(4)

Nos.	Description of Goods	Quantity	Unit Price	Amount
III.	FEED ADDITIVES			
		kg	yen	yen
1	Vitamin A & B	182.1	450	82,000
2	Vitamin B complex	147.7	400	59,000
3	Minerals	182.1	300	55,000
4	DL Methionin	147.7	900	133,000
5	Lysine	147.7	1,000	147,700
6	Hygromycin	48.1	980	47,000
7	Enramycin	274.8	1,900	522,000
8	Choline Sulphate	274.8	1,600	440,000
9	Virginiamycin	154.8	1,500	232,000
10	Frazoridon	274.8	635	175,000
11	2-Calcium Phosphate	1,477.0	95	140,310
	III. Feed Additives Sub Total			2,033,010

(5)

Nos.	Description of Goods	Quantity	Unit Price	Amount
POULTRY SECTOR				
I.	LAYER CHICKS			
1	Breeder chicks, Tester delivered from Shirakawa National Livestock Breeding Station			
		birds		yen
	(1) Tester (female) line 1106	1,000	40	40,000
	(2) P.S. (male) line 62	200	150	30,000
	(1) - (2) * delivery date Dec. 6, 1978			
	(3) P.S. (male) line 11	200	150	30,000
	(4) P.S. (male) line 06	200	150	30,000
	(5) P.S. (female) line 06	1,000	120	120,000
	(3) - (5) * delivery date Dec. 27, 1978			
				250,000
2	Breeder Chicks to be imported from the third countries (USA, Canada, etc.) * procured in Burma			
	(1) Harvard Comet (P.S. male)	250	660	165,000
	(2) Shaver (P.S. male)	250	660	165,000
	(3) Harvard comet (P.S. female)	1,750	660	1,155,000
	(4) Shaver (P.S. female)	1,750	660	1,155,000
	I. Layer Chicks Sub Total			2,890,000

Nos.	Description of Goods	Quantity	Unit Price	Amount
II.	MEDICINE			
		kg	yen	yen
1	Sulfa-di-metoxine, Powder 10 %	200	1,200	240,000
2	Sulfa-mono-metoxine, powder 10 %	100	1,800	180,000
		vial		
3	Chloromycetin, injection 50 mg I.U., 20 ml	100	430	43,000
		pack		
4	Tyrocin, water soluble 100 g	20	8,000	160,000
		bottle		
5	Tyrocin, injection 12,5 g I.U., 500 ml	120	3,000	360,000
		bottle		
6	Sulfa-mono-metoxine, injection 200 mg I.U., 100 ml	100	680	68,000
		tablet		
7	Piperazine, tablet 0.5 g	30,000	2	60,000
		kg		
8	Sevin, hydrate 75 %	30	3,000	90,000
		kg		
9	Sevin, powder 3 %	30	270	81,000
		can		
10	Ortho-drugs, 18 L	60	4,800	288,000
		can		
11	Inverted Soap, 18 L	30	6,500	195,000
		bottle		
12	Formalin, 20 L	50	2,500	12,500
		bottle		
13	Potassium permanganate 25 kg	2	22,000	44,000
14	Ethanol for disinfection 500 ml	10	400	4,000
15	Wood Tar 500 g	3	400	1,200
	II. Medicine Sub Total			1,826,700

Nos.	Description of Goods	Quantity	Unit Price	Amount
III.	FEED ADDITIVES			
			yen	yen
1	Flazolidone, 10 % 20 kg pack	180 kg	500	90,000
2	Vitamin A.D.E. Compound 20 kg pack	80 kg	400	32,000
3	Vitamin B 20 kg pack	120 kg	350	42,000
4	Minerals 25 kg pack	80 kg	250	20,000
5	Choline Sulphate 20 kg pack	80 kg	350	28,000
6	D.L-Methionin 20 kg pack	200 kg	900	180,000
7	L-Lysine 25 kg pack	150 kg	1,000	150,000
8	Zoalen 25 %	70 kg	1,500	105,000
9	3-calcium Phosphate, 95 %	800 kg	95	76,000
	III. Feed Additives Sub Total			723,000
IV.	BIOLOGICS			
				yen
1	Vaccine for Marek's Disease	37,000 dose		214,600
2	Vaccine for Corryza	12,000 dose		55,200
3	Antigen for pullorum disease	600 ml		120,000
	IV. Biologics Sub Total			389,800

付属資料２．豚舎設計図

Pig Sector

1．Boar House (A)　種雄豚舎（Aタイプ）
2．Boar House (B)　種雄豚舎（Bタイプ）
3．Dry Sow House　種雌豚舎
4．Finisher House　肥育豚舎
5．Grower House　育成豚舎
6．Weaner House　分娩豚舎

付属資料３．鶏舎設計図

Poultry Sector

1．Breeder House　種 鶏 舎
2．Grower House　育 成 舎
3．Brooder House　育すう舎
4．Incubator House　ふ 卵 舎

付属資料4　帰国後ビルマ側に送付した設計図

5月4日実施協議チームが帰国して後、畜舎等の設計のため、さらに次の設計図（Floor Plan）を、ビルマ畜産公社関係者に送付した。

第1回（6月　日）

(1) ふ卵舎（Incubator House）

軒高、ドアの位置等を手直しした設計図

第2回（6月23日）

(2) 飼料生産施設（Feed Mill）

(3) 飼料攪拌・粉砕システム（Feed Milling and Crashing System）

(4) 粉砕機据付図面（Setting Layout and Specification of Feed Crasher）

(5) ケージ式育成舎（Grower House）

(6) ケージ式成鶏舎（Layer House）

第3回（7月6日）

(7) 自家発電機（Stand－by Power Plant）

第4回（7月10日）

(8) 豚簡易屠場（Pig Slaughter House）

第5回（8月19日）

(9) 全体レイアウト改訂案

(10) 試験研究室（生化学・栄養）

June 23, 1978

NOTE FOR DESIGN DRAWING OF FEED MILL AND CAGE POULTRY HOUSE

I. Cage Poultry House

1. Brooder House

An ordinary poultry house designed in consultation with Mr. Akiyama, will be used for cage-system brooder house. One unit of brooder and and twelve units of brooder battery (for 2 to 8 weeks grower) will be accommodated in one room each.

2. Grower House

One group-battery breeding house will be constructed, on the basis of design attached hereto.

1) Floor level is 40 cm higher than ground level.
2) Bamboo-made curtain procured locally, will be hung inside as sun-shade.
3) Insulator under roof will be attached, if available.

3. Layer House

One layer house will be constructed on the basis of the same design shown in Grower House.

4. Installation (Set-up) of battery instrument

An engineer will be sent to Burma to set up these battery instrument for two weeks.

II. FEED MILL

Layout and design for feed mill are revised as an attached plan

1) Feed Crasher: "Hammer Crasher No. 3"
The crasher will be installed in pit (2300 x 700 x 600^{H} mm)

Appendix 1. Feed Mill
2. Feed Milling and Crashing System
3. Setting Layout and Specification of Feed Crasher
4. Design of Grower House (Maruto Model)
5. Design of Layer House (Maruto Model)

NOTE FOR STAND-BY POWER PLANT (EMERGENCY ELECTRIC GENERATOR)

1. Floor concrete should be over 600 mm thick.
2. Exausted pipe should be fixed 500 mm distant from side wall.
3. Eight (8) holes (150 x 400 mm depth) should be made to install anchor volt of electric generator.
4. Some part (1 - 1.5 square meter open to outside) of side wall (opposite to exausted pipe) will be made of zig-zag type brick or gallery type door (to be substituted by bamboo-made door)
5. Stand-by power plant will be constructed near to transformer and incubator house. At the same time, noise and bibration will be factors to be considered.

Detailed design of the stand-by power plant draughted by Burmese engineers will be checked in Japan, when the design will be sent to JICA.

Livestock Development Division
JICA

July 6, 1978

NOTE FOR DESIGN FOR PIG SLAUGHTER HOUSE

1. This floor design is drawn by Dr. Oishi, according the existing slaughter house of Ibaraki Branch, Shirakawa National Livestock Breeding Station.
2. The cold room with floor space (12 square meter: 4 x 3 m) accommodate 25 head (liveweight 100 kg) of dressed carcass.
3. A freezer in the cold room has specification of 5000 kcal/h.
4. Waiting yard is fenced with by iron pole (90 cm height). Pig are washed and cooled here by shower.
5. Washing passage for cleaning pigs is equipped with shower instrument.
6. Pigs are slaughtered electrically and bleeded in the slaughter room.
7. Carcass is hanged by electric hoist and moved by sliding ceiling rail, and soaked into scalder. (hot-water bath)
8. Carcass is soaked in the scalder (63~-65°C) in a few minutes, then moved to dehairer.
9. After dehaired in a minute, some hair of carcass is completely taken on gambrelling table. Then, (remain) hanging by electric hoist, evisceration is made, weighed by scale, and cut by electric saw in the dressing room. Washed carcass is stocked in the cold room.
10. Hot water is provided through boiler, in addition it is warmed by piped heater in the scalder equipment.
11. Boiler has a specification of 75,000 kcal/h.
12. Specification for hot-water circulation pump are diameter of 50 mm, pumping-up capacity of 150 l/min, and pumping-up height of 4 m.
13. Hot water from boiler is conducted to the visceration room.
14. Petrol storage tank should be installed for boiler.
15. Each room requires at least two taps (water).
16. Waste disposal facilities are also necessary, such as incinerater for blood, hair and viscera etc. and drying equipment.
17. This design is not ideal one, because of additional construction of scalding facilities. It is desirable that linear processing line is adopted for worker's convienience.

18. This design is just an example of pig slaughter house, as an experiment stage.

Prepared by Livestock Development Division, JICA

10th July, 1978

19 August 1978

COMMENTS ON COMPLEHENSIVE LAYOUT OF 10 MILE FARM

After examing the layout plan, the following comments are made by Dr. Seki.

1. Alteration of housing site

Among housing complex A and B, which are facing a road, housing complex A should be moved to northward in some extent (shown by arrow) and housing complex B should be moved to C area. B area should be categorized as project area, where no housing should be located.

2. Alteration of the site for cage poultry houses

Although two poultry houses (cage grower house type 1, cage layer house 1) are sited in D area, they should be relocated to B area after alteration of the housing site.

3. Relocation poultry houses

Brooding house and grower houses complex are too densily located, therefore these layout arrangement should be simplyfied. To prevent poultry disease effectively in the broiler house area, commercial broiler zone and brooding and grower house (broiler breeder) should be separated with a control zone (dotted red line) between the two area. The control (off limit) zone will be afforested. Fifty-seven (57) broiler houses should be located on the right side of control zone, and its layout should be studied, covering the area pointed by the arrows. Broiler breeder complex should be located on the left side of the control zone, where brooder house for breeder should be sited with proper distances.

Above mentioned comments on layout should be designed with thorough consideration of annual prevailing wind direction.

4. Feed mill facilities

Pathogene is easily invaded to the project site, with raw materials of feed to be transported. For this reason, it will be desirable to install the feed mill facilities in H area near the Farm gate. The existing feed storage could be utilized for feed mill.

Even if the feed mill facilities are to be installed in F area feed storage (P.S) and storage for raw materials (F.S) should be sited vice versa.

5. Location of hatchery and laboratory (biochemistry and nutrition)

The hatchery and laboratory equipment are easily affected by electric black-out, therefore stand-by power plant will be able to supply electricity to both facilities. For this reason. G (hatchery) should be relocated to the laboratory site as same.

19 August 1978

COMMENTS ON ELECTRICAL INSTALLATION DESIGN OF HATCHERY

The following comments on hatchery are made by Mr. Akiyama with consultation of a engineer of Showa Hatchery Company.

1. The specification of incubator will be modified to 200-230 voltage, considering smooth operation.

2. Electric wiring of ventilation fan should be connected to an electric controller (stabilizer), enabling one time operation (turn on and off) for ventilation.

3. A plug receptacle should be located on the right side back of incubator house.

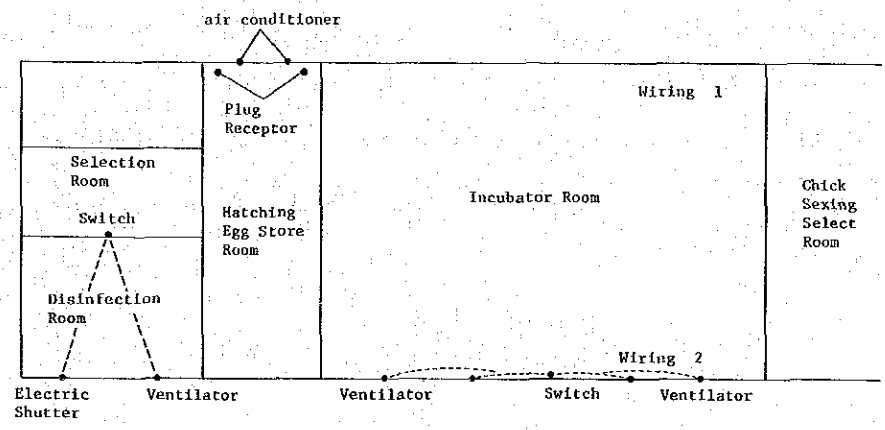
4. Switches for ventilators and electric shutter in disinfectant room will be fixed on the wall of egg selection room, since nobody enters into the room during disinfecting and smoking (fumigating).

5. Water supply device and two (2) plug receptacle should be fixed in the egg cooler room (egg storage), because two (2) units of air-conditioners will be installed.

6. The desirable electric wiring in the incubator house will be devided to four (4) lines as follows:

   1) one circuit to the hatchers (3) and setters (8) in the northern half of incubator room.
   2) one circuit to the hatchers (2) and setters (8) in the southern half of incubator room.
   3) One circuit to egg cooler room.
   4) one circuit to electric light, ventilators etc.

7. The design of hatchery are drawn satisifactory, based on the revised proposal.



19 August 1978

EXPLANATORY NOTE ON LABORATORY DESIGN (BIOCHEMISTRY AND NUTRITION

Two alternative design plan for laboratory are made for a reasonable choice of Burmese side.

Plan A (500 square meters) is made with consultation of researchers of Feed Quality Control Laboratory of MAFF.

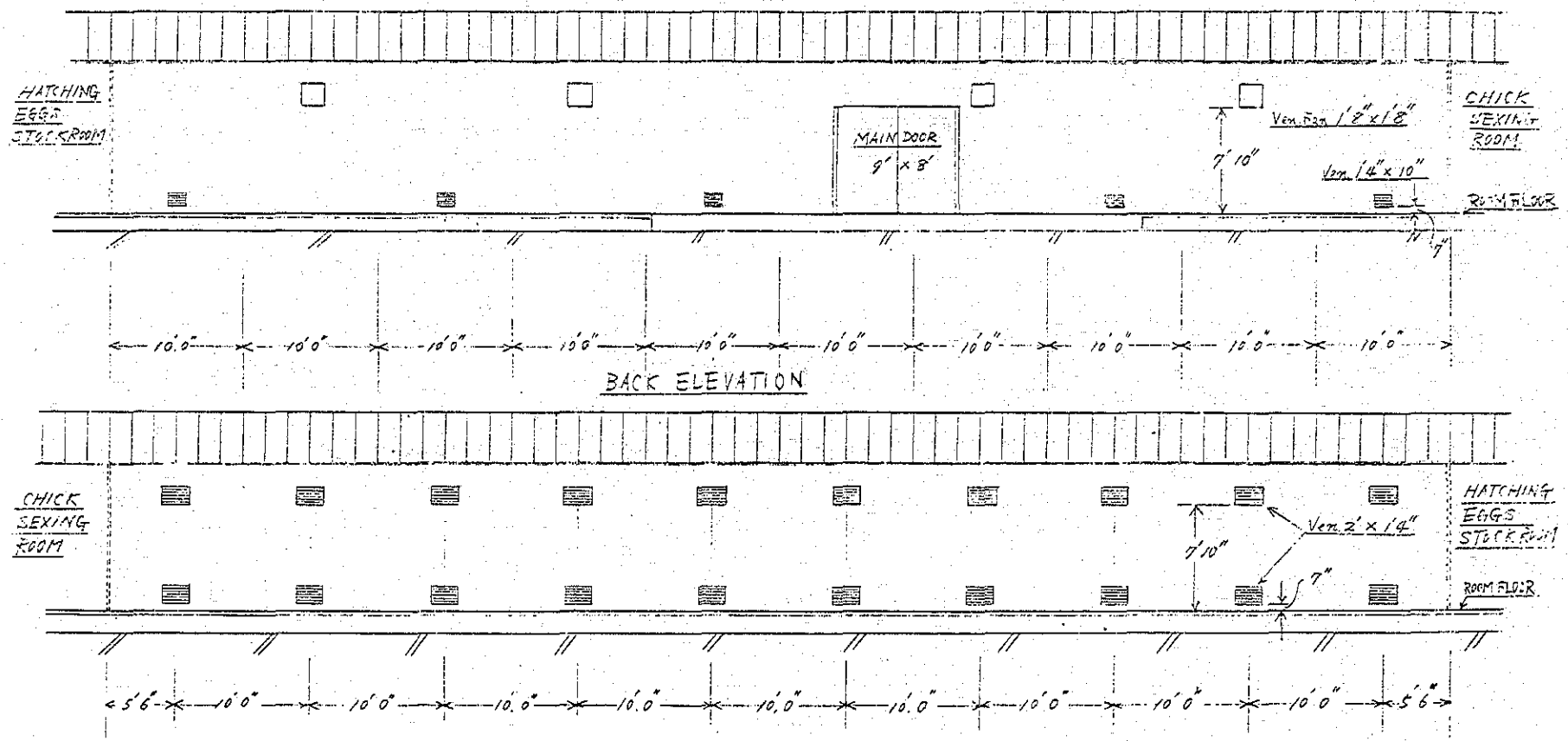
Plan B (compact size) is made as same as the existing feed analize laboratory attached to Okazaki National Livestock Breeding Station of MAFF.

