No.

スリ・ランカ民主社会主義共和国
ガンパハ農業普及改善計画
モデルインフラ整備事業
実施設計調査報告書

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平成７年４月
（１９９５年４月）

国　際　協　力　事　業　団
株式会社　レーモンド設計事務所

農開技
[redacted]
95－15

スリ・ランカ民主社会主義共和国

ガンパハ農業普及改善計画

モデルインフラ整備事業

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序　　文

国際協力事業団は、スリ・ランカ国実施機関との討議議事録(R／D)等に基づきスリ・ランカ国　ガンパハ農業普及改善計画に関する技術協力を平成６年７月から５ヶ年の計画で実施していますが、技術協力活動の一環として、実証圃を用いた普及員、村落行政官、農民リーダーに対する研修を実施するための圃場及び研修／農業実習施設を整備することとなりました。

当事業団は、当該モデルインフラ整備事業の実施設計を行うため、平成７年２月11日から３月11日まで国際協力事業団農業開発協力部農業技術協力課　安藤洋子氏を団長とする実施設計調査団を派遣し、圃場及び研修／農業実習施設を整備する上で必要な現地調査を行いました。

本報告書は、現地調査及び国内作業の結果をとりまとめたものであり、今後予定される圃場及び研修／農業実習施設の整備を行う上での指針として活用されることを願うものです。

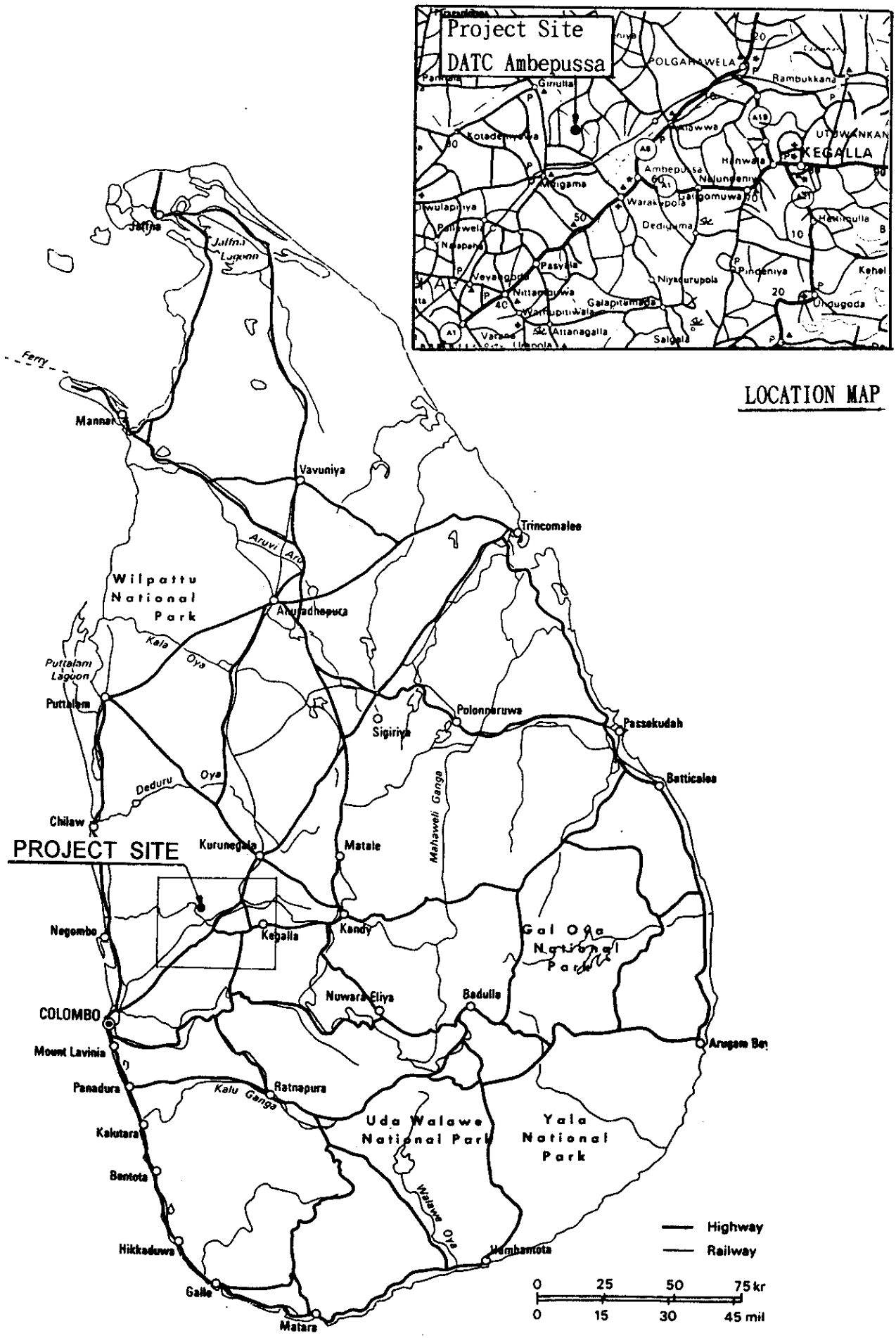
終わりに、この調査にご協力とご支援を頂いた内外の関係各位に対し、心より感謝の意を表します。

平成７年４月

国　際　協　力　事　業　団

農　業　開　発　協　力　部　長

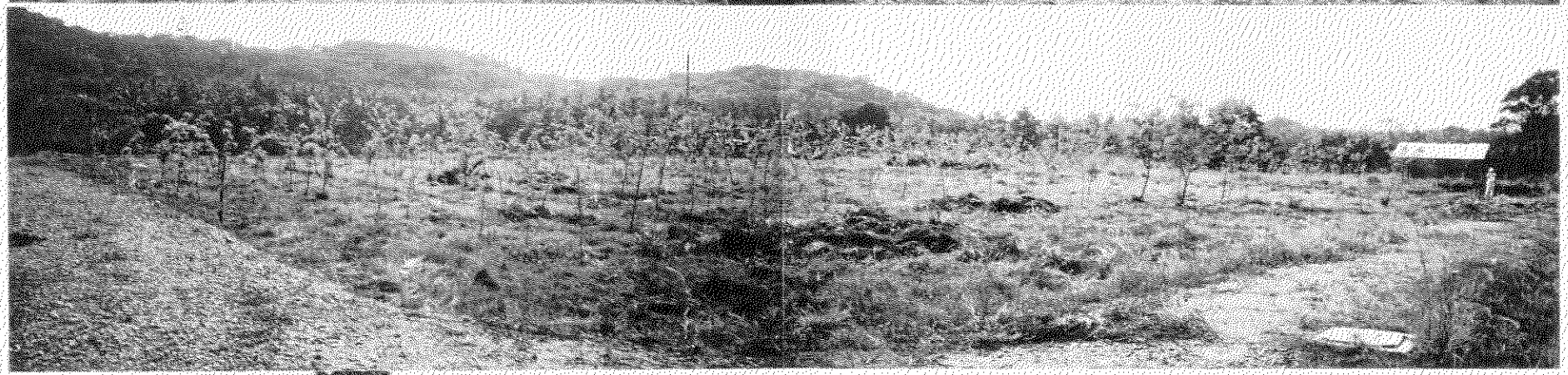
大　田　信　介



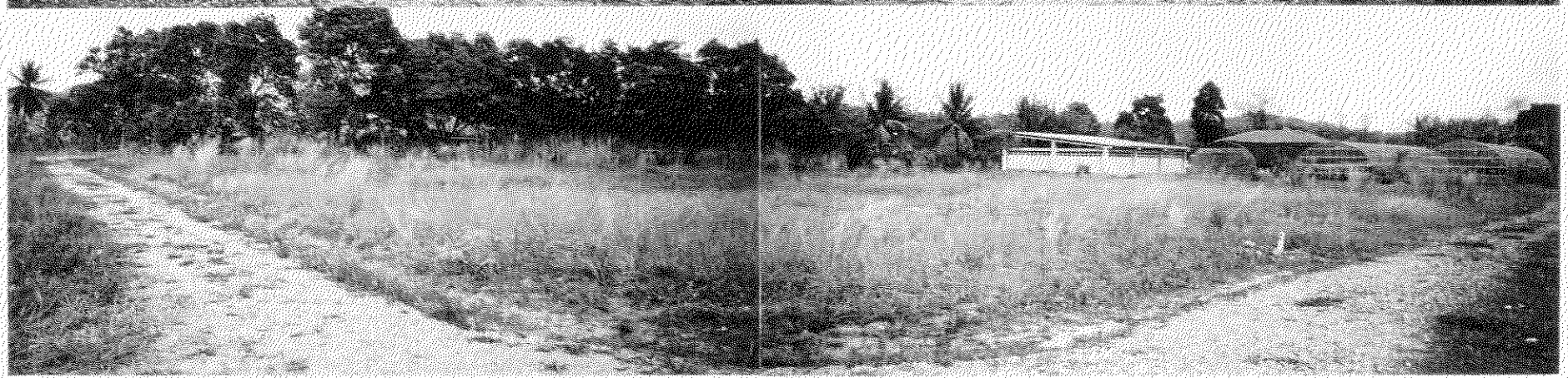
LOCATION MAP



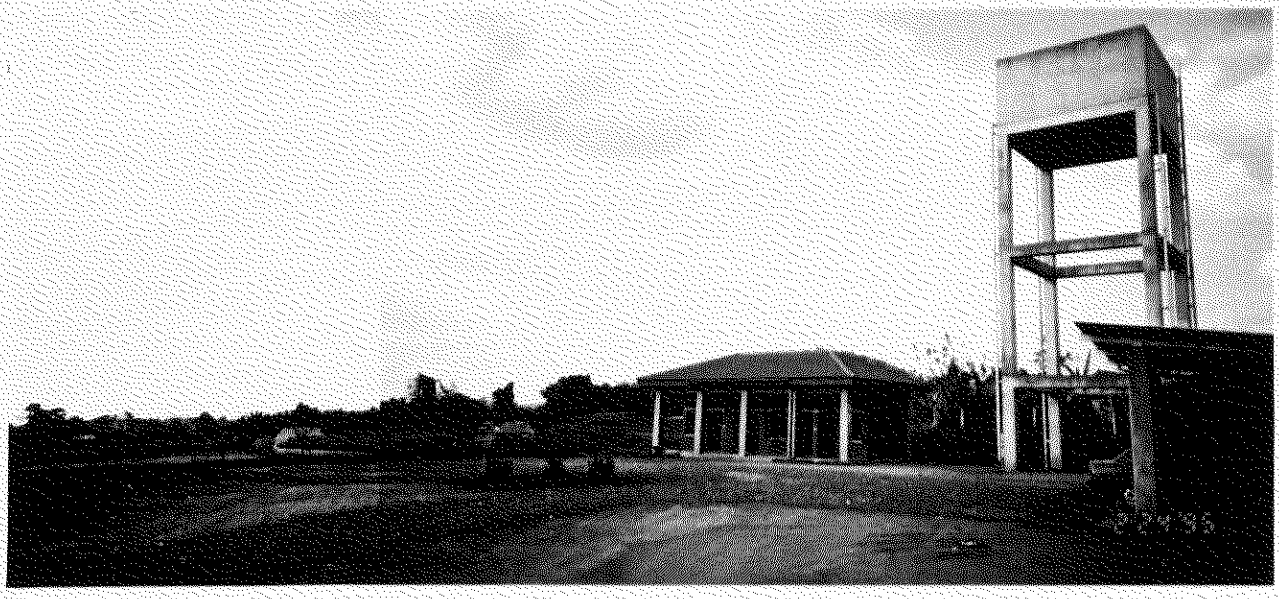
Site for
Shading Facilities- II
(Vegetable)
遮光施設- II



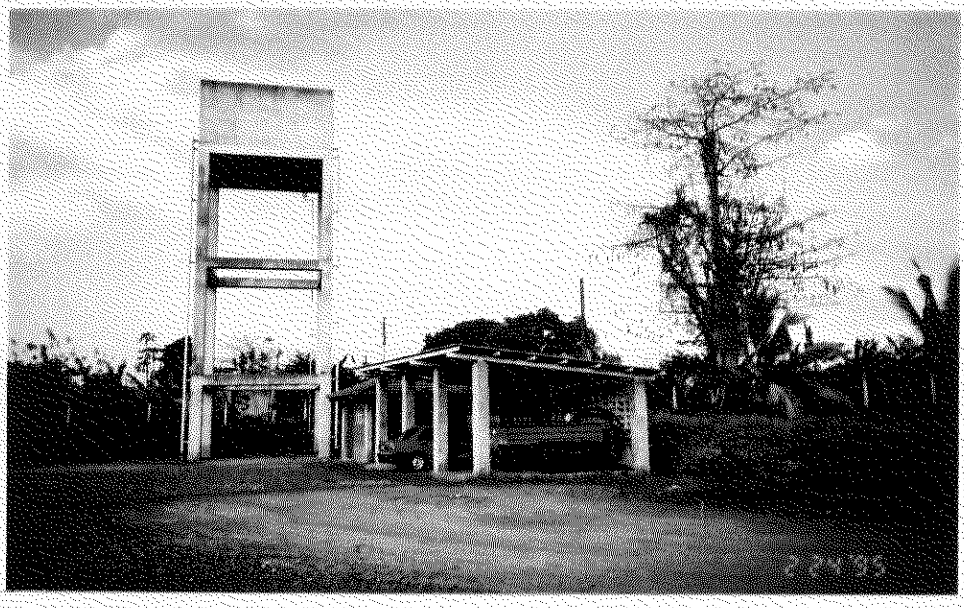
Site for
Shading Facilities- I
(Other Crops)
遮光施設- I



Site for
Workshop Open Air
/Drying yard
ワークショップ及び
乾燥施設



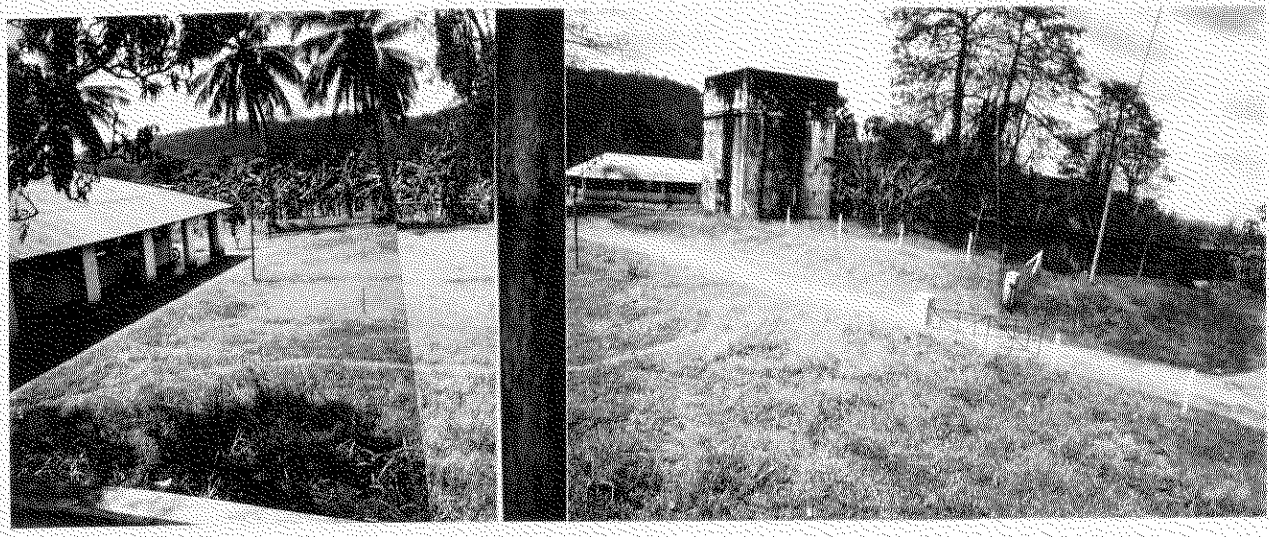
Site for
Laboratory Building
実験棟



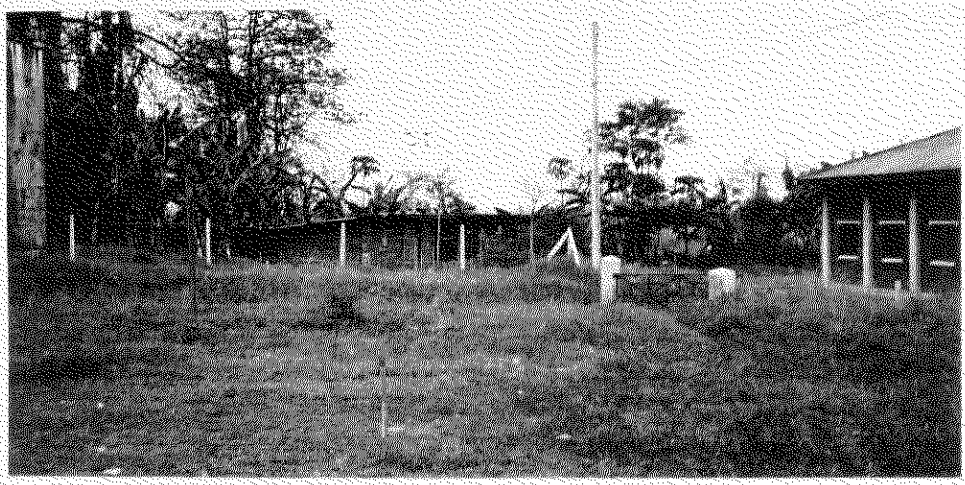
Site for
Garage
車　庫



Site for
Toilets
便　所



Site for
Training Building
研修棟

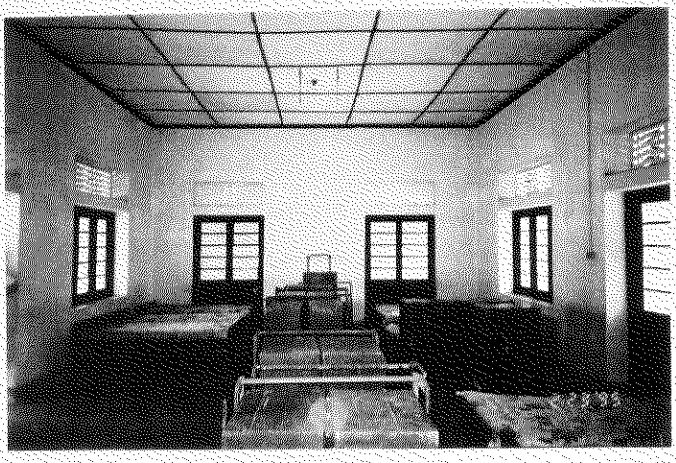


Site for
Trainee's Toilets
研修生用便所





Main Building
(Administration Block)
本　館



Dormitory
宿泊室



Canteen Kitchen
食堂及び厨房



Canteen's interior
食堂内部



Lecture Hall
講　堂

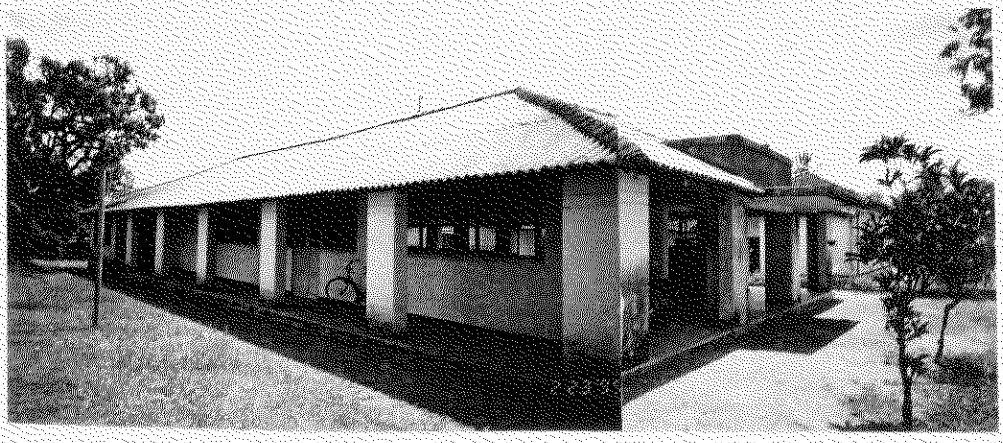


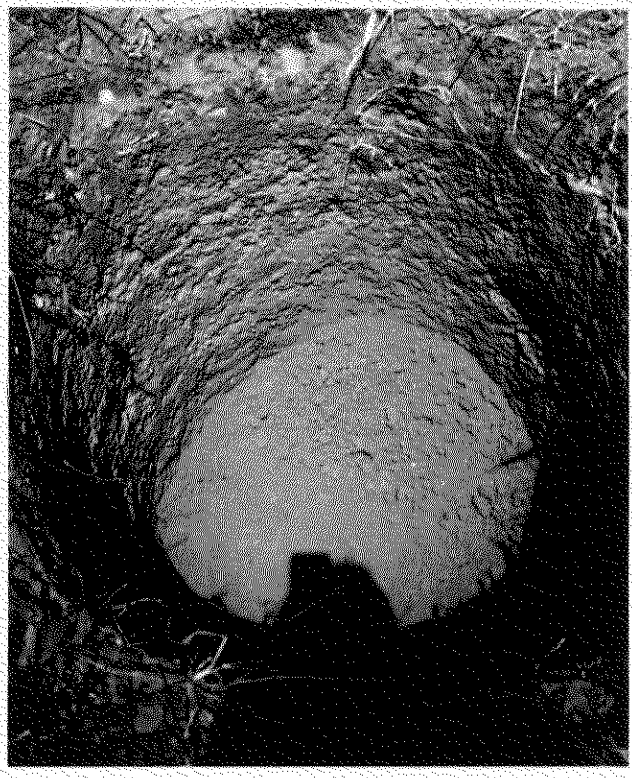


Open Gallery
回　廊



Lecture Hall
講堂内部





Soil Research on
the Site for
Training Building
研修棟地盤調査



Soil Research on
the Site for
Workshop
ワークショップ地盤調査

目　次

（序文）
（位置図）
（現況写真）

第１章　　緒論 1
　１．１　調査の背景 1
　１．２　プロジェクトの概要 2
第２章　　調査団の派遣 5
　２．１　モデルインフラ整備事業 5
　２．２　調査の目的 6
第３章　当初計画の内容 7
　３．１　工事内容 7
　３．２　概算設計数量 19
　３．３　概算工事費 21
第４章　　計画の概要 23
　４．１　モデルインフラ整備事業のサイト 23
　４．２　既存施設 24
　４．３　プロジェクトの現況 26
第５章　事業計画 27
　５．１　プロジェクトの活動計画 27
　５．２　モデルインフラ整備計画 28
　５．３　事業計画 28
第６章　実施設計 33
　６．１　設計方針 33
　６．２　設計条件 36
　６．３　設計基準 38
　６．４　実施設計 41
　６．５　設計図面
第７章　事業費 44
　７．１　積算の条件 44
　７．２　工事費 45
第８章　施工計画 47
　８．１　工事概要 47
　８．２　基本計画 47
　８．３　工程計画 47
　８．４　工事契約 58
　８．５　施工監理 59
第９章　入札図書 60

