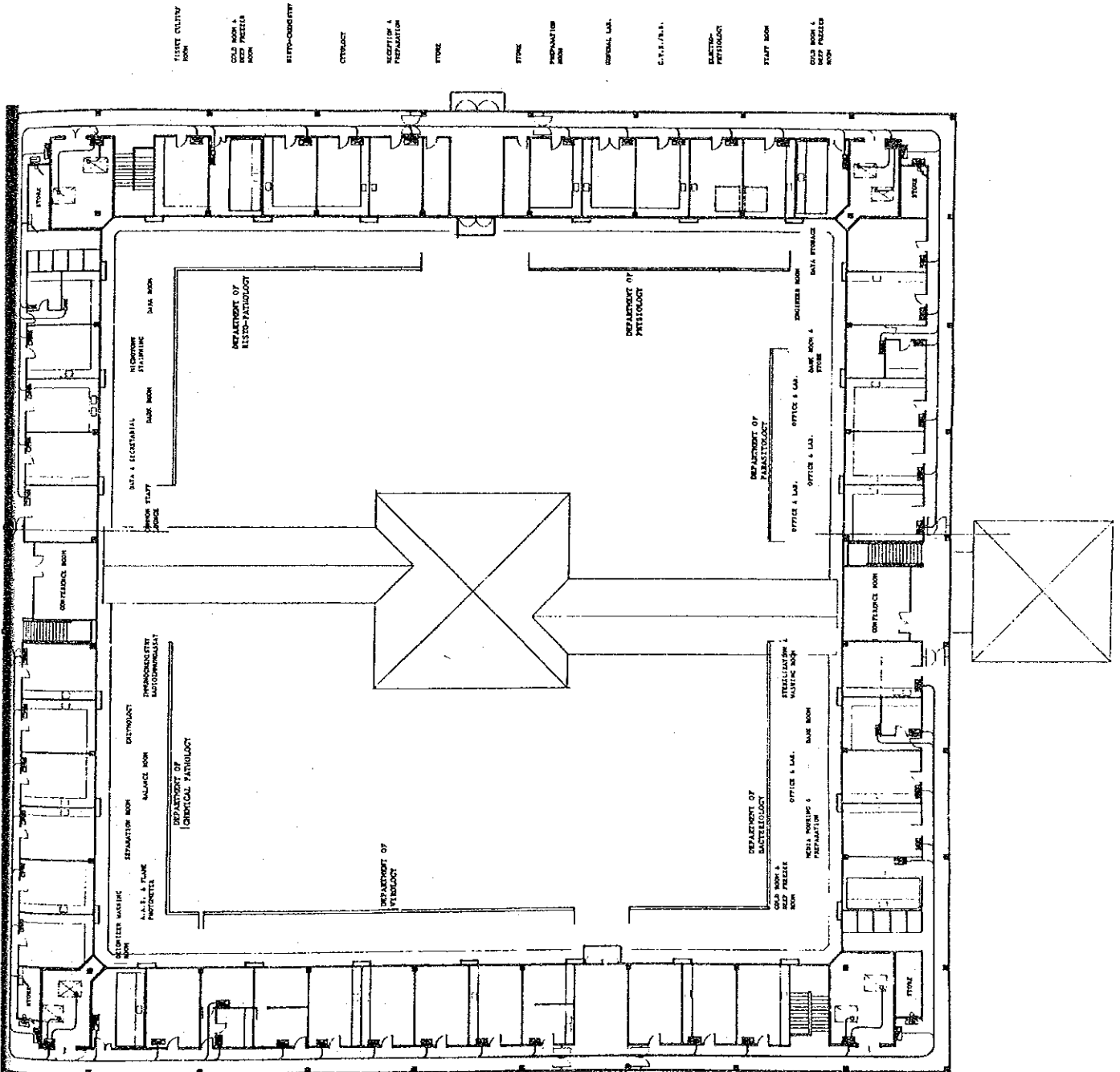
STONE
ENGINEER ROOM
LARGE ELECTRON
RESEARCH
LABORATORY ELECTRON
TECHNOLOGY
LABORATORY
PAINT ROOM &
PREPARATION
STAFF ROOM
STAFF ROOM
STAFF ROOM
MAIL OFFICE
SECRETARY ROOM
WHITE ROOF
OFFICE

STAFF ROOM
STONE
MAIL ROOM

SYMBOL	DESCRIPTION
[Symbol]	LIGHTING PANEL BOARD
[Symbol]	POWER PANEL BOARD
[Symbol]	LABORATORY ROOM PANEL BOARD
[Symbol]	ALARM PANEL
[Symbol]	OUTDOOR LIGHTING FIXTURE
[Symbol]	PERCENT LAMP
[Symbol]	TELEPHONE TERMINAL
[Symbol]	EXCHANGE CABINET
[Symbol]	ATTENDANT CONSOLE
[Symbol]	MAIN DISTRIBUTION FRAME
[Symbol]	CHARGER AND BATTERY
[Symbol]	HANDHOLE

**ELECTRICAL PLAN
LEVEL 1
14**

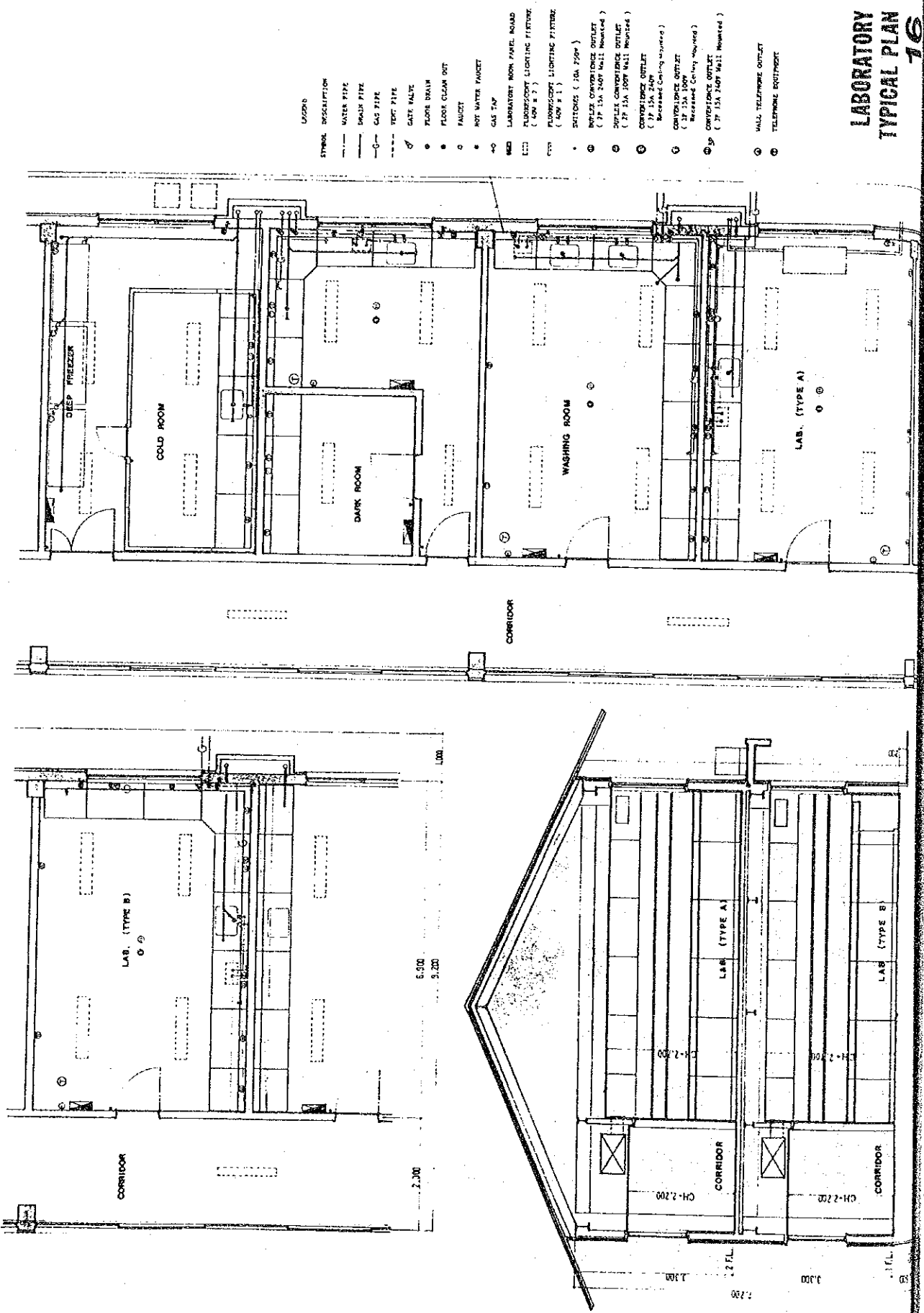
ELECTRICAL PLAN LEVEL 2 15



COLD ROOM & WOOD FREEZER ROOM
 DATA/SECRETARIAL
 CORRIDOR
 TISSUE CULTURE ROOM
 OFFICE & LAB.
 OFFICE & LAB.
 ENTRENCHMENT ROOM
 OFFICE & LAB.
 STERILIZATION & WASHING ROOM
 STONE
 OFFICE & LAB.
 OFFICE & LAB.