The following comments on laboratory Plan A is made by researcher group of FQCL of MAFF.

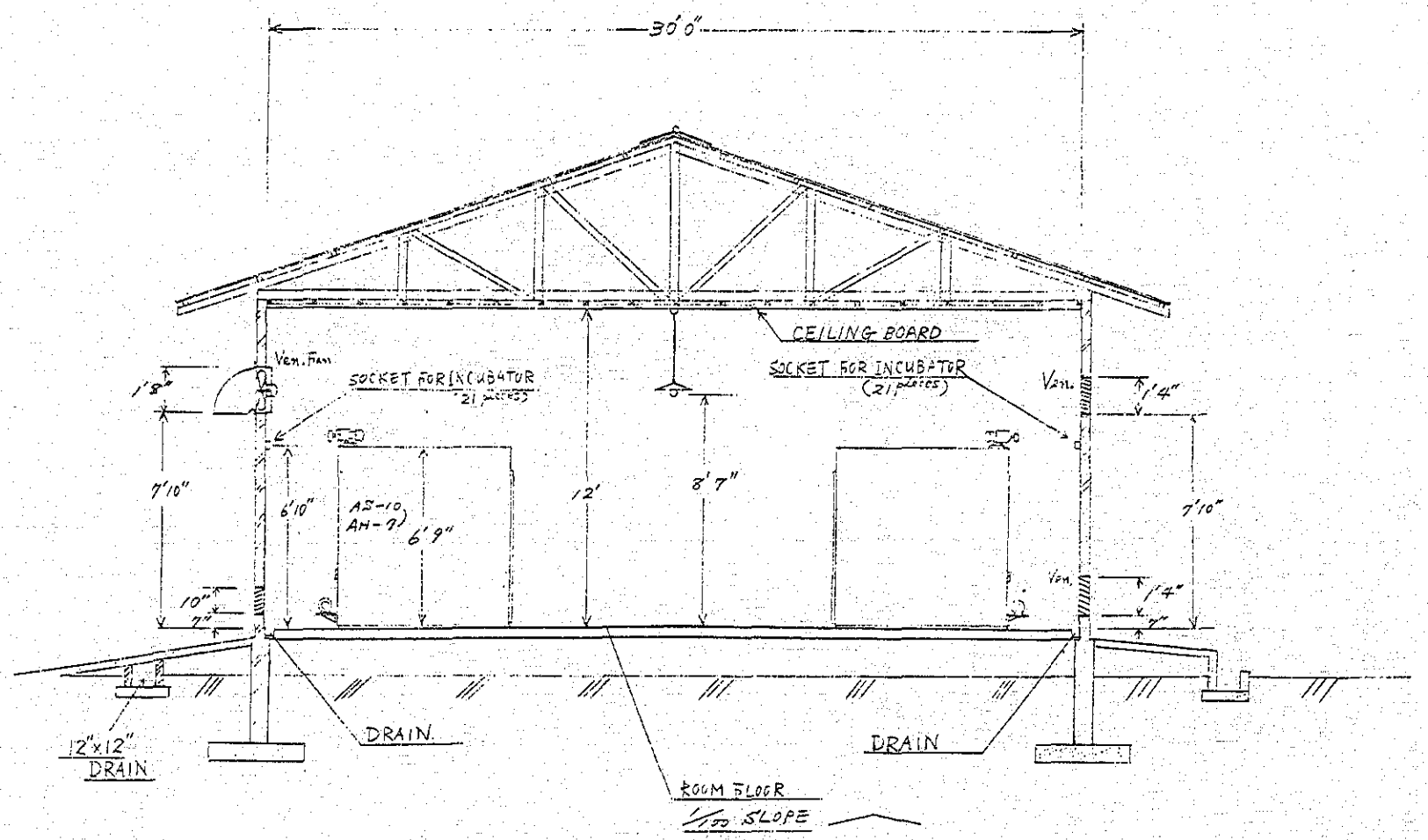
1. Arrangement order of rooms and placement of tables and cabinet will be re-examined based on actual condition in Burma.
2. It is desirable to install air exhausters at low and high position of each room. Particularly, powerful air exhausters are necessary in draft chamber and ether room.
3. Two (2) gas valves will be installed in draft chamber. Four (4) to six (6) gas valves will be installed in the main laboratory room and equipment room. (It is desirable that these gas valves can be housed in laboratory tables)
4. Electric receptacles (20 Ato 50A) and branch circuit panel (electrical distribution) should be installed in each room.
5. The plug receptacle in ether room should be modified to "anti-explosive type".
6. Water taps (2 to 10) will be fixed in each room. According to regulation in Japan, inner diameter of water tap (ordinary) is 10 to 12 mm and inner diameter of chemical water tap is 8 mm to provide water current of 15 to 20 l per minutes.
7. It should observe electrical regulation in force in Burma concerning voltage, amperage, cycle, transformer, distributor panel and wiring.
8. It is desirable to install regulators for water pressure and gas pressure.
9. Necessary structural arrangement should be made for design of cylinder (gas container room).