付属資料 61
　付－１　調査団 62
　付－２　収集資料 77
　付－３　建設費内訳 89

第 1 章

緒　　論

第１章　緒論

１．１ 調査の背景

スリ・ランカ国の農業人口は労働人口の約半数を占めるが、農業のＧＤＰに占める割合とその生産性は低い。そこでスリ・ランカ国政府は農村地域の貧困からの脱却と地域格差の是正を目指し、1979 年から地域開発の重要性に焦点をあて開発の遅れている地域に対する農村総合開発事業(Integrated Rural Development Project ： IRDP)に着手してきた。首都コロンボの北に隣接するガンパハ県は農業用地が総面積の 57%を占めており、その生産は飯米用の水稲と伝統的な換金作物であるココナッツを中心に行われているが、生産性は低い。

この様な状況に鑑みスリ・ランカ国政府はわが国に対し、ガンパハ県の農村総合開発計画の開発調査を要請し、わが国政府の協力を得て、1987 年にマスタープランを策定した。ガンパハ県農村総合開発計画は、次の４つの基本目標を設定している。

① 農業技術を改善し、より集約的で収益の高い農業の振興（生産振興/基盤整備）

② 高度な技術を持った労働者の育成（人材の育成）

③ 地域社会に調和した産業の振興（農村工業の育成）

④ 健康で住みよい農村の建設（社会インフラストラクチュアの改善整備）

スリ・ランカ国政府はこのマスタープランに基づき、開発計画の優先事業として位置付けられた農業生産振興モデル事業の一環として、①ココナッツ畑における間作および水田の３毛作の導入にかかる栽培技術の確立および②栽培管理技術移転のための展示圃場としてのモデル圃場の建設等を計画した。

わが国政府はその計画に対する無償資金協力を行い、アンベプッサおよびモレンナにモデル圃場が整備され、1991 年 11 月に完成した。

さらに同国政府は農業生産振興モデル事業推進の一環としてガンパハ県において農業生産の多様化により農業生産性向上および農家収入の増大を図るべく、1990 年７月にわが国に対し、プロジェクト方式技術協力を要請した。わが国政府はその要請を受けて、1993 年２月に事前調査団および 1993 年７月から９月まで長期調査員を派遣した。スリ・ランカ国側からの要請は広範・多岐に亘っていたが、事前調査および長期調査の結果、農業生産の多様化と生産性の向上性には普及の強化が

重要であるとの結論を得た。その後、協力内容の検討を進め、1994年３月～４月に実施協議調査団を派遣し、ガンパハ県のココナッツ畑における農業普及の改善により、土地の有効利用、農業生産の多様化を図ることを目的として1994年７月１日から５年間に亘るプロジェクト方式技術協力「スリ・ランカ国　ガンパハ農業普及改善計画」（以下プロジェクト）が開始された。

本プロジェクトの協力課題は①ココナッツ畑における作物生産体系の改善②普及方法の改善③教材開発④研修の実施である。

プロジェクトサイトであるアンベプッサ農業研修センター(DATC)には、上記課題についての技術協力活動を行うためのココナッツ畑の圃場が整備されてないこと、既存の研修/農業実習施設は老朽化しており規模質共不十分であることから、実施協議調査（平成６年３月～４月）の過程で、圃場の整備および既存の研修/農業実習施設の一部増設、改修が必要であることが提起され、協議の結果、モデルインフラ整備に関する日本側のローカルコスト負担についてR/Dに記載された。

また、計画打合せ調査（平成７年２月）時協議の結果、上記整備計画のうち、日本側は全体詳細設計（改修分も含む）および圃場、研修/農業実習施設整備に係る工事を行うことが合意された。

これにより、当該圃場および研修/農業実習施設の増改築整備のモデルインフラ整備事業実施設計調査を行うこととになった。

１．２ プロジェクトの概要

１．２．１　目的と協力活動

本プロジェクトは前述のようにガンパハ県のココナッツ畑において、土地の有効利用と農業生産の多様化、ひいては生産性の向上を図るため農業普及の強化を行うことを目的としている。その目的を達成するため本プロジェクトの活動の内容として以下が設定されている。

（１）　ココナッツ畑における間作物の生産技術の改善

①　栽培技術の改善（作物の適応性等）

②　導入が考えられる作物と品種の導入試験

③　経済作物の作付け体系の改善

④　管理技術の改善

⑤ 実証圃における作物生産技術の展示

（2） 農業普及方法の改善

① ボトムアップ方式の普及方式の導入

② モデル地区における自主的な生産集団の育成とモデル展示圃の設置

③ 効果的な普及活動方法の実証

④ 普及活動の評価

（3） 研修教材の開発

① 研修や普及活動に必要な教材の開発と準備

（4） 研修の実施

① 普及員や村落行政官に対する改善された普及方法の研修

② 普及員や生産集団のリーダーに対する作物生産技術の研修

本プロジェクトの具体的な活動としては、アンベプッサDACTの圃場に設置される予定の試験圃(Trial farm) およびアンベプッサDATCの近傍に設置される予定の実証圃(verification farm) においてココナッツ畑の間作に導入を図る作物の適正試験と生産技術の改善を行うと共に、県内に５ヶ所のモデル地域を選定し、自主存生産集団の育成を図りながら、モデル展示圃場を設置し、トライアルファームおよび実証圃で検証された作物および生産技術を当該地域を担当する普及員(AI)、村落行政官(VO)、グループリーダー(GL)を通じて育成されたモデル生産集団のモデル展示圃に移転される。そのため、AI、VO、GL、に対する研修・実習を普及計画、研修計画に基づきトライアルファーム、実証圃等の実習施設および研修施設を使用して効果的に行う。さらに実験施設を使用して、生産技術の改善普及に必要とされる研修者(AI、VO、GL)およびカウンターパート(C/P)の科学的判断の向上を図る。研修教材は、適正作物と生産技術の開発、普及の過程で得られた作物生産技術情報、栽培体系、生産技術等の成果や発生した問題等を教材として作成する。また、カウンターパートへの技術移転を通じて研修カリキュラムおよび教材の作成を行う。

1.2.2　プロジェクトサイト

プロジェクトオフィスおよびプロジェクト活動の現場であるアンベプッサ DATC およびその畑作モデル農場はコロンボに隣接するガンパハ県の北東部に所在し、コロンボの北東約 60Km に位置する。アンベプッサ DATC には本来の既存（DATC 事務所、宿舎、食堂、講堂等）の施設と圃場に加えて、わが国の無償資金協力により造成された畑作モデル圃場と建設された農場管理棟、見張り人住宅、農作業小屋等の施設がある。しかしこれらの圃場および施設は、本プロジェクトの協力活動に対しては、十分ではなく整備が必要とされる。

第 2 章

調 査 団 の 派 遣

第２章　調査団の派遣

２．１ モデルインフラ整備事業

2.1.1　モデルインフラ事業計画の基本的な考え方

本プロジェクトでは、県内５ヵ所において農業グループの育成を図りながらモデル展示圃を設置運営し、生産性の高いココナッツ間作技術を地域へ波及することとしている。

このため、当該地域を担当する普及員、村落行政官、グループリーダーに対する研修を、別途設置する実証圃等を用いて効果的に実施するため、最小限の研修施設が必要である。

この研修は、研修対象者およびC/Pの科学的判断力の向上を目指す必要があるため、プロジェクト施設の一環として実験施設が必要である。

また本プロジェクトでは、上記のモデル展示圃、実証圃を効果的に設置運営するため、あらかじめ、不確定な作物、技術を確認する必要上、ヤシ園の間作条件に近い遮光施設の設置が必要である。

2.1.2　モデルインフラ事業の負担計画

スリ・ランカ国側と日本国側は本調査の団長レター（別添資料－１．４）に記した下記負担計画に基づいて実施することとする。

（1）　日本側が負担する項目

1)　施設の整備・建設・改修にかかる詳細設計

2)　下記の施設の整備および建設工事

①　圃場内の畑作栽培試験用の日陰施設

②　栽培および水管理試験用の実験室棟

③　農業機械用の車庫

④　実習室、雨天作業場、農機具倉庫を備えたワークショップ

⑤　野外乾燥場

⑥　講義室、視聴覚室、図書室、機材準備室、資材室、研修管理室等を備えた研修棟

⑦　研修生用便所棟

（2） スリ・ランカ側が負担する項目

1） 既存研修施設の改修工事

① 本館－研修生用宿泊施設・シャワー室、事務室、倉庫等

② 食堂・厨房

③ 講堂

2） その他環境整備

① 建設予定地の整備

② 各施設周辺の造園

2.2 調査の目的

本プロジェクトの協力期間は1994年4月6日に署名された討議議事録(R/D)に基づき1994年7月1日より開始され、6名の長期の専門家の派遣とともに技術協力活動が実質的に始動している。本プロジェクトの実施上、不可欠であるアンベプッサDATCの圃場（トライアルファーム）および研修/農業実習施設の整備が早急に実施されることが求められており、わが国政府は本プロジェクトにかかるモデルインフラ整備事業実施のため、1995年2月11日から約4週間の現地調査を含む実施設計調査を行った。 本調査は、プロジェクトサイトにおける現況を把握し、協力活動の実施に必要な圃場および研修/農業実習施設の整備にかかる適切な計画を立案し、それらの実施設計を行うと共に入札図書案および施工計画を作成し、実施設計調査報告書を作成提出することを第一年次の目的とした。又上記モデルインフラ整備事業を円滑に実施するため、入札業務および工事請負契約の補佐と契約対象施設の建設にかかる施工監理を第二年次の目的とする。

第 3 章

当 初 計 画 の 内 容

第３章　当初計画の内容

３．１ 工事内容

本プロジェクトに対するモデルインフラ整備事業による工事内容は、圃場の整備、研修/農業実習施設の新設、既存研修施設の改修の３項目より構成されており、それぞれの計画内容は次の通り。

３．１．１　圃場整備（遮光施設）

アンベプッサ DATC の圃場 19 区画の内、２区画（プロット NO.8, 13＝40a)に３段階の遮光量（60%, 50%, 25%)の環境設定した圃場（寒冷紗による遮光）を設ける。

３．１．２　研修施設の増築

既存研修施設に隣接してつぎの研修施設を新設する。

（１）　農業実習施設

既存の車庫（ﾄﾗｸﾀｰ等)、管理棟に隣接して、作物栽培、水管理部門の研究・実験の施設を 増設し、圃場管理関係については１区画（プロット NO.14)へ設置する。

① 野外実習・作業　；実習・農作業・試験・作物乾燥場に利用する。

乾燥場　　1,350 ㎡のｺﾝｸﾘｰﾄ床、実習施設と野外乾燥場間のｴﾌﾟﾛﾝを含む。

② 雨天作業実習場　；研修員の屋外実習及び雨天時の作業場に利用する。

200 ㎡、屋根のみの吹き抜け

③ 農機倉庫　　；農機の保管に利用する。

90 ㎡を１室

④ 資材庫　　；農具の保管に利用する。

80 ㎡を１室

⑤ 実習室　　；研修実習に利用する。

80 ㎡を１室

⑥ 実験室　　；栽培実験、栽培調査、水管理実験の試験・調査に利用する。

60 ㎡を３室（計 180 ㎡)

⑦ 駐車場　　；ﾄﾗｸﾀｰ、作業車の駐車に利用する。

50.8 ㎡

⑧トイレ　　；職員及び研修者用

15 ㎡を２室（計 30 ㎡）

⑨ 連絡用通路　　；開放廊下、各施設の連絡に利用する。

65 ㎡

（２） 研修施設

既存の講堂、宿舎、食堂に隣接して設置する。また、予定地の地形から、教室施設と研修管理施設に分けた２棟の設置を必要とする。

［教室施設］

① 講義室（大）　　;30 人(モデル地区関係 Divisional の AI)規模の研修の利用する。

90.7 ㎡を１室

② 講義室（小）　　；10 人(モデル地区の AI,ｸﾞﾙｰﾌﾟﾘｰﾀﾞｰ)規模の研修の利用する。

32 ㎡を１室

③ 視聴覚教室　　；研修時に利用する。

66.4 ㎡を１室

④図書室　　；研修員の自習等に利用する。

32 ㎡で８人の閲覧規模を１室

⑤講師控室　　；講師の講義準備、控え室に利用する。

32 ㎡を１室

［研修管理施設］

① 教材作成室　　；教材の作成に利用する。

20 ㎡を１室

② 資材室　　；研修資材の保管に利用する。

20 ㎡を１室

③ 研修管理室　　；研修管理に利用する。

90 ㎡を１室

上記の教材準備室、資材室、研修管理室は、１室にまとめ将来の利用状況に応じて間仕切を設置する。

（3） 既存研修施設の改修

① 講　　堂　　；ﾌﾟﾛｼﾞｪｸﾄ対象地区の全AI(45名) 規模の研修に利用する。

外・内壁の塗装、瓦屋根への葺替え、窓の設置,ブラインドの取り付け、照明・空調設備の改善、視聴覚設備の設置、床の張り替え、椅子・机の整備。

② 宿　　舎　　；研修生の宿泊に利用する。30人規模とする。

内・外壁の塗装、照明・空調設備の改善、屋根瓦の葺替え、窓の改善、施設内のトイレの改善、シャワー室の改善、上下水道の改善、大部屋を間仕切により４人部屋に改善、床の張り替えを行う。宿舎については、現在の倉庫の改善も含めて拡張し、談話室も設置する。