TISSUE CULTURE ROOM
 COLD ROOM & WOOD FREEZER ROOM
 DATA/SECRETARIAL
 CORRIDOR
 RECEIPT OF & REFORMATION
 STONE
 STONE
 RECEPTIONIST ROOM
 GENERAL LAB.
 C.S.R./P.L.A.
 C.S.R./P.L.A.
 ELECTRO-PHYSIOLOGY
 STAFF ROOM
 COLD ROOM & WOOD FREEZER ROOM
 TELEPHONE TERMINAL
 EXCHANGE CABINET
 ATTENDANT CONSOLE
 MAIN DISTRIBUTION FRAME
 CHARGER AND BATTERY
 HANGHOLE

SYMBOL	DESCRIPTION
[Symbol]	LIGHTING PANEL BOARD
[Symbol]	POWER PANEL BOARD
[Symbol]	LABORATORY ROOM PANEL BOARD
[Symbol]	ALARM PANEL
[Symbol]	OUTDOOR LIGHTING FIXTURE
[Symbol]	MERCURY LAMP
[Symbol]	TELEPHONE TERMINAL
[Symbol]	EXCHANGE CABINET
[Symbol]	ATTENDANT CONSOLE
[Symbol]	MAIN DISTRIBUTION FRAME
[Symbol]	CHARGER AND BATTERY
[Symbol]	HANGHOLE



- LEGEND
- SYMBOL DESCRIPTION
- WATER PIPE
 - SINK PIPE
 - GAS PIPE
 - VENT PIPE
 - ✓ GATE VALVE
 - FLOOR DRAIN
 - FLOOR CLEAN OUT
 - FAUCET
 - HOT WATER FAUCET
 - GAS TAP
 - LABORATORY ROOM PANEL ROAD
 - FLOODPROOF LIGHTING FIXTURE (40W x 7)
 - FLOODPROOF LIGHTING FIXTURE (40W x 1)
 - SUTURES (10A 220V)
 - INFLUX CONVEYANCE OUTLET (1P 15A 240V Wall Mounted)
 - SUPPLER CONVEYANCE OUTLET (1P 15A 200V Wall Mounted)
 - CONVEYANCE OUTLET (1P 15A 240V Increased Ceiling Clearance)
 - CONVEYANCE OUTLET (1P 15A 100V Increased Ceiling Clearance)
 - CONVEYANCE OUTLET (1P 15A 240V Wall Mounted)
 - WALL TELEPHONE OUTLET
 - TELEPHONE EQUIPMENT

LABORATORY
TYPICAL PLAN
16

DESCRIPTION OF FLOOR AREA AND FINISHES

FLOOR AREA TABULATION

PHASE 1	LEVEL-1		LEVEL-2	
	DESCRIPTION	AREA (m ²)	DESCRIPTION	AREA (m ²)
ADMINISTRATION	222.18 (7)	253.92 (8)	DEPARTMENT OF BACTERIOLOGY	222.18 (7)
DEPARTMENT OF ELECTRON MICROSCOPE	126.96 (4)	253.92 (8)	DEPARTMENT OF VIROLOGY	222.18 (7)
STAFF ROOM & ENGINEER ROOM	222.18 (7)	90.48 (2)	DEPARTMENT OF CHEMICAL PATHOLOGY	253.92 (8)
STORE	111.09 (3.5)		CONFERENCE ROOM	90.48 (2)
POWER ROOM	47.61 (1.5)			
TOTAL:	730.02 m ²	820.50 m ²		
COMMON FLOOR AREA	729.86 m ²	618.39 m ²		
COVERED WAY, PORCH	507.86 m ²			
LEVEL-1 FLOOR AREA	1,957.72 m ²	1,438.28 m ²		
			PHASE-1 TOTAL FLOOR AREA	3,406.60 m ²
PHASE 2	LEVEL-1		LEVEL-2	
DEPARTMENT OF HAEMATOLOGY	190.74 (6)	222.18 (7)	DEPARTMENT OF HISTOPATHOLOGY	222.18 (7)
SPECIAL EXPERIMENTAL ROOM	95.22 (3)	126.96 (4)	DEPARTMENT OF PHYSIOLOGY	126.96 (4)
ANIMAL HOUSE	63.48 (2)	126.96 (4)	DEPARTMENT OF PARASITOLOGY	126.96 (4)
STAFF ROOM & ENGINEER ROOM	222.18 (7)	31.74 (1)	DATA STORAGE	31.74 (1)
COMMON LOUNGE	31.74 (1)	126.96 (4)	STAFF ROOM & ENGINEER ROOM	126.96 (4)
WORK SHOP	47.61 (1.5)	31.74 (1)	COLD ROOM & DEEP FREEZER ROOM	31.74 (1)
STORE	47.61 (1.5)	31.74 (1)	COMMON STAFF LOUNGE	31.74 (1)
			STORE	31.74 (1)
TOTAL:	698.28 m ²	730.02 m ²		
COMMON FLOOR AREA	571.32 m ²	539.58 m ²		
LEVEL-1 FLOOR AREA	1,269.60 m ²	1,269.60 m ²		
			PHASE-2 TOTAL FLOOR AREA	2,539.20 m ²
			GRAND TOTAL FLOOR AREA	5,945.80 m ²

NOTE: One unit is 4.6 m x 6.9 m = 31.74 m²

OUTLINE OF STRUCTURE AND FINISHES

FOUNDATION AND BELOW GROUND FLOOR CONSTRUCTION:
Reinforced Concrete Foundations Sprit Footing, Reinforced Concrete Tie Beams and Ground Floor Slab.

UPPER CONSTRUCTION:
Two-Story Steel Frame Construction, Reinforced Concrete Slabs and Steel Beams.

ROOF:
Vinyl Coated Galvanized Iron Sheet. Insulation back-up panels and Coloured Asbestos Roof Tiles on Steel Framing.

STAIRCASE:
Steel Stair Framing and Reinforced Precast Terrazzo Tread.

EXTERNAL WALL:
Coloured Asbestos Siding Board with Polystyrene In-Situ Forming. Washed Terrazzo Skirting.

EXTERNAL WINDOW AND DOOR:
Anodized Aluminum Sliding and Fixed Window in General, Wooden Louvers with Insect Screen.

GLAZING:
Clear Sheet Glass.

INTERNAL PARTITION:
6" Concrete Hollow Block

INTERNAL DOOR:
Wooden Door: Heat Insulated Doors to Cold Rooms.

WALL FINISH:
Typical Laboratory Room: Plaster and Emulsion Paint. Glazed Tiling partially to walls in Laboratories and Toilets. Veneered Plywood Panels in Head Office, Conference Room and Common Staff Lounge.

FLOOR FINISH:
In-Situ Polished Terrazzo with Brass Divided Strips Carpet in Head Offices, Conference Room and Common Staff Lounge.

CEILING FINISH:
Suspended Mineral Fiber Acoustic Ceiling Boards, in General. Clean Room Boards in Special Rooms.

表 4 - 1 CONSTRUCTION SCHEDULE

	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	25	28	30	32	34	36
CONSULTANT'S ACTION	Preliminary Design Working Drawings	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Tender Invitation	Final Inspection Phase I Guarantee	Final Inspection Phase I Guarantee	Final Inspection Phase I Guarantee	Final Inspection Phase I Guarantee	Final Inspection Phase I Guarantee	Phase II Guarantee
PHASE I CONSTRUCTION	Tender	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction
PHASE II CONSTRUCTION																							
OWNER'S ACTION	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval	Approval
GOVERNMENT'S ACTION	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note	Exchange of Note
REMARKS	<p>The approval period of drawings were assumed as one month</p> <p>Tenderer will be invited after the publication of Governments Exchange of Notes.</p> <p>Commencement of construction shall be ordered after the verification of the contract.</p> <p>After the acceptance of building by the owner, the maintenance of building has to be considered by the owner.</p> <p>Defects Inspection will be held after one year of the delivery of building.</p> <p>Defects Inspection will be held</p>																						

4-4 建設範囲と建設期間

4-4-1 工事の分担

本説明書の中にはガーナ大学で計画施工される部分についてもふれてきたが研究所の建設に当り、早急にガーナ大学当局で準備されねばならぬのは、

- a) レゴンキャンパスより敷地迄の導入路
- b) 敷地への給電施設
- c) 敷地への給水施設
- d) 電話局線の準備
- e) 敷地よりの排水施設（汚水排水、雨水排水を含む）

これらの施設は研究所の着工にさきだち完成されなければ、円滑な工事の進行は期待できない。上記のうち、項目b)の給電施設については、工事中仮設電力として必要であり、また現地での工事を考えると資材の輸入より工事完了迄相当期間がかかる考えが予想され研究所着工6ヶ月前にこれらの工事に着手する必要があると思われる。

4-4-2 工期

研究所の実施設計着手より工事完成までの予定は次表のように計画され一期工事の建設は12ヶ月、第二期工事について同じく12ヶ月を想定している。

工期については入札時に於て請負者に実施可能工期を提出させる等の方法も考慮に入れた方がよい。

表4-2 概算予算

昭和51年10月20日作成

工事区分	金 体 計 画			初 年 度			次 年 度		
	仕 様	数 量	単 価	仕 様	数 量	単 価	仕 様	数 量	単 価
I 建築工事	鉄筋コンクリート造及鉄骨造2階建 ○鉄筋コンクリート造及鉄骨造2階建 ○附帯設備：造りつけ実験台、流し台、薬品棚 ○パッケージ型空調機及七パレート型小型空調機の併用方式	6,064㎡	139,446円		3,328㎡	118,179円	○シールドルームを含む	2736㎡	165,314円
II 空調換気設備工事	○特殊排気設備を含む ○給水設備局所給湯設備、セントラルガス配管設備、衛生陶器、排水設備及消火栓設備を含む ○各室に100V、230V、400Vを供給 ○照度300ルクス ○電話設備、避雷針及非常用電源設備を含む	一式	69,492	○恒温恒湿実験室を含む	一式	54,928	○無菌動物飼育室を含む	一式	87,208
III 給排水衛生設備工事		一式	30,739		一式	27,825		一式	34,284
IV 電気設備工事		一式	36,164	○電話交換機及自家用発電機を含む	一式	45,042		一式	25,365
I~IV 小計			275,841			245,974			312,171
V 輸送費			173,800			100,800			73,000
VI 施工監理料及常駐監督			153,500			80,600			72,900
合 計			2,000,000			1,000,000			1,000,000