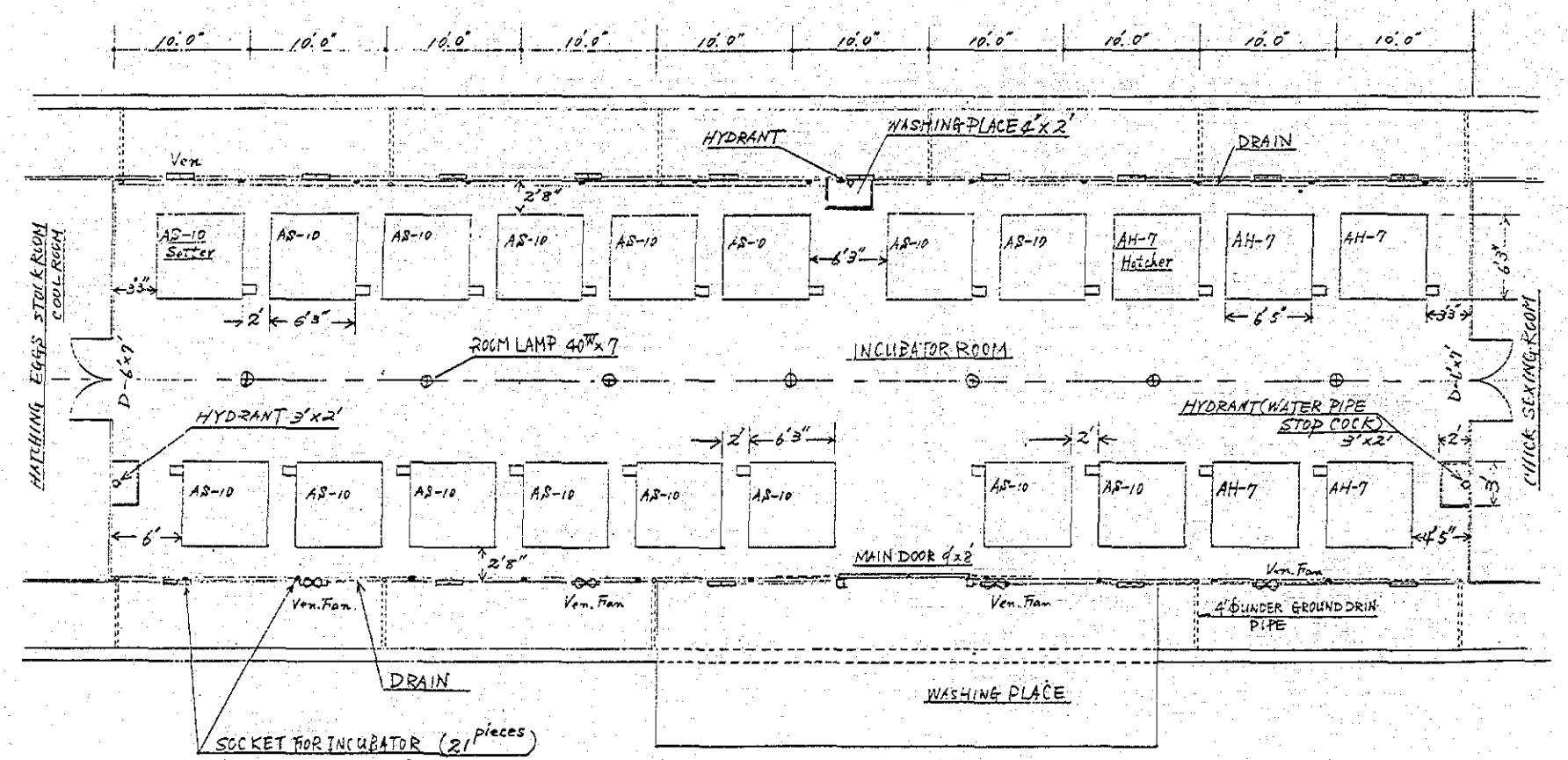
付属資料４－(1)　ふ卵舎（改訂）

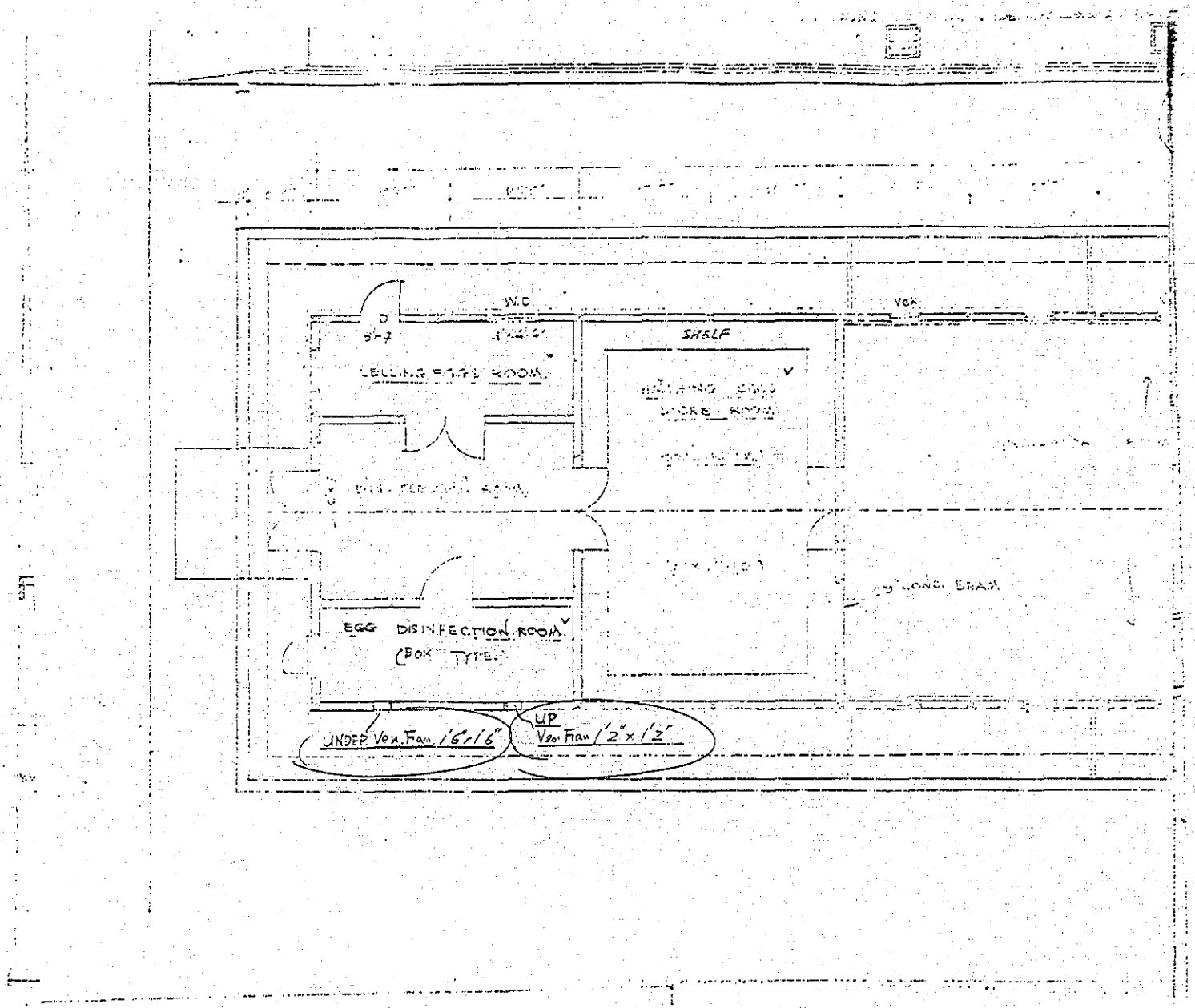
INCUBATOR ROOM
FRONT ELEVATION



INCUBATOR ROOM SIDE SECTION



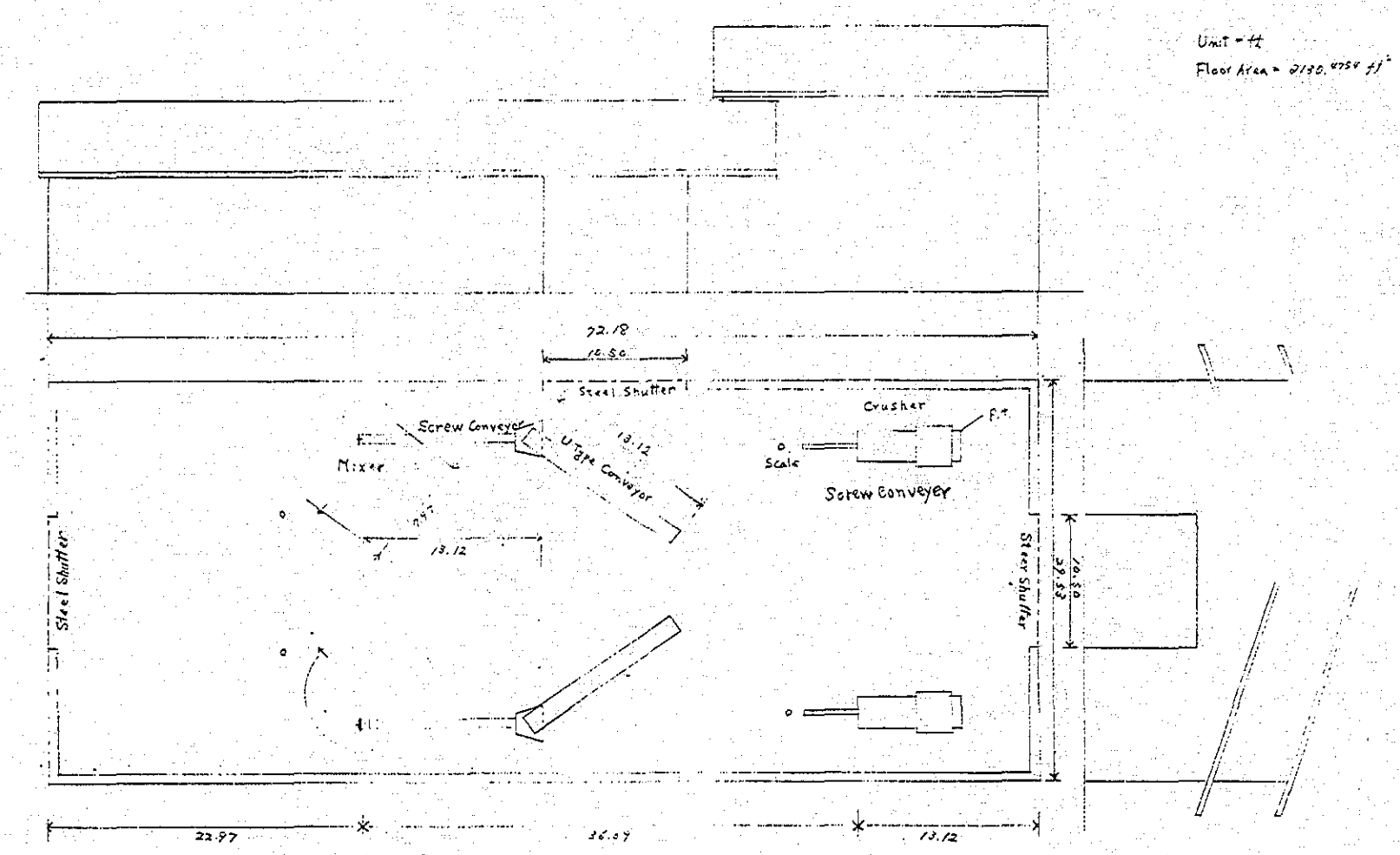

10'.0"
HYDRANT
WASHING PLACE 4'x2'
DRAIN
Ven
2'8"
AS-10 Setter
AS-10
AH-7 Hatcher
AH-7
6'3"
6'5"
3'3"
ROOM LAMP 40W x 7
INCUBATOR ROOM
HATCHING EGGS STOCK ROOM
COOL ROOM
CHICK SEXING ROOM
D-6'x7'
HYDRANT 3'x2'
HYDRANT (WATER PIPE STOP COCK) 3'x2'
2'
6'
4'5"
MAIN DOOR 6'x8'
Ven. Fan
4" Ø UNDER GROUND DRIN PIPE
DRAIN
WASHING PLACE
SOCKET FOR INCUBATOR (21 pieces)


W.D.
SHELF
EGG DISINFECTION ROOM
(BOX TYPE)
UNDER Ven. Fan 16"x16"
UP
Ven. Fan 12"x12"

付属資料４－(2)　飼料生産施設

Appendix 1. Feed Mill

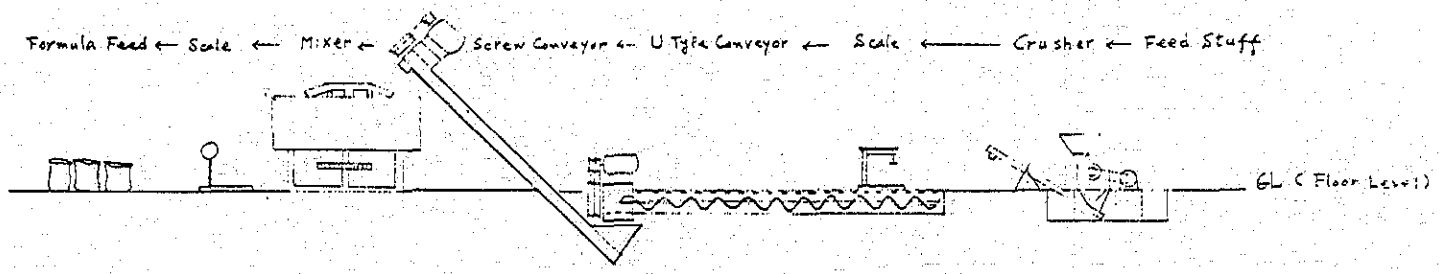
Feed Mill

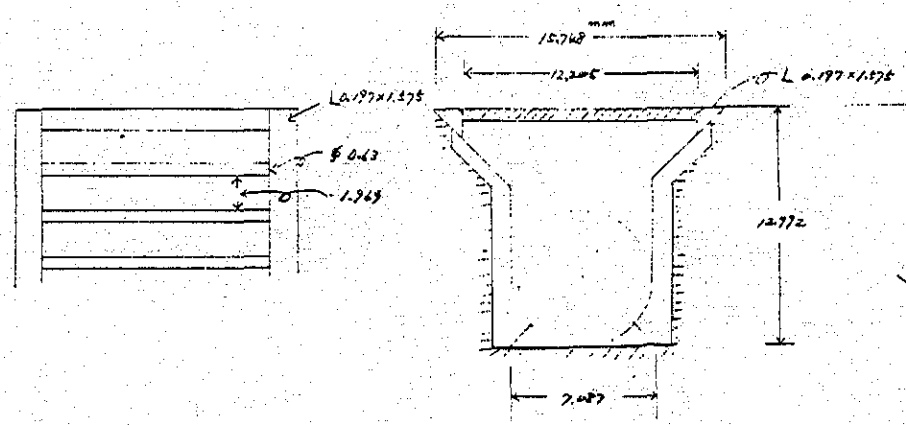


付属資料４－(3)　飼料攪拌・粉砕システム

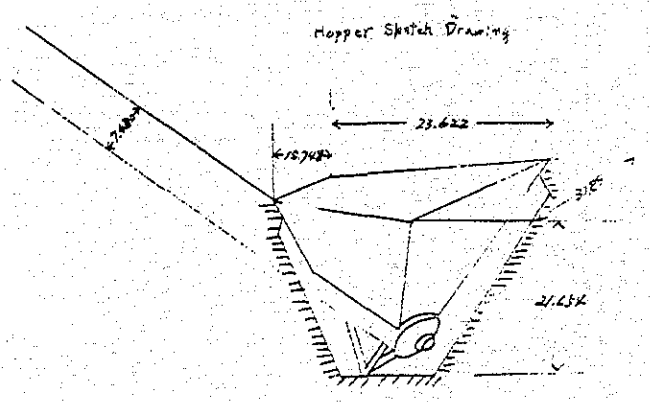
Appendix 2.Feed Milling and Crashing System

Feed Combin System





U Type Convayor
Sectional Drawing



(注)　飼料粉砕機（旭式ハンマークラッシャーNO3型）

1）粉砕システムの一部変更について

当初案及びリスト価格で指示した粉砕機については、今回メーカー及び本機種を使用中の飼料工場の調査を行った結果、当初考えていた牧場で従来から使用して来た機械と異り、その粉砕システム、レイアウト取扱いについて大幅な変更が必要になった。（別図参照）

主な変更点は次のとおり

(A)　防塵対策

高速回転であるため、当初案では粉砕後の飛散が甚しいために、クラッシャー下部にホッパーを付け、さらにスクリューコンベアーによって搬出する。

この場合、ホッパー内の粉塵を除去するためのエアー抜きを付け、木綿布による沪過搬出を行う。

(B)　原料投入口の改良

原料のはね返りを防ぐため、上部に大型投入ホッパーをつけ、ダンパーによる投入量の調節を行う。

(C)　台座及びピットの新設

上記改造を行うには台座（60cm）が必要である。この場合地上に設置したのでは、1 m 70 cmの高さになり、原料投入作業が困難になる。ためにピット（2.300 × 700 × 600H）を堀り、粉砕システムをこのピット内に設置する。

(D)　機種の変更

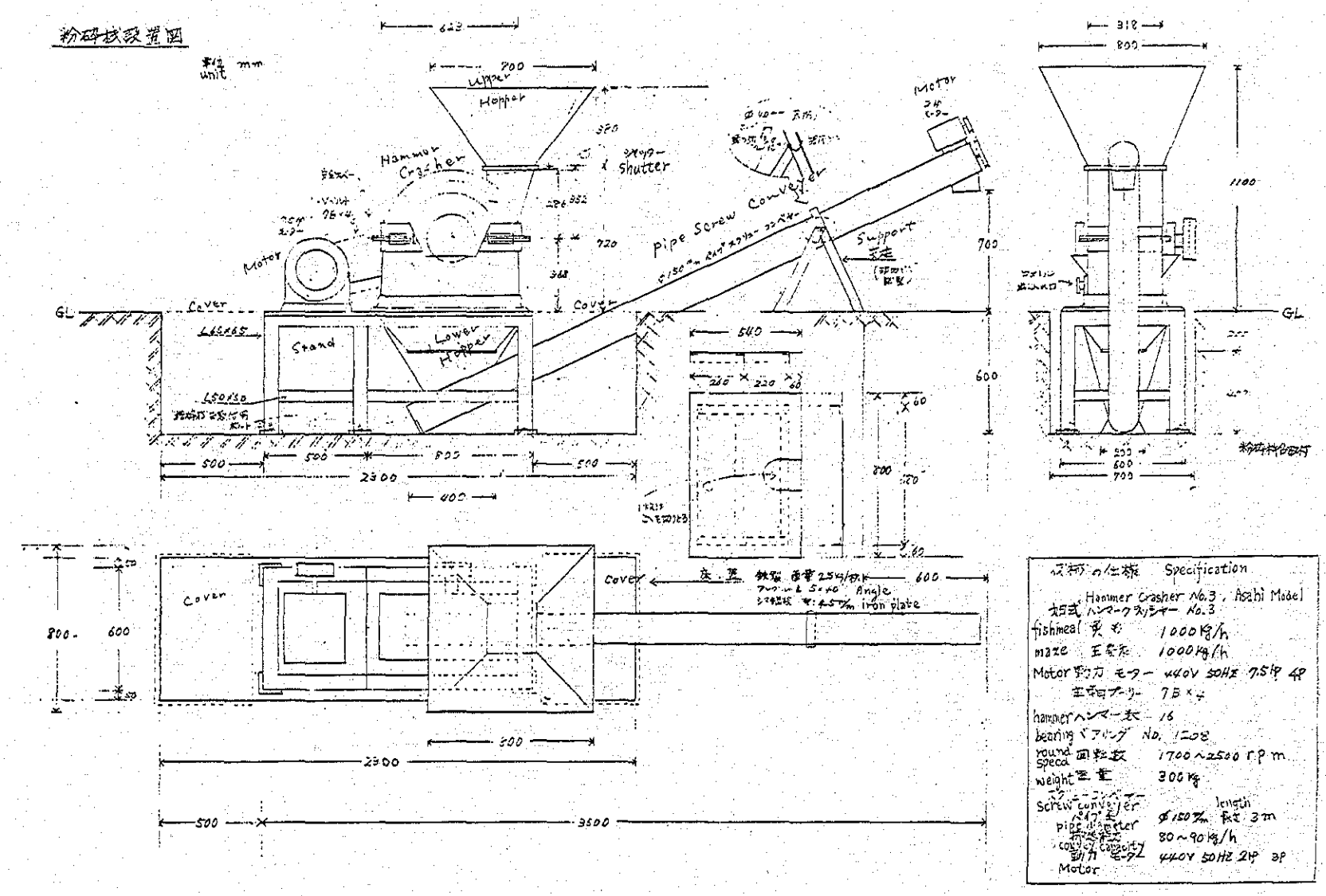
上記の理由により、台座、投入ホッパー、受口ホッパー、コンベア、同モーターなどが新たに必要となり予算的に当初予算より大幅な超過になる。この対策として、4型機を3型機にダウンし、1時間当りの粉砕能力を1,000 kgとした。

見積金額　863,500円（当初案 650,000）

ハンマークラッシャー	450,000
台　座	100,000
投入ホッパー	30,000
スクリュウ（クロスオーガー）	120,000
モーター 10hp	39,500
モーター 2hp	24,000
荷造、運賃	100,000

付属資料４－（４）　粉砕器据付図面

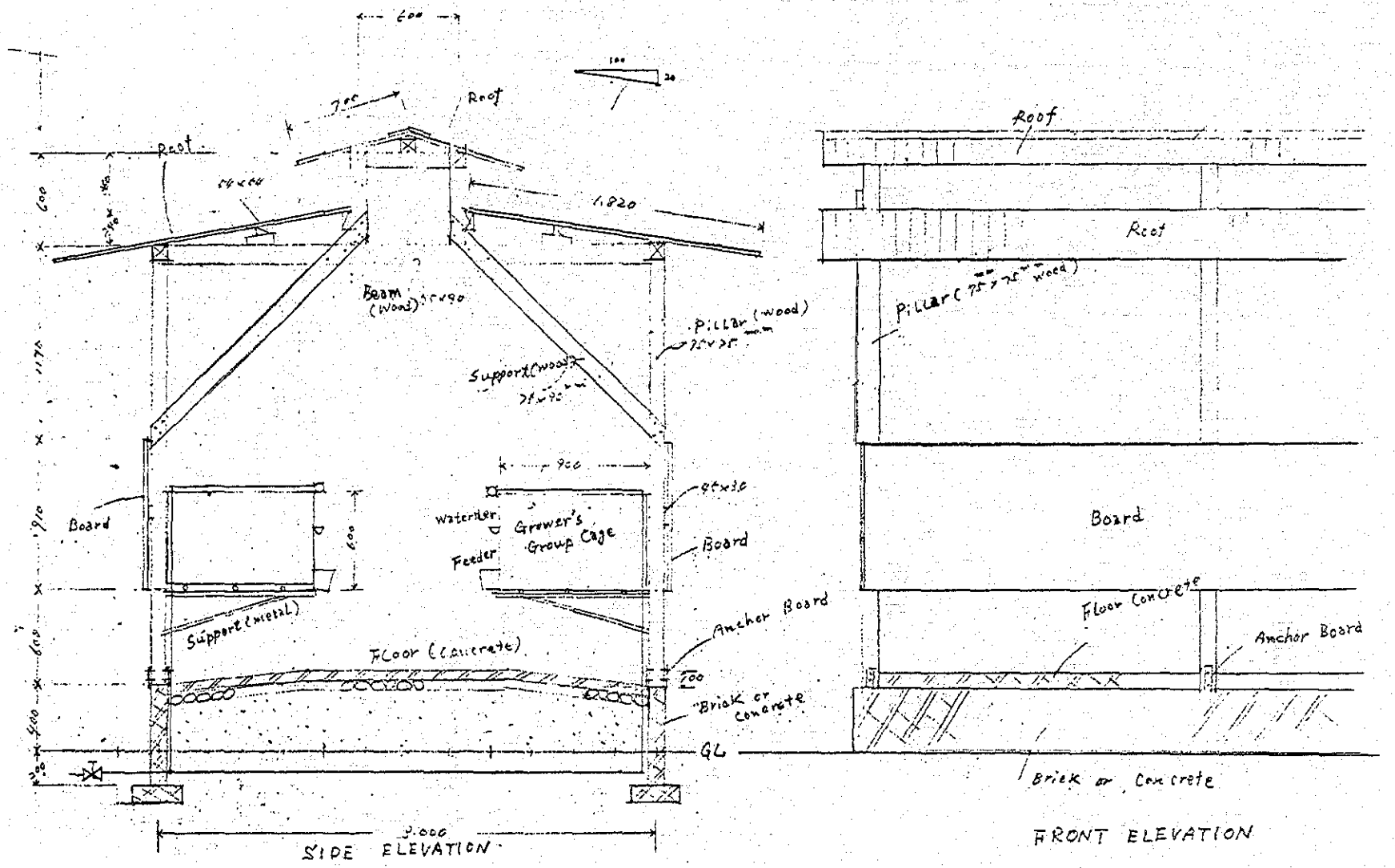
Appendix 3.Setting Layout and Specification of Feed Crasher