③ 食　　堂　　；研修生の食堂に利用する。30人規模とする。

内・外壁の塗装、照明・空調設備の改善、瓦屋根への葺替え、窓の改善、厨房の改善(ｶﾞｽ台、調理台、流し) 、上下水道の改善、床の張り替えを行う。

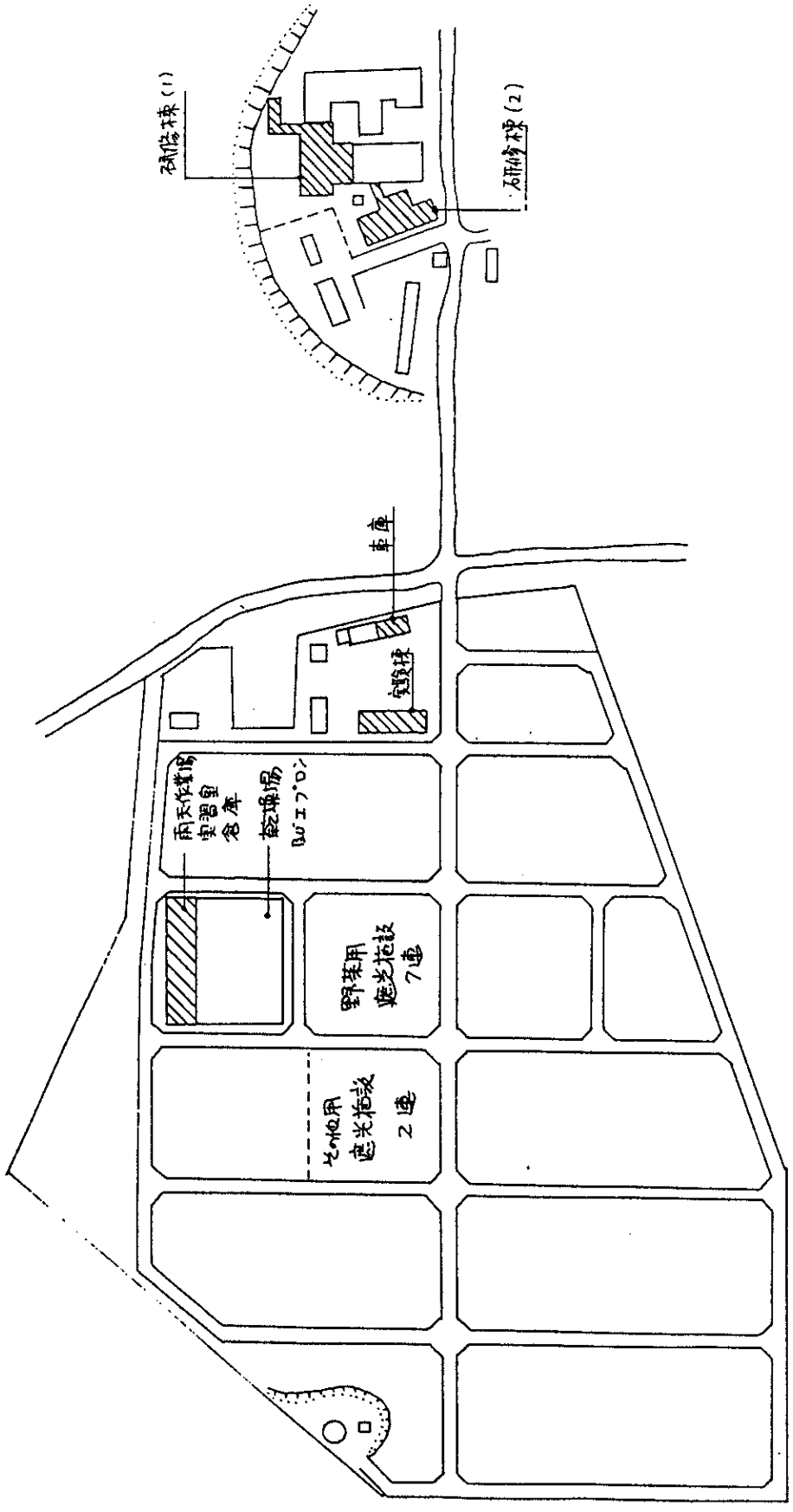
③ 事務所　　；現状通りアンベプッサDATCの研修管理室として利用する。

内・外壁の塗装、屋根瓦の葺替え、窓の改修、床の張り替えを行う。

各施設は、渡り廊下で結び効率よく利用出来るようにする。

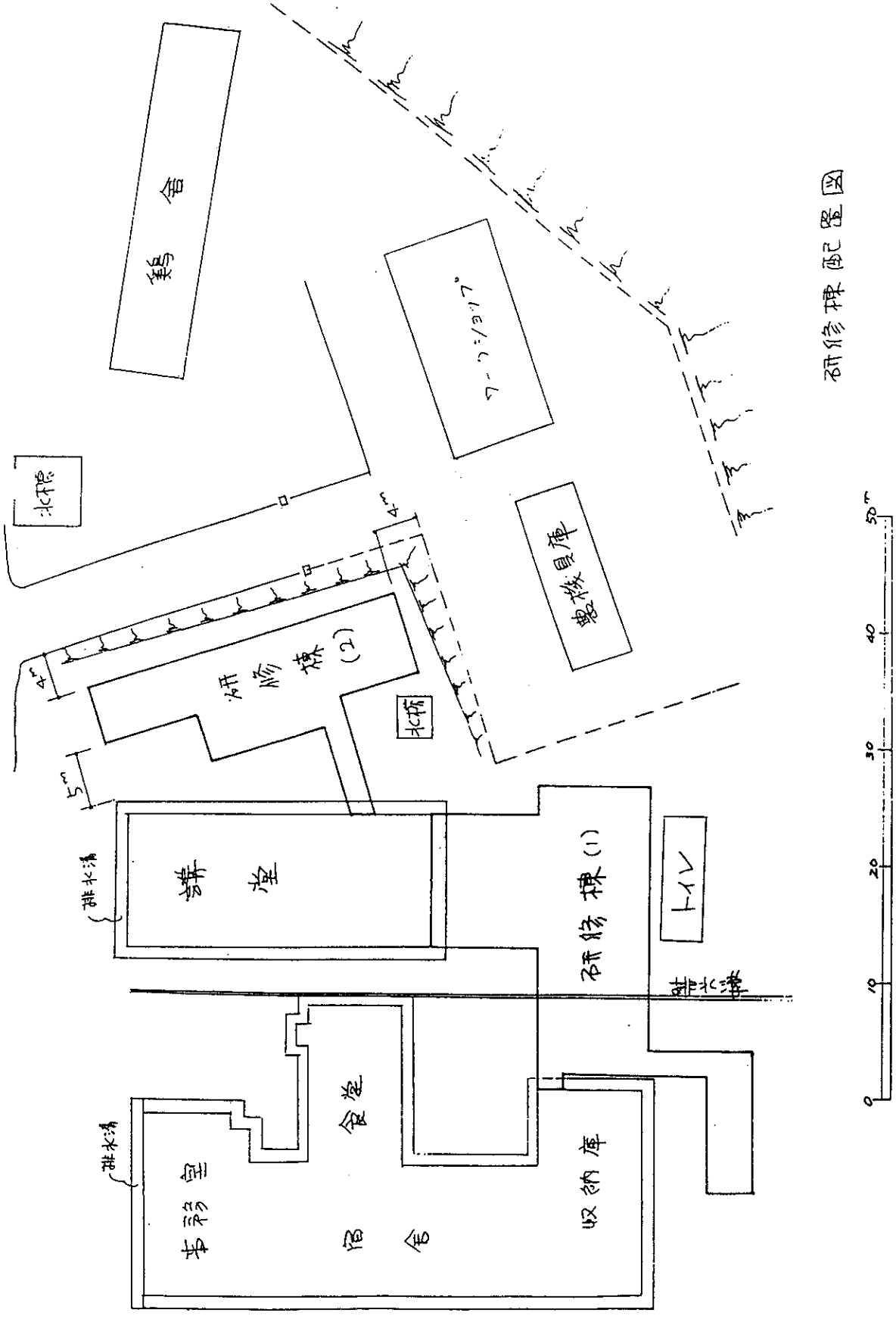
圃場整備および研修施設の増築にかかる概略図を図３．１に示す。

図3．1－（1）



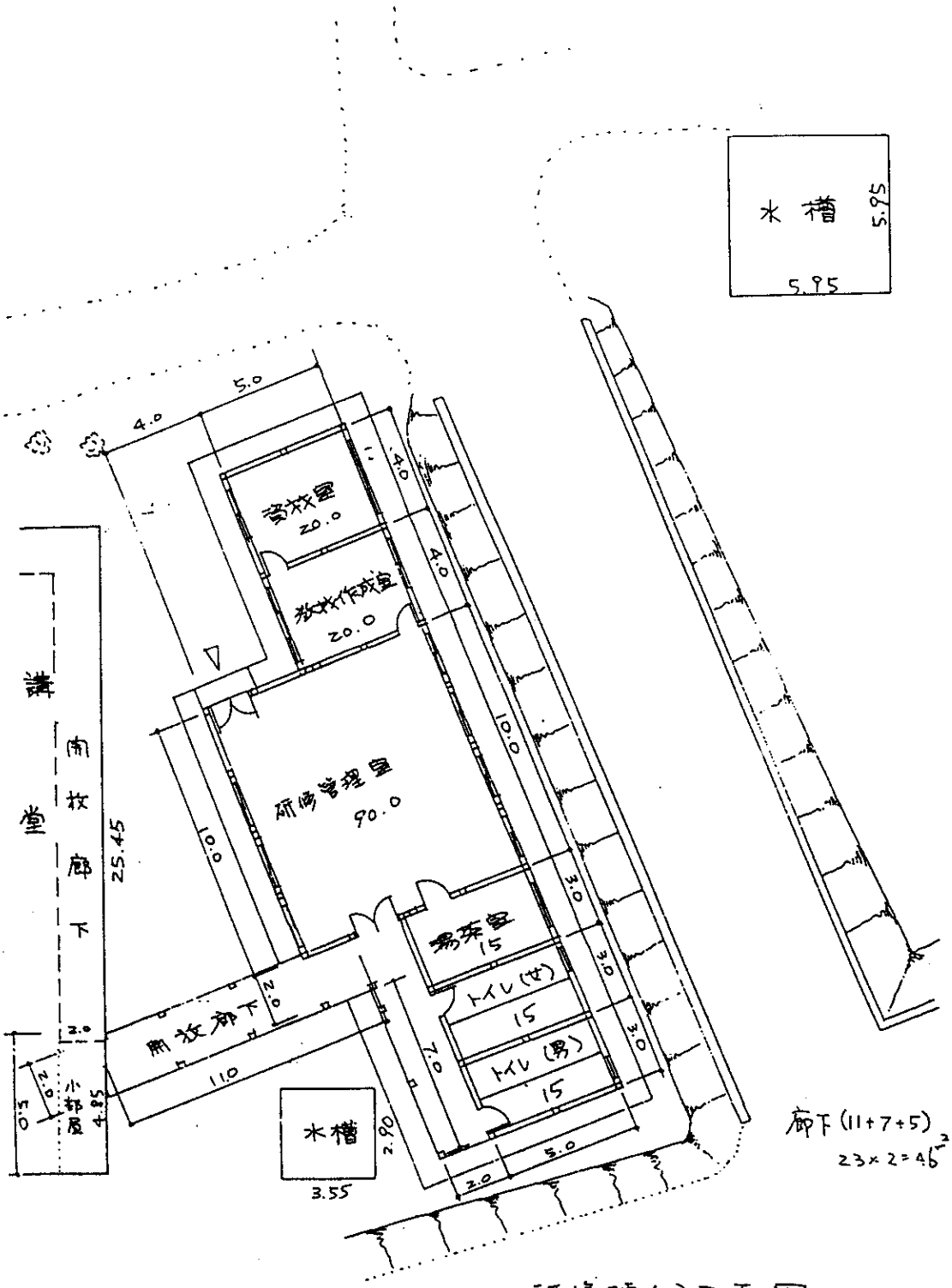
プロジェクト基盤整備計画　概要図

図3．1－（2）



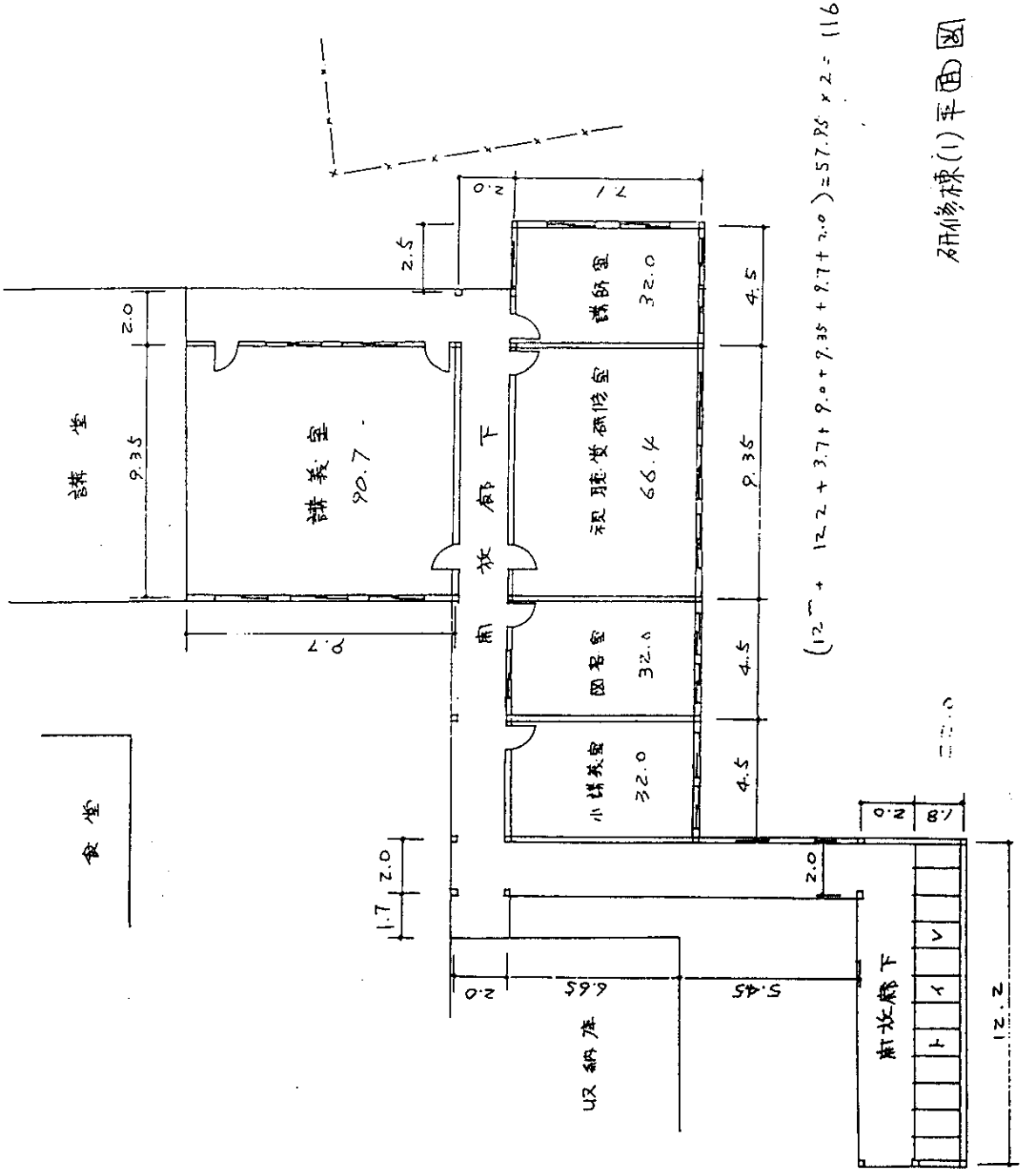
鶏舎
ワークショップ
水標
4m
4m
5m
研修棟(2)
水標
農機具庫
講堂
排水溝
研修棟(1)
トイレ
排水溝
事務室
食堂
宿舎
収納庫
研修棟配置図
0
10
20
30
40
50m