備考 1. 附帯費は直接工事費の20%を見込んでいる
 2. 諸物面の値上り等を著案して各工事金額については初年度は直接工事費の14%、次年度は27%を見込んでいる
 3. 単価は各工事単価を床面積で除したものである

4-5 工費概算見積書

4-5-1 一般見積条件

研究所建設の工費の概算見積にあたり、下記の条件を基として算出を試みた。

- i) 昭和51年10月の時点でのガーナ共和国及び日本での資材及び労務費の単価をもとにし概算を行う。
- ii) 交換ルートは1 USD=290円 1 USD=1.15cedy とした。
- iii) 建設に当り二期工事は一期工事着工1年後に着工するものと想定する。
- iv) ガーナ共和国に於て入手できない建設資材については、日本製品を使用する事とし、日本から輸送するものとする。
- v) 日本より輸送する建設資材及び建設機材については免税処置が受けられるものとした。
- vi) 現地での工事に際し、本研究所建設にのみに関して、事業税等の課税は免除されるものとする。
- vii) 輸送された資材、機材のテマ港よりレゴンキャンパス敷地迄の運搬はガーナ大学当局によりすみやかに行われるものとする。

4-5-2 概算予算

概算予算については前節の見積条件に従い表4-2に整理された。

付属資料

付属資料－1	契約材料単価表	付1
付属資料－2	人件費	付8
付属資料－3	建設工事費	付11
付属資料－4	労務者作業能率	付15
付属資料－5	敷地地盤調査報告書	付29
付属資料－6	ガーナ大学レゴンキャンパス現状設備図	付33

SCHEDULE OF THE BASIC PRICES OF THE PRINCIPAL MATERIALS UPON
WHICH THESE BILLS OF QUANTITIES ARE BASED

The following prices of materials to be used in the contract are inclusive of freight, marine insurance, landing and port handling charges, excise duty and sales tax, delivered to site.

The prices for the following materials are nett and exclusive of any Cash or Trade discount or Profit.

No adjustment will be made on the basic prices for increases or decreases due to the specific materials being purchased in small quantities.

A. E. S. C.
August 1976

MATERIAL		UNIT	BASIC PRICE ¢	SUPPLIER
Naco Louvre Frames	4 Blades		13.90	Otu's Naco Stores, Accra
Naco Louvre Frame	6 Blades		23.10	Otu's Naco Stores, Accra
Naco Louvre Frame	8 Blades		32.90	Otu's Naco Stores, Accra
Naco Louvre Frame	10 Blades		37.50	Otu's Naco Stores, Accra
Clear Glass Blades	6" x 36"	No.	3.90	
Obscure Glass Blades	6" x 36"	No.	4.55	
Mosquito Gauze	100' x 3'	Roll	30.00	
Mosquito Gauze	100' x 4'	Roll	33.25	
Soft Board	1/2' x 8' x 4'	Sheet	15.00	
Emulsion Paint		Gallon	16.75	City Paints Supply
Gloss Paint		Gallon	19.00	City Paints Supply
Super Snowcem		Gallon	23.23	City Paints Supply
Plywood	8' x 4' x 1/4"	Sheet	8.50	
Plywood	8' x 4' x 1/2"	Sheet	15.75	
Asbestos Pipe	4" φ x 10'	No.	8.25	
	6" φ x 10'	No.	15.45	
Floor Tiles P.V.C.		S.Y.	35.00	
Wall Tiles		S.Y.	90.00	
Asbestos Corrugated Sheet		Sheet	6.59	
Asbestos Flat Sheet		Sheet	6.40	

MATERIAL		UNIT	BASIC PRICE ¢	SUPPLIER
P.V.C. Pipes	1/2"φ	No.	5.50	Dupa Plasts
P.V.C. Pipes	3/4"φ	No.	6.50	Dupa Plasts
P.V.C. Pipes	1"φ	No.	9.50	Dupa Plasts
P.V.C. Pipes	1-3/4"φ	No.	14.25	Dupa Plasts
P.V.C. Pipes	1-1/2"φ	No.	16.30	Dupa Plasts
P.V.C. Pipes	2"φ	No.	17.50	Dupa Plasts
Cement		Cwt. 45kg	4.00	
Sand		C.Y.	6.00	Ghana Store Quarry
Stone	1-1/2"	C.Y.	22.00	Ghana Store Quarry
Stone	3/4"	C.Y.	30.00	Ghana Store Quarry
Wawa		C.F.	5.50	
Hardwood		C.F.	6.50	
Solid Blocks	6"	No.	0.72	
Solid Blocks	4"	No.	0.61	
Hollow Blocks	6"	No.	0.61	
Hollow Blocks	9"	No.	0.70	
M. S. R.	1/4"	Ton	1,200.00	
M. S. R.	3/4"	Ton	950.00	
M. S. R.	3/8"	Ton	1,200.00	
M. S. R.	1"	Ton	950.00	
M. S. R.	1/2"	Ton	1,200.00	
M. S. R.	5/8"	Ton	1,200.00	
Binding Wire		L.T.	110.00	
Mortice Lockset		No.	9.60	
B. R. C.	No. 65		350.00	
Brass Butt Hinges		No.	4.30	

PRECAST & SPUN CONCRETE PRODUCTS LIMITED

PRICE-LIST
(Provisional)

1st May, 1976

CONCRETE BLOCKS

Description & Size	Average Weight per block	Ex-work price per block	Transport charge per block within 10 miles from factory site
	kg	¢	¢
CONCRETE HOLLOW BLOCKS			
4" x 9" x 18"	12	0.40	0.07
5-1/2" x 9" x 18"	18	0.49	0.09
6" x 9" x 18"	19	0.50	0.09
8-1/2" x 9" x 18"	26	0.63	0.10
9" x 9" x 18"	27	0.66	0.11
CONCRETE SOLID BLOCKS			
4" x 9" x 18"	19	0.48	0.09
5-1/2" x 9" x 18"	27	0.60	0.12
6" x 9" x 18"	28	0.66	0.12
8-1/2" x 9" x 18"	38	0.96	0.18
9" x 9" x 18"	39	0.99	0.19

- Note:
- 1) The above cancels all previous price-lists, quotations and discount agreements.
 - 2) They are based on prevailing raw-material and labour costs, and are subject to adjustments in the event of changes in any of these costs.
 - 3) For detailed information, please do not hesitate to contact us.

PRECAST & SPUN CONCRETE PRODUCTS LIMITED

PRICE-LIST
(Provisional)

1st May, 1976

RIDGE COVERS & VERTICAL LOUVERS

Description & Size	Average Weight per piece in kg.	Ex-work price per piece ₹
Ridge Covers		
18" x 6" x 6" x 1.1/4"	16	3.00
18" x 9" x 9" x 1.1/4"	17	3.10
Vertical Louvres		
3' x 2' x 4"	72	10.00
3' x 3' x 6"	93	11.00

- Note: 1) The above cancels all previous price-lists, quotations and discount agreements.
 2) They are based on prevailing raw-material and labour costs, and are subject to adjustments in the event of changes in any of these costs.
 3) For detailed information, please do not hesitate to contact us.

PRECAST & SPUN CONCRETE PRODUCTS LIMITED

PRICE-LIST
(Provisional)

1st May, 1976

CONCRETE PIPES — OGEE JOINTS
(Without Reinforcement)

Length	Int. Diameter	Wall Thickness	Average Weight in kg.	Ex-work price per pipe
3' 0"	18"	2.1/8"	180	11.80
3' 0"	21"	2.1/8"	205	13.00
3' 0"	24"	2.1/4"	230	14.65
3' 0"	27"	2.1/2"	330	17.00
3' 0"	30"	2.3/4"	370	22.50
3' 0"	33"	3"	480	25.00
3' 0"	36"	3.1/4"	560	31.00
3' 0"	42"	3.1/2"	725	51.00
3' 0"	48"	4"	930	58.60
3' 0"	60"	4.3/4"	1,450	94.00
3' 4"	72"	6"	2,200	203.00

- Note: 1) The above cancels all previous price-lists, quotations and discount agreements.
 2) They are based on prevailing raw-material and labour costs, and are subject to adjustments in the event of changes in any of these costs.
 3) Reinforced concrete pipes (ogee joints) are manufactured on request.
 4) For detailed information, please do not hesitate to contact us.

PRECAST & SPUN CONCRETE PRODUCTS LIMITED

PRICE-LIST
(Provisional)

1st May, 1976

SEPTIC TANKS

Description	3' 0"	4' 0"	5' 0"	6' 0"
	Diameter	Diameter	Diameter	Diameter
	¢	¢	¢	¢
Concrete Lid (Reinforced)	42.00	51.50	81.90	97.25
Top Ring 18" Length	31.25	40.65	79.25	114.00
Ring with In and Outlet 3' 0" Length	66.00	86.50	125.10	221.00
Bottom Ring 3' 0" Length	31.00	58.60	94.00	203.00
Manhole 24" Diameter with In and Outlet	21.50	21.50	21.50	21.50
Lid for Manhole (movable & reinforced)	16.25	16.25	16.25	16.25
Complete Set	198.00	275.00	418.00	673.00
Transport charge per set within 10 miles from factory site	25.00	25.00	45.00	70.00

- Note 'A'
- 1) We recommend that the bottoms of septic tanks are cast at site.
 - 2) Pre-fabricated bottoms are however available.
 - 3) Soak-away pits are obtainable on request.