付属資料４－(5)　ケージ式育成舎

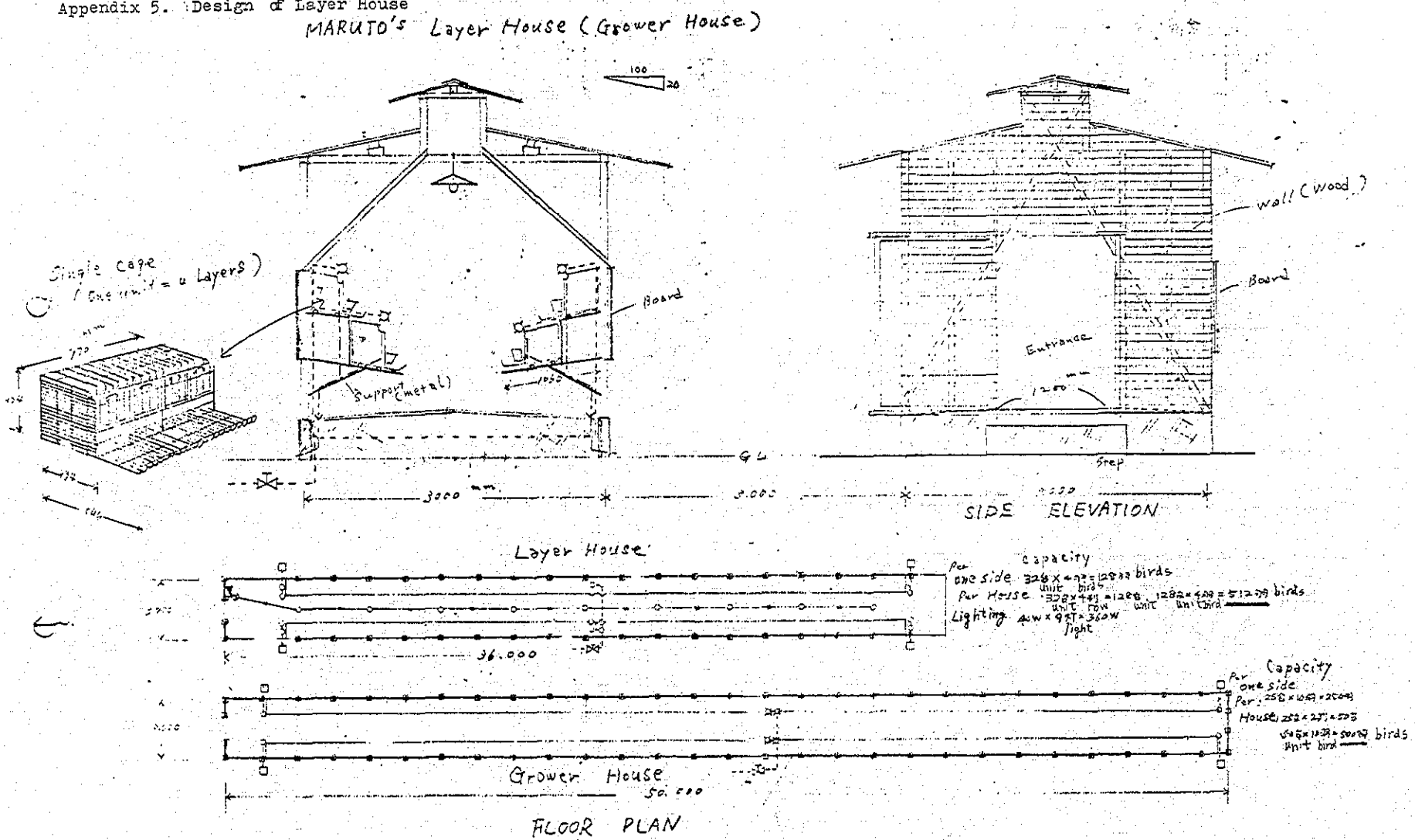
Appendix4.Design ofGrower House

MARUTO's Grower House (Layer House)
Ⓐ



付属資料４－(6)　ケージ式成鶏舎

Appendix 5. Design of Layer House



(注)　Ⓗ式ケージ養鶏システム

1)　育すう施設について（給温バタリー　廃温バタリー）

餌付後8週令までの育すう期の施設については、当初Ⓗ式育すう鶏舎を設置することを考えたがⓗ式養鶏法発明者の辻一夫氏と話合った結果、ビルマ側建設予定の育すう舎をそのまま使い、餌付から2週令までの給温育すう器1台を1室に、2週令から8週令までの廃温育すうバタリー12台は1室に6台づつ、計2室に収容することとする。

結果的にはⓗ式育すう鶏舎の新設は不要である。給温は石油ヒーター式（日本ではプロパン）に改造する。

2)　育成施設について（Ⓗ式大すう群飼ケージ）

Ⓗ式大すう舎については別紙設計図により1棟を設置する。

ビルマの気象条件を考え床面の高さを通常より20㎝高くし、地上高から40㎝高とする。

上部空間のカーテンはとりやめ、現地で生産されているアンペラ材をひな群を移動収容後、1～2週間吊り下げ直射日光の射入をさけることとする。

屋根材は現地生産のスレートとし、下地材（断熱材）は入手できれば入れるが、なければスレートのむき出しでもよい。

屋根モニター部の幅は通常60㎝であるが、現地の多雨性を考え10㎝伸ばし70㎝とした。

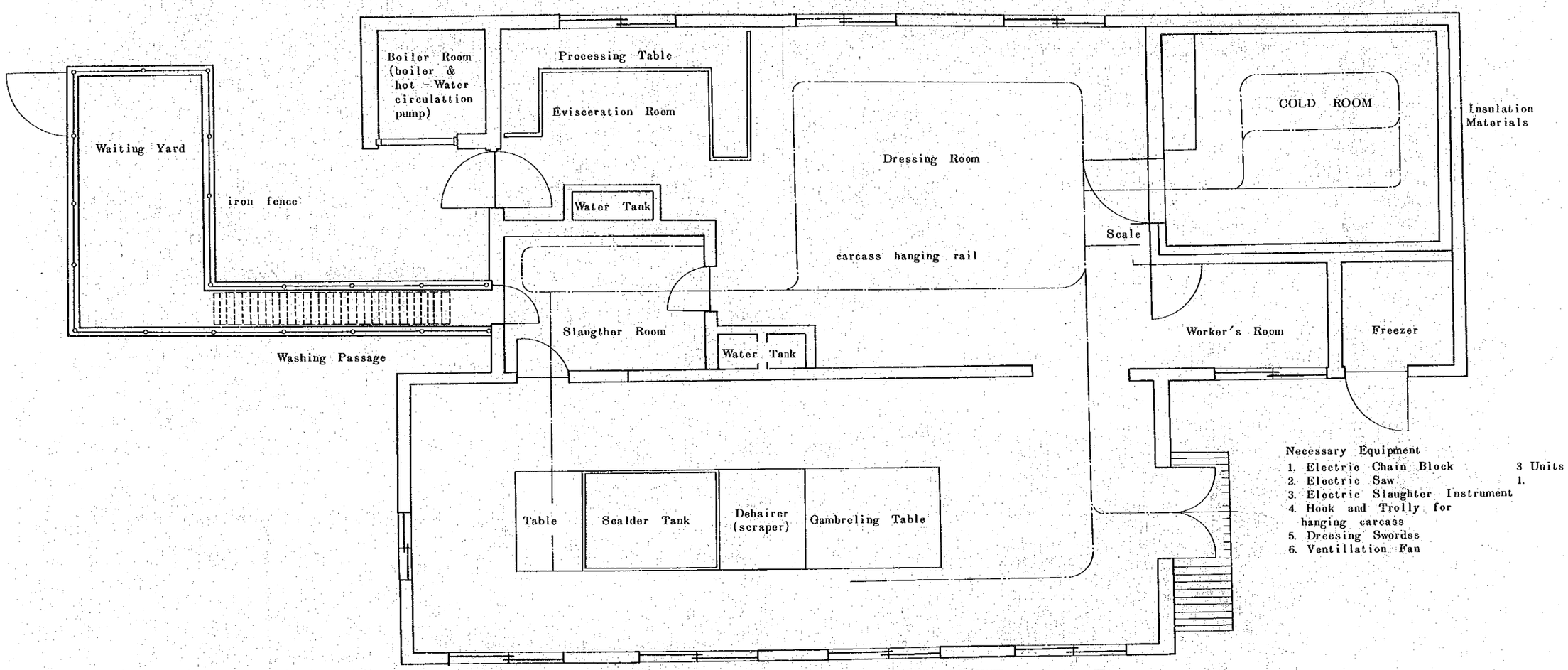
3)　産卵施設について（Ⓗ式産卵ケージ）

通常は幅24.25㎝ケージの2羽飼いであるが、現地の気象条件を考え1羽飼いとし、別紙設計図により、間口3㎞、長さ36㎞のⓗ式産卵鶏舎（構造は大すう舎と同じ、吊下げケージのみ異る）1棟を設置する。

4)　育すう器具、ケージの組立てについて

Ⓗ式バタリー育すう器具及び大すうケージ、産卵ケージは分解して荷造輸送する。現地での組立て、ケージのセッティング、Ⓗ式養鶏法の技術指導については、経験者（豊橋飼料養鶏試験場長菅沼氏）を7～10日ていど現地に派遣することを考えている。

付属資料4－(7)　豚簡易屠場



Necessary Equipment

1. Electric Chain Block　3 Units
2. Electric Saw　1.
3. Electric Slaughter Instrument
4. Hook and Trolly for hanging carcass
5. Dreesing Swordss
6. Ventillation Fan

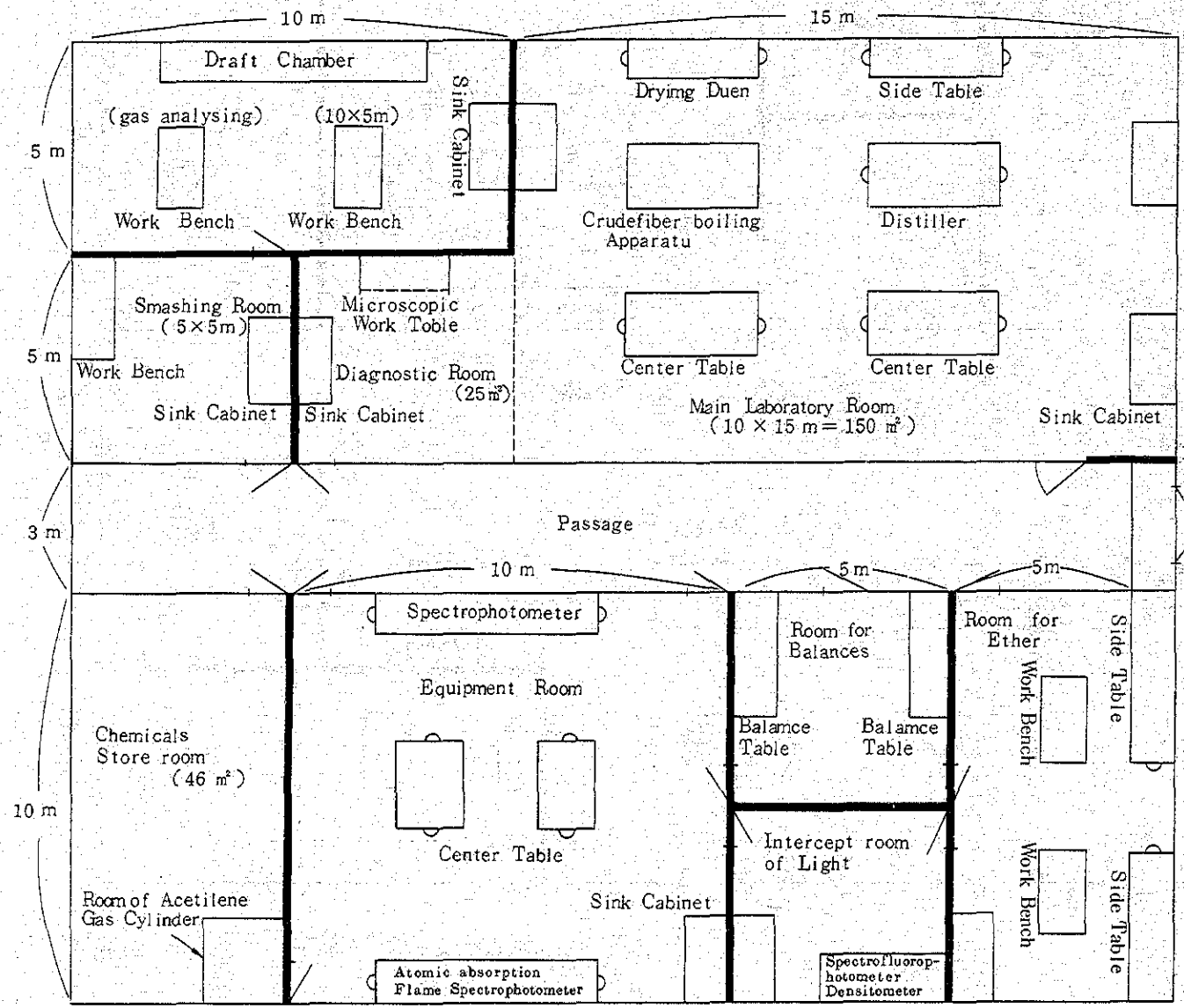
FLOOR DESIGN OF PIG SLAUGHTER HOUSE, IBARAKI BRANCH, SHIRAKAWA NATIONAL LIVESTOCK BREEDING STATION

SCALE 1/50

JULY, 1978
JICA TOKYO

付属資料4－(8)　試験研究室(飼料分析　生化学)

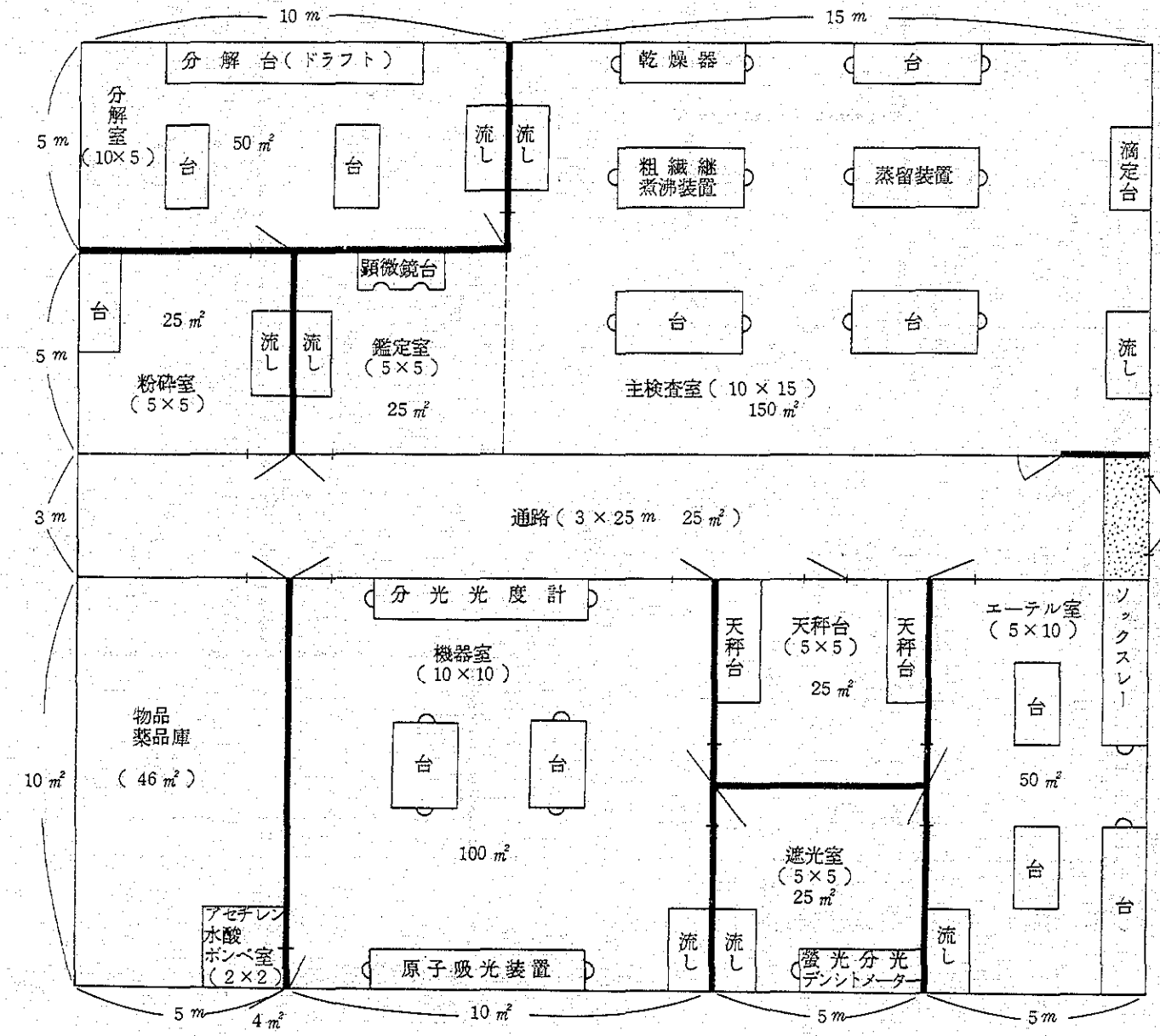
PLAN A. FLOOR PLAN OF LABORATORY (BIOCHEMISTRY AND NUTRITION)