図3．1－（3）



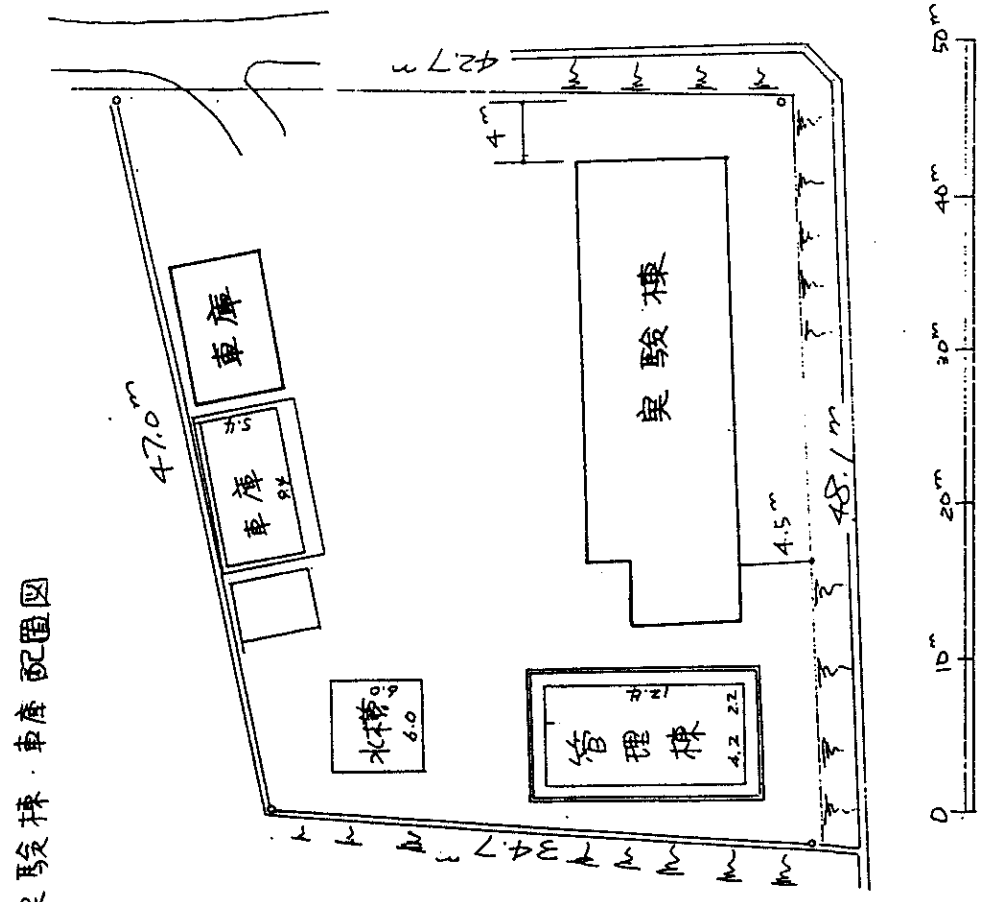
研修棟(2)平面図

図3．1－（4）



研修棟(1)平面図

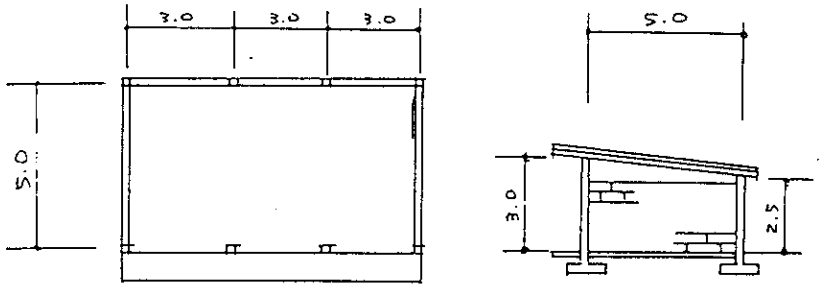
図3．1－（5）



実験棟・車庫配置図

図3．1－（6）

車庫平面図



実験棟平面図　　1：200

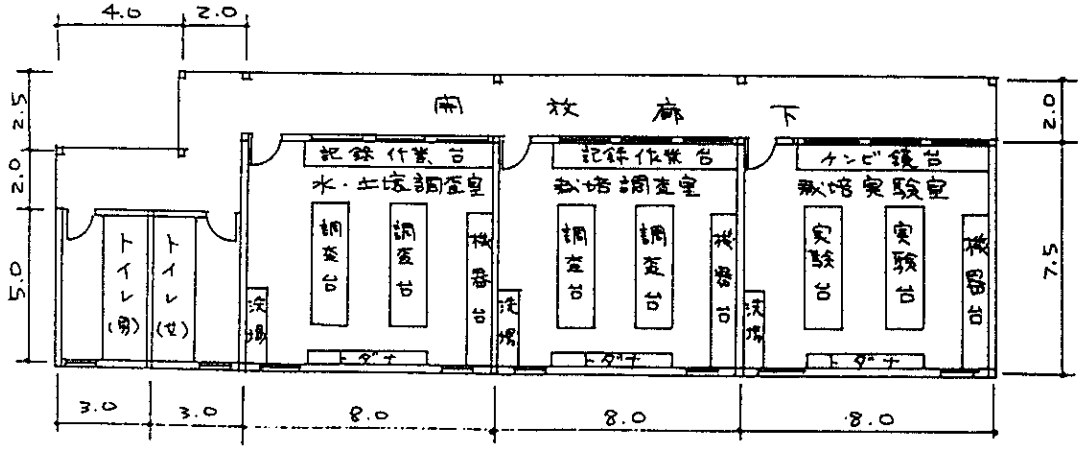
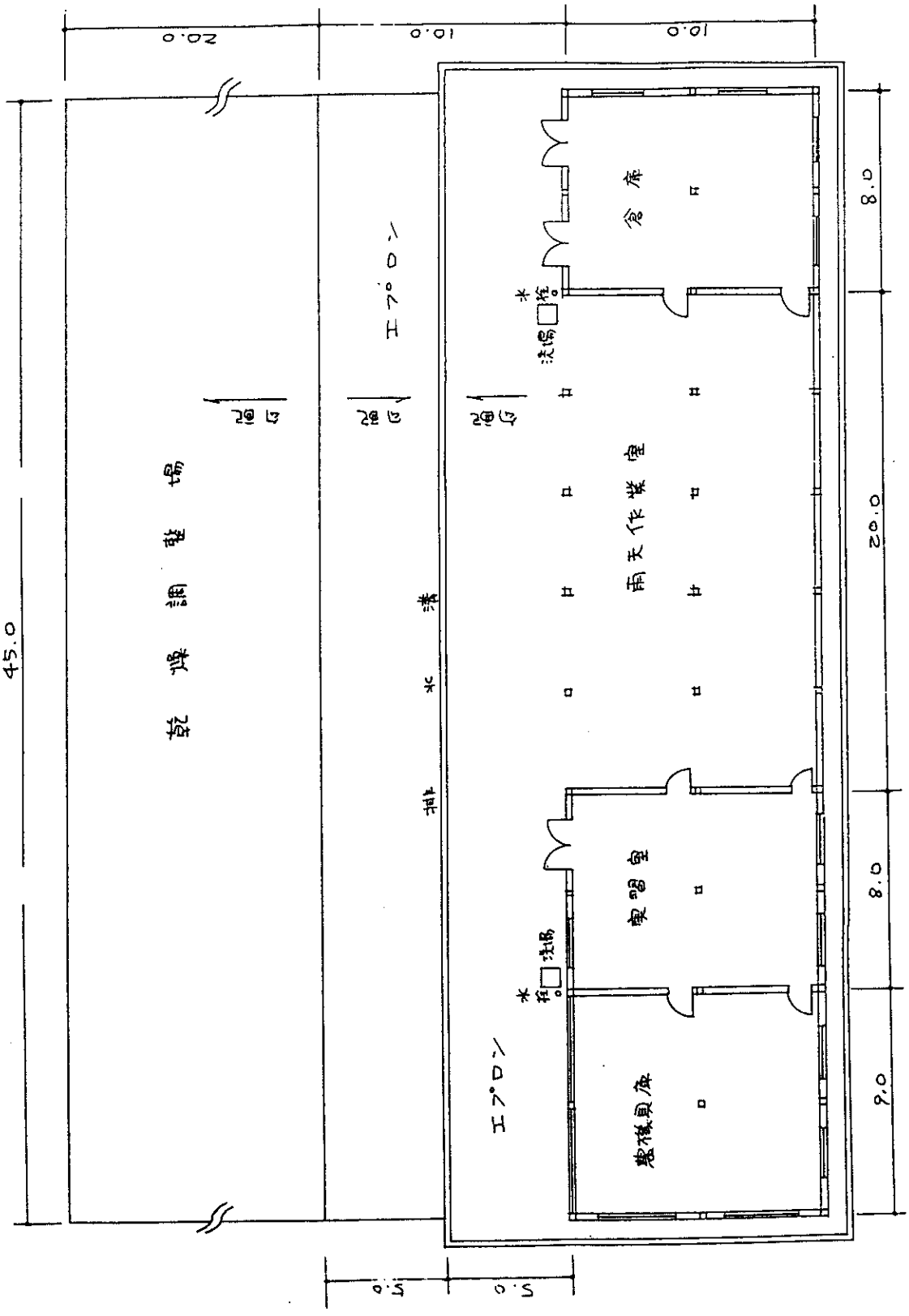
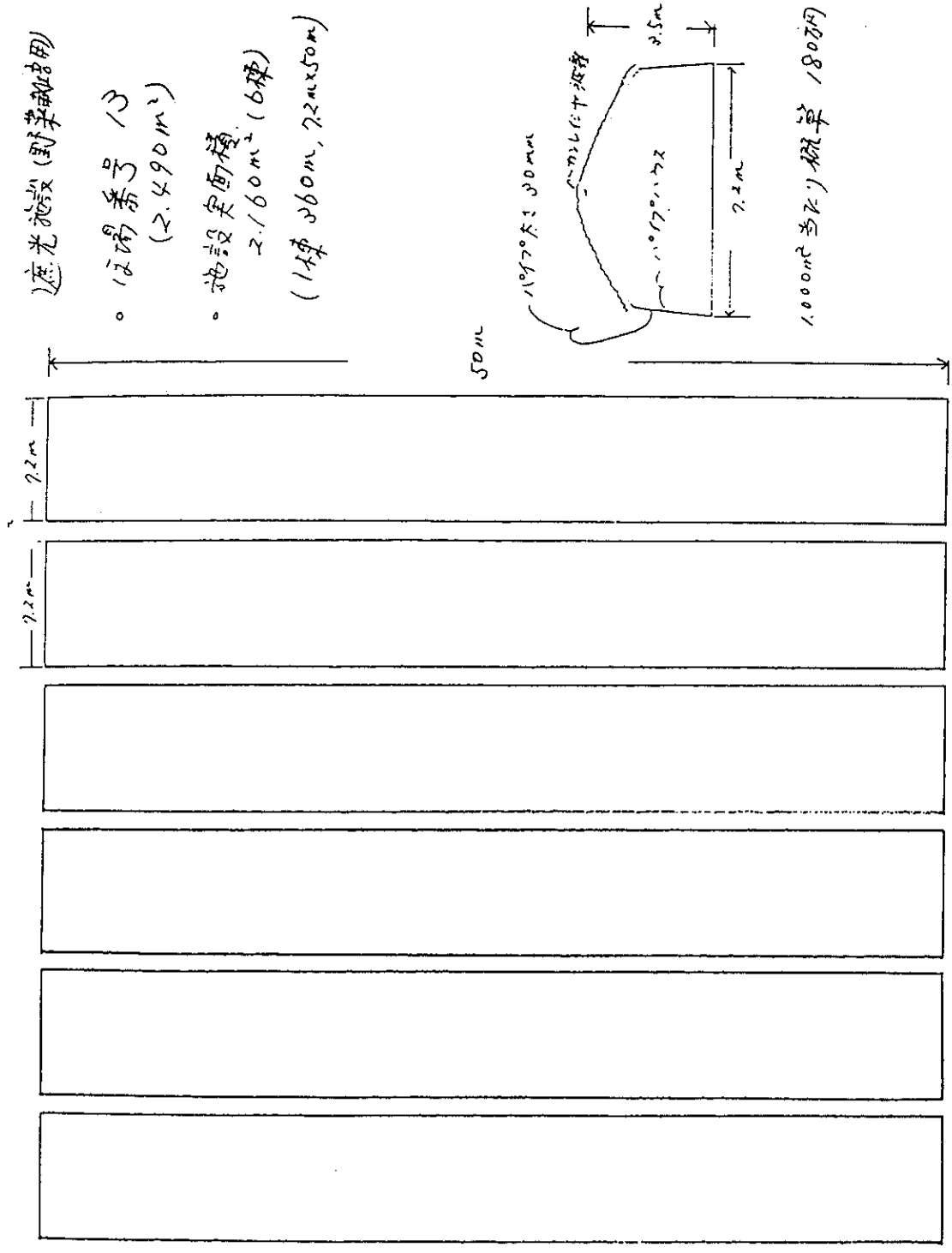


図3．1－（7）



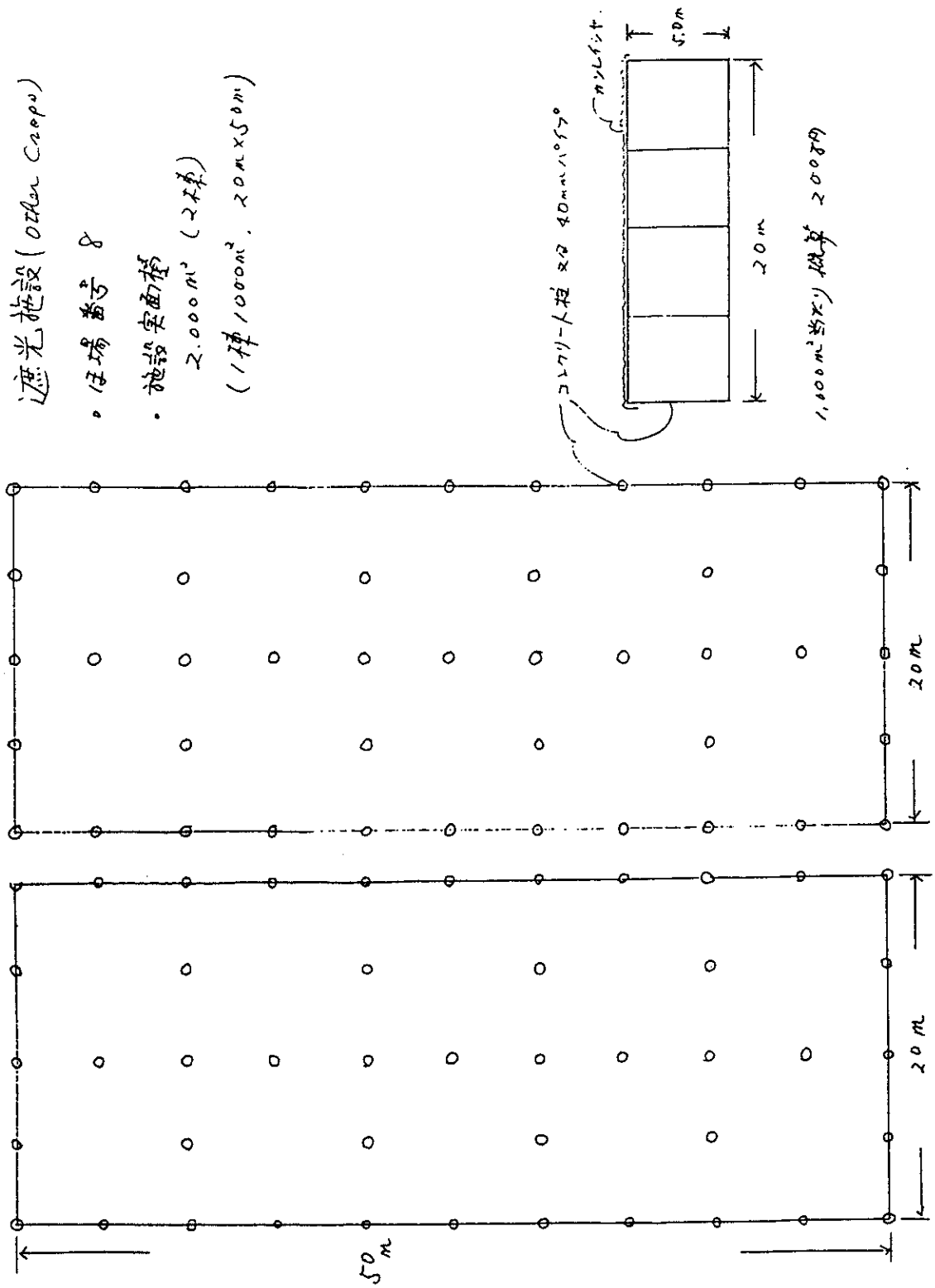
雨天作業場他平面図

図3．1－（8）



遮光施設（野菜軟弱用）
・ほ場番号 13
（2.490m²）
・施設実面積
2.160m²（6棟）
（1棟 360m，7.2m×50m）
50m
7.2m
7.2m
3.5m
7.2m
1,000m² 当たり概算 180万円

図3．1－（9）


遮光施設（Other Crops）
・圧場番号 8
・施設実面積
2,000m²（2棟）
（1棟1000m²，20m×50m）
コンクリート柱 又は 40mmパイプ
カンレイシャ
5.0m
20m
1,000m² 当たり 概算 200万円
20m
20m
50m

3.2 概算設計数量表

アンベプッサ農業研修センター（アンベプッサ DATC）

施設名	設計工種	概略工事内容	概算数量
圃場整備	野菜栽培試験用遮光施設の整備	ﾊﾟｲﾌﾟﾊｳｽ６棟、各棟共巾 7.2m、長さ 50m 高さ 3.5m、遮光率 60%, 50%, 25%	0.2ha
	その他栽培試験用遮光施設の整備	ﾊﾟｲﾌﾟﾊｳｽ２棟、各棟共巾 20m、長さ 50m、高さ 5m、 遮光率 60%, 50%, 25%	0.2ha

アンベプッサ DATC の研修施設増設（新設）

施設名	設計工種	概略工事内容	概算数量
農業実習施設	実験室	60 ㎡ x 3 室	180.0 ㎡
	車庫(ﾄﾗｸﾀｰ、作業車用)	ｺﾝｸﾘｰﾄ床	50.8 ㎡
	雨天作業場	ｺﾝｸﾘｰﾄ床、吹き抜け(屋根のみ)	200 ㎡
	実習室		80 ㎡
	機材倉庫		90 ㎡
	資材倉庫		80 ㎡
	野外乾燥場	ｺﾝｸﾘｰﾄ床、実習施設のｴﾌﾟﾛﾝも含む	1,350 ㎡
	トイレ	15 ㎡×2 室	30 ㎡
	連絡用解放通路		65 ㎡
研修施設 研修棟－(1)	講義室（大）	30 人規模	90.7 ㎡
	講義室（小）	10 人規模	32 ㎡
	視聴覚室	20 人規模	66.4 ㎡
	図書室	10 人規模	32 ㎡
	講師控室		32 ㎡
研修施設 研修棟-(2)	資材室		20 ㎡
	教材作成室		20 ㎡
	研修管理室		90 ㎡
	湯茶室		15 ㎡
	講師用トイレ		30 ㎡
	研修生用トイレ		22 ㎡
研修棟共通	連絡用解放通路		162 ㎡

アンベプッサ DATC の研修施設改修（改修）

施　設　名	設　計　工　種	概　略　工　事　内　容	概算数量
研修施設	講　　堂	45 人規模、外・内壁の塗装、スレート波板→瓦屋根葺き替え、蛇腹式窓の設置（ﾌﾗｲﾝﾄﾞ付）、照明、空調設備の改善、視聴覚設備の設置、ｺﾝｸﾘｰﾄ床の張り替え、イス・机の整備	297 ㎡
	宿　　舎(2 室)	30 人規模、外・内壁の塗装、照明・空調設備の改善、瓦屋根葺き替え、窓の取り付け、間仕切りによる 4 人部屋へ改善、ｺﾝｸﾘｰﾄ床の張り替え、談話室の設置	244 ㎡
	食　　堂	30 人規模、外・内壁の塗装、照明・空調設備の改善、瓦屋根葺き替え、窓の取り付け、厨房の改善（ｶﾞｽ台、調理台、流し）	120 ㎡
	トイレ・シャワー（屋内分）	野外のトイレは、移築のため新設施設（研修生用トイレ）にする。	39 ㎡
	事務所・倉庫		154 ㎡

3.3 概算工事費

アンベプッサ DATC 研修施設増改築概算工事費

施　設　名	増改築項目	増改築内容	概算予算（円）
圃場整備 （新設）	遮光施設	野菜試験用（7.2m x 50m×3.5m）を６棟） その他作物（20m x 50m x 5m）を２棟 遮光率　60%, 50%, 25%	9,640,000
	小　計	20a	9,640,000
農業実習施設 （新設）	実験室	３室合計 180 ㎡（１室 60 ㎡）	4,339,000
	車庫(ﾄﾗｸﾀｰ)	50.8 ㎡、ｺﾝｸﾘｰﾄ床	1,224,000
	雨天作業場	200 ㎡、ｺﾝｸﾘｰﾄ床、吹き抜け	4,821,000
	実習室	80 ㎡	1,928,000
	機材倉庫	90 ㎡	2,169,000
	資材倉庫	80 ㎡	1,928,000
	野外乾燥場	1,350 ㎡	1,620,000
	トイレ	30 ㎡	723,000
	連絡用開放通路	65 ㎡	1,566,000
	小　計	2,125 ㎡	20,318,000
研修施設 （新設）	講義室(大)	30 人規模、90.7 ㎡	2,186,000
	講義室(小)	10 人規模、32 ㎡	771,000
	視聴覚室	20 人規模、66.4 ㎡	1,600,000
	図書室	10 人規模、32 ㎡	771,000
	講師控室	32 ㎡	771,000
	資材室	20 ㎡	482,000
	教材作成室	20 ㎡	482,000
	研修管理室	90 ㎡	2,169,000
	湯茶室	15 ㎡	361,000
	講師用トイレ	30 ㎡	723,000
	研修生用トイレ	22 ㎡	530,000
	連絡用解放通路	162 ㎡	3,905,000
	小　計		14,751,000
	増設施設合計		35,069,000

施　設　名	増改築項目	増改築内容	概算予算(円)
研修施設	講　堂	297 ㎡	
(改築)	宿　舎(2 室)	244 ㎡	
	食　堂	244 ㎡	
	ﾄｲﾚ･ｼｬﾜｰ (屋内分)	39 ㎡、野外のトイレは、移築のため新設施設 (研修生用トイレ) にする。	
	事務所・倉庫	154 ㎡	
	小　計	854 ㎡	21,000,000

(注)　増築施設の建物施設についての概算額の算出根拠は、ｽﾘﾗﾝｶ政府の基本積算額、24,106 円/㎡を基に算出した。

遮光施設の概算額の算出根拠は、2,410 円/㎡を基に算出した。

野外乾燥場の概算額の算出根拠は、1,200 円/㎡を基に算出した。

既存施設の概算額については、当地の建築家の見積を参考にした。

第 4 章

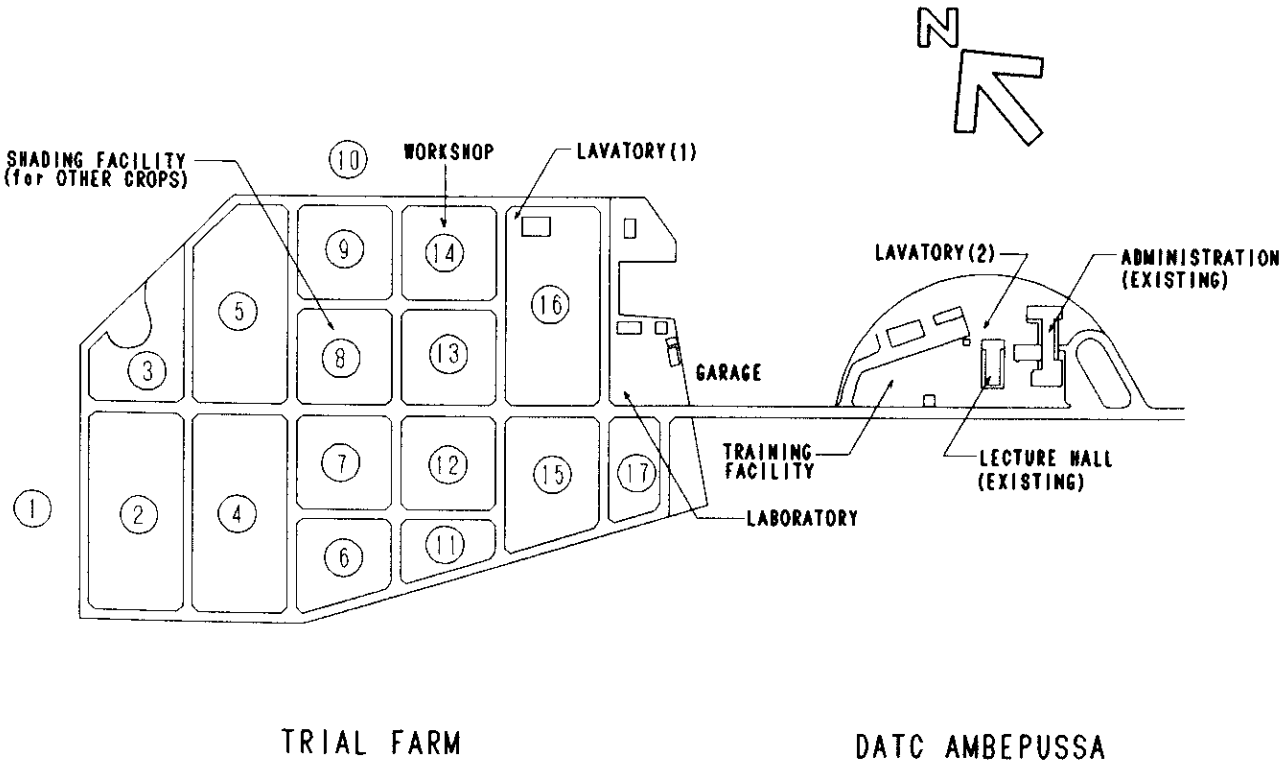
計 画 の 概 要

第４章　計画の概要

４．１　モデルインフラ整備事業のサイト

本モデルインフラ整備事業の遮光施設を設ける圃場および農業実習施設のサイトはアンベプッサの畑作栽培モデル圃場(5.8ha) 内である。畑作栽培モデル圃場は、わが国の無償資金協力により、耕地の造成、および農道の整備と農業事務所、農作業小屋、見張り人住宅、パイプハウス、および潅漑施設の建設が 1991 年 11 月に完成されている。研修施設のサイトはアンベプッサ DATC の運営事務所等の諸施設のある敷地内で、事務室、宿舎、食堂を備えた本館と講堂に隣接した位置で、上記の無償資金協力により建設された農業機械実習用のワークショップおよび農業機械用の車庫が隣接している。農業実習施設それぞれの施設を建設するサイト内における高低差は殆どなく平坦であり、施設の建設に支障はない。しかし、研修施設のサイトは 1,350mm 程度の高低差がある緩斜面であるのでその条件を踏まえた施設計画を行わねばならない。地盤は 15～18cm の表土の下は小砂利混じりの赤色砂質シルト系の固い層があり、20t/㎡以上の地耐力が期待できる。給水はそれぞれのサイトに高架水槽が設置されており容易に供給可能であるが、現在水源に問題があり乾季における供給量は不安定である。電力はサイトに隣接する道路に沿って設置されている高架の幹線により受電可能である。

図４．１　モデルインフラ整備事業のサイト



4．2 既存施設

本プロジェクトの運営に供される既存施設の中、わが国政府の無償資金協力で建設された諸施設は良好な状態に保たれており機能的に何ら支障がない。しかしそれら以外の研修施設の一部として活用される本館（約655 ㎡）および講堂（約264 ㎡）はそれぞれ築後50年以上を経過しており、老朽化した部分が随所に見受けられる。