- Note 'B'
- 1) The above cancels all previous price-lists, quotations and discount agreements.
 - 2) They are based on prevailing raw-material and costs, and are subject to adjustments in the event of changes in any of these costs.
 - 3) For detailed information, please do not hesitate to contact us.

PRECAST & SPUN CONCRETE PRODUCTS LIMITED

PRICE-LIST
(Provisional)

READY MIXED CONCRETE

Mix	Price per C.Y.	Transport Charge per C.Y.	Dumping Charge per C.Y.
1 : 1.1/2 : 3	₱ 52.50	₱ 7.00	₱ 5.00
1 : 2 : 4	49.00	7.00	5.00
1 : 3 : 6	45.00	7.00	5.00

CONCRETE BLOCKS (Ex. Factory)

Hollow			Solid		
4"	—	40P	4"	—	50P
5.1/2"	—	49P	5.1/2"	—	60P
6"	—	50P	6"	—	66P
8.1/2"	—	63P	8.1/2"	—	96P
9"	—	66P	9"	—	99P

付屬資料— 2 人件費

SALARY RATE

GHANA SANYO ELECTRICAL
MANUFACTURING CORPORATION

POST	1975 May		
	A	B	C
	¢		¢
1. Messenger Jr. Clerk	861	24	1077
2. Clerk/Copy Typist	960	29	
3. Tale/Receptionist	960	29	
4. Short hand typist Senior Clerk	1104	35	
5. Stenographer G II Personal Ass.	1236	55	
6. Stenographer G I	1845	66	
7. Pantry Boy	840	18	
8. Servers	1861	24	
9. Cooks	1008	24	
10. Canteen Supervisor	1344	46	
.....			
Manager I	8400	—	—
II	6000	—	8000
Ass. Manager	4900	180	5980
Supervisor	4700	150	5050
Supervisor	3400	—	4200

Legend: A Minimum
 B Yearly Increase
 C Maximum

NEW RATES OF PAY EFFECTIVE FROM
1st October, 1974

(Architectural Engineering Service Cooperationによる)

GRADE	New Minimum Monthly Rate ¥	New Minimum Daily Rate ¥
Blaster	57.24	2.12
Driver Grade III (Group D)	60.48	2.24
Driver Grade II (Group D)	62.91	2.33
Driver Grade I (Group D)	65.61	2.43
Greaser	54.00	2.00
Labourer Senior Headman	57.24	2.12
Labourer Senior	55.08	2.04
Labourer General	54.00	2.00
Labourer (Tar, Concrete, Creosote etc.)	55.08	2.04
Laboratory Attendant Grade I	65.61	2.43
Laboratory Attendant Grade II	60.48	2.24
Pipe Layer & Jointer	58.32	2.24
Messenger	55.08	2.04
Operator (Group A)	79.11	2.93
Assistant Chief Operator (Group A)	85.86	3.18
Chief Operator (Group A)	87.21	3.23
Operator Grade III (Group C)	60.48	2.24
Operator Grade II (Group C)	65.61	2.43
Operator Grade I (Group C)	68.31	2.53
Pegman Labourer	54.00	2.00
Painter & Related Grades:		
Brush-hand	56.16	2.08
Painter Grade III	57.24	2.12
Painter Grade II	62.91	2.33
Painter Grade I	68.31	2.53
Road Survey Assistant	65.61	2.43
Steel Bender	57.24	2.12
Tradesman Grade I:		
Auto-Electrician, Blacksmith	80.46	2.98
Carpenter, Electrician, Fitter, Machinist (Woodworking) Mason Motor Mechanic, Pipe Fitter (Plumber) Welder (Gas and/or Electricity) Polisher Carpenter.	75.06	2.78

GRADE	New Minimum Monthly Rate ¢	New Minimum Daily Rate ¢
Tradesman Grade II		
Tradesman Apprentice:		
1st Year	54.00	2.00
2nd Year	55.08	2.04
3rd Year	56.16	2.08
4th Year	57.24	2.12
5th Year	58.32	2.16
Tyre Repairer (Vulcaniser)	62.91	2.33
Day Watchman	56.16	2.08
Night Watchman	57.24	2.12
Watchman Supervisory	58.32	2.16
Fireman Marine (Engineering)	57.24	2.12
Borehole Driller Head	65.61	2.43
Borehole Driller	62.91	2.33
Borehole Driller Assistant	55.08	2.04
Labourer (Survey)	55.08	2.04
Drawing Office Assistant	62.91	2.33
Draughtsman Temporary	65.61	2.43
Driver Grade 'B' (Extra Heavy Vehicle)	79.11	2.93
Photocopier (Printer)	62.91	2.33
Storeman (Assistant Storekeeper)	56.16	2.08
Timekeeper	58.32	2.16
Storekeeper (Allocated Stores)	62.91	2.33
Cost Clerk	62.91	2.33
Security Guard	62.92	2.33
Steel Erector	68.31	2.53

付属資料 - 3 建設工事費

GHANA SANYO FACTORY

TOTAL FLOOR AREA = 1,800 Sq.m.

	BG. BUILDERS	DE SIMONE
	₪	₪
Preliminary	65,400	72,600
Contingency	15,000	15,000
Factory		
Substructure	133,362	146,549
Superstructure		
Concrete Work	148,671	162,662
Block Work	35,737	37,919
Roofing	46,529	47,070
Carpentry	5,987	7,024
Joinery	19,880	18,149
Metal Work	21,406	23,896
Plumbing & Engineering Installation	24,988	24,395
Electrical Installation	91,800	89,950
Plaster Work and other floor etc.	46,412	55,512
Glazing	—	18,200
Painting & Decorating	21,403	22,666.6
External	7,000	7,000
Day-Works	3,241.49	4,134.15
Insurance, Water for the works, temporary lighting & power	5,500	7,000
	692,318.94	759,702.2
Errors	+ 20,787.25	- 2,804.8
Correct Tender	713,106.19	756,897.4

ARCHITECT: Architectural Design Partnership
 PROJECT: Office Building, Tarkwa.
 CLIENT: SSNIT
 CONTRACTOR: A. Lang Ltd.
 DATE OF TENDER: 14/6/74

TOTAL FLOOR AREA 7,584 SQ.FT.

TENDER AMOUNT ₵347,947.56

El.	Description	Total Cost ₵	Cost/SF ₵	% on Total
1	Work below ground floor finish	20,603.90	2.72	10.26
2	Frame	23,224.46	3.06	11.55
3	Upper Floors	8,909.00	1.17	4.42
4	Roofs and Rainwater Goods	13,841.91	1.83	6.91
5	Staircases and Railings	2,349.42	0.31	1.17
6	External Walls	1,179.40	0.16	0.60
7	External Doors and Windows	22,121.50	2.92	11.02
8	Internal Doors and Borrowed lights	8,183.35	1.08	4.08
9	Internal Walls and Partitions	10,692.20	1.41	5.32
10	Wall Finishes	14,873.10	1.96	7.40
11	Floor Finishes	15,976.50	2.11	7.96
12	Ceiling Finishes	4,004.22	0.53	2.00
13	Decorations	3,584.06	0.47	1.77
14	Fittings	8,268.40	1.09	4.11
15	Internal Plumbing Installation	20,601.20	2.72	10.26
16	Air Conditioning Installation	22,492.50	2.96	11.17
	Building Total:	200,905.11	26.50	100.00

NB. Main Building of two, the other being a canteen building.

UNIVERSITY OF CAPE COAST NEW CENTRAL LIBRARY

CONTRACTOR: A.A. Mussey & Co.

Date: 29th June 1976

ARCHITECT: Architectural Design Partnership

TOTAL FLOOR AREA 102,318 SQ.FT.

El.	Description	Total Cost ¢	Cost/FS ¢	% on Total
1	Work below ground floor finish	708,818.30	6.93	15.79
2	Frame	750,218.00	7.33	16.71
3	Upper Floors	424,727.55	4.15	9.46
4	Roofs & Rainwater Goods	233,281.23	2.28	5.20
5	Staircase & Railings	55,257.45	0.54	1.23
6	External Walls	155,942.38	1.52	3.46
7	External Doors & Windows	197,769.59	1.93	4.40
8	Internal Doors & Borrowed light	51,891.93	0.51	1.16
9	Internal Walls & Partitions	79,219.62	0.77	1.75
10	Wall Finishes	205,346.28	2.01	4.58
11	Floor Finishes	272,777.35	2.67	6.09
12	Ceiling Finishes	150,941.00	1.48	3.37
13	Decorations (Paint)	58,178.00	0.57	1.30
14	Fittings	69,045.17	0.67	1.53
15	Internal Plumbing Installation	122,500.00	1.20	2.74
16	Air Conditioning	562,633.10	5.50	12.53
17	Lifts Installation	104,625.00	1.02	2.32
18	Electrical Installation	235,750.00	2.30	5.24
19	Special Services (Telephone, Fire Lighting etc.)	50,625.00	0.50	1.14
	Net Building Total	4,489,615.95	43.88	100.00
				% on Net Building
20	External Works	313,963.13		7
21	Preliminaries	167,500.00		3.7
22	Contingencies	512,600.00		11.4
	Tender Amount for	5,483,727.14		

CONTRACTOR — S.C.C. (Lowest tender)

Date: 6th June 1976

S.S.N.I.T. — REGIONAL OFFICE BUILDING, KOFORIDUA

ARCHITECTS: KOBAKU & ASSOCIATES

TENDER AMOUNT: ₵3,339,370.31

TOTAL FLOOR AREA 93,665 SQ.FT. including parking on ground floor.