Laboratory Floor		575 m²
1	gas analysing room	50
2	smashing room	25
3	diagnostic room	25
4	main laboratory	150
5	chemical store room	46
6	gas cyinder room	4
7	main equipment room	100
8	balance room	25
9	ether room	50
10	passage	75

Extraction Apparatus Soxhlet

付属資料４－(8)　試験研究室（飼料分析　生化学）



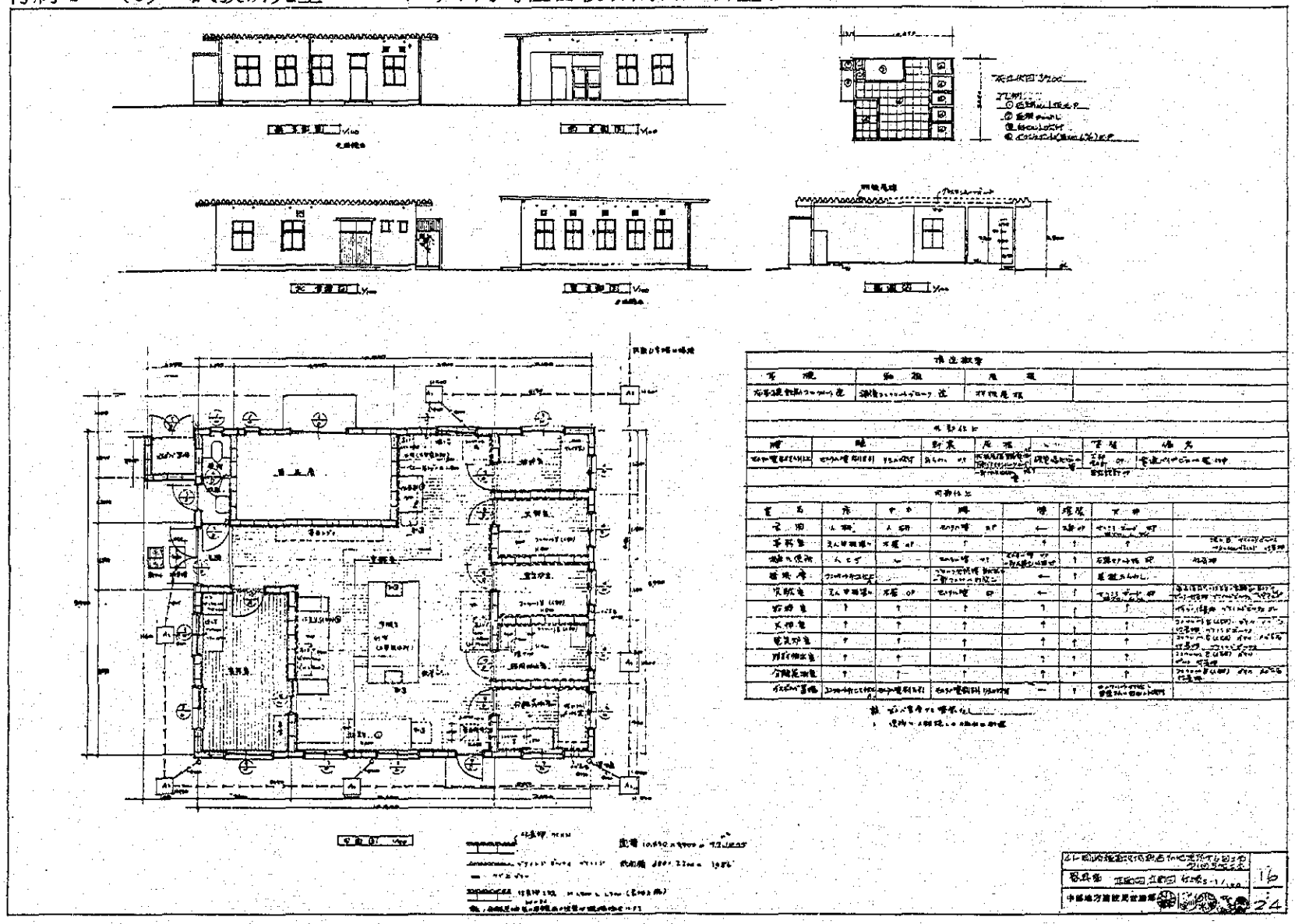
総面積	575 m²
分解室	50
粉砕室	25
鑑定室	25
主検査室	150
物品・薬品庫	46
ボンベ室	4
機器室	100
天秤室	25
遮光室	25
エーテル室	50
通路	75

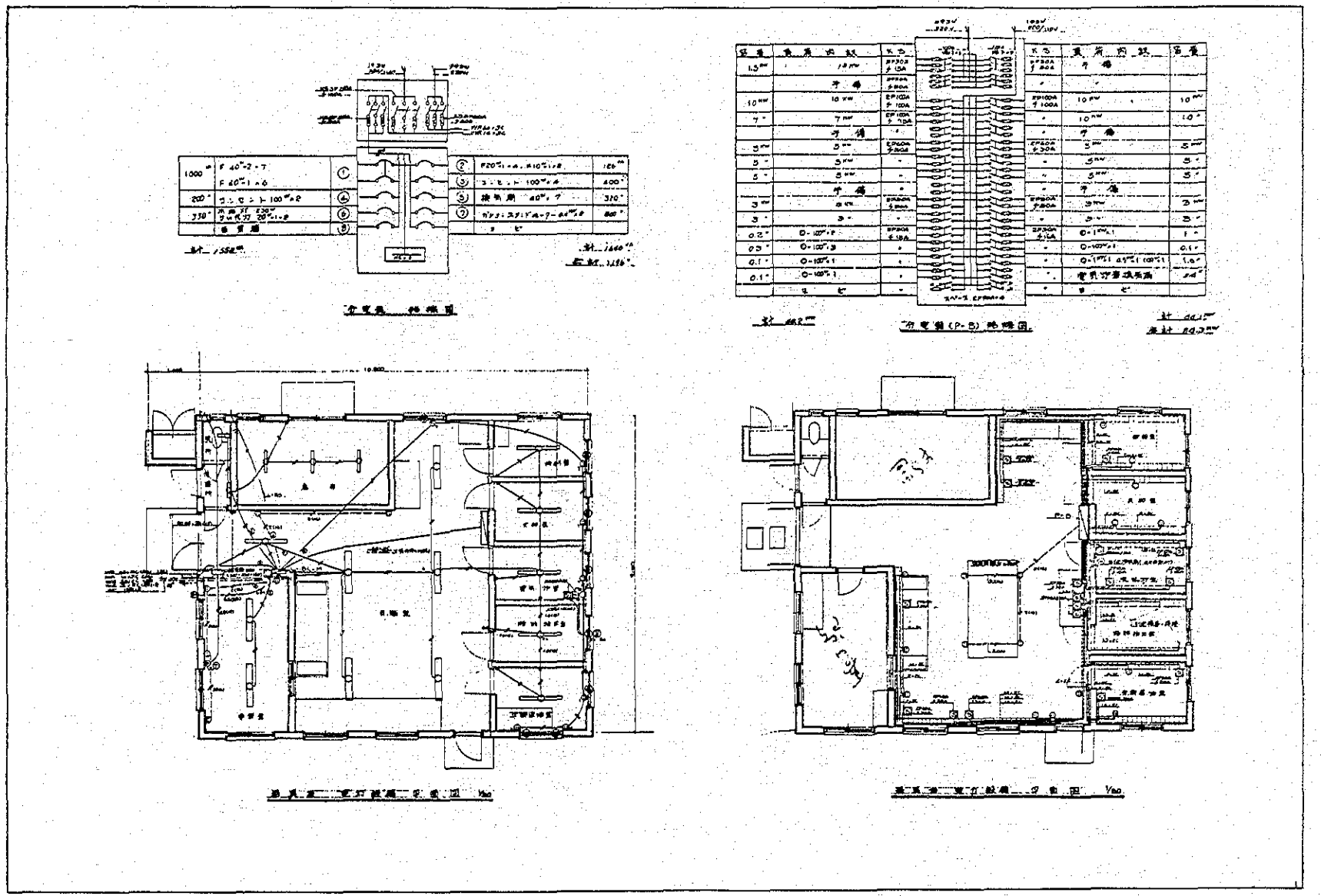
総　面　積　　500 m^2

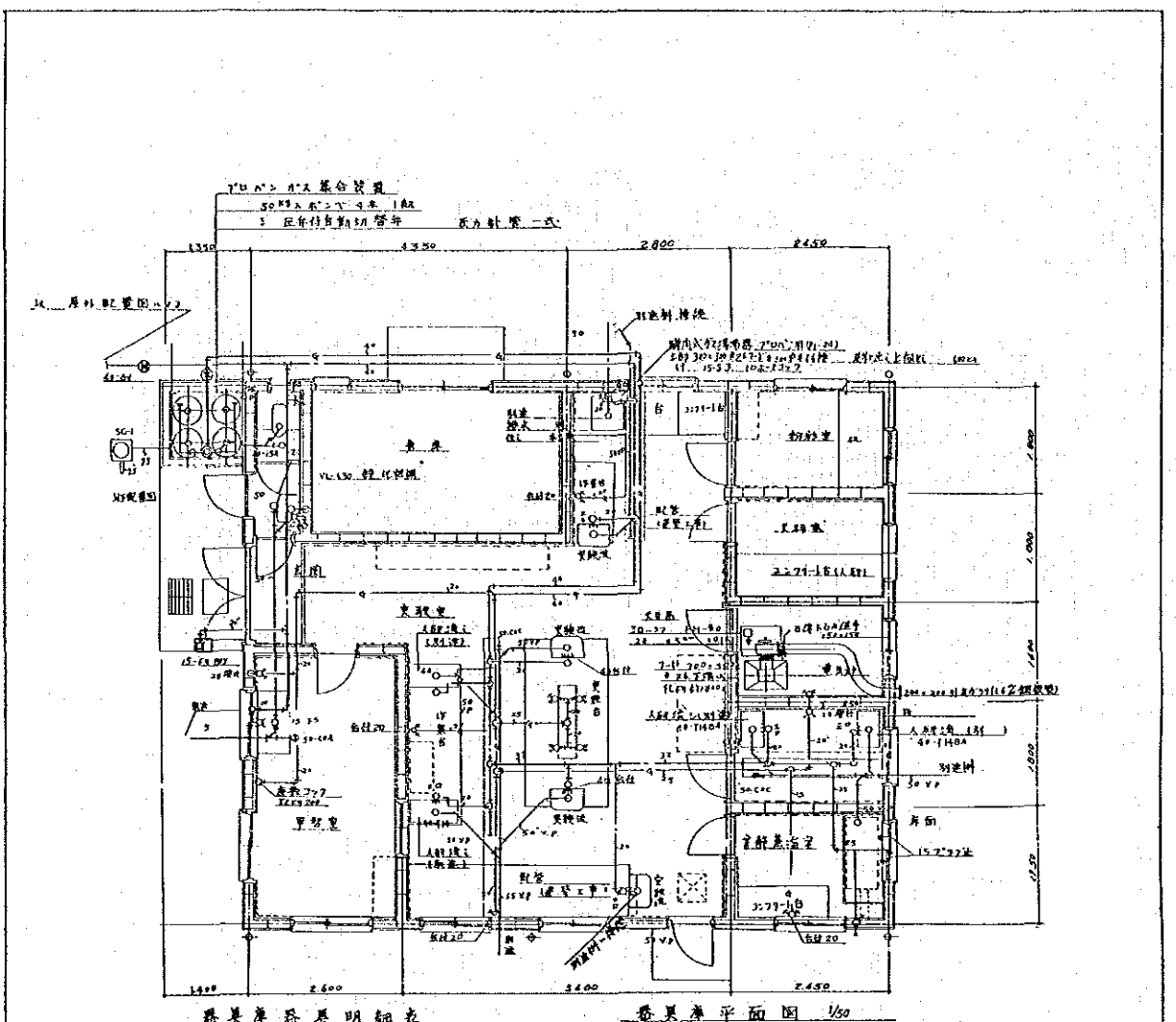
1. 各室の配置順及び実験台、戸棚等の配置は、現地状況にあわせ別途検討すること。
2. 各室上部及び下部に排気装置を設けることが望ましい。特に原子吸光光度計上部、ドラフト及びエーテル室には強力な排気装置が必要。
3. 分解室ドラフト内にはガス口を2個ずつ。主検査室、機器室にはガス口4～6個ずつ（実験台内に格納できる形式が望ましい。）を設ける。
4. 各室に電気用20A～50Aコンセント、分電盤による分岐回路を設けることが望ましい。（国内規定参照のこと）
5. エーテル室コンセントは防爆型とする。
6. 各室に水道設備2～10個設置。
   日本の蛇口は、おおむね内径10～12㎜、化学水栓は内径8㎜で15～20ℓ/分。
7. 電圧、電流、周波数調整器及び分電盤、屋内配線等は国内配線規定によること。
8. 水圧、ガス圧調整器を設けることが望ましい。
9. ボンベ室には、構造上必要な措置を講ずること。
10. その他国内法規に照らし、細部の調整を計ること。

PLAN B. FLOORPLAN OF FEED ANALIZING ROOM OF OKAZAKI NATIONAL LIVESTOCK STATION

付属４－(8)　試験研究室PLAN(B)(岡崎種畜牧場飼料分析室)