4．2．1　本館

① 屋　根　：食堂・厨房を除く部分の瓦葺の部分は、瓦の破損に起因する漏水により瓦桟、垂木、母屋の木材の劣化の徴候が見られる。食堂および厨房部分は後日に増築されたもので、アスベストスレート波板葺であり、一部破損による漏水ヶ所がある以外は木造トラスを含む小屋組みは変形しておらず比較的良好な状態にあるといえる。

② 天　井　：食堂、厨房、ベランダおよび通路には吊天井はなく小屋裏が全て露出したままであり、また軒裏も同様の形態である。

③ 壁　：壁は全てレンガ積みで、プラスター塗りペイント仕上げである。プラスターの亀裂および剥離が散見されるが比較的良好な状態である。

④ 床　：床は全てレンガ敷の上にカラーモルタル仕上げであり、モルタル部分の亀裂および剥離が随所に見られる。

⑤ 建　具　：窓および出入り口の木製建具は比較的に良好といえるが一部に経年変化により機能に支障を生じているものがある。

⑥ 厨房設備　：木製テーブルの甲板をビニールクロスで覆ったものが調理台兼配膳台として置かれており、その脇に小型の人研ぎ流し１台、スパイス加工用の台および石臼が配置されているのみである。調理用ストーブとして薪を使用する炉があるが、煙突の低いことから排煙が悪く厨房内はすすで黒く汚れている。

⑦ 照明設備　：全般的に照明器具の数が極端に少なく、且半数は機能していないまま放置されている。この建物に設置されている電力メーターはタイプE-12A.である。

⑧ 換気設備　：事務室および食堂に天井扇が設置されているがその他の部屋にはない。

⑨　改修　　：構造体に関して問題はないが、内外装の改修が望まれる。特に内部の改装として床・壁の補修・塗装、不良建具の取替え、厨房・食堂・シャワー室の全面的な改修、屋根の雨漏れ部分の補修および照明器具と天井扇の新規配置と配線が挙げられる。

4．2．2　講堂

① 屋　根　　：アスベストスレート波板葺であり破損による漏水ヶ所が、散見される。木造の小屋組みは経年変化により変形した部材が多く見受けられる。特にトラスの下弦材に撓みが見られる。

② 天　井　　：吊天井は無く、小屋裏が全て露出したままである。

③ 壁　　：壁は全てレンガ積みで、プラスター塗りペイント仕上げである。プラスター面における亀裂および剥離が随所に見受けられる。

④ 床　　：床は全てレンガ敷の上にカラーモルタル塗仕上げでありモルタル部分の亀裂および剥離が散見される。

⑤ 建　具　　：楽屋（現在倉庫状態）に木製の建具が使用されているが、その他の開口部の窓部分は木枠に溶接金網が固定されたものである。出入口部分は型鋼材を使用したフレームに溶接金網が張られたドアーが取り付けられており、ガラスは一切使用されていない。

⑥ 照明設備　：照明器具の数は少なく、故障して機能しておらず皆無に等しい。電力は本館からの延長により供給されており独自の受電はしていない。

⑦ 換気設備　：屋根は寄棟の型式であることから、アスベストスレート面からの輻射熱に加えて小屋裏部分の換気設備がないことから熱気が排出されず頭上に停滞し非常に熱く、天井扇はあるもののホール部分約 130 ㎡に対し２台のみで有効に機能させるには全く不十分である。

⑧　改修　　：構造体に関して壁までは問題がないが小屋組のトラスに変形がみられることから、吊天井・天井扇および照明器具の増設等の現状以上の荷重を加えることは無理と判断される。また、現在のトラス下に天井を吊ると天井高

は約3mとなり室内面積に対して低すぎる。改修は以上をふまえ、壁・床の補修、雨漏り対策と最小限の照明器具と天井扇の増設に留めるか、屋根を小屋組を含めて架替える大規模な改修を行うかの選択となる。

4．2．3　その他

本館・講堂共に築後相当の歳月を経ており両建物に対する電気配線および給排水配管にかかる図面は当センターおよび地域を管轄している西部州技術部のミヌワンゴドゥ支所にも保管されておらず現状は不明である。

4．3 プロジェクトの現況

現在本プロジェクトに対して6名の長期専門家〔①リーダー、②業務調整、③農業普及、④畑作栽培（野菜）、⑤畑作栽培（その他）、⑥水管理〕および1名の短期専門家〔研修計画〕が昨年よりプロジェクトサイトに派遣されており、モデル圃場内の既存施設である農場事務所および監視人住宅を暫定の拠点とし、カウンターパートと共に活動を開始している。活動は対象地域の実態調査および県内5ヶ所の普及モデル地区の選定を完了し、ココナッツ畑の間作物として導入を図る作物の検討を行っている。

第 5 章

事 業 計 画

第５章　事業計画

５．１ プロジェクトの活動計画

本プロジェクトの研修計画を含む基本的な活動における施設利用計画の内容は、表５．１に示すとおりである。

表５．１　プロジェクトの活動計画

（１）　生産技術の改善

作業内容	従事者	人員	
①屋内実験・分析	C/P 等	約５名	毎日
②圃場実験・研究	C/P 等	約５名	毎日

（２）　月間研修計画

１）　屋内研修

研修内容	対象	人員	日数及び回数
①合同研修	研修者・C/P 等	約 30 名	２日×１回
②分野別研修	研修者・C/P 等	約 10 名	３日×２回
③職種別研修	研修者・C/P 等	約 10 名	３日×２回
④ AV 機材による分野別研修	研修者・C/P 等	約 10 名	２日×２回
⑤ AV 機材による職務別研修	研修者・C/P 等	約 10 名	２日×２回
⑥実験・分析研修	研修者・C/P 等	約 10 名	２日×２回

２）　屋外研修

①合同・分野別･職種別研修	研修者 C/P 等	約 70 名	２日×２回

３）　教材開発

①視聴覚教材の作成	C/P 等	約５名	１日×10 回

（３）　プロジェクトの広報

①プロジェクトの説明	見学者	約 30 名	１日×２回
②実験・研修状況の展示	見学者		毎日

（４）　定例会議

①合同会議	研修者･C/P･関係者	約 30 名	１日×２回
②小会議	分野別･C/P･専門家		１日×８回

（５）　実証圃及モデル展示圃の運営

５．２ モデルインフラ整備計画

本プロジェクトに対するモデルインフラ整備事業は、前述のプロジェクトの施設利用計画をふまえて計画され、その内容として圃場に遮光施設の整備、研修施設および農業実習施設の増設、既存研修施設の改修にかかる計画は、当初前記第３章に示されている内容が策定されている。

圃場はココナッツ畑と同様な環境を備えるため、野菜栽培試験用およびその他栽培試験用の遮光施設を整備し、実験室、雨天作業場、実習室、機材倉庫等の農業実習施設および講義室、視聴覚室、図書室、教材作成室、研修管理室等を備えた研修施設の増設に講堂、宿舎、食堂、および厨房等の既存施設の改修である。

５．３ 事業計画

本モデルインフラ整備事業により、整備、増設、改修される各施設に関して、プロジェクトの活動計画、モデルインフラ整備計画および専門家の見解をふまえ事業計画概要を下記のように策定した。

５．３．１　施設のサイト

（１）　圃場整備

①　遮光施設-1（その他栽培試験用）はモデル圃場の第８区画とする

②　遮光施設-2（野菜栽培試験用）はモデル圃場の第１３区画とする

（２）　農業実習施設

①　ワークショップおよび野外乾燥場

モデル圃場の第１４区画とする

②　実験棟および車庫

農場事務所の所在する区画内とする

（３）　研修施設

①　研修棟および研修生用便所棟

既存施設の講堂の周辺とし西側を研修棟、北側を便所とする

５．３．２　施設概要

（１）　圃場整備

① 遮光施設-1（その他栽培試験用）

高さ5.0mを確保し、ココナッツ畑と類似の環境を創出する遮光施設とする。規模として20.0m×50.0m×2棟とされていたが、用地の圃場第８区画は実測の結果、隅切および法面により所要区画（50.0m×54.0m）の確保が不可であるので用地に適正な規模に縮小する。

② 遮光施設-2（野菜栽培試験用）

高さ3.5mパイプハウスを遮光率の異なる寒冷紗で覆いココナッツ畑と類似の環境を創出する。規模として7.2m×50m×6棟とされていたが、用地の圃場第１３区画も上記と同様の理由により所要区画（52.0m×54.0m）の確保が不可であるので用地に適正な規模に縮小する。

（２） 農業実習施設

① ワークショップ

雨天作業場、実習室、農業機材倉庫、農業資器材倉庫を備え床面積440㎡程度とする。実習室以外はグリルブロックまたは金網張りの開放的なものとする。

② 野外乾燥場

ワークショップの南側に1,350㎡程度をコンクリートおよびモルタルにて舗装し野外乾燥場とする。

③ 実験棟

栽培実験、栽培調査および水管理実験のために３室の実験室を設ける。基本計画で付設されていた便所を既存の農場事務所内の便所を利用することとして削除し、圃場内に設置する。便所を設置する位置は既存の農業作業小屋の西側の空地をあてる。

④ 車庫

既存の車庫を延長した形状の増設とする。

（３） 研修施設

① 研修棟

研修管理部門として研修管理室、講師控室、準備室、資材室、湯沸室、職員用便所を設け、学習施設として大講義室、小講義室、図書室、視聴覚室を設ける。基本計画は管理

部門と学習施設を既存の講堂の西側および北側に別棟として配置され、機能の分散、施設相互の圧迫感および通風の妨げが問題と考えられる。機能の集約と動線の整理を考慮し独立した１棟として計画することが建築的にも望ましく、経済的であることをふまえて１棟に集約する。施設内部は可能な限り小規模の区画を作らない方針とし、小講義室と図書室を併合して１室とし、また講師控室は研修管理室に併合することとした。教材作成に使用される準備室はその機能から視聴覚室に隣接して配置する。付設される湯沸室および職員用便所は必要最小限の規模の計画とする。機能を集約し施設利用目的の変化に容易に対応可能とするフレキシビリティを保たせた平面計画とする。施設の位置は既存の講堂の西側とし講堂へのアクセスが容易なことおよび床レベルを講堂の床と同じレベルとすることを条件とする。

② 研修生用便所

男女別とし、男子は大便器×１、小便器×３、シャワー×１、女子用は大便器×３、シャワー×１を備えた規模とする。施設の位置は既存の講堂の北側とし、研修生の利用が容易なことをふまえる。

5．3．3　既存施設の改修

既存施設の改修はスリ・ランカ国側の負担工事であることから、講堂の小屋組の老朽度に関して技術的な進言を行ったが、改修の内容に関してスリ・ランカ国側で決定し、それにかかる数量調書(B.O.Q)も作成され提出されている。スリ・ランカ国側が決定をした改修の概要は下記のとおりである。

（1） 本館

① 屋根

瓦葺の部分は50%の瓦、たる木、瓦桟を取替え、アスベストスレート波板葺きの部分は破損部分の取替え。

② 天井

廊下、ベランダ、食堂および厨房に吊天井を設け、軒裏はアスベスト平板を打上げる。

③ 内外壁

内外壁のプラスター面の必要と認められる部分を補修し全面的に再塗装を行う。天井も

全面的に再塗装を行う。

④ 建具

既存のドアーおよび窓の約20%を取り替える。

⑤ 床

レンガ舗装上の仕上げモルタルの破損部分の舗装。

厨房および食品庫の床を全面的にカラーモルタル仕上げを行う。

⑥ シャワー室

シャワー室の床および壁をセラミックタイル貼りにて仕上げる。

⑦ 樋

角型PVC軒樋およびPVC竪樋を取り付ける。

⑨ 厨房（上記にないもの）

調理・配膳台（甲板ーセラミックタイル貼り、下部戸棚付）の新設し、調理炉の上部煙突を、排気効率の向上を図り高くする。

⑩ 給排水衛生設備

シャワー室の老朽化した洗面器を取替える。

厨房の既存の流し台をステンレススチール製の流し台に取り替える。浄化槽および浸透槽を取替える。

⑪ 電気設備

適切な数量の天井扇、照明器具（蛍光燈）の配置を全館にわたり行うと共に配線も引き直す。

上記により増大した容量に基づく、サーキットブレーカー、分電盤、メインスイッチの設置。

（2） 講堂

小屋組を含む屋根の全てと窓・ドアーの開口部の全面的な取替える大規模な改修を計画している。

① 解体撤去

・既存の本造トラスと小屋組を含む屋根を全て解体撤去する。

・建物の外周部のレンガ積柱を基礎を含めて全て解体撤去する。

・新設柱の位置のモルタル仕上げのレンガ舗装の解体撤去。

・内外壁のプラスターおよび床モルタルの損傷部分をハツリ取り撤去する。

・木製の窓サッシュおよびドアーを枠共全て解体撤去する。

・開口部の熔接金網張りおよび熔接金網張りのドアーを枠共全て解体撤去する。

② 躯体

外周部に新規の屋根を支持する基礎、柱、梁を鉄筋コンクリートで構築する。

③ 屋根

鉄骨製トラスを架けアスベストスレート波板葺きの屋根とする。

④ 窓および出入口

木製のガラス窓、フレームドアーおよびフラッシュドアーを取付ける

⑤ 壁

一部のレンガ積の壁積み直し、内部の必要部分のプラスター補修

外壁および柱の全面的なプラスター仕上げ。

⑥ 床

カラーセメントモルタル仕上げの補修。

⑦ 犬走り

雨水排水溝付犬走りの設置。

⑧ 天井および軒裏

講堂内および外周廊下にアスベストボードの天井を吊る。軒裏もアスベストボードを打上げとする。

⑨ 樋

軒樋および竪樋を取付ける。

⑩ 塗装

内外壁面および天井・軒裏は全て塗装する。

⑪ 電気設備

・コンセント、照明器具、天井扇および所要の配線の新設

・60アンペアのメインスイッチおよびマグネットサーキットブレーカーの設置

第 6 章

実 施 設 計

第６章　実施設計

６．１ 設計方針

６．１．１　基本方針

実施設計対象の諸施設は、「モデルインフラ整備事業」により整備、増設、改修が実施されるものであり、プロジェクトの運営及びその成果に及ぼす影響の大なることをふまえ、その運営に必要・不可欠の機能を備え効果的且つ最適な施設の設計は下記を充分に配慮したものとする。

① 各施設のサイトの環境に調和した設計を行う。

② 現地レベルの施設を計画すると共に可能な限りローコスト化を図る。

③ 省エネルギーおよびランニングコストの低減化に努める。

④ 施設の耐久性と維持管理の容易性を充分に考慮する。

６．１．２　自然条件に関する方針

スリ・ランカ国は熱帯気候帯に属しており、年間を通じて気温が高く、温度変化が少ない。気温と降雨はモンスーン風によって支配されている。ガンパハ県はWet Zoneに属しており、年間2,000～2,600mmの降雨がある。降雨は年２回のモンスーンに分かれて集中し、年間降雨量の約45%が９～11月に、また約30%が４～６月に降っている。ガンパハ県の年間平均気温は、23.9～31.5℃で、12月～１月が低く、３月～４月が高い。湿度は60～95%であり雨期に高くなる。1993年度のガンパハ県の気象データーを表６．１に示す。スリ・ランカ国に地震はなく、それに関する規制はない。施設の設計は、上記の高温多湿及び多量の降雨に対して充分な配慮をし、その対応がなされたものとする。

表６．１　ガンパハ県の気象（Katunayake　測候所）

気　温	℃	降雨量	mm
最高気温	36.3　（２月）	年間降雨量	2,033.4
月間平均最高	33.3　（２月）	最多降雨量/月	378.0　(10月)
最低気温	16.6　（２月）	最多降雨量/日	98.2　（９月）
月間平均気温最低	21.3　（２月）	最小降雨量/月	8.2　（１月）
温　　度	%	降雨日数	日
最高湿度	95.0　(11月)	年間降雨日数	157
最低湿度	60.0　（１月）	最多降雨日数/月	25　(10月)
風 速	ｋｍ／ｈ	最小降雨日数/月	2　（１月）
最高風速	22.9　（１月）		

出典　：Climate and Data Division, Department of Meteorology.

６．１．３　建設事情に対する方針

スリ・ランカ国には建設公社・公団と民間建設企業とあるが、大規模の建設工事を受注するには十分な能力を備えているとは言えない。スリ・ランカ国における労務者の調達は数的に豊富であり容易であるが、その大部分は未熟練工である。各種の専門職能工が少なく技術レベルも低く、熟練工の確保は容易でない。

建設資材の現地産品及び現地調達が容易な資材としては、セメント、砂、砕石、鉄筋、レンガ、コンクリートブロック、セラミックタイル、テラゾーンブロック、屋根瓦、アスベストスレートの波板・平板、ペイント等が主たる品目である。また設備資材としては低圧配線用電線、電話配線用ケーブル、PVCパイプ、ヒューム管、衛生陶器及び付属品等があるが輸入品を除くと選択の範囲が極めて狭い。

建築関連法規として　Planning and Building Regulation　および Standard Specification Buildings　等があるかSri Lanka Standard (SLS)または British Standard (BS)が機能している。

また建築工事の標準仕様書として Institute for Construction Training and Development (ICTAD) の発行の下記がある。

建築工事	Building Works (SCA / 4 Vol. Ⅰ)
衛生設備	Sanitary Installation (SCA / 4 Vol. Ⅱ)
給排水設備	Water Supply, Sewerage & Storm Drainage (SCA / 3 / 2)
電気及び機械設備	Electrical and Mechanical Works (SCA / 8)

現地の規模の大きい建物は柱・梁を鉄筋コンクリートで構築し、張壁をレンガ積み両面モルタル塗とし、屋根は木造トラスの小屋組に瓦またはアスベストスレート波板葺である。しかし最近は良質の木材の入手が容易でなく、また高価となりつつあることから鉄骨トラスに移行し始めている。屋根の形状は寄棟型が過半を占めている。欧州系の植民地であった影響があり壁にある窓は比較的小さい。

建築資材は全て現地で調達可能なものの活用と、構法にかかる現地レベルを把握し、仕様は ICTAD の標準仕様書に準拠することを設計の前提とする。

6．1．4　設備設計に関する方針

（1）　電気設備

電力の供給は各施設最寄りの送電線より低圧(240V)受電とし、各施設毎にＷＨメーターを設置する。施設内の電力使用料の低減化を図ることに配慮し、照明器具およびコンセント設備が過剰とならぬよう注意する。照明器具の配置は各室の用途・目的を踏まえて設定し、講義室、研修管理室等は机上２００ルックス程度の照度とするが、その他は必要最低限の照度とする。講義室をのぞき、全般的に天井照明による照度を低く押さえ、必要な箇所でスッポットライトの併用で対応することを考慮する。

（2）　給排水・衛生設備

給排水の配管系統の維持管理が容易なことに配慮した設計とし、機器材は全て現地製品を使用することを原則とする。給水は最寄りに敷設されている給水管より分岐配管により受水する。排水処理施設として浄化槽および浸透槽を各施設の周辺に設置する。汚水は浄化槽を経由して浸透槽に流入させるが雑排水は直接浸透槽に流入させる。

（3） 換気設備

空調機器を一切設置しないことから、室内の通風換気に関して十分な配慮が必要である。建築計画で良好な通風を考慮した窓等の開口を配置するが、その補完設備として天井扇を、必要と判断される各室に、その機能を踏まえた適切な台数を設置する。

6.1.5 工期に関する方針

プロジェクトの運営の進展と連繋して、実施設計の対象施設に対する施工期間は限定されていることをふまえ、実施設計において指定工期内で完成することを前提として、使用材料の選定・構法にかかる検討を十分に行うと共に施工期間内の降雨に対して配慮する。

6.2 設計条件

上記の設計方針をふまえて設計条件を以下のように定める。

6.2.1 ローコスト化

現地において最も一般的な材料、構法を採用することは当然のこととして、鉄筋コンクリート造の基礎、柱、梁等の構造体の断面を現地レベルに準じたものとし、コンクリート及び鉄筋量を必要最小限に留める。構造体に現地における既製品のプレストレスコンクリート(PC)材の採用も検討する。

屋根葺材を瓦でなくアスベストスレート波板とし、小屋組に対する荷重の軽量化により建設費の軽減を図る。

6.2.2 気象条件の対応

高湿・多湿の環境における室内の不快度を軽減化するため、窓の開口面積を大きくし、可能な限り通風を良くし、室内空気の換気効率の向上を図る。直射日光の遮断を図るため、軒の出を大きくすると共に外壁は熱貫流抵抗の大きい材料を採用する。