El.	Description	Test Cost ₵	Cost/FS. ₵	% on Total
1	Work below ground floor finish	170,011.35	1.82	5.96
2	Frame	268,585.60	2.82	9.39
3	Upper Floors	303,355.55	3.25	10.63
4	Roofs and Rainwater Goods	99,946.25	1.07	3.50
5	Staircases and Railings	31,299.11	0.33	1.07
6	External Walls	43,943.82	0.47	1.54
7	External Doors and Windows	368,199.99	3.93	12.86
8	Internal Doors & Borrowed lights	62,923.90	0.67	2.19
9	Internal Walls & Partitions	66,415.81	0.71	2.32
10	Wall Finishes	78,163.33	0.84	2.75
11	Floor Finishes	203,588.23	2.17	7.10
12	Ceiling Finishes	114,119.88	1.22	4.00
13	Decorations	40,457.82	0.43	1.40
14	Fittings	58,265.27	0.62	2.03
15	Internal Plumbing Installations	49,876.60	0.53	1.73
16	Air Conditioning Installation	405,901.20	4.34	14.20
17	Lifts Installation	172,750.00	1.84	6.02
18	Electrical Installation	278,500.00	2.97	9.72
19	Special Services	45,300.00	0.48	1.57
	Building Total:	2,862,503.71	30.56	100.00
20	External Works	154,466.60		
21	Preliminaries	231,600.00		7.5
22	Contingencies	90,800.00		on rest

付屬資料一 4 勞務者作業能率

A. EARTH WORK

Material Cartage etc.	Quantity	Unit
Cut down trees		
1) Trees up to 18" girth		
Labourer	20	hour
Overhead & Profit	17.1/2	%
2) Trees exceeding 18" up to 24" girth		
Labourer	25	hour
Overhead & Profit	17.1/2	%
3) Trees exceeding 24" up to 36" girth		
Labourer	32	hour
Overhead & Profit	17.1/2	%
4) Trees exceeding 36" up to 48" girth		
Labourer	40	hour
Overhead & Profit	17.1/2	%
5) Trees exceeding 48" and up to 60" girth		
Labourer	50	hour
Overhead & Profit	17.1/2	%
6) Trees exceeding 60" up to 72" girth		
Labourer	58	hour
Overhead & Profit	17.1/2	%
7) Trees exceeding 72" up to 84" girth		
Labourer	66	hour
Overhead & Profit	17.1/2	%
8) Trees exceeding 84" up to 96" girth		
Labourer	73	hour
Overhead & Profit	17.1/2	%
9) Trees exceeding 96" up to 108" girth		
Labourer	83	hour
Overhead & Profit	17.1/2	%
10) Trees exceeding 108" up to 120" girth		
Labourer	90	hour
Overhead & Profit	17.1/2	%
11) Trees exceeding 120" up to 132" girth		
Labourer	96	hour
Overhead & Profit	17.1/2	%
12) Trees exceeding 132" up to 144" girth		
Labourer	104	hour
Overhead & Profit	17.1/2	%

* * * * *

Material Cartage etc.	Quantity	Unit
Excavate over site average 6" deep to remove top soil & vegetable water		
Labourer	2/3	hour
Overhead & Profit	17.1/2	%
Excavate to reduce levels and get out		
Labourer	3.1/2	hour
Overhead & Profit	17.1/2	%
Excavate Trench not exceeding 5'-0" and get out		
Labourer	4	hour
Overhead & Profit	17.1/2	%
Hard Core Filling and well ram and consolidate in making up levels		
Hard Core Material at site	1.1/3	C.Y.
Labourer	2	hour
Sundries		L.S.
Overhead & Profit	17.1/2	%
4" Bed of approved Hard Core spread and levelled and finished		
Rate as previously derived		C.Y.
∴ for 4" thick	A/9	
Add labourer for thin layer and levelling the area	0.50	hour
Overhead & Profit	17.1/2	%
9" Bed of Hard Core spread and levelled and finish to receive concrete		
Rate for Hard Core as worked out per C.Y.		
Labourer	1/4	hour
Excavate in Temporary spoil heaps selected materials and spread and level in 6" layer well rammed		
Labour	4	hour
Overhead & Profit	17.1/2	%

B. CEMENT CONCRETE WORK

Material Cartage etc.	Quantity	Unit
Plain Cement Concrete 1:1.1/2:3 (3/4" aggregate) in foundation ground beam etc.		
Coat of materials		
Stone 3/4"	0.86	C.Y.
Sand	0.53	C.Y.
7/5 Mixer with driver	5/8	hour
Mason	5/8	hour
Labourer	5	hour
Allow for Curing labourer	1/2	hour
Overhead & Profit	17.1/2	%
Plain Cement Concrete 1:2:4 (3/4" aggregate)		
3/4" aggregate	0.9	C.Y.
Sand	0.57	C.Y.
Cement	5	Cwt.
Plain Cement Concrete 1:2.1/2:5 (3/4" aggregate)		
Aggregate 3/4"	0.95	C.Y.
Sand	0.6	C.Y.
Cement	4.16	Cwt.
Overhead & Profit	17.1/2	%
Plain Cement Concrete 1:3:6		
Aggregate 1.1/2"	0.95	C.Y.
Sand	0.6	C.Y.
Cement	3.5	Cwt.
Cement Concrete 1:3:6 (1.1/2" aggregate) Laid as blinding layer 2" thick		
Labour:		
Mixer & Driver	1	hour
Labourer	8	hour
Mason	1	hour
Allow for Curing Labourer	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in beams, girders strings and similar sections.		
Mixer & Driver	1.1/6	hour
Mason	1.1/6	hour
Labourer	9	hour
Curing labour	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in beams, girders strings and similar sections under 48 sq. inches. (Form work and reinforcement measured separately)		
Mixer	1.1/4	hour
Mason	1.1/4	hour
Labourer	10	hour
Curing labourer	1/2	hour

Material Cartage etc.	Quantity	Unit
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in walls exceeding 9" but not exceeding 12" thick (Form work and reinforcement measured separately).		
Mixer & Driver	3/4	hour
Labourer	6	hour
Mason	3/4	hour
Curing Labour	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in walls exceeding 6" and not exceeding 9" thick (Form work and reinforcement measured separately).		
Mixer & Driver	5/6	hour
Mason	5/6	hour
Labourer	6.2/3	hour
Curing Labourer	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in wall up to 6" thick (Form work and reinforcement measured separately).		
Mixer & Driver	15/16	hour
Labourer	7.1/2	hour
Mason	15/16	hour
Curing Labourer	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in floors over 4" but not exceeding 6" thick (Form work and reinforcement measured separately).		
Mixer & Driver	15/16	hour
Labourer	7.1/2	hour
Mason	15/16	hour
Curing Labourer	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in floors over 4" but not exceeding 6" thick (Form work and reinforcement measured separately).		
Mixer & Driver	1	hour
Mason	1	hour
Labourer	8	hour
Curing Labour	0.5	hour
Overhead & Profit	17.1/2	%
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in Columns over 144 sq. inches in Sectional area (Form work and reinforcement measured separately).		
Mixer & Driver	1.1	hour
Mason	1.1	hour
Labourer	9	hour
Labour Curing	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in Columns over 48 sq. inches but not exceeding 144 sq. inches in Sectional area. (Form work and reinforcement measured separately).		
Mixer & Driver	1.2	hour
Mason	1.2	hour
Labourer	9.1/2	hour
Labour Curing	1/2	hour

Material Cartage etc.	Quantity	Unit
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in Columns up to 48 sq. inches in Sectional area (Form work and reinforcement measured separately).		
Mixer & Driver	1.1/2	hour
Mason	1.1/2	hour
Labourer	12.1/2	hour
Labour Curing	1/2	hour
Reinforced Cement Concrete 1:2:4 (3/4" aggregate) in Staircase (Form work and reinforcement measured separately)		
Mixer & Driver	1.3/8	hour
Mason	1.3/8	hour
Labourer	11	hour
Curing Labour	1/2	hour
Perforation through 12" concrete for small pipe		
for small pipe --		
Mason	3/4	hour
for large pipe --		
Mason	1	hour
Perforation through Reinforced Concrete 12" thick for small pipe.		
for small pipe --		
Mason	1	hour
for large pipe --		
Mason	1.1/4	hour
Labours in Concrete		
1) Finishing the Top surfaces of concrete slabs to falls and currents.		
Mason	1/8	hour
2) Hack face		
Mason	1	hour
3) Form chase 18" girth in concrete		
Mason	1.1/4	hour
4) Mortice for dowel		
Mason	1/4	hour
5) Mortice for holding		
Mason	5/8	hour
6) Groove for bar		
Mason	1/2	hour
Extra for cement concrete ramp, bed etc., finished smooth to slope.		
Labourer	1/4	hour

Material Cartage etc. Quantity Unit
 Precast concrete 1:2:4 (3/4" aggregate) in 8" x 1.1/2" sunk, weathered and grooved sill finished fair or exposed surfaces.

Cement Concrete required for say 4 L.Y.

$$12' \times 0-2.1/2" \times 0-8" = 1.66 \text{ C.F.T. or } 0.062 \text{ C.Y.}$$

Material for 0.062 C.Y. Labour for Mixing laying in mould etc.:

	0.062	C.Y.
Mixer & Driver	1	hour
Mason	1	hour
Labourer	20	hour
Transporting Labourer	2	hour
Curing	1	hour

∴ for 0.062 C.Y.