器具庫器具明細表　　器具庫平面図 1/50

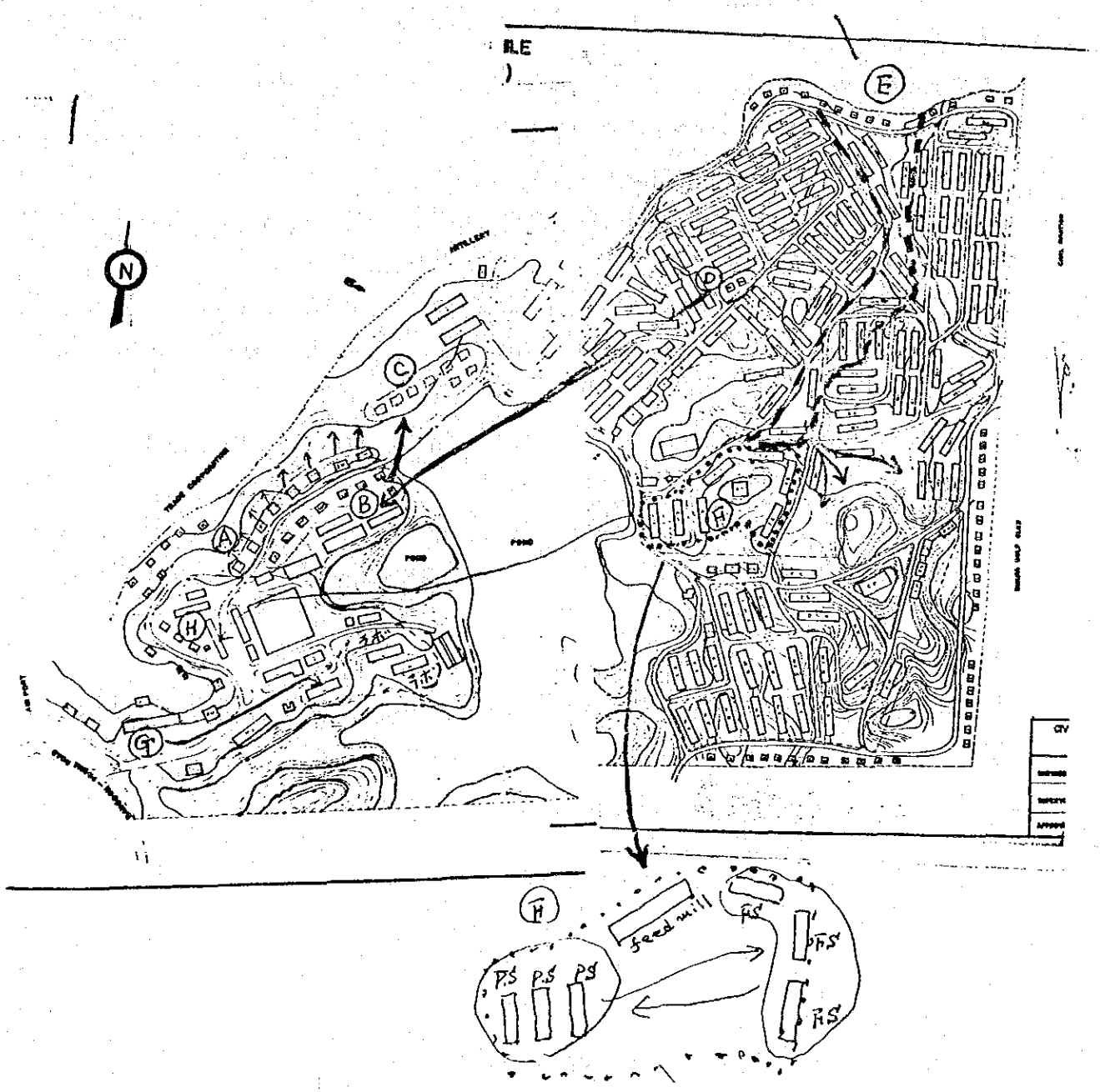
品名	品番	備考	実験室	風洞室	合同	実習室	教官室	準備室		屋外	電子計算室	合計
実験用流し	215S-107	水栓 ヨ=(1.97) 5-107(伊東)	4									4
流し用水金物	40-T14BA		2	2								4
化学点検		40台付　30台付	40 2 30 5	30 2								9
実験用理科台	壁付								1		1	1
自在水栓	15-F5						1					1
洗面器	VL-630	付属共(ドラッグ)						1				1
両用便器	VL-410	付属共							1			1
掃除水栓	15-F11	B								1		1
鏡	-							1				1
20A-ユニオン	10A		6 8 7	層付 1	6 9 1		層 8 1				層付 1	11
瞬間ガス湯沸器	P1-24	15-53 10A-ユニオン 付属品	1									1
点検口ユニオン							1					1
火栓箱								1				1
実験水トラップ	40-T5A								1			1
床上掃除口	50-C04						1		1			2

———	給水管	凡例	材料
—⊗—	埋設管	CC	ビニル管
—○—	汚水管		
—Pt—	20ユニオン管		

図名		縮尺	
所在地	鹿児島市郡山町	図面の名称	器具
建物名称		建築主名称	鹿児島大学
建築面積		延面積	
構造		設計	鹿児島大学
		監理	名誉村

付属資料４－(9)　全体レイアウト（改定案）

PROPOSED PLAN LAYOUT OF TEN-MILE
PIG AND POULTRY FARM (RANGOON)
J.I.C.A. PROJECT
LIVESTOCK DEVELOPMENT AND MARKETING
CORPORATION



㈱ LDMC 農場の全体配置図について

1. 宿舎位置の変更

道路両側に配置した宿舎群Ⓐ、Ⓑのうち、Ⓐは道路からもう少し離して北側に設置する。（↑印）

Ⓑは地図上のⒸの位置に変更しⒷ地区は事業用地域とし、宿舎は設置しない。

2. モデルケージ鶏舎位置の変更

モデル鶏舎2棟（ケージ育成舎1、ケージ鶏舎1）が、Ⓓの位置におかれているが、宿舎位置変更後のⒷ地区に設置する。

3. 鶏舎の配置変更、整理

鶏舎地区のうち、殊に育すう、育成鶏舎群は密集し、しかも配置が複雑で問題が大きい。

コマーシャルブロイラーの育成と種鶏の育すう育成を分離する意味で、両地域間に防疫地帯（赤点線）を設置する。防疫地帯には植林を行う。Ⓔ

ブロイラー鶏舎57棟は防疫地帯の右側とし、図中の→印の位置を含め、その配置を検討する。

種鶏地区は防疫地帯の左側とし、この地域に種鶏用育すう舎9棟を分散配置する。

以上の鶏舎配置については、現地における年間最多風向を十分配慮し設計すべきであろう。

4. 飼料関係施設 Ⓕ

飼料原料を外部から搬入する場合、同時に病原体が農場内に持込まれる危険性が極めて大きい。

ために飼料関係施設は入口に近いⒽ地区に設置し既存の飼料庫を利用することが望ましい。

なお、飼料関係施設をⒻ地区に配置するとしても、左側の飼料倉庫（製品）と、右側の原料倉庫FSとを入れ替えて配置すべきであろう。

5. 孵卵舎とラボの配置

停電による影響を受け易い孵卵舎Ⓖとラボについては、停電時には孵卵舎に設置した自家発電機による一括して電力の供給を受けることになっている。

ために、Ⓖをラボの位置に移し同一地域内とすることが望ましい。

（53. 8. 3 関）

付属資料5　変電設備要請書

5th July, 1978.

Dear U Po Tin,

With reference to your letter dated 21st June, 1978 I just received a telegram from JICA, of which gist I am pleased to convey to you as follows:

1. It would soon send you through me an observation schedule in English for U Tyi Soe and you, as well as the contents of your consultation with JICA people on this project.
2. It is scheduled to send you through me designs of laboratory slaughter house and others at the end of this month.
3. It conjectures the necessary electric power calculated by you of 1 mega watt for your farm might be too much in view of the fact that Mr. Seki's farm which keeps 10,000 grown-up birds and 40,000 chicks needs the electric power of 240 KWH only.

Therefore, it would like to hear from you as quickly as possible about (1) the breakdowns or details of electric power which is expected to be consumed by your farm and (2) the rough estimate of costs of the electric facilities including transformers.

Sincerely yours,

JIRO OHIRAU,
Extra Chancellor,
Embassy of Japan.

U Po Tin,
Deputy General Manager,
Livestock Development and Marketing
Corporation,
Insein.

Dated: 6-7-78.

Mr. Jiro Obitsu,
Extra Chancellor,
Embassy of Japan,
Rangoon.

Dear Mr. Obitsu,

1. Thank you very much for your kindness to convey me the information from JICA regarding the observation schedule and contents of discussion, design of laboratory, slaughter house and others and electrical power consumption.

2. I tried to catch up the Electrical engineers to hold discussion with regard to your request to work out the actual and accurate, as far as possible, power consumption which would be required by the project.

3. We have been holding discussion and detail calculation had been worked out. All those detail calculations along with their work sheets are attached herewith for information and checkup (Annex. I).

4. Electrical Engineers had kindly furnished me all the necessary detail including the cost of electrical installation covering the whole project which is appendiced as Annex. II

5. The list of electrical facilities proposed to be supplied by Japan is attached herewith as Annex. III.

6. I hope , JICA authorities and experts concerned will come clear when they had studied the attached papers.

7. I had already managed to send Negatives of Designs regarding the civil construction and electrical installation to JICA through you on coming Monday the JULY 10, 1978. It does not cover all because some more designs are still undergoing detail touching. The rest of the designs will be sent as soon as possible, when they are finished.

8. I hope every confusion concerning the electical power consumption will be clear when JICA had studied the attached papers along with their respective designs.

9. I had reminded my boss to expedite sending A.1,2,3 & 4 forms to Japan.

Sincerely yours,

(Ye Tin)
Deputy General Manager,
Livestock Development & Marketing Corp:

Summarised Explanation on

ELECTRIC POWER CONSUMPTION

of

JICA PROJECT

at

10th. MILE PIG AND POULTRY FARM.

(1) Total Connect Load = 1662.83 Kilo Watt(Project Only)
(2) Including Existing Load =1662.83 + 30 = 1692.83 KW.
(3) Maximum Load(Estd.) = 790.70 + 30 = 820.70 KW
(4) Calculated c̄ overall Diversity factor = 1692.83 x 50% =846.415 KW
(5) Minimum Consumption c̄ 25% D.F. = 1692.83 x 25% =423.2075 KW
(6) Operating Time/day = 12 hr/day
(7) Daily Power Consumption in Kilo Watt hour = 423.2075 x 12 = 5078.49 (K.W.H.)
(8) Cost / day (1 KWH =0.2 K) = 5078.49 x 0.2 = 1015.698 K/day
(9)Cost/month = 1015.698 x 30 = 30470.940 Ks.
(10) Cost/ Annual = 1015.698 x 30 x 12 = 3,65,651.28 Ks.

(11) Reference

1. " Farm Electrifiation"- by Robert H. Brown E.E., A.E. Indian Edition, Mc Graw-Hill Book Co. Inc., New York and London, Allied Pacific Private Ltd., Bombay.

2. " AEI - General Information on Cables and Conductors " - 12th. Edition , June 1965. Associated Eledtrical Industries International Ltd., 33 Grosvenor Place, London SW.

TOTAL CONNECT LOAD OF JICA PROJECT.

Sr. No.	Name	K W
1.	Pig Farm	181.35
2.	Poultry Farm	1039.84
3.	Technical Training Centre	136.70
4.	Feed Mill	50.94
5.	Residential	243.92
6.	Road Light	10.08
	Total Connect Load	1662.83
	Existing Load	30.00
		1692.83 Kilo Watt.

K*

INDIVIDUAL CONNECT LOAD

No.	Name	No	KW bdg	Total
	TRAINING CENTRE			
1.	Main Office Bdg	1	36.88	36.88
2.	Lab:	3	20.0	60.0
3.	Student Qtr:	2	16.8	33.6
4.	Fuel Store	1	0.72	0.72
5.	Mach: Equip:&Store	1	5.5	5.5
				136.70
	FEED MILL			
1.	Office	1	6.46	6.46
2.	Feed Store	3	2.32	6.96
3.	Product Store	3	1.20	3.6
4.	Milling & Mixing	1	32.92	32.92
5.	Garage	1	1.0	1.0
				50.94

Sr. No.	Name	No.	KW bdg	Total
	RESIDENCIALS			
1	Project Manager	1	5.0	5.0
2	As. :Gen:Man:	2	7.6	15.2
3	Farm Manager Staff & Specialist	1	51.56	51.56
4.	Deputy Farm Manager, Senior Vet:, Acc:	5	3.36	16.8
5.	Assist:Man: Vet. Assist:	8	3.3	26.4
6.	Other Staff	52	2.48	128.96
				243.92

INDIVIDUAL CONNECT LOAD

Sr. No.	Name	No	KW/bdy	Total	Sr. No.	Name	No.	Kw/bdy	Total
	PIG FARM					POULTRY FARM			
1.	Farm Office	1	6,46	6.46	1.	Farm Office	1	6.46	6.46
2.	Boar House A	1	14.9	14.9	2	Incubator Hos.	1	49.94	49.94
3.	Boar House B	1	4.9	4.9	3	BrooderHouse	66	9.58	632.28
4.	Weaner House	3	7.27	21.81	4.	Grower House	17	6.28	106.76
5.	Dry Sow House	5	9.9	49.5	5.	Breeding "	20	10.4	208
6.	Grower House	2	4.78	9.56	6.	Model "(2)	1	0.54	0.54
7.	Finisher House	10	5.84	58.4	7.	" (6)	1	0.78	0.78
8.	Feed Store	1	2.32	2.32	8.	Feed Store	1	1.32	1.32
9.	Mach: Eqp:Sto:	1	0.5	0.5	9.	Mach:Eqp:St:	1	1.5	1.5
10.	Dispensery	1	1	1	10.	Dispensery	1	1	1
11.	P.M.	1	1	1	11.	P.P.P	1	30	30
12.	Slaughter	1	3	3	12.	Stand by P.P.	1	0.24	0.24
13.	Disinfection Room	1	0.5	0.5	13.	Disinfection Room	1	0.5	0.5
14.	Cold Storage	1	7.5	7.5					
				181.35					1039.34

ANNEX. I

Electrical Estimated Load for Pig and Poultry Development Project (10) Mile , Rangoon.

Sr. No.	Description	K.W.	Remarks
1	Pig Farm	81.20	
2.	Poultry Farm	491.02	
3.	Technical Training Centre	80.94	
4.	Feed Mill	43.04	
5.	Residential	84.42	
6.	Road Light	10.08	
		790.70	

I

PIG FARM

Sr.No.	Name of Building	K.W. building	Building No.	Total K.W.	Remarks
1.	Farm office Building.	2.56	1	2.56	
2.	Boar House(TypeA)	4.40	1	4.40	
3.	Boar House(TypeB)	1.90	1	1.90	
4.	Weaner House	6.27	3	18.81	
5.	Dry Sow House	3.15	5	15.75	
6.	Grower House	1.78	2	3.56	
7.	Finisher House	1.84	10	18.40	
8.	Feed Store	1.32	1	1.32	
9.	Machinery & Equipment Store	0.50	1	0.50	Assumption.
10.	Dispensary	1.0	1	1.0	Assumption
11.	Post Mortem Room	1.0	1	1.0	Assumption
12.	Slaughter House	3.0	1	3.0	Assumption
13.	Dis-infection Room	0.50	1	0.50	
14.	Cold Storage	7.50	1	7.50	
				81.20	

I

1. Farm Office Building

Sr.No.	Description	No.pt.xwattage	D.F.	Total wattage	Remarks
1.	Internal Lighting	3pt x 60=180	1	180	Batten point
		12 x 40=480	1	480	F/L fitting
		2 x 60=120	1	120	36"ceiling fan.
		3 x 1000=3000			5A 3Pin Socket
		2 x 100 = 200	0.25	1300-	5A 2Pin Socket
		1 x 2000=2000			15A 3Pin Socket
2.	External Lighting (Security Lighting)	8 x 60=480	1	480	Batten pt; water tight
		Grand Total		2560	(2.560)K.W.

I

2, Boar House (type A)

Sr. No	Description	No. pt;x wattage	D.F.	Total wattage	Remarks
1.	Internal Lighting	9 x 60=540	1	540	Pendant point.
		4 x 1000=4000			5A 3Pin Socket
		5 x 2000=10000	0.25	3500	15A3Pin Socket
2.	Security Lighting	6 x 60=360	1	360	Batten point
		Grand Total		4400	(4.4.K.W.)

I

3. Boar House (type B)

Sr.No.	Description	No.pt. x wattage	D.F.	Total Wattage	Remarks
1.	Internal Lighting	9 x 60=540	1	540	Pendant point
		4 x 1000=4000	0.25	1000	5A 3Pin Socket
2.	SecurityLight.	6 x 60= 360	1	360	Batten point
		Grand Total		1900	(1.9 K.W)

I

4. Weaner House

Sr.No.	Description	No. pt;x wattage	D.F.	Total wattage	Remarks
1.	Internal lighting	11 x 60= 660	1	660	Pendant point
		2 x1000=2000	0.5	1000	5A3Pin Socket
2.	Brooder light	34 x 125=4250	1	4250	Broode Lamp (125 watt)
3.	Security light	6 x 60=360	1	360	Batten point
		Grand Total		6270	(6.27 K.W.)

I

5. Dry Sow House

Sr.No.	Description	No.pt. x wattage	D.F.	Total wattage	Remarks
1.	Internal lighting	13 x 60= 780	1	780	Pendant point
		5 x 1000=5000	0.25	2250	5A 3Pin Soc:
		2 x2000=4000			15A3Pin Soc:
2.	Security lighting	2 x 60= 120	1	120	Batten point
		Grand Total		3150	(3.15 K.W.)