現地施設の屋根の形状に多く見受けられる寄棟型は小屋裏の換気が行われないことから、小屋裏に高温化した空気が滞流する欠点がある。その欠点を排除する為屋根の形状を切妻型とし、妻壁及び軒裏に換気口を設け、小屋裏の換気を容易にする。

6.2.3　省エネルギー化

窓の開口面積を大きくすることにより採光効率を向上させ、人工照明の使用を抑制する。

一般の照明は用途に応じた必要最小限に留め、全般的な照度を必要しない場合はスポット照明を併用することにより機能を確保する。また照明器具に対するスイッチ系統を細分化し経済的な利用に対応可能とする。

6.2.4　維持管理の容易化

施設の耐久性をふまえ、またメンテナンスフリーを目標とする資材の選択に留意すると共に、材料および工種を集約化して単純化に努め維持管理の容易を図る。

6．3 設計基準

各施設規模を策定するにあたり、施設を構成する各室の面積を下記の通り設定した。

6．3．1　圃場整備

施　設　名	計画面積	根　　拠
遮光施設－1 （その他栽培試験用）	1,716.0 ㎡	20m×50m×2棟(2,000.0 ㎡)の計画であったが用地の広さに適正な規模を縮小し、19.5m×44m×2棟とした
遮光施設－2 （野菜栽培試験用）	1,848.0 ㎡	7.2m×50m×6棟(2,160.0 ㎡)の計画であったが用地の広さに適正な規模に縮小し7.0m×44m×6棟とした

6．3．2　農業実習施設

（1）　ワークショップおよび野外乾燥場

室　名	設定基準	計画面積	根　　拠
雨天作業場	9.0m×3.0m×7ｽﾊﾟﾝ	189.0 ㎡	20.0m×10.0m(200.0 ㎡)の計画であったが、3.0m×9.0mのﾕﾆｯﾄの既製PC構造の採用による変更
実習室	9.0m×3.0m×3ｽﾊﾟﾝ	81.0 ㎡	8.0m×10.0m(80.0 ㎡)の計画を既製PC構造の採用による変更
機材倉庫	9.0m×3.0m×3ｽﾊﾟﾝ	81.0 ㎡	8.0m×10.0m(80.0 ㎡)の計画を既製PC構造の採用による変更
資材倉庫	9.0m×3.0m×2ｽﾊﾟﾝ	54.0 ㎡	8.0m×10.0m(80.0 ㎡)の計画を既製PC構造の採用による変更
野外乾燥場		1,350.0 ㎡	ｴﾌﾟﾛﾝを含め45.0m×30.0mの計画面積を確保

（2）　便所棟

室　名	設定基準	計画面積	根　　拠
男子便所	最小限の設備	9.24 ㎡	洗面×1、大便器×1、小便器×1
女子便所	最小限の設備	7.48 ㎡	洗面×1、大便器×1

（3） 実験棟

室　名	設定基準	計画面積	根　　拠
栽培実験室	中央実験台×2	60.0 ㎡	強酸性土壌、高い土壌硬度、熱帯で消耗の激しい土壌有機物の補給技術、土壌肥沃度の向上技術、間作物の栄養条件及び栽培管理技術の改善と効果にかかる分析・確認を行う。
栽培調査室	中央調査台×2	60.0 ㎡	上記の各項目に関連して間作作物体の育成状況、収量、品質、病害虫などを確認するため植物体の解体、測定、観察、調査等を行う
水管理実験室	中央実験台×2	60.0 ㎡	土壌保水力の向上及び土壌水分管理技術を組み立てるための、土壌種類別の保水力の特性、改善対策による土壌保水力の向上経過のサンプル調査・分析を行う。

（4） 車庫

	設定基準	計画面積	根　　拠
車庫		45.0 ㎡	5.0m×9.0m の既存車庫と同規模の増築

6.3.3　研修施設

（1）　研修棟

室　名	設定基準	計画面積	根　　拠
講義室（大）	3.0 ㎡×30 名	90.0 ㎡	通常 30 名の会議室、合同研修等に使用する、一般教室のばあいは 2.0 ㎡/人を基準として計画するが、対面討議等に対するフリーな座席配置、30 人以上の使用等多目的な要素を加味し 3.0 ㎡/人を基準とする。
講義室（1）＋ 図書室	3.0 ㎡×10 名 3.0 ㎡×10 名	31.5 ㎡ 31.5 ㎡ 計 63.0 ㎡	10 名の研修に使用するが討議が中心となるのでロの字型に座席を配置することから 3.0 ㎡/人を基準とする。 図書室は 10 名程度の閲覧席を設ける。 （閲覧席の面積は 2.0～3.0 ㎡/人である） 小区画の両室を併合し、中型の講義室としての使用も可能とする
視聴覚室	2.0 ㎡×30 名	63.0 ㎡	視聴覚教材を用いた研修に使用する、10～30 名を対象と考える。
準備室		22.5 ㎡	コピー機、ビデオ編集機器を設置し教材作成を行う
倉庫		22.5 ㎡	主として視聴覚の機械及び教材の保管庫とする。
研修管理室		135.0 ㎡	研修実施に関する専門家と C/P の協議、研修対象者との個別協議、外来講師の応接等プロジェクトの運営管理に関する多目的スペースである
湯沸室		9.4 ㎡	流し、調理台
男子便所		6.8 ㎡	洗面×1、大便器×1、小便器×1
女子便所		5.4 ㎡	洗面×1、大便器×1

（2）　研修生用便所

室　名	設定基準	計画面積	根　　拠
男子便所		21.6 ㎡	洗面×2、大便器×1、小便器×3、ｼｬﾜｰ×1
女子便所		21.6 ㎡	洗面×2、大便器×3、ｼｬﾜｰ×1

6.4 実施設計

6.4.1 圃場整備

（1） 遮光施設－1（その他栽培試験用）

所要の高さ5mの空間を創出するため、柱および寒冷紗幕受けの頭繋ぎ材を設ける。柱はプレキャストコンクリート(PC)製の電話柱を転用し、頭繋ぎ材は軽量リップチャンネルおよびPC構造用の規格品のタイロッドで構成する。

上記のエレメントにより1ユニットの規模を4.0m×6.45mと設定し1棟を19.5m×44m(858㎡)の規模とする。

（2） 遮光施設－2（野菜栽培試験用）

日本製のパイプハウスにて1棟を19.5m×44m(308㎡)の規模とする。

6.4.2 農業実習施設

（1） ワークショップ

柱、梁、母屋を現地既製品の9.0mスパン用PC構造による設計とする。このPC構造は桁行方向は3.0mスパンの倍数であるので建物の規模を9.0m×45.0mとした。45.0mの長さはサイトの規模に対して許容される最大限の長さである。従って、床面積は405㎡となる。この建物は圃場内の実習施設であることから可能な限りのローコスト化を図る。壁はコンクリートブロック（厚150mm）の化粧積みとし、実習室内のみ吊天井および壁のペイント仕上げをする。実習室の開口部はガラス窓を取付けるがその他の開口部は全て熔接金網張りとする。照明およびコンセント設備は必要最小限とし、天井扇は実習室のみ取付ける。給水設備として屋外散水栓を2ヶ所設ける。屋外乾燥場のエプロン部分(450㎡)はトラクター等の乗り入れを考慮して、熔接金網で補強したコンクリート打ちの床とするがその他は地下をレンガ敷きとしたモルタル塗床とする。

（2） 便所棟

躯体はコンクリートブロック造とし厚200mmのブロック化粧積みとする。屋根はアスベストスレート波板葺、片流れの型式とする。内部は清潔感の維持、掃除の容易性を考慮し、床および腰壁部分をセラミックタイル貼りとし、その他はペイント仕上げとする。

（3） 実験棟

実験室を３室備えた施設であるが、実験室内の所要設備は３室共同様の内容を備える。但し、中央実験台、調査台、流し台等は別途で供与されることから給排水、電力供給にかかる接続準備を整えておく。柱および梁は鉄筋コンクリート造とし、帳壁はレンガ積みモルタルプラスター塗りとする。屋根は小屋組のトラス(@2,700mm)および母屋を鉄骨、たる木および桟木を木材とし、アスベストスレート波板葺きとする。アスベストスレート波板葺の下に断熱材としてアルミフォイルシートを敷き込む。主構造のグリッドは平面計画における所要室の構成に最も適切な 7.5m×4.0m とし桁行方向を６スパンで 24.0m とする。室内は全て吊天井を設け、開放廊下の天井および軒裏は、たる木下端にアスベストスレート平板を打上げる。渡り廊下は天井仕上げをしない。実験室の床は、耐薬品性能と清潔の維持が容易であることを考慮し、エポキシ系樹脂塗り仕上げとする。照明器具、実験機材用コンセントおよび天井扇は適切は台数を据付ける。照明器具は机上 200 ルックス以上を基準として所要数量を算出する。

（4） 車庫

既存と同規模の増築であり、構法は全て既存に準拠する。柱および壁の頭繋ぎ梁は鉄筋コンクリート造とし、壁の腰部分はコンクリートブロック(厚 100mm)、上部はグリルブロックの化粧積みとする。小屋組は鉄骨造とし母屋受の梁は溝型鋼、母屋は軽量リップチャンネルとする。鉄筋コンクリートの躯体は既存とは独立した形状とするが母屋は既存と接続し、アスベストスレート波板葺の屋根を一体の形状とする。

6.4.3 研修施設

（1） 研修棟

研修棟は学習および研修管理部門の諸室を備えることから、プロジェクトの本拠となることにも配慮し、建設費のコストコントロールは、施設の質の低下とならぬよう留意して行う。施設は、現状の地形を造成せずそのままの状態に仕上り床を既存講堂と同レベルとして配置する。地盤面の低い部分は、躯体の地中梁を擁壁として内側を埋め戻す。主要構造体は、鉄筋コンクリート造とし、帳壁はレンガ積みモルタルプラスター塗りとする。屋根は小屋組のトラス(@3,000mm)および母屋を鉄骨造とし、たる木および桟木を

木材としアスベストスレート波板葺きとする。

アスベストスレート波板の下に断熱材として、アルミフォイルシートを敷き込む。

主構造のグリッドは平面計画において所要室の構成に最も適切な 10.0m×4.5m として桁行方向 10 スパン 45.0m に便所部分の 3.5m を加え総長 48.5m とする。室内は全て吊天井を設け、開放廊下および軒裏はたる木下端にアスベストスレート平板を打ち上げる。渡り廊下は天井仕上げをしない。学習用諸室の機能的な連繋を考慮し、東の講堂側より講義室、視聴覚室の順に配し、視聴覚室に隣接し準備室・倉庫を配する。湯沸室・職員用便所は西端に配置する。各室内部の仕上げは、床：カラーモルタル金鏝仕上げ、壁：モルタルプラスター塗ペイント仕上げ、天井：ミネラルウール吸音板を取付けるとする。湯沸室内は流し台、カップボード等を据え付ける。照明器具、コンセントおよび天井扇は機能に応じて適切な台数を据え付ける。照明器具は机上 200 ルックス以上を基準として所要数量を算出する。湯沸室および便所には所要の給排水を付設する。

（2） 研修生用便所

主構造はレンガ造とし各コーナー部分を鉄筋コンクリートで補強する。屋根は木材のたる木および桟木にアスベストスレート波板葺きとする。レンガ積の壁は内外共モルタルプラスター塗りとするが、内部の腰壁および床はセラミックタイル貼りとする。天井はたる木下端にアスベストスレート平板を打上げる。

所要の給排水、衛生設備を配備する。

6.4.4 既存施設改修

スリ・ランカ国側より提出された各施設の改修にかかる数量調整書(B.O.Q)に基づき実施設計図書を作成する。床・壁の補修を要する箇所は現地にて監督官の指示により明示する。照明器具の台数は 40W 蛍光燈を 3.3 ㎡当たり 1 灯(200 ルックス以上) とする基準により所要台数を配置する。

６．５　実施設計図

LIST OF DRAWINGS

ARCHITECTURAL

A-00 -01 -01 --------- LIST OF DRAWINGS
A-01 -00 -01 --------- PRACTICE FACILITIES -- SITE PLAN
-01 -01 --------- SHADING FACILITY (FOR OTHER CROPS) -- FINISH SCHEDULES, FLOOR PLAN, ELEVATIONS & WALL SECTION
-02 -01 --------- WORKSHOP -- FLOOR PLAN, ROOF PLAN & CEILING PLAN
-02 --------- WORKSHOP -- ELEVATIONS & SECTIONS
-03 --------- WORKSHOP -- WALL SECTION & FINISH SCHEDULES
-04 -01 --------- LABORATORY -- FLOOR PLAN, ROOF PLAN & CEILING PLAN
-02 --------- LABORATORY -- ELEVATIONS, SECTION & FINISH SCHEDULES
-03 --------- LABORATORY -- WALL SECTION
A-02 -00 -01 --------- TRAINING OPERATION FACILITIES -- SITE PLAN
-01 -01 --------- TRAINING FACILITY -- FLOOR PLAN, ROOF PLAN & CEILING PLAN
-02 --------- TRAINING FACILITY -- ELEVATIONS, SECTIONS & FINISH SCHEDULES
-03 --------- TRAINING FACILITY -- WALL SECTION & FINISH SCHEDULES

PLUMBING WORK

P-01 -01 --------- PRACTICE FACILITIES SITE PLAN
-02 --------- WORKSHOP & LAVATORY (1) PLAN
-03 --------- LABORATORY PLAN
P-02 -01 --------- TRAINING OPERATION FACILITIES SITE PLAN
-02 --------- TRAINING FACILITY & LAVATORY (2) PLAN

ELECTRICAL & VENTILATING WORK

E&V-01 -01 --------- PRACTICE FACILITIES SITE PLAN
-02 --------- WORKSHOP & LAVATORY (1)
-03 --------- LABORATORY & GARAGE
E&V-02 -01 --------- TRAINING OPERATION FACILITIES SITE PLAN
-02 --------- TRAINING FACILITY & LAVATORY (2)

[RENOVATION]

ARCHITECTURAL

A-04 -00 -01 --------- ADMINISTRATION -- SITE PLAN
-01 -01 --------- ADMINISTRATION BLOCK -- FLOOR PLAN
-02 --------- ADMINISTRATION BLOCK -- ELEVATIONS, SECTION
-04 --------- ADMINISTRATION BLOCK -- CEILING PLAN
-02 -01 --------- CANTEEN & KITCHEN BLOCK -- FLOOR PLAN, ROOF PLAN, CEILING PLAN, ELEVATIONS & SECTION
-03 -01 --------- LECTURE HALL -- FLOOR PLAN, ELEVATIONS & SECTION
-03 --------- LECTURE HALL (EXISTING) -- FLOOR PLAN, ELEVATIONS & SECTION

PLUMBING WORK

P-03 -03 --------- RENOVATION OF ADMINISTRATION BLOCK
-04 --------- RENOVATION OF CANTEEN & KITCHEN BLOCK

ELECTRICAL &VENTILATING WORK

E&V-03 -01 RENOVATION OF ADMINISTRATION BLOCK
-02 RENOVATION OF CANTEEN & KITCHEN BLOCK
-03 RENOVATION OF LECTURE HALL

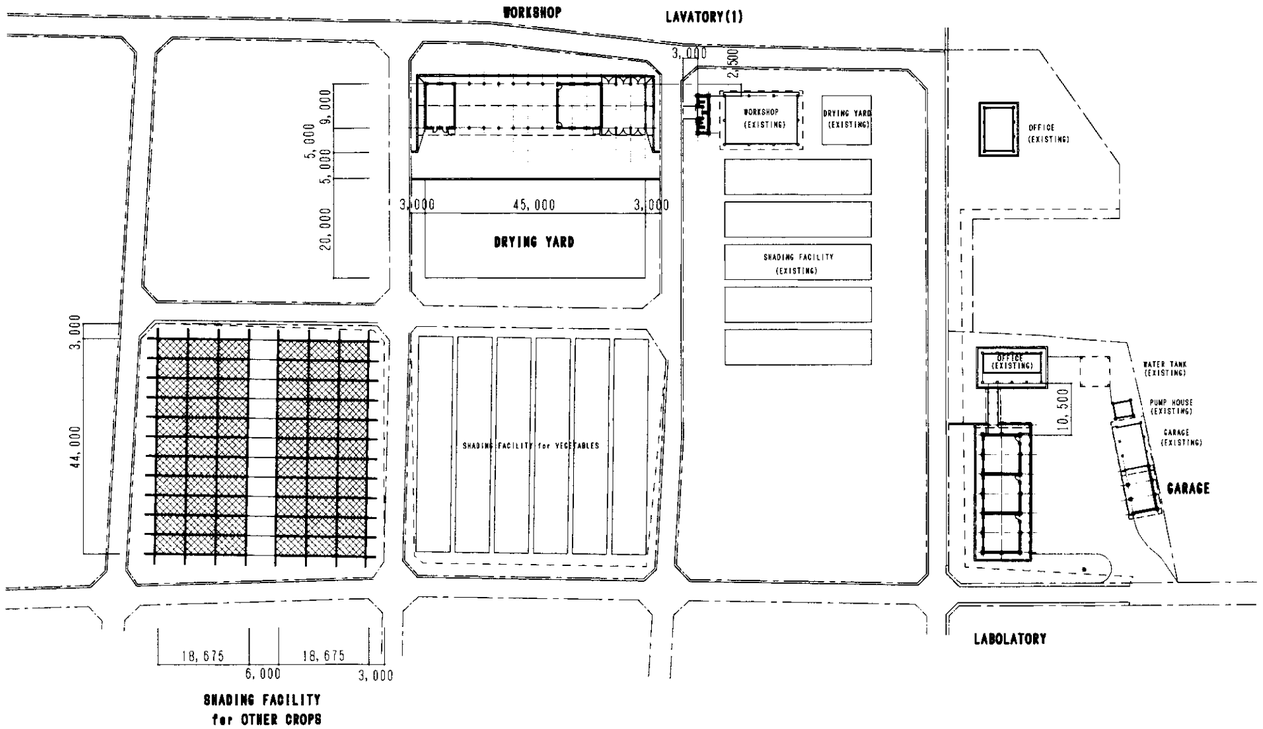
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

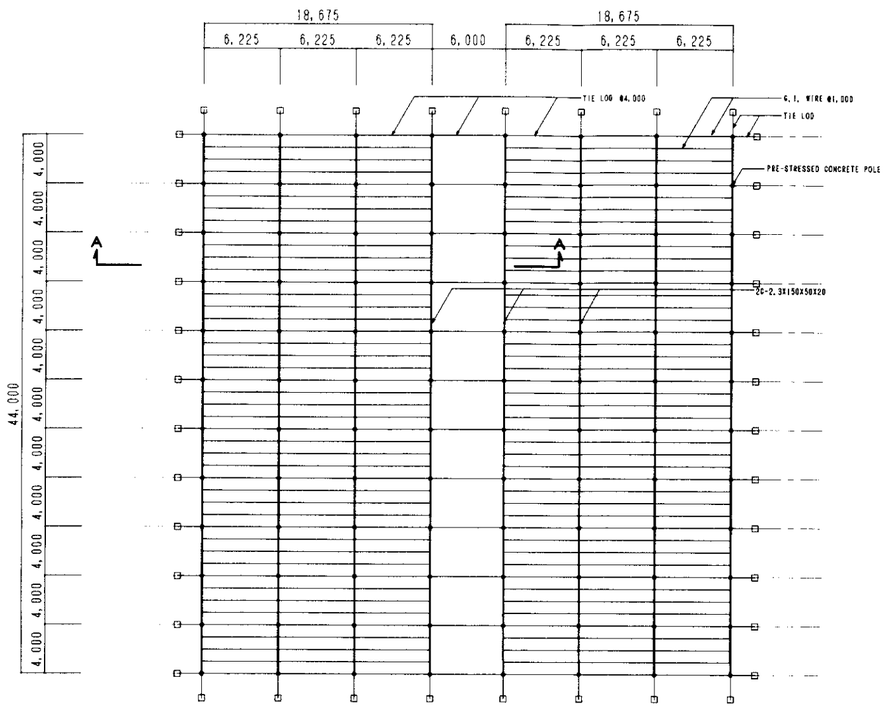
GENERAL DRAWINGS
LIST OF DRAWINGS

DATE: 29/APR./1996 | DRAW. NO. A-00-01-01

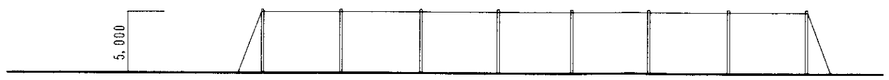
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