Precast Concrete 1:2:4 (3/4" aggregate) in 8" x 2.1/2" sunk, weathered and grooved sill (cont'd).

Mould

Timber: —

$$2 \times 4 - 1 \times 0 - 2.1/2 \times 0 - 1 : 0.14$$

$$5 \times 4 - 2 \times 0.2.1/2 \times 0 - 1 : 0.36$$

$$4 \times 3 - 0 \times 0 - 1 \times 0 - 1 : 0.08$$

$$4 \times 3 - 0 \times 0 - 2 \times 0 - 1 : 0.16/0.74$$

Add 10% Wastage	0.07/0.81	0.81	C.F.T.
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D. REINFORCEMENT AND STEEL WORK

Material Cartage etc.	Quantity	Unit
Mild steel reinforcement 1/4" dia. in beams, columns, slab and walls.		
1/4" dia. bars	1	Cwt.
Wastage 10%		
Cartage		L.S.
Binding wire	1	Lb.
Steel fixer	10	hour
Mild steel reinforcement 3/8" dia. in beams, columns, slab and walls.		
3/8" dia. rods	1	Cwt.
Wastage 10%		
Binding wire	1	Lb.
Steel fixer	8	hour
1/2" dia. rods	1	Cwt.
Wastage 10%		
Cartage		L.S.
Steel fixer	6	hour
Sundries		L.S.
Mild steel reinforcement 5/8" dia. in beams, slab, columns and walls.		
5/8" dia. rods	1	Cwt.
Wastage 10%		
Cartage		L.S.
Binding wire	1	Lb.
Steel fixer	6	hour
Sundries		L.S.
Mild steel reinforcement 3/4" to 1" dia. in beams, slab, columns and walls.		
3/4" dia. rods	1	Cwt.
Wastage 10%		
Cartage		L.S.
Binding wire	1	Lb.
Steel fixer	5	hour
Sundries		L.S.
B.R.C. No. 65 reinforcement place in position.		
B.R.C. No. 65	1	S.Y.
Cartage		L.S.
Wastage 20%		
Steel fixer	1/4	hour
Labourer	1/4	hour
Sundries		L.S.

Material Cartage etc.	Quantity	Unit
B.R.C. No. 125 placed in position for reinforcement complete.		
B.R.C No. 125	9	S.FT.
Cartage		L.S.
Wastage 20%		
Steel fixer	1/4	hour
Labourer	1/4	hour
Sundries		L.S.

L. RENDERING AND PLASTERING

Material Cartage etc.	Quantity	Unit
1/2" External rendering in cement mortar 1:3 Block wall.		
Cement mortar 1:3	0.021	C.Y.
Wastage 5%		
Sundries		L.S.
Plasterer	1/2	hour
Labourer	1/2	hour
1/2" Smooth Internal rendering on Concrete Soffits in C.M. 1:3.		
Cement mortar 1:3	0.021	C.Y.
Wastage 5%		
Sundries		L.S.
Mason	7/8	hour
Labourer	1/2	hour
3/4" Smooth External rendering in two coats on Concrete Soffits in C.M. 1:3.		
Cement mortar 1:3	0.028	C.Y.
Wastage 5%		
Sundries		L.S.
Mason	1/2	hour
Labourer	1/2	hour
3/4" rendering on block finished trowelled smooth including all arrises cement and sand 1:4.		
Cement mortar 1:4	0.028	C.Y.
Wastage 5%		
Sundries		L.S.
Mason	7/8	hour
Labourer	1/2	hour
1" rendering in two coats on block walling consisting of 3/4" rendering (1:4) and 1/4" rendering 1:2 finish smooth including all arrises etc.		
3/4" rendering as worked out Cement mortar		
1:2 for 1/4" coat	0.012	C.Y.
Add extra mason	1/4	hour
External Tyrolean Rendering 3/4" thick in two coats on walls including all sundry labour.		
1/2" rendering with Cement mortar 1:4	0.021	C.Y.
Wastage 5%		
Mason	3/4	hour
Labourer	1/2	hour
Ceramic	1/10	Cwt.
Carriage of Ceramic		L.S.
Machine & Sundries		L.S.
Sprayer	1/4	hour
Labourer	1/4	hour
Preparation of surface		L.S.

Material Cartage etc.	Quantity	Unit
White glazed wall tiling bedded and jointed in cement mortar 1:3 on rendering (measured separately) and pointed in white cement.		
1/4" glazed tiles	36	Nos.
Wastage 5%		
Carriage		
Cement Mortar	1/3	Cft.
White cement & whiting	1/40	Cft.
Plasterer	2	hour
Labourer	1	hour
Sundries		
1/8" Asbestos flat sheets fixed to ceilings.		
Asbestos Sheet	9	S.F.T.
Carriage 5%		
Wastage 12.1/2%		
Nails	1/5	Lbs.
Carpenter	1/2	hour
Labourer	1/2	hour
2" x 1/2" Beads for Asbestos cement sheet ceiling.		
14 L.F.T.		
Timber	1	C.F.T.
Wastage 12.1/2%		
Nails	1/6	Lbs.
Planning Carpenter	3	hour
Fixing Carpenter	3	hour
Labourer	3	hour
1/2" approved termite proof Vee Jointed insulation fibre board and fixed to soffit of roof timbers with galvanized clout nails, including all cuttings and stopping heads with plaster.		
1/2" Insulation Board	9	S.F.T.
Wastage 12.1/2%		
Carriage		L.S.
Clout Nails	1/8	Lb.
Carpenter	1/3	hour
Labourer	1/3	hour
Sundries		L.S.

M. PAINTING

Material Cartage etc.	Quantity	Unit
Prepare and apply 3 coats of Emulsion paint on Plastered walls.		
For 100 S.Y.		
Emulsion Paint	4.29	gal.
Wastage 5%		
Carriage		L.S.
Sundries		
Painter	25	hour
Preparation of surface before painting	6	hour
Labourer		
Overhead & Profit 17.1/2%		

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H. WOOD WORK JOINERY

Material Cartage etc.	Quantity	Unit
1.1/2" (Finished) Skeleton framed flush door faced both sides with 3/16" exterior quality plywood lipped all round with hard wood.		
Hard Wood Skeleton Frame		
2 x 6 - 6 x 0 - 1.1/8 x 0 - 3.3/4" = 0.38		
2 x 2 - 9 x 0 - 1.1/8 x 0 - 3.3/4" = 0.16		
1 x 2 - 9 x 0 - 1.1/8 x 0 - 6.1/2" = 0.14		
2 x 2 - 9 x 0 - 1.1/8 x 0 - 2 = 0.09		
	0.77	
	0.77	
Add Wastage 12.1/2%	0.10	
	0.87	
Lipping 19' x 0 - 1.1/2 x 0 - 1.1/2 = 0.30	0.30	C.FT.
	1.17	
Plywood	40	
Glue		L.S.
Nails	1/4	L.S.
Carpenter Framing	3	hour
Carpenter Fixing Plywood	2	hour
Rate for 1.1/2" (Finished) Skeleton framed flush doors freed both sides (Cont'd).		
Carpenter fixing door	1	hour
Labourer	4	hour
1.3/4" Skeleton framed flush door covered both sides with 1/4" plywood and lipped all round with hard wood.		
Take a door of 2 - 9 x 6 - 6		
Framing		
2 x 6 - 6 x 0 - 1.1/2 x 0 - 3.3/4" = 0.50		
2 x 2 - 9 x 0 - 1.1/2 x 0 - 3.3/4" = 0.22		
1 x 2 - 9 x 0 - 1.1/2 x 0 - 6.1/2" = 0.30		
2 x 2 - 9 x 0 - 1.1/2 x 0 - 2		
Lipping 1.1/2" x 1.1/2" = 1.02		
1 x 18 - 6 x 0 - 1.1/2 x 0 - 1.1/2 = 0.30	1.42	
12.1/2% Wastage	0.18	
	1.60	C.FT.
Plywood		
2 x 2 - 9 x 6 - 6 x 35.74		
Wastage 10% = 3.57		
	39.31	
Say 40 S.FT.	40	S.FT.

Material Cartage etc.	Quantity	Unit
1.3/4" Skeleton framed flush door (cont'd).		
Glue		L.S.
Nails	1/4	Lbs.
Carpenter for framing	4	hour
Labour for framing	2	hour
Carpenter fixing plywood	2	hour
Labourer	2	hour
Carpenter hanging door	1	hour
Labourer hanging door	1	hour
1" x 2" Bearer Plugged to Block Work		
3 FT. RN.		
Hard-wood —		
3 x 1/6 x 2/12	1/24	C.FT.
Plugs	1	No.
Nails		L.S.
Sundries		L.S.
Carpenter	1/6	hour
Mason	1/6	hour
Labourer	1/6	hour
1.1/2" x 2" Sawn hard wood framing plugged to concrete or block work.		
1.1/2" x 2" Framing as worked out		L.F.
For 3FT.		
Plug		L.S.
Plugging Carpenter	1/6	hour
Labourer	1/6	hour
Sundries		L.S.
1.1/2" x 2" hard wood framing		
Take a length of 3 FT.		
Hard-wood 3 x 1/8 x 1/6	1/16	C.FT.
Wastage 12.1/2%		
Sundries Nails etc.		L.S.
Carpenter	1/2	hour
Labourer	1/4	hour
2" x 6" Twice Rebated Window frames plugged and screwed to Concrete or Block work.		
Take a length of 5' — 0"		
Hard-wood		
5 x 0 — 6 x 0 — 2	5/12	C.FT.
add Wastage 12.1/2%		
Plug	4	No.
Carpenter	2	hour
Mason	1/2	hour
Labourer	1/2	hour
Sundries		L.S.