I

6. Grower House

Sr.No.	Description	No.pt. x wattage	D.F.	Total wattage	Remarks
1.	Internal	7 x 60= 420	1	420	Pendent point
	Lighting	4 x1000=4000	0.25	1000	5A 3Pin Soc:
2.	Security lighting	6 x 60=360	1	360	
		Grand Total		1780	(1.78 K.W.)

I

7. Finisher House

Sr. No.	Description	No. pt. x Wattage	D.F.	Total wattage	Remarks
1.1.	InternalLighting	8 x 60=480	1	480	Pendant point
		5 x 1000=5000	0.20	1000	5A3Pin Socket
2.	Security lighting	6 x 60=360	1	360	Batten point
		Grand Total		1840	(1.84 K.W.)

I

8. Feed Store

Sr.No.	Description	No. pt. x Wattage	D.F.	Total wattage	Remarks
1.	Internal Lighting	14 x 60= 840	1	840	Pendent point
2.	Exhaust Fan	10 x 100=1000	1	1000	(20"Exhaust Fan)
3.	Security Light	8 x 60= 480	1	480	Batten point
		Grand Total		1320	(1.32 K.W.)

COLD STORAGE

Dimension	9' x 15' x 9'
Capacity	2000 x 3.6 lb. (Pork) (102°F)
Storage Temperature	38°F.
Product Load	$= \text{sp.ht.} \times \text{lb.} \times \text{T.D.} \times \frac{1}{24}$
	$= 0.68 \times 2000 \times 3.6 \times (102-38) \times \frac{1}{24}$
	$= 1360 \times 3.6 \times 64 \times \frac{1}{24}$
	$= 1360 \times 4.2 \times 8$
	$= 1360 \times 9.6$
	= 13056 Btu/hr.
Space Load	= 6.5 Btu/sq.ft./hr x Space Area
	$= 6.5(2 \times 9 \times 15 + 9 \times 15 + 2 \times 9 \times 9)$
	$= 6.5 \times 702$
	= 4563 Btu/hr.

(Cork Insulation 4")

Total Load	= 13056 + 4563
	= 17619 Btu/hr.

12000 Btu/hr. = 1 ton of refrigeration = 1 HP.

Therefore H.P. $= \frac{17619 \times 24}{12000 \times 4}$ (operating 4 hr. out of 24 hrs.)

$= \frac{17619}{2000}$

= 8.8095 H.P.

Say 10 H.P.

II

POULTRY FARM

Sr.No.	Name of Building	K.W/Building	Building No.	Total K.W	Remarks
1.	Farm Office Building	2.56	1	2.56	
2.	Incubator House	46.94	1	46.94	
3.	Brooder House	4.58	66	302.28	
4.	Grower House	2.08	17	35.36	
5.	Breeding House	3.40	20	68.00	
6.	Model House(Layer)	0.54	1	0.54	
7.	Model House(Grower)	0.78	1	0.78	
8.	Feed Store	1.32	1	1.32	
9.	Machinery & Equipment Store	1.50	1	1.50	
10.	Dispensary	1.00	1	1.00	
11.	Poultry Processing Plant	30.00	1	30.00	
12.	Stand by Power Plant	0.24	1	0.24	
13.	Dis-infection Room	0.50	1	0.50	
			Total	491.02	

II

3. Grower House

Sr.No.	Description	No.pt.x watt.	D.F.	Total watt.	Remarks
1.	Internal Lighting	12 x 60=0.72	1	0.72	PendentPt:
2.		5 x 1000=5000	0.20	1	Soc:5A3P.
2.	Security Light	6 x 60=0.36	1	0.36	Batten Pt;
		Grand Total		2.08 K.W.	

II

4. Breeder House

Sr. No.	Description	No.Pt.x watt	D.F.	Total watt.	Remarks
1.	Internal	34 x 60=2.04	1	2.04	PandentPt;
2.		8 x 1=8	1/8	1	Soc:5A3P.
2.	Security Light	6 x 60=0.36	1	0.36	Batten Pt:
		Grand Total		3.4 K.W.	

II

5. Model House (Layer House)

Sr. No.	Description	No. Pt; x watt	D.F.	Total watt:	Remarks
1.	Internal Lighting	9 x 60=0.54	1	0.54 K.W.	

II

6. Model House (Grower House)

Sr. No.	Description	No. Pt; x Watt	D.F.	Total watt	Remarks
1.	Internal Lighting	13 x 60=0.78	1	0.78 K.W.	

III. TECHNICAL TRAINING CENTRE

Sr.No.	Description	K.W./Bldg	No.of Building	Total K.W.	Remarks
1.	Main Office Building	15.18	1	15.18	
2.	Laboratory	15.00	3	45.00	
3.	Machinery and Equipment Store	4.980	1	4.980	
4.	Student Quarter	7.41	2	14.82	
5.	Fuel Store	0.96	1	0.96	
		Grand Total		80.94	

III.

1. Main Office Building.

Sr.No.	Description	No.pt:x watt	D.F.	Total watt	Remarks
1.	Internal light	42 x 60=2.520	0.6	1.51	Pendant Pt;
2.		30 x 100=3.00	0.6	1.80	Ceiling Fan
		63 x 40=2.520	0.6	1.51	
		26 x 1000=26.00	0.25	6.50	Soc:5A3P.
		4 x 60=0.240	0.25	0.06	Mirror Lamp
3.		20 x 100=2	0.10	0.20	Soc:5A.2P.
2.	Security Light	10 x 60=0.60	1.00	0.60	
3.	Air Conditioner Window type4H.P.	3 x 1000=3.00	1.00	3.00	
		Grand Total		15.18 K.W.	

III.

2. Machinery and Equipment Store

Sr.No.	Description	NoPt: x watt:	D.F.	Total watt:	Remarks
1.	Internal Lighting	22 x 40=880	0.5	0.440	4'-40W F/L
2.	Security Light	9 x 60=540	1.0	0.54	
3.	Air Conditioner W830 1 H.P.	4 x 1=4	4.00	4.000	
		Grand Total		4.980	

III.

3. Student Quarter

Sr.No.	Description	No.Pt:x watt.	D.F.	Total watt	Remarks
1.	Internal Lighting				
		44 x 60=2.640	1	2.640	Pendent Pt:
		19 x 40=0.760	0.8	0.608	4'-40W F/L
		7 x 100=0.700	0.8	0.560	Ceiling Fan
		17 x 100=1.700	0.50	0.850	.Soc:5A2P.
		7 x 1000=7.000	0.25	1.75	" " 3P.
		2 x 2000=4.000	0.25	1.000	" 15A "
		Grand Total		7.410	

III.

4. Fuel Store

Sr.No.	Description	No.Pt:x watt	D.F.	Total watt	Remarks
1.	Internal Lighting	6 x 60=0.360	1	0.360	
2.	Security Lighting	5 x 60=0.300	1	0.300	
		Grand Total		0.960	

IV.

FEED MILL

Sr.No.	Description	K.W./Buidg	No of Bdg.	Total K.W.	Remarks
1.	Office Building	2.56	1	2.56	
2.	Feed Store	1.32	3	3.96	
3.	Product Store	1.20	3	3.60	
4.	Milling & Mixing	32.92	1	32.92	
		Grand Total		43.04	

IV.

1. Feed Milling & Mixing.

Sr.No.	Description	No.Pt:x watt	D.F.	Total watt	Remarks
1.	Mixer	2 x 7.5HPx746 4	1	11.19	
2.	Screw Conveyor	2 x 2.0HP x 746	1	2.98	
3.	U-Conveyor	2 x 2.0HP x 746	1	2.98	
4.	Crusher	2 x 7.5 HPx 746	1	11.19	
5.	U-Conveyor	2 x 2.0HP x 746	1	2.98	
6.	General Lighting	20 x 80	1	1.60	4'-40W F/L
		Grand Total		32.92	

IV.

2. Product Store

Sr.No.	Description	No.Pt: x watt	D.F.	Total watt.	Remarks
1.	Internal Lighting	14 x 60=0.840	1	0.840	Pendant Pt;
2.	Security Lighting	6 x 60=0.360	1	0.360	Batten Pt;
		Grand Total		1.200	

V.

RESIDENTIAL

Sr.No.	Name of Building	K.W./Bdg.	Bdg.No.	Total	Remarks
1.	Project Manager (1300/-Scale Qr.)	5	1	5.000	
2.	Assistant General Manager. (800/--50-1000)	2.6	2	5.20	
3.	Farm Manager ,Staff Officer, & Specialist (450-25-700)	9.36	1	9.36	(8 Rooms) (two storyes
4.	Dy. Farm Manager,Senior Veterinarian, B.C.& Dy.Farm Manager Accountant, Feed Mill Manager. (300-15-420)	1.11	5	5.50	
5.	Assistant Manager & Veterinarian Assist: (185-15-305)	1.05	8	8.40	
6.	Other Staff (130-10-200)	0.98	52	50.96	
	Grand Total			84.42	

V.

1. Residential

Sr.No.	Description	No.Pt: x watt	D.F.	Total watt	Remarks
1.	130-10-200Scale Qr.	8x60=0.48	1	0.480	PendentPt:
		2 x 1000=2.00	0.25	0.5	Soc: 5A3P
				0.980	
2.	185-15-305Scl:Qtr.	5 x 60=0.30	1	0.300	Pendentlt;
		3 x 1=3	0.25	0.75	Soc:5A3P.
				1.05	
3.	300-15-420Scl:Qtr.	6 x 60=360	1	0.36	Pendent Pt:
		1 x 1=1 } 1 x 2=2 }	0.25	0.75	Soc: lt:5A " 15A.
				1.11	
4.	450-25-700Scl:Qtr.	56 x 60=3.360	1	3.36	Pendent Pt;
		32 x 1 = 32	0.125	4.000	Soc: 5A3P.
		8 x 2 =16	0.125	2.000	" 15A."
				9.36	
5.	800-50-1200 "	10 x 60=0.6	1	0.6000	Pendent Lig
		5 x 1= 5	0.20	1.000	Soc: 5A.3P.
		1 x 2=2	0.50	1.000	" 15A3P.
				2.000	

ANNEX. II.

PROVIDING ELECTRICAL INSTALLATION AND DISTRIBUTION(EXTERNAL) IN PIG AND POULTRY FARM, " JICA PROJECT" AT 10 MILE. PROME ROAD , R A N G O O N .

Sr. No.	Particulars	Amount.
1.	S U M M A R Y.	
1.	High Tension Electrical Equipment and Power Cable For 6.6.K.v./0.4 K.V. Substation.	K/ 9,71,620.00
2.	High Tension Electrical Equipment And Power Cable for 33/6.6K.V. Substation.	K/ 3,43,000.00
3.	Low Tension Electrical Distribution and Control Accessories at "A" Station.	K/ 2,24,050.00
4.	Low Tension Electrical Distribution and Control Accessories at "B" Station.	K/ 3,40,270.00
5.	Low Tension Electrical Distribution and Control Accessories at "C" Station.	K/ 5,37,190.00
		K/24,14,750.00
		1,400.00
		K/24,16,130.00

(Kyats Twenty-Four Lakh Sixteen Thousand, one Hundred and Thirty-only.)

Sr. No.	Particulars	Unit	Quantity	Rate per	Amount
	HIGH TENSION ELECTRICAL.				
	EQUIPMENT AND POWER CABLE FOR 6.6K.V./0.4 SUBSTATION.				
1.	Power Transformer 6.6/0.4 K.V. 300 K.V.A. Indoor Type(for 30 sqmm in H.T. and 65 sqmm in L.T. ~~single core~~).	No.	3	40,000/-ea	1,20,000/-
2.	Oil circuit breaker 3Ø indoor type 7.2 K.V. 600 amp rating capable of breaking capacity 250 M.V.A. Complete with bus-section comprising 3 Nos. of 7.2 K.V. 400A with power assisted mechanism making and breaking of circuit and fitted with instantaneous tripping device under fault condition in accordance with the protective relays.	No.	1	30,000/-ea	30,000/-
3.	Oil circuit breaker 3 Ø indoor Type 7.2 K.V. 400 Amp. rating capable f breaking capacity 150 M.V.A. complete with power assisted mechanism making and breading of circuit and fitted with instantaneous tripping device under fault condition in accordance with the protective relays.	No.	6	30,000/- ea	1,80,000/-
4.	Three phase indoor type air circuit breakkr with me tal link 600 Amp 500 volt rating with bus-section for three out going feeder of circuit breaker complete with power assisted mechanism relays.	No.	3	20,000/-ea	60,000/-
5.	7.2. K.V. 600 Amp disconnecting switch Complete with power assisted mechanism operated Manually.	No.	1	7,000/-ea	7,000/-
6.	7.2 K.V.400Amp disconnecting Switch complete with power assisted mechanism manually.	No.	6	5,000/-ea	30,000/-
				C.C.	4,27,000/-

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
7.	Under Ground cable for 6.6 K.V. Grade 3 Core 30 sq.mm(Packing 3 core in 300 metre coil).	Mt.	1,800	3,500/-	B.F.	4,27,000/-
					%Mt.	63,000/-
8.	30 sq.mm6.6K.V. under ground cable, cable jointing meterials and accessories.	No.	4	3,00/-	ea	12,000/-
9.	Lightning arrester 84 K.V.A. Rating 3 Nos. in One Set complete with accessories.	Set.	4	15,000/-	Set	60,000/-
10.	1 x 19/083 or (1 x 50 ~~sq.mm~~ mm^2) polyvenyl chloride and sheathed wire 500 volt grade(Packing single in 100 meter coil).	Mt.	1,000	1,000/-	%mt.	10,000/-
11.	Plate copper 18"x18x¼" earth electrode or cast Iron Plate.	Sht.	7	250/-	Sht	1,750/-
12.	⅜ Ø x 1½" long brass bolt & nut.	No.	14	10/-	ea.	140/-
13.	Soldering paste or fluxite in 1 lb. tin .	Tin	3	10/-	Tin	30/-
14.	Soldering lead ready mixed	Vs.	2	100/-	Vs	200/-
15.	Emery cloths.	Sht.	12	2/-	Sht.	24/-
16.	Kerosene	Gr.	4	7/-	Gr.	28/-
17.	6.6 K.V. to 0.4 K.V. substation building with fencing and protection size in 40' x 20'.	No.	3	30,000/-	ea.	90,000/-
	Total Cost of materials					6,63,672/00
18.	Labour Charges for the above installation and fitting.					1,32,734/00
	Amount (A)					7,96,406/00

ADD.

5% Transporting loading & unloading charges on (A)	39,820/50
2% Depreciation charges on (A)	15,928/13
3% Design, estimating & stationary charges on (A)	23,829/15
12% overhead charges on (A)	95,568/77
K.	9,71,615/75

Say K. 9,71,620/-

(Kyats Nine Lakh Seventy One Thousand, Six Hundred and Twenty Only).