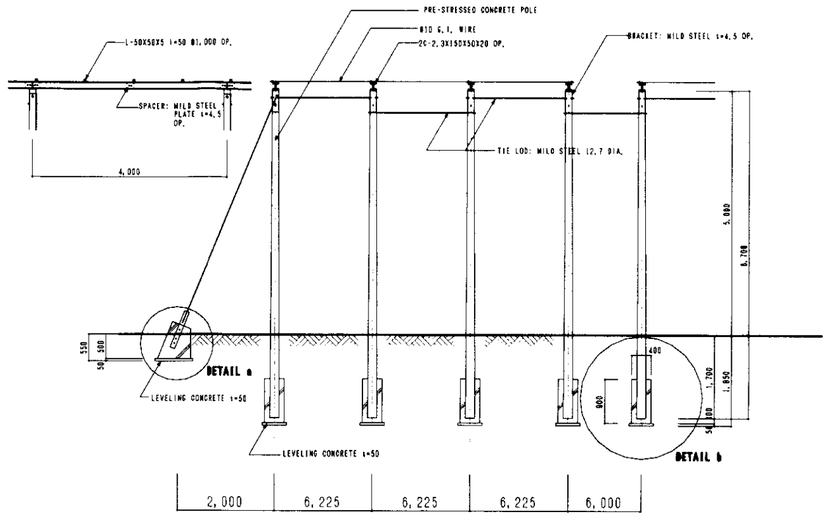
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA
PRACTICE FACILITIES SITE PLAN
DATE: 20/APR./1998 | DRAW. NO. A-01-00-01 | S=1:500
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



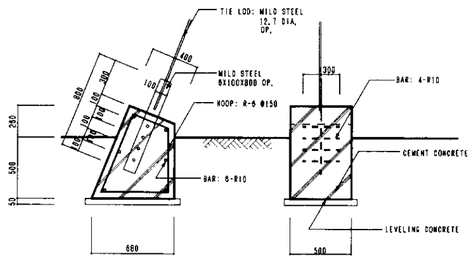
SHADING FACILITY FOR OTHER CROPS PLAN 1:200



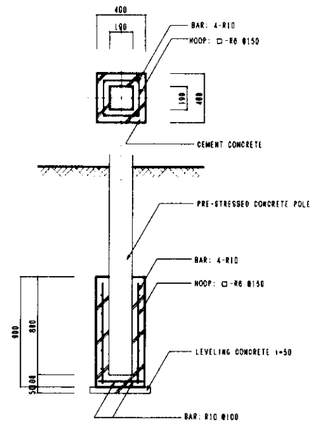
SHADING FACILITY FOR OTHER CROPS ELEVATION 1:200



A-A SECTION 1:50



DETAIL a 1:20



DETAIL b 1:20

EXTERIOR FINISH SCHEDULES A-01-01 SHADING FACILITY (FOR OTHER CROPS)	
COLUMN	PRESTRESSED CONCRETE
BEAM	MILD STEEL LIP CHANNEL 2L-2.3X150X50X20. OP.
BRACKET	MILD STEEL PLATE t=4.5mm. OP.
SPACER	MILD STEEL PLATE t=4.5mm. OP.
TIE ROD	MILD STEEL 12.7mm DIA. X6,588mm. OP.
WIRE	#10 G.I. WIRE

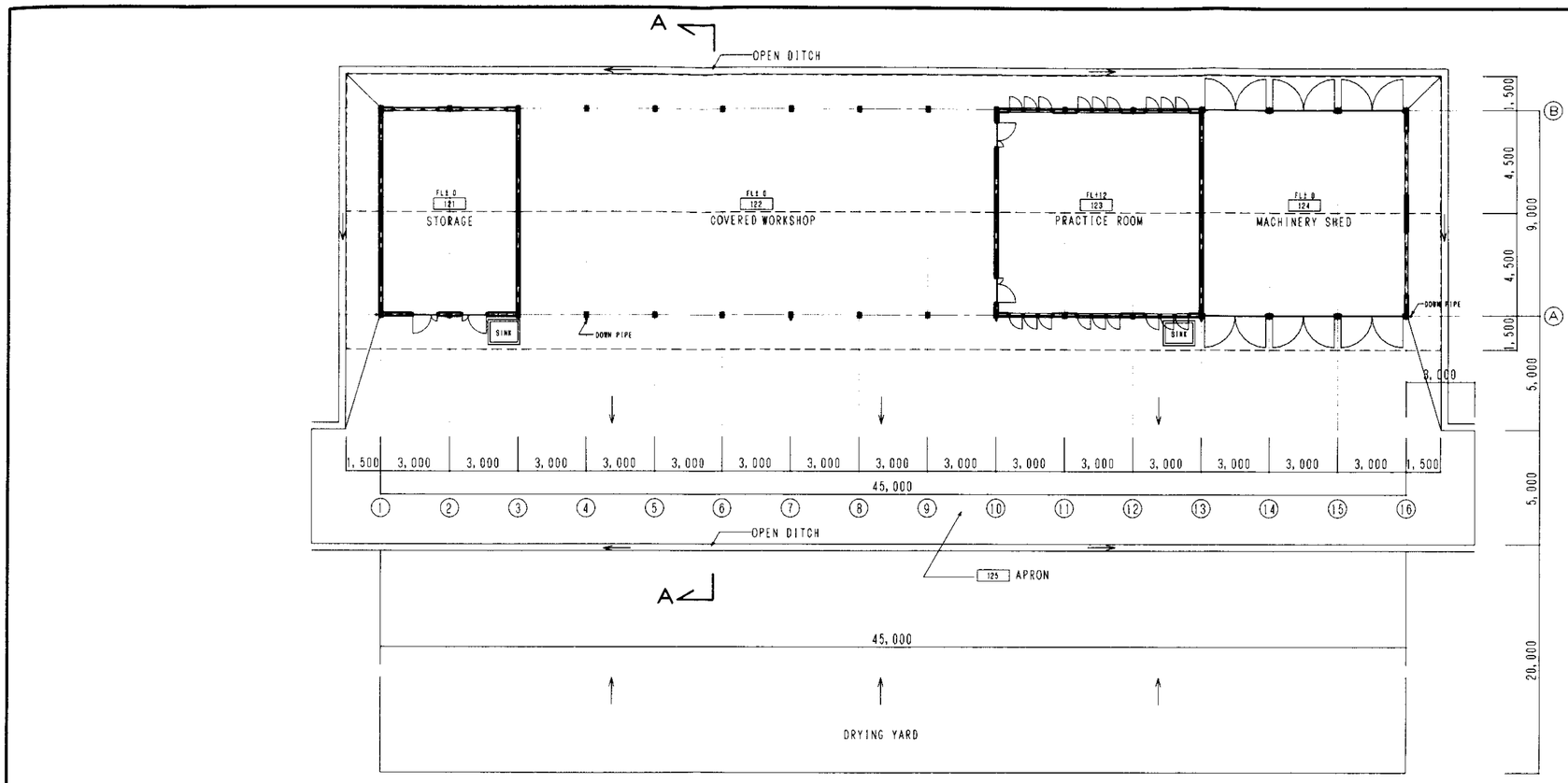
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

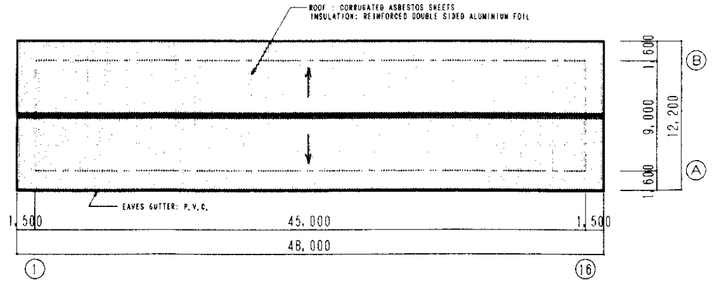
SHADING FACILITY (FOR OTHER CROPS) FINISH SCHEDULES, PLAN, ELEVATIONS, DETAILS

DATE: 29/APR./1996	DRAR. NO. A-01-01-01	S=1:200

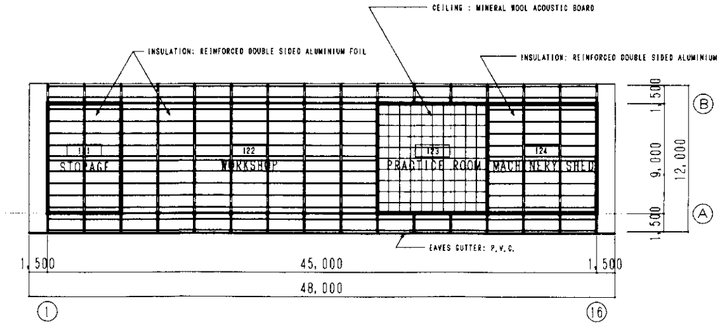
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



WORKSHOP PLAN 1:100



WORKSHOP ROOF PLAN 1:200



WORKSHOP CEILING PLAN 1:200

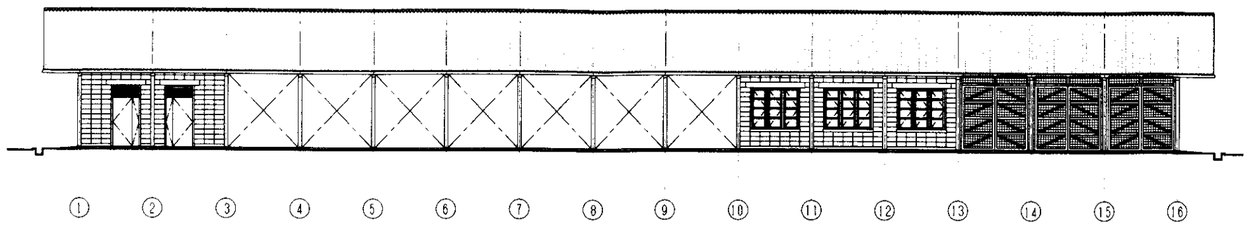
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

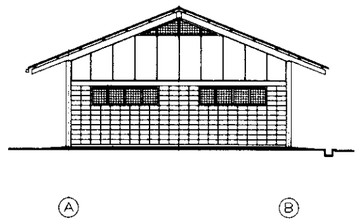
WORKSHOP
FINISH SCHEDULES/FLOOR, ROOF & CEILING PLAN

DATE: 28/MAR/1996	DRAW. NO. A-01-02-01	S=1:100,200

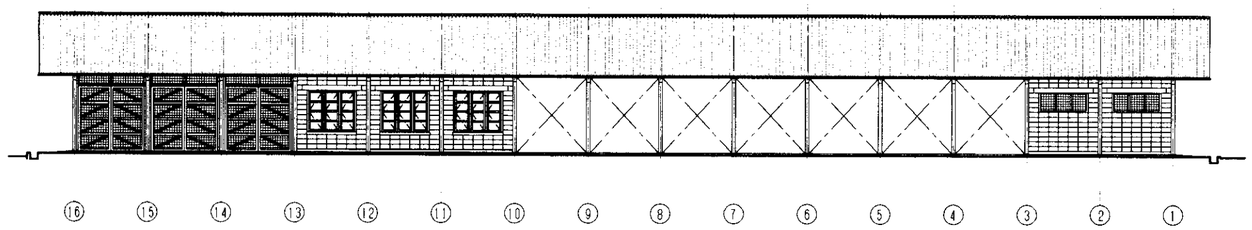
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



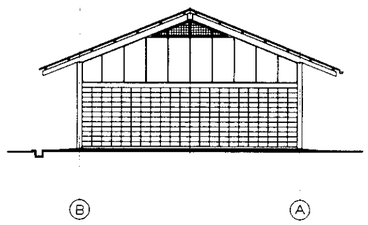
SOUTH SIDE ELEVATION 1:100



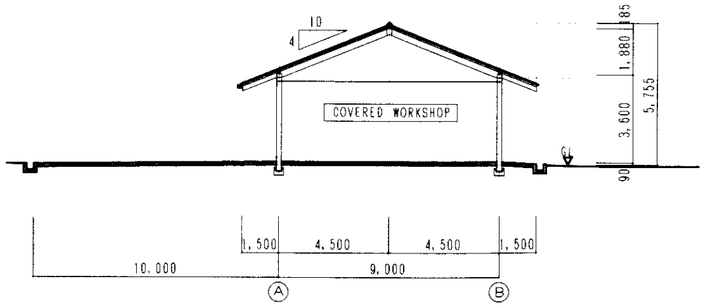
EAST SIDE ELEVATION 1:100



NORTH SIDE ELEVATION 1:100

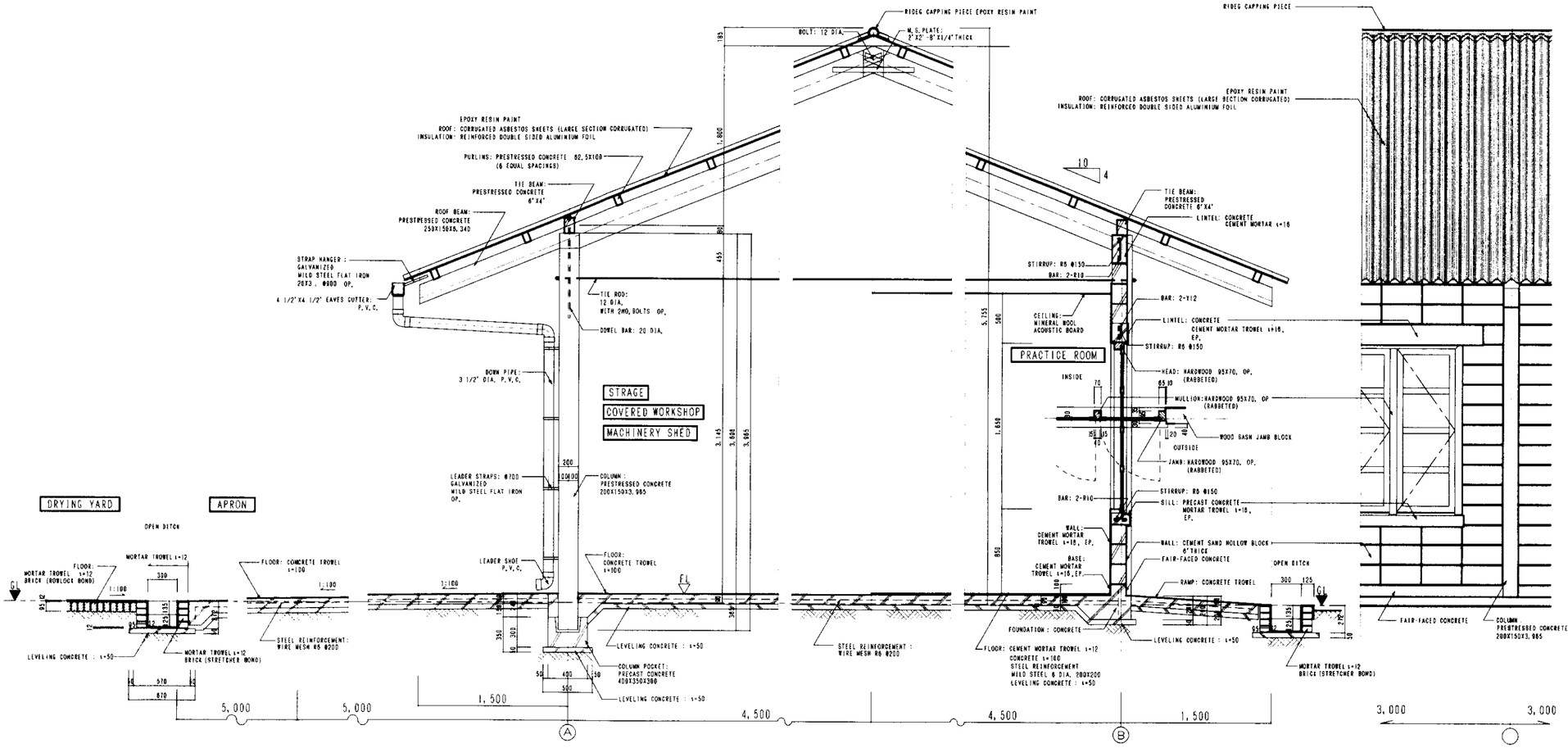


WEST SIDE ELEVATION 1:100



A－A SECTION 1:100

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
WORKSHOP ELEVATIONS, SECTIONS		
DATE: 28/MAR/1995	DRAW. NO. A-01-02-02	0=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



EXTERIOR FINISH SCHEDULES A-01-02 WORKSHOP	
ROOF	CORRUGATED ASBESTOS SHEET t=6 (LARGE SECTION CORRUGATED), INSULATION: REINFORCED DOUBLE SIDE ALUMINIUM FOIL
EAVES GUTTER	P.V.C. EAVES GUTTER 4 1/2" SQUARE FIXED WITH P.V.C. BRACKETS
RAIN LEADER	P.V.C. DOWN PIPES 3 1/2" DIA.
EXTERIOR WALL	CEMENT SAND HOLLOW BLOCK 6" THICK, FLAT ASBESTOS SHEET t=6, EP.
SASH & FRAME	HARDWOOD, OP.
WINDOW SILL, JAMB & LINTEL	CONCRETE, CEMENT MORTAR TROWEL t=16, EP.
RAMP	CONCRETE TROWEL
DRYING YARD	FLOOR: BRICK (TYPE-II, GRADE-I), CEMENT MORTAR TROWEL t=12

INTERIOR FINISH SCHEDULES A-01-02 WORKSHOP

RM No.	ROOM NAME	FLOOR	BASE OR WAINSCOT	H	WALL	CEILING	C.H.	RM No.	REMARKS
121	STORAGE	CONCRETE TROWEL	CEMENT MORTAR TROWEL t=16	100	CEMENT SAND HOLLOW BLOCK 6" THICK	—	—	121	BRICK SINK
122	COVERED WORKSHOP	CONCRETE TROWEL	CEMENT MORTAR TROWEL t=16	100	CEMENT SAND HOLLOW BLOCK 6" THICK	—	—	122	
123	PRACTICE ROOM	CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	123	BRICK SINK
124	MACHINERY ROOM	CONCRETE TROWEL	CEMENT MORTAR TROWEL t=16	100	CEMENT SAND HOLLOW BLOCK 6" THICK	—	—	124	
125	APRON	CONCRETE TROWEL	—	—	—	—	—	125	

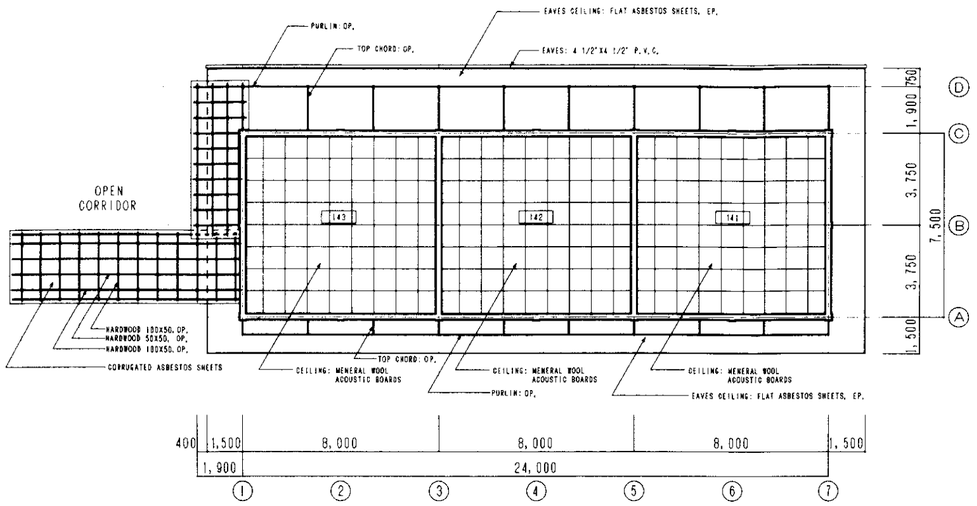
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