Material Cartage etc.	Quantity	Unit
2" x 6" Chamfered Cill		
For 4' - 0" Long		
Hard-wood:		
4 x 1/6 x 1/2	1/3	C.F.T.
Wastage 12.1/2%		
Sundries		L.S.
Carpenter	3/4	hour
Labour	1/4	hour
1" Cross Tongued Top		
Timber:		
1 x 1 x 1/12	1/12	C.F.T.
add Wastage 12.1/2%		
1 FT.RN. of Tongue		L.S.
Labour Grooving 2 Nos. and tonguing Carpenter	1/2	hour
Fixing Carpenter	1/3	hour
Sundries		L.S.
Screw		L.S.
1/2" Plywood back		
Say for 9 S.F.T.		
Plywood 1/2" thick	9	S.F.T.
Wastage 12.1/2%		
Nails		L.S.
Carriage		L.S.
Carpenter cutting to size & fixing	1/3	hour
Labourer	1/3	hour
Hard-wood floor boarding 3" wide and 3/4" thick (T & G)		
Timber:	0.63	C.F.T.
Wastage 12.1/2%		
Nails	1/8	Lb.
Carpenter Making	3/4	hour
Carpenter Fixing	1/2	hour
Labour	1	hour
Wood block flooring 9" x 3" x 1.1/4" Blocks laid over Mastic.		
Preparation of floor		L.S.
Timber Hard-wood	15/16	C.F.T.
Wastage 12.1/2%		
Mastic	1/6	Gal.
Carpenter Making Blocks	8	hour
Laying Carpenter	4	hour
Labourer	8	hour
Sundries		L.S.

FOUNDATION INVESTIGATION
UNIVERSITY MEDICAL SCHOOL BUILDING SITE

PRELIMINARY REPORT

The contract given by the University of Ghana Development Office to the Geological Survey Department to undertake foundation investigation on geologic basis at the site for the proposed buildings of the University of Ghana Medical School, has almost been completed.

The investigation consisted of pitting, drilling and geophysical exploration. Two base-lines, each measuring more than 600 metres were cut through the site. Three cross-lines with a total length of about 1,800 metres were also cut. These enabled the work to be done without hindrances and also helped systematic plotting and successful attempt on correlation.

GEOLOGY OF THE AREA

The area is underlain by Togo series consisting of quartz-mica schist. The quartz grains are fine and are mixed with specks of mica without any cementing or binding medium. Because of lack of cementing material the schist tends to be friable. It has a tendency of weathering into grey, micaceous "fine" sand.

ASPECTS OF FOUNDATION PROBLEMS

The general sequence of rock layers in the area consists of soil or reddish-brown clay cover of about 2 metres thick. Below this cover is a hard lateritic pan which has an average thickness of 2 metres. These two superficial layers overlie the quartz-mica schist.

The water table is deep. At this time of the year, August 1976, the level of the underground water lies far below 6 metres.

FURTHER WORK

Before final conclusion can be drawn further investigations must be carried out to determine, whether the badly weathered schist at the site and the fresh schist seen near, the surface, and outside the site have a sharp boundary, and what the cause of the differential weathering was. Again the probe may determine whether the "boundary" is within or outside the precinct of the site. These are being carried on at the moment. Geophysical exploration to delineate faults or weak zones, if any, is being undertaken with Hammer Seismograph Model FS-3.

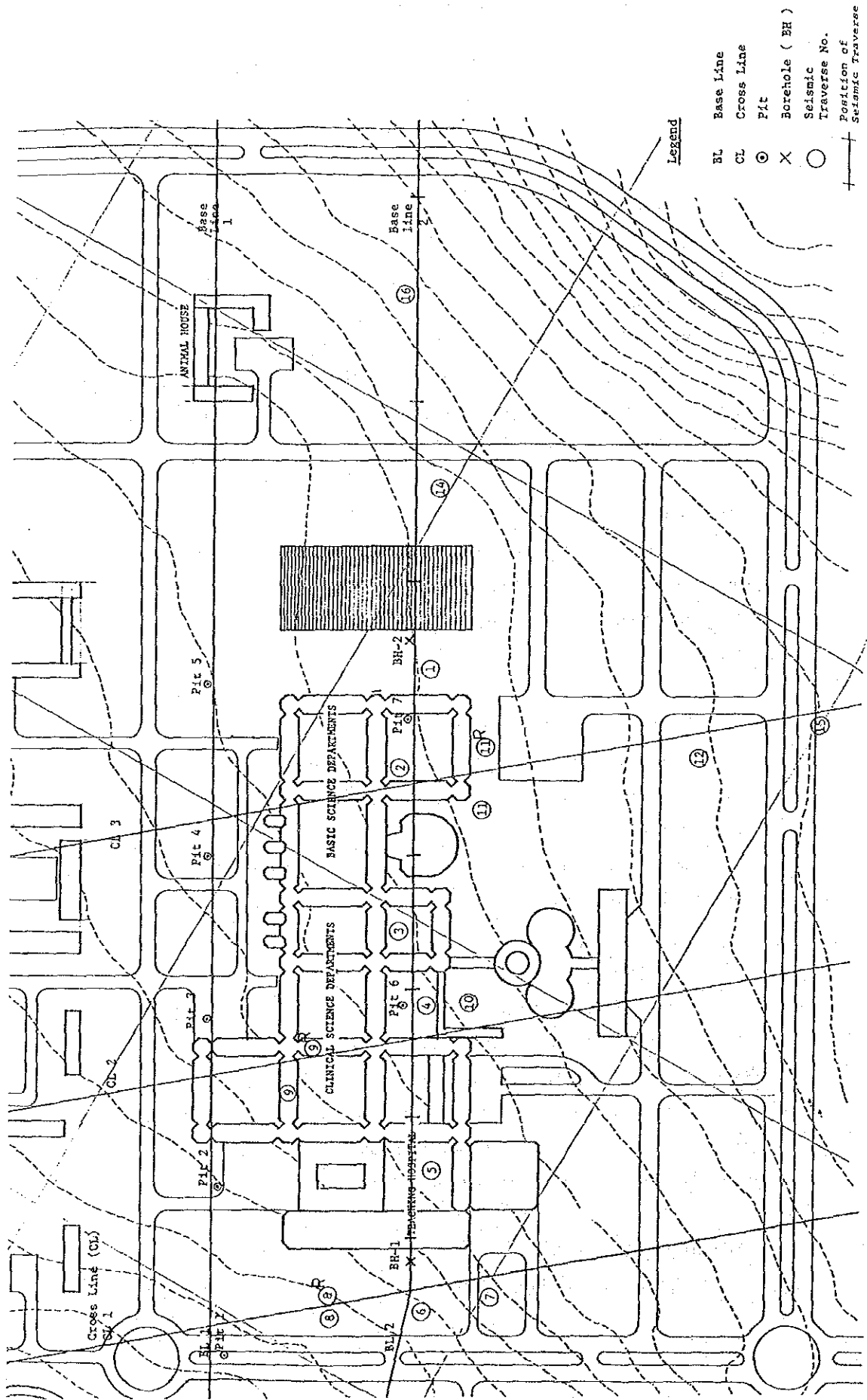
PARTIAL CONCLUSION

No faults have so far been detected.



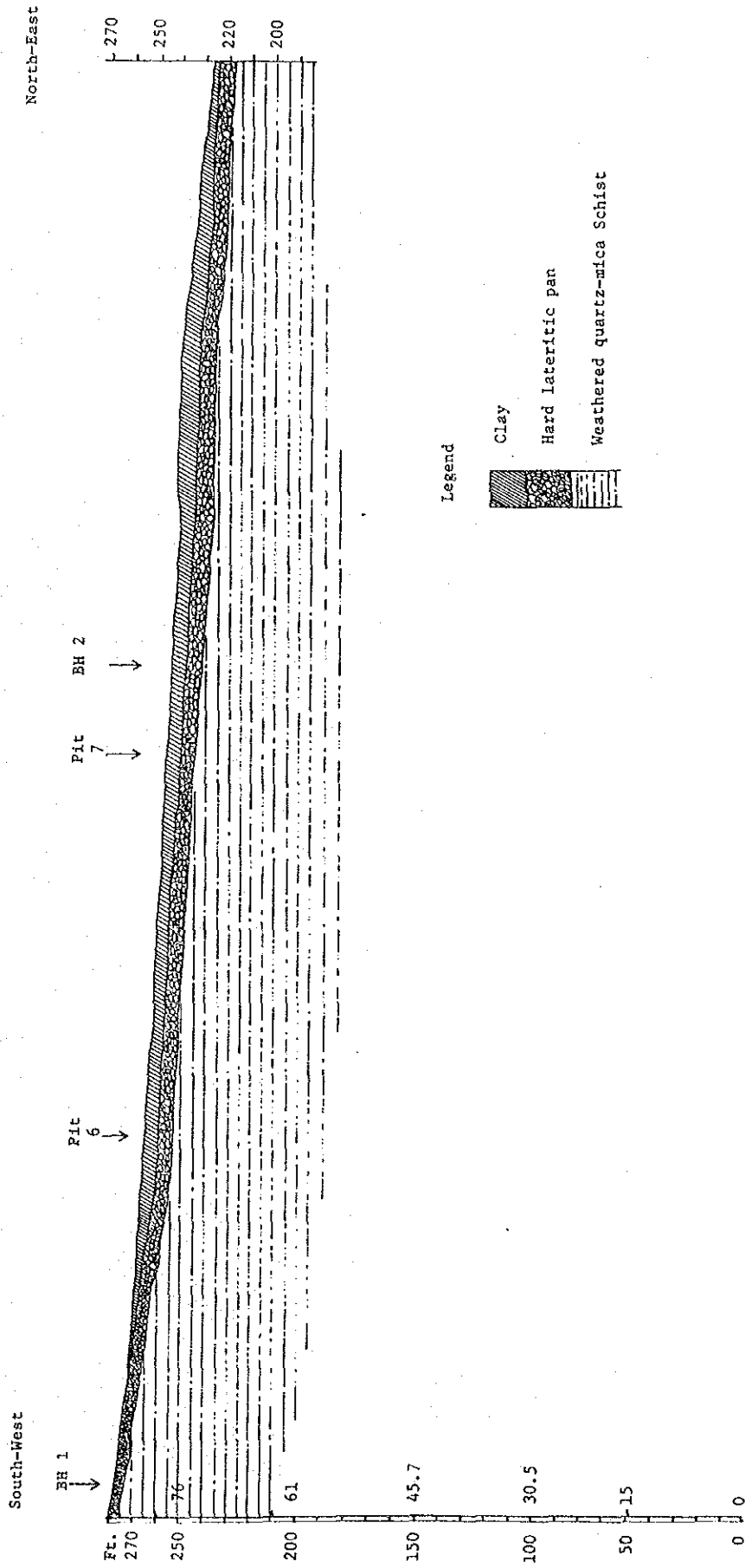
for: DIRECTOR, GEOLOGICAL SURVEY
(C. E. ODURO)