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
II.	HIGH TENSION ELECTRICAL EQUIPMENT. AND POWER CABLE FOR 33K.V/6.6 KV SUBSTATION.					
1.	Power transformer 1000 K.V.A.33K.V.to 6.6 KV in door type for 60 sq.mm 3 core out going terminal point complete with the above cable, entry accessories.	No.	1	1,00,000	ea	1,00,000/-
2.	Under ground cable 33 K.V. Grade 3 core 60 sq.mm butyl rubber insulated polychlorophene sheathed wire. (packing 3core in 100 metre coil)	Mt.	200	6,000	%Mt	12,000/-
3.	36 K.V. 600 amp disconnecting switch complete with power assisted mechanism operated mannually.	No.	1	5,000	ea	5,000/-
4.	36 K.V. oil cirouit breaker 3Ø indoor type 400 A,750 M.V. A capable of breaking capairty complete with cubicle of power assisted mechanism making and breaking of circuit and fitted with instantaneous tipping device under fault conditions in accerdance with the protective relays.	No.	1	50,000	ea.	50,000/-
5.	Lightning arreste of 42 K.V. rating 3 Nos. in one set complete with accessories.	Set	1	15,000	Set	15,000/-
6.	36 K.V. 400 amp,disconnecting switch complete with power assisted mechanism operated manually.	No.	2	5,000	ea.	10,000/-
7.	Plate copper 18"x18"x¼"Earth electrode or cast iron plate.	"	1	250	ea	250/-
8.	¾"Ø x 1½" long brass bolt & nut	"	2	10	ea	20/-
9.	Soldering paste or fluxite in 1lb	tin	1	10	tin	10/-
10.	Soldering lead ready mixed.	Vs	1	100	Vs	100/-
11.	Emery clothes	sht	6	2	sht	12/-
12.	Kerosene	gat	2	7	gat	14/-
13.	19/064 standed copper conductor for earth continunity.	lb.	20	13	lb.	260/-
14.	33 K.V. to 6.6 K.V. substation buildi g with fencing and protection size 40"x20"	No.	1	30,000	ea	20,000/-
		Cost of materials				2,23,666/-

Sr. No.	Particulars	Unit	Quan-tity	Rate	Per	Amount
		Cost of materials B/F				2,22,666/-
15.	Labour Charges for the above fitting and installation.					63,332/20
		Amount (A)				2,85,998/20
	ADD.					
16.	5% Transporting loading and unloading charges on (A)					14,299/91
17.	2% Depreciation charges on (A)					5,719/96
18.	3% Design estimating and stationary charges on (A)					8,579/95
19.	12% overhead charges on (A)					34,319/78
		Total:-				3,428,17/80

Say K. 3,43,000/-

(Kyat three lakh fourty three thousand only).

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
III.	LOW TENSION ELECTRICAL DISTRIBUTION AND CONTROL ACCESSORIES AT"A".					
1.	Straining insulator3"x4½"for post stay.	No.	25	15/-	ea	375/-
2.	Pin Insulator 2½"x3¼" with spindle bolt and nut.	"	150	10/-	"	1,500/-
3.	Shackle insulator 3" with bolt and nut complete with straps for medium tension.	"	200	15/-	"	3,000/-
4.	Procelain insulator egg type 2½"x3/4" (aerial fuse for street light and service main).	"	100	3/-	"	300/-
5.	Wire G.I. 7/16" for stay and continunity earth.	lb.	500	10/-	lb/	5,000/-
6.	Cross arm 4 pin type 3"x4"x40" hard wood complete with pole clamp, bolt and nut.	No.	50	50/-	ea	2,500/-
7.	Copper wire No.4 S.W.G.hard drawn bare.	lb.	3,200	15/-	lb.	48,000/-
8.	Copper wire No. 8 S.W.G. hard drawn bare	"	350	15/-	"	5,250/-
9.	Bracket for street lighting	No.	39	20/-	ea	780/-
10.	¾¢P.V.C. Pipe for guard with clamp, bolt & nut	"	10	30/-	"	300/-
11.	1"¢ x 6ft. long G.I. pipe with 2 nos. pole earth.	"	10	150/-	"	1,500/-
12.	Street light fixture 4'4 OW fluorescent fitting with tube,starter, chole, 230V,A.C.	Set	39	400/-	Set	1,56,000/-
13.	Electric port 27' reainforced complete as per drawing.	No.	55	700/-	ea	38,500/-
14.	Post footing for the above post	"	55	200/-	"	11,000/-
15.	Stay rod ⅝"¢x 6ft. long M.S. rod with 12" long thread complete.	"	25	60/-	"	1,500/-
16.	Stay swivel ⅝" x 14"	"	25	50/-	"	1,250/-
				C.O.		1,36,355/-

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
				B.F.		1,36,355/-
17.	Clamp for post stay and continunity earth made of 2"x¼" M.S.flat.	No	60	20/-	ea	1,200/-
18.	Enamel point in 1 gallon tin	tin	2	150/-	tin	300/-
19.	Lead ready mixed for soldering	lb.	1	100/-	lbs	100/-
20.	Soldering paste or fluxite in 1 lb tin.	tin	2	10/-	tin	20/-
21.	Emery clothes.	sht	6	2/-	sht	12/-
22.	Kerosene	gal	2	7/-	gal	14/-
23.	Paint brush 2"	No.	3	20/-	ea	60/-
24.	Hack saw blades	#	6	5/-	"	30/-
25.	Control switches for distribution triple pole with neutral 200 amp rating moulded case circuit breaker or T.P.I.C. with neutral link main switch.	"	3	1,500/-	"	4,500/-
26.	Control switches for street light supply 30 amp D.P.I.C. main switch or circuit breaker.	"	3	150/-	"	450/-
27.	2"ϕ P.V.C. pipe and cable rising rack from substation to four pole structure. (one item)					10,000/-
		Cost of materials				1,53,041/00
28.	Labour charges for above installation and fitting.					30,608/20
		Amount (A)				1,83,649/20
	ADD.					
	5% transporting, loading and unloading charges on (A)					9,182/46
	2% depreciation charges on (A)					3,672/98
	3% design, estimating and stationary charges on (A)					5,509/48
	12% overhead charges on (A)					22,037/90
		Total K/				2,24,052/02

Say K. 2,24050/-

(Kyats two lakh, twenty four thousand and fifty only).

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
IV.	LOW TENSION ELECTRICAL DISTRIBUTION AND CONTROL ACCESSORIES AT " B ".					
1.	Straining insulator 3"x4½" for poststay.	No.	30	15/-	ea	450/-
2.	Pin insulator 2¾"x½" with spindle bolt and nut	"	280	10/-		2,800/-
3.	Sheackle insulator 3" with bolt and nut complete with straps for medium tension.	"	200	15/-	"	3,000/-
4.	Procelain insulator egg ty e2½"x¾" (aerial fuse for street light and service main).	"	200	3/-	"	600/-
5.	Wire G.I. 7/16" for stay and continuity earth.	lb.	950	10/-	lbs	9,500/-
6.	Cross arm 4 pin type 3"x4"x40" hard wood complete with pole clamp, bolt and nut.	No.	90	50/-	ea	4,500/-
7.	Copper wire no. 4S.W.G. hard drawn bare.	lb	6,100	15/-	lb	91,500/-
8.	" " No.8 " "	"	700	15/-	"	10,500/-
9.	Bracket for street light fixture	No.	78	20/-	ea	1,560/-
10.	1"¢ x 6ft. long G.I. pipe new with 2 Nos. 3/8"¢ 1½" brass bolt & nut for pole earth.	"	20	150/-	"	3,000/-
11.	¾"¢P.V.C. pipe forguard with clamp, bolt and nut for above earth.	"	20	30/-	"	600/-
12.	Street light fixture 4' 40W fluorescent fitting with tube, starter, choke 230V, A.C.	"	78	400/-	"	31,200/-
13.	Electric Post 27' reinforced as per drawing.	"	95	700/-	"	66,500/-
14.	Post footing for he above post.	"	95	200/-	"	19,000/-
15.	Stay rod ¾"¢ x 6ft. long M.S. rod with thread of 12" long complete.	"	30	60/-	"	1,800/-
16.	Stay switch ¾" x 14" for rod	"	30	50/-	"	1,500/-
17.	Clamp for post stay and continunity earth made of 2"x¼" M.S. flat	"	95	20/-	"	1,900/-
18.	Enamel paint in 1 gallon tin	Tin	3	150/-	Tin	450/-
19.	Soldering lead for ready mixed.	Vs.	1	100/-	Vs.	100/-
					C.O.	2,50,460/-

Sr.No.	Particulars	Unit	Quantity	Rate	Per	Amount
			B.F.			2,50,460/00
20.	Soldering paste of fluixite in 1 lb. tin.	tin	2	10/-	tin	20/-
21.	Emery clothes.	sht	12	2/-	sht	24/-
22.	Kerosene	gal	4	7/-	gal	28/-
23/	Paint brush 2".	no.	6	20/-	ea	120/-
24.	Hack saw blades.	"	6	5/-	"	30/-
25.	Control switches for distribution triple pole with neutral 200 amp rating moulded case circuit breaker of T.P.I.C. with neutral link mainswitch.	"	3	1,500/-	" "	4,500/-
26.	Control switches for street light supply 30 amp D.P.I.C. main switch or circuit breaker.	"	3	150/-	"	450/-
27.	2" ¢ P.V.C. pipe and cable rising rock from substation to four pole structure. (one item)					10,000/-
			Cost of materials			2,65,632/00
28.	Labour charges for above installation and fitting.					13,281/60
			(A)			2,78,913/60
	ADD.					
	5% Transporting, loading and unloading charges on (A)					13,945/68
	2% depreciation charges on (A)					5,578/27
	3% design, estimating and stationary charges on (A)					8,367/41
	12% overhead charges on (A)					33,469/63
			Total K.			3,40,274/59
			Say K. 3,40,270/-			

(Kyats three lakh , fourty thousand , two hundred and seventy only)

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
V.	LOW TENSION ELECTRICAL DISTRIBUTION AND CONTROL ACCESSORIES AT " C ".					
1.	Straining insulator 3"x4½"for post stay.	No.	30	15/-	ea	450/-
2.	Pin Insulator 2¾"x3½" with spindle bolt and nut	"	360	10/-	"	3,600/-
3.	Shackle insulator 3" with bolt and nut complete straps for medium tension.	"	240	15/-	"	3,600/-
4.	Procelain insulator egg type 2½"x¾" (Aerial fuse for street light and service main)	"	240	3/-	"	720/-
5.	Wire G.I. 7/16" for stay and continunity earth.	lb.	1,500	10/-	lb	15,000/-
6/	Cross arm 4 pin type 3"x4"x40" hard wood complete pole clamp, bolt & nut	No.	150	50/-	ea	7,500/-
7.	Copper wire No 4 S.W.G. hard drawn bare.	lb	9,600	15/-	lb.	1,44,000/-
8,	Copper wire No. 8S.W.G. hard drawn bare.	"	1,100	15/-	"	16,500/-
9.	Bracket for street light fixture	No.	95	20/-	ea	1,900/-
10.	1"¢x6ft.long G.I.pipe new with 2Nos. 3/8"x1½" brass bolt and nut for pole earth.	"	30	150/-	"	4,500/-
11.	¾"* P.V.C. pipe for guard with clamp bolt & nut for above earth.	"	30	30/-	"	900/-
12.	Street light fixture 4'-40W. fluorescent fitting complete with tube, starter, choke 230V, A.C.	"	95	400/-	"	38,000/-
13.	Electric post 28' reinforced	"	120	700/-	"	84,000/-
14.	Post footing for the above post.	"	120	200/-	"	24,000/-
15.	Stay rod ¾"¢ c 6ft. long M.S. with thread 12" long complete.	"	30	60/-	"	1,800/-
16.	Stay switch ¾" x 14" for above	"	30	50/-	"	1,500/-
17.	Clamp for post stay and continunity earth made of 2"x ¼" M.S.Flat.	"	150/-	20/-	"	3,000/-
18.	Enmel paint in 1 gallon tin.	Tin	4	150/-	Tin	600/-
19.	Soldering lead ready mixed.	Vs.	2	100/-	Vs.	200/-
20.	Soldering paste or fluxite in 1 lb.tin.	tin	2	10/-	tin	20/-
21.	Hack saw blades.	No.	6	5/-	ea	30/-
				C.O.		3,51,820/-

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
				B.F.		3,51,820/00
22.	E,ery clothes/	sht	6	2/-	ea	12/-
23.	Kerosene	gal	4	7/-	gal	28/-
24.	Paint brush 2"	No	6	20/-	ea	120/-
25.	Control switches for distribution triple, pole with neutral 200 amp rating moulded case circuit, breaker or T.P.I.C. with neutral link 500 volt main switch.	No	3	1,500/-	ea	4,500/-
26.	Control switches for street light supply 30 amp D.P.I.C. main switch or circuit breaker.	"	3	150/-	"	450/-
27.	2"¢ P.V.C. Pipe and cable rising rick from substation to from substation to four pole structure.	(One item)				10,000/00
		Cost of materials				3,66,930/-
28.	Labour charges for above installation and fitting.					73,386/00
				(A)		4,40,316/00
	ADD.					
	5% transporting, loading and unloading charges on (A)					22,015/80
	2% Depreciation charges on (A)					8,806/32
	3% design, estimating and stationary charges on (A)					13,209/48
	12% overhead charges on (A)					52,837/92
				Total K.		5,371,85/52

Say K. 5,37,19000

(Kyats five lakh, thirty seven thousand one hundred and ninety only).

Annex III.

ELECTRICAL FACILITIES WHICH SHOULD BE SUPPLY BY JAPAN

" PROPOSED LIST OF ELECTRICAL FACILITIES"

Sr, No.	Particulars	Unit	Quantity	Rate C&F ~~C&F~~	Per	Amount
1.	Power Transformer 6.6/0.4 KV.330 KVA indoor Type (for 30sqmm in H.T. and 65 sqmm in L.T. single core).	No.	3	40,000	ea	1,20,000
2.	Oil circuit breaker 3ϕ indoor type 7.2 KV. 600 amp rating capable of breaking capacity 250 M.V.A complete with bus-section comprising 3 Nos. of 7.2 KV 400 A with power assisted mechanism making and breaking of circuit and fitted with instantaneous tripping device under fault condition in accordance with the protective relays	"	1	30,000	"	30,000
3.	Oil circuit breaker 3 ϕ indoor type 7.2 K.V. 400 amp rating capable of breaking capacity 150 MVA complete with power assisted mechanism making and breaking of cirduit and fitted with instantaneous tripping device under fault condition in accordance with the protective relays	"	6	30,000	"	1,80,000
4.	Three phase in door type air circuit breaker with metal link 600 Amp 500 volt rating with bus-section for three out going feeder of circuit breaker complete with power assisted mechanism relays.	"	3	20.000	"	60,000
5.	7.2KV 600 Amp disconnecting switch complete with power assisted mechnism operated manually.	"	1	7,000	"	7,000
6.	7.2kV 400 Amp disconnecting switch complete with power assisted mechanism manually.	"	6	5,000	"	30,000
7.	Under ground cable for 6.6.KV.Grade 3 core 30 sq. mm (Packing 3core in 300 metre coil).	Mt.	1,800	3,500	%Mt	63,000

Annex III. (Contd:)

Sr. No.	Particulars	Unit	Quantity	Rate	Per	Amount
8.	30 sq. mm. 6.6 KV. under ground cable, acce accable lugs, jointing materials and accessories	No.	4	3,000	ea	12,000
9.	Lighting arrestor 84 M.V.A. rating 3 Nos. in one set complete with accessories.	Set	4	15,000	Set	60,000
10.	1 x 19/ 0.83 or (1 x 50 Mm²) polyvenyl chloride and sheathed wire 500 volt grade (Packing single in 100 metres coil)	Mt	1,000	1,000	%Mt	10,000
11.	Power Transformer 1000 KVA 33 KV to 6.6 KV indoor type for 60 sq. mm. 3core out going terminpl point complete with the above cable, entry accessories.	No.	1	1,00,000	Ea.	1,00,000
12.	Under ground cable 33 KV. Grade 3 core 60 Sq.mm butyl rubber insulated poly chlorophene sheathed wire(Packing 3 core in 100 metre coil)	Mt	200	6,000	%Mt	12,000
13.	36KV. 600 Amp disconnecting switch complete with power assisted mechanism operated manually.	No	1	5,000	ea	5,000
14.	36 KV. oil circuit breaker 3¢ indoor type 400 A, 750 MVA capable of breaking capacity complete with cubicle of power assisted mechanism making and breaking of circuit and fitted with instantaneous tripping divice under fault condition in accordance with protective relays.	No.	1	50,000	ea.	50,000
15.	Lighting arrestor of 42 KV rating 3 Nos in one set complete with accessories	set	1	15,000	set	15,000
16.	36 KV. 400 Amp discorrecting switchs complete with power assisted mechanism operated manually.	No.	2	5,000	ea.	10,000
17.	Copper wire No. 4 S.W.G. hard drawn bare.	lb	189000	15	lb.	2,83,500
18.	Copper wire No.8 S.W.G. hard drawn Bare	lb	2150	15	lb.	32,250
19.	Control switches for distribution triple pole with neutral 200 Amp rating, moulded case circuit breaker or T.P.I.C. with neutral link 500 Volt main switch.	No.	9	1,500	ea.	1,35,00
	Total Amount(Kyats)					10,93,250.

JICA