PROPOSED UNIVERSITY MEDICAL SCHOOL BUILDING SITE
 SHOWING POSITION OF PIT BOREHOLE & SEISMIC TRAVERSE



PRELIMINARY SKETCH

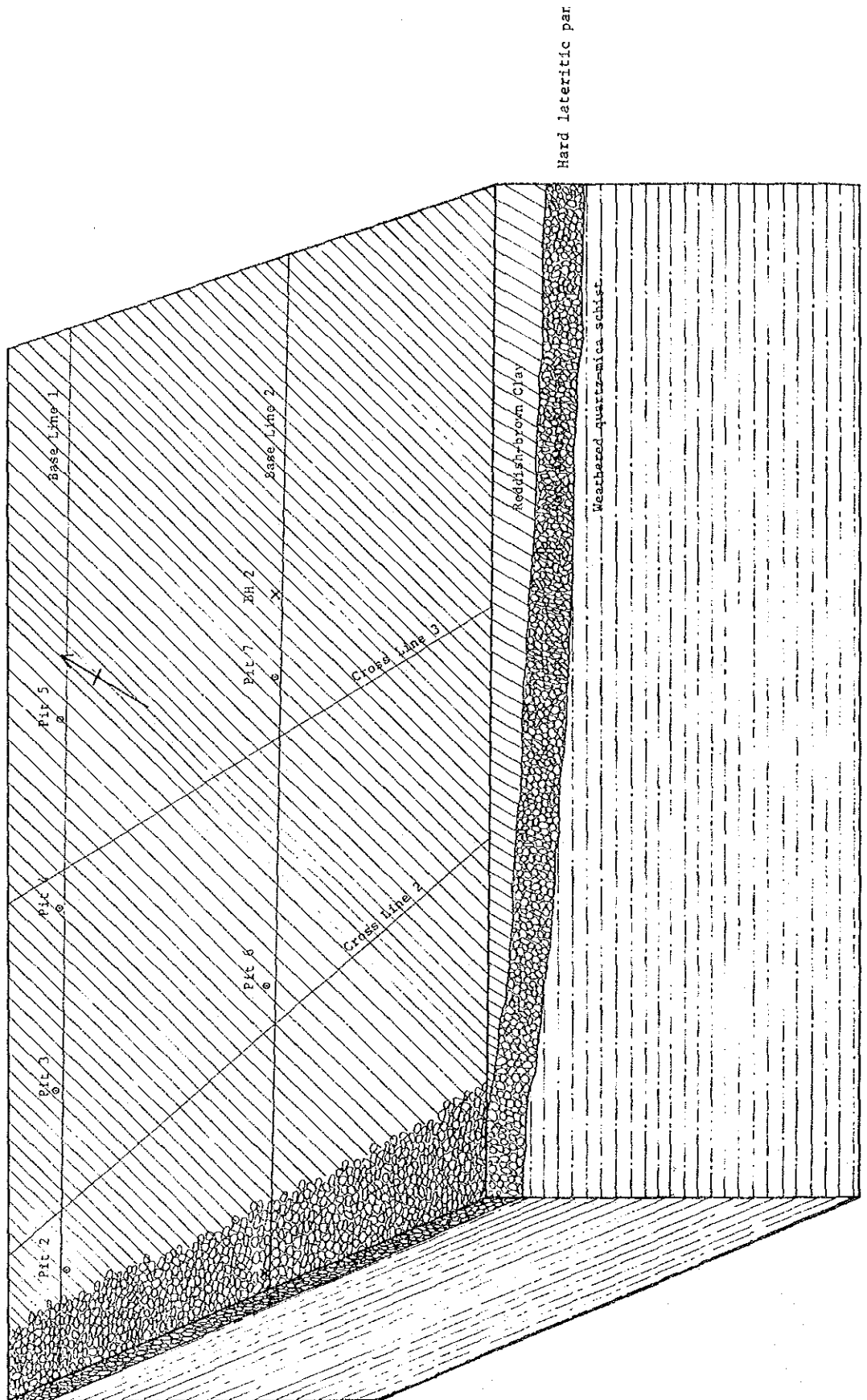
UNIVERSITY MEDICAL SCHOOL BUILDING SITE
SUBSURFACE CROSS-SECTION ALONG BASE LINE 2

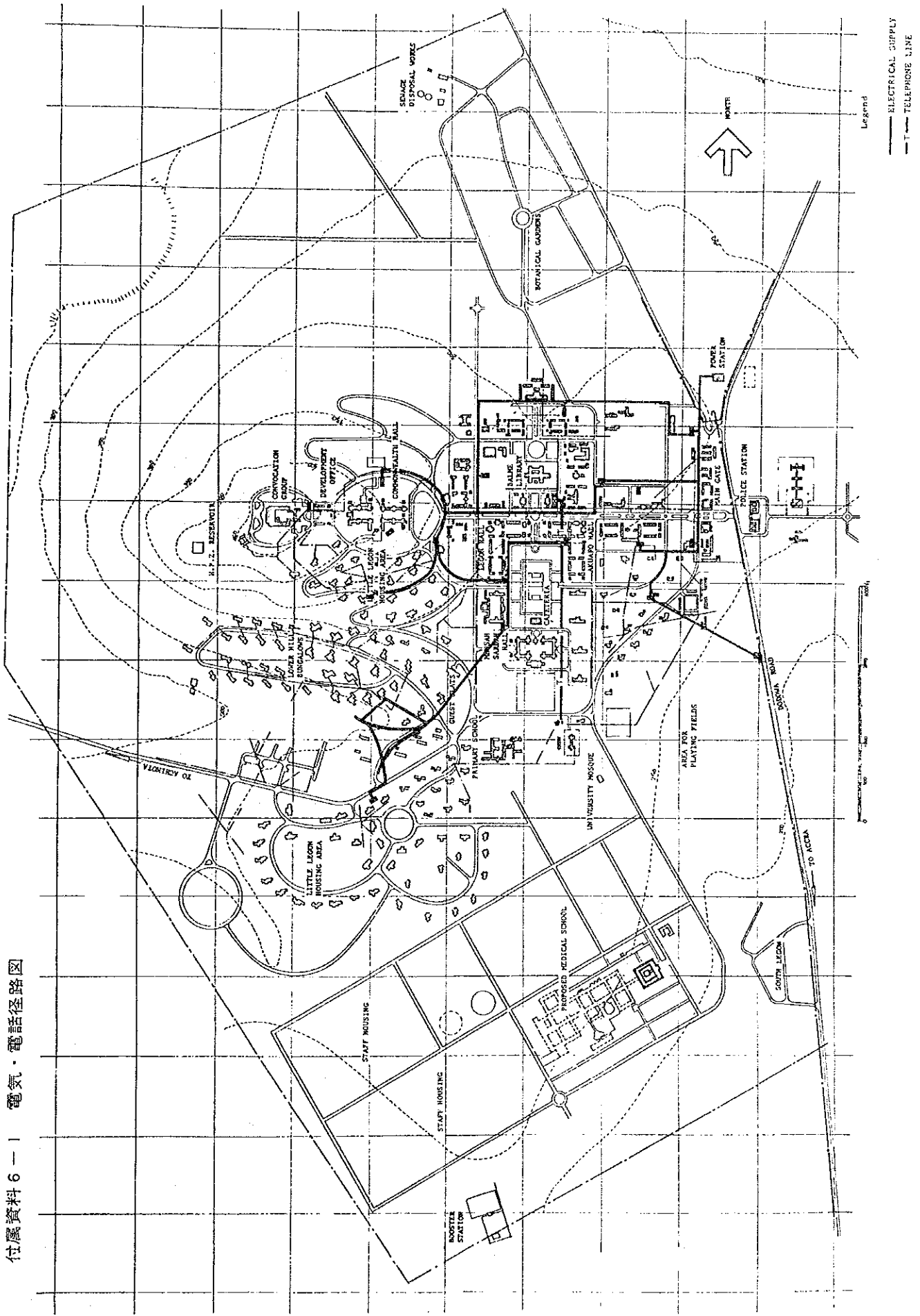


UNIVERSITY MEDICAL SCHOOL BUILDING SITE

PRELIMINARY SKETCH

ROUGH
BLOCK DIAGRAM





付属資料 6 - 1 電気・電話径路図