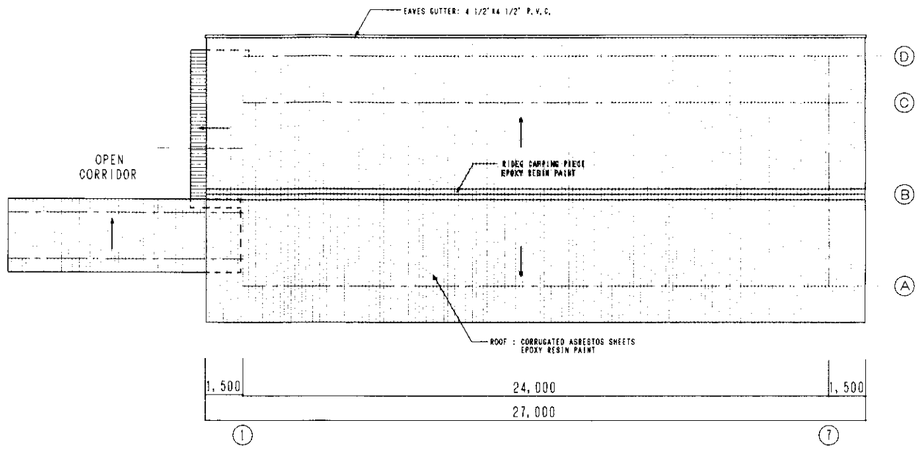
WORKSHOP
WALL SECTIONS, DETAILS

DATE: 28/MAR/1996 | DRAW. NO. A-01-02-03 | 0-1:20

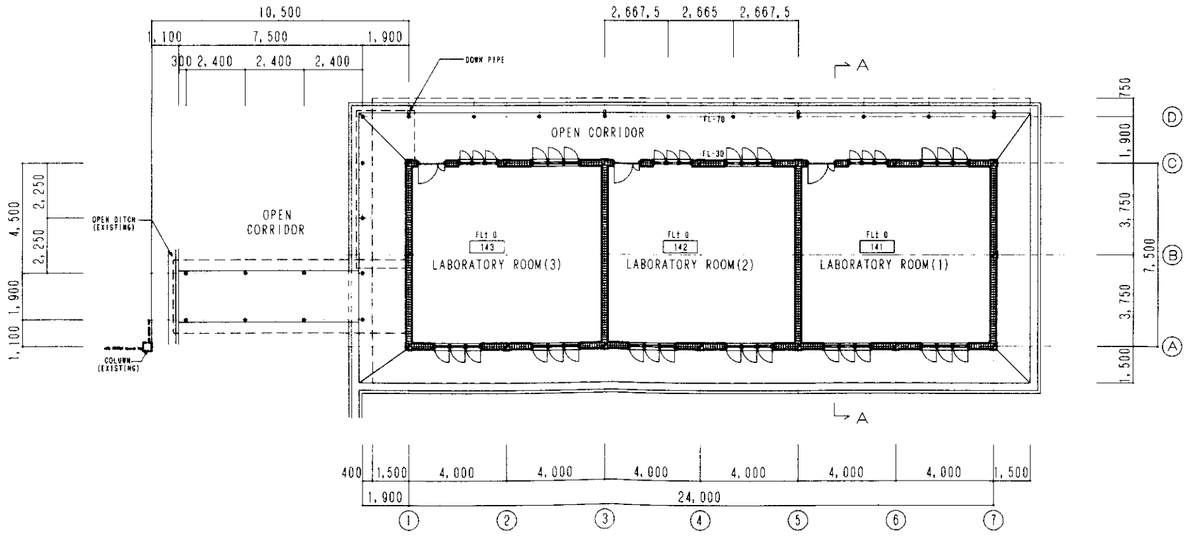
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



LABORATORY CEILING PLAN 1:100



LABORATORY ROOF PLAN 1:100



LABORATORY PLAN 1:100

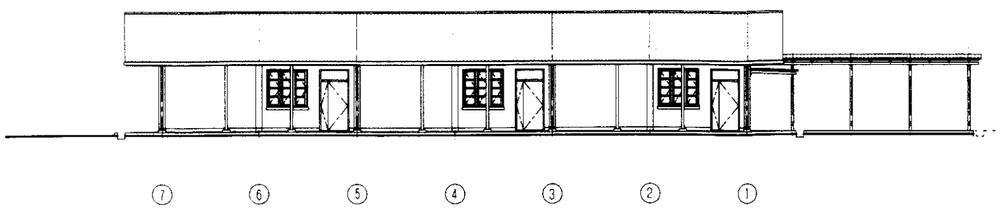
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

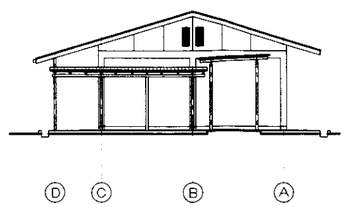
LABORATORY
FINISH SCHEDULES, FLOOR, ROOF & CEILING PLAN

DATE: 29/APR./1996	DRAW. NO. A-01-04-01	S=1:100

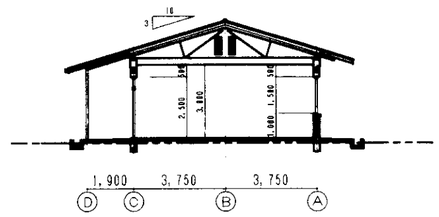
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



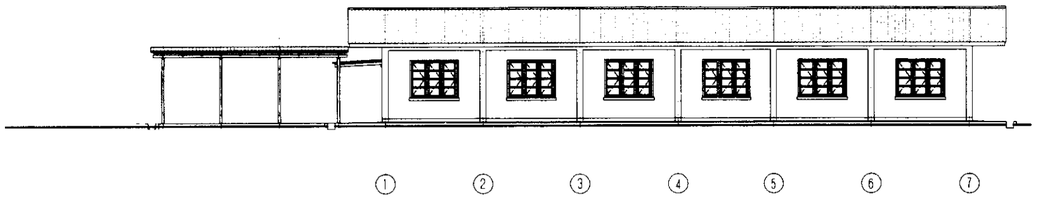
EAST SIDE ELEVATION 1:100



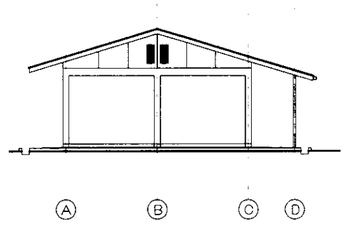
NORTH SIDE ELEVATION 1:100



A－A SECTION 1:100



WEST SIDE ELEVATION 1:100



SOUTH SIDE ELEVATION 1:100

EXTERIOR FINISH SCHEDULES A-01-04 LABORATORY	
ROOF	CORRUGATED ASBESTOS SHEET t=6 (LARGE SECTION CORRUGATED), EPOXY RESIN PAINT INSULATION: REINFORCED DOUBLE SIDE ALUMINIUM FOIL
FASCIA	HARDWOOD t=25mm, OP.
EAVES GUTTER	P.V.C. EAVES GUTTER 4 1/2" SQUARE FIXED WITH P.V.C. BRACKETS
RAIN LEADER	P.V.C. DOWN PIPES 3 1/2" DIA.
EAVES CEILING	FLAT ASBESTOS SHEET t=6, EP.
EXTERIOR WALL	BRICK (TYPE-II, GRADE-I) 9" THICK, CEMENT MORTAR TROWEL t=16, EP. FLAT ASBESTOS SHEET t=6, EP.
SASH & FRAME	HARDWOOD, OP.
WINDOW SILL, JAMB & LINTEL	CONCRETE, CEMENT MORTAR TROWEL t=16, EP.
RAMP	CONCRETE TROWEL
OPEN CORRIDOR	
ROOF	CORRUGATED ASBESTOS SHEET t=6 (LARGE SECTION CORRUGATED), EPOXY RESIN PAINT
EAVES GUTTER	P.V.C. EAVES GUTTER 4 1/2" SQUARE FIXED WITH P.V.C. BRACKETS
RAIN LEADER	P.V.C. DOWN PIPES 3 1/2" DIA.
COLUMN	MILD STEEL PIPE, OP.
FLOOR	CONCRETE TROWEL

INTERIOR FINISH SCHEDULES A-01-04 LABORATORY

RM No.	ROOM NAME	FLOOR	BASE OR WAINSCOT	H	WALL	CEILING	C.H.	RM No.	REMARKS
141	LABORATORY ROOM (1)	MORTAR TROWEL t=12 SYNTHETIC RESIN FLOOR COATING	MORTAR TROWEL t=12 SYNTHETIC RESIN FLOOR COATING	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	141	
142	LABORATORY ROOM (2)			100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	142	
143	LABORATORY ROOM (3)			100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	143	

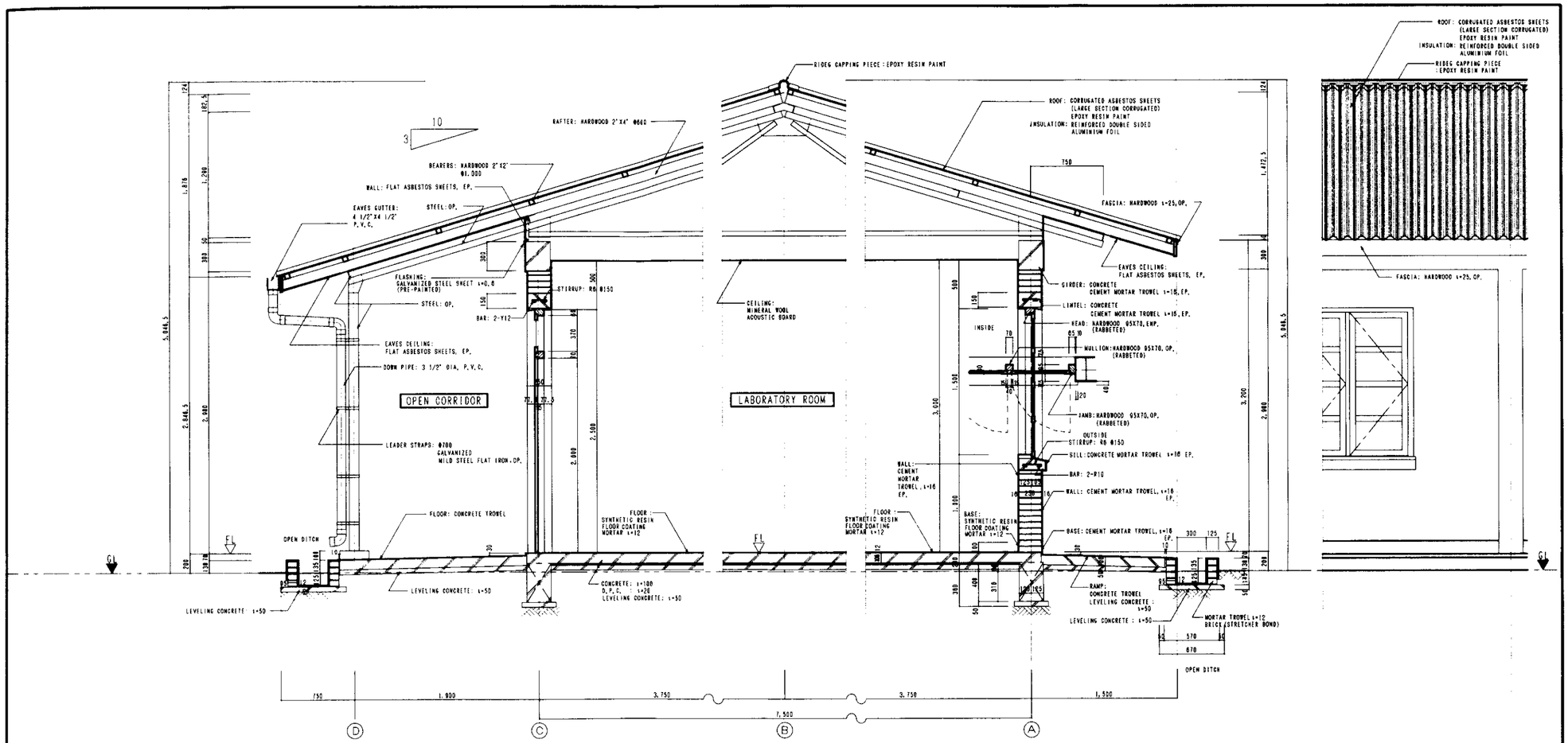
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

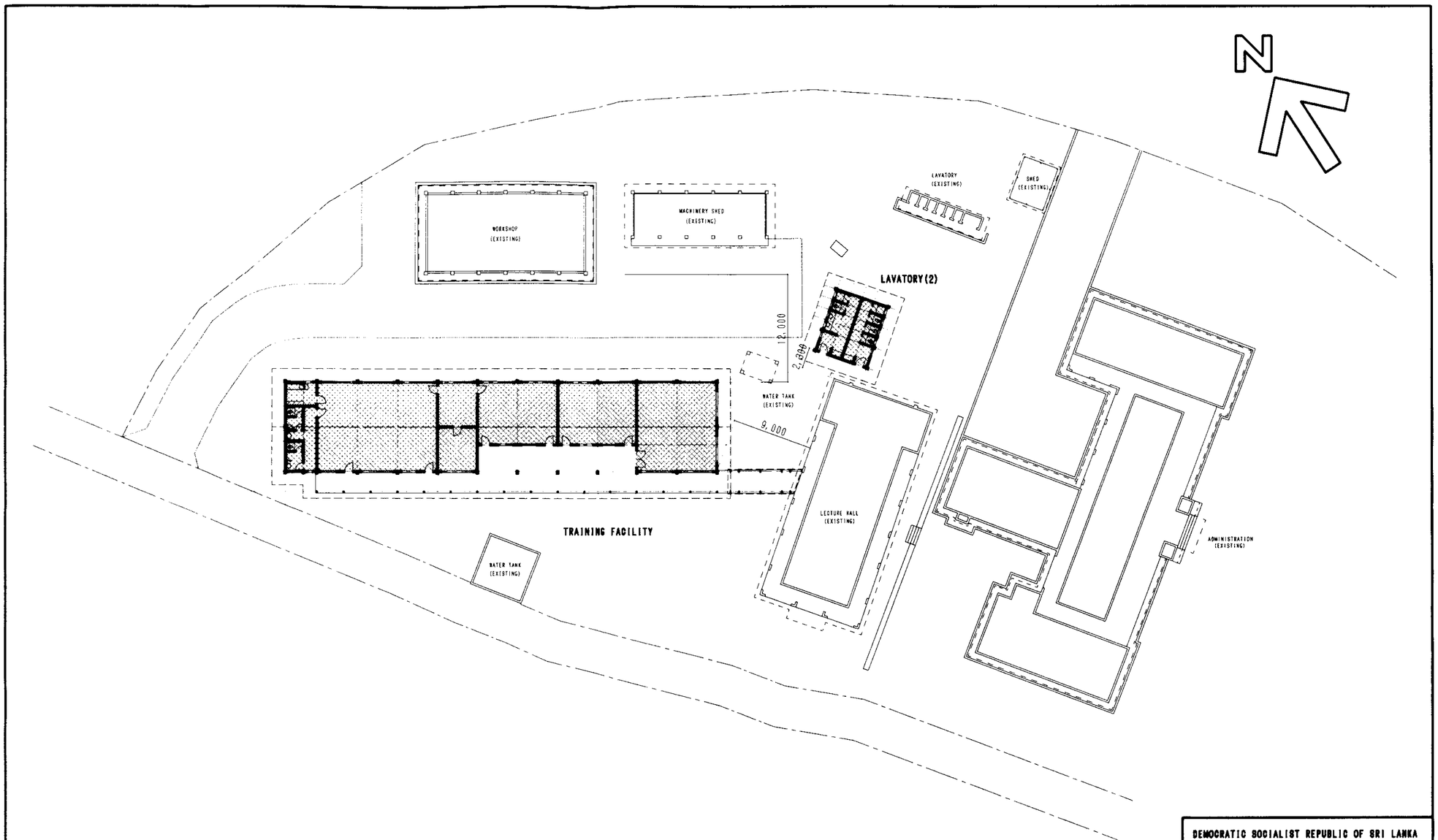
LABORATORY
ELEVATIONS, SECTIONS

DATE: 26/APR./1996	DRAW. NO. A-01-04-02	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
LABORATORY WALL SECTIONS, DETAILS, DOOR & WINDOW SCHEDULES		
DATE: 26/APR./1996	DRAE. NO. A-01-64-23	S=1: 25
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



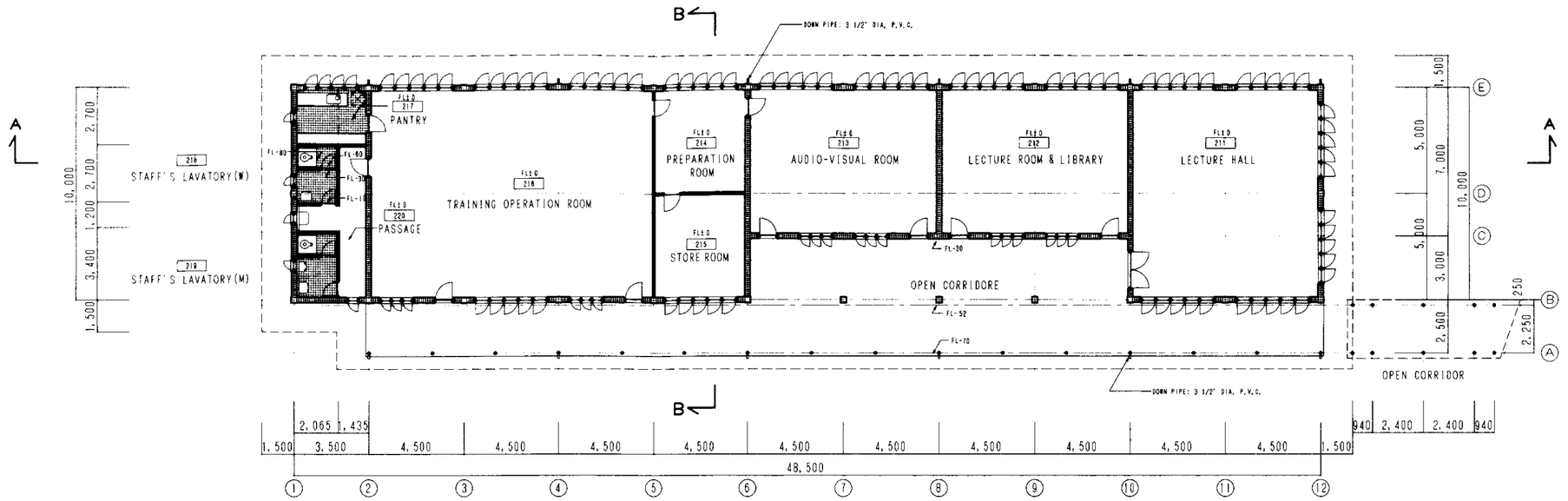
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

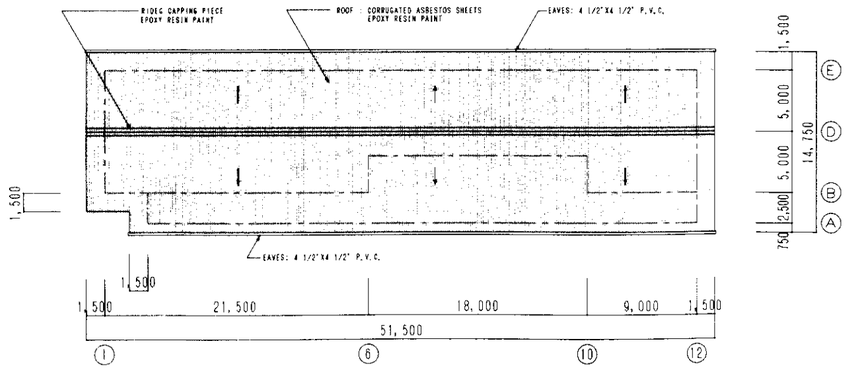
TRAINING OPERATION FACILITIES
SITE PLAN

DATE: 29/APR./1996	DRAW. NO. A-02-00-01	S=1:200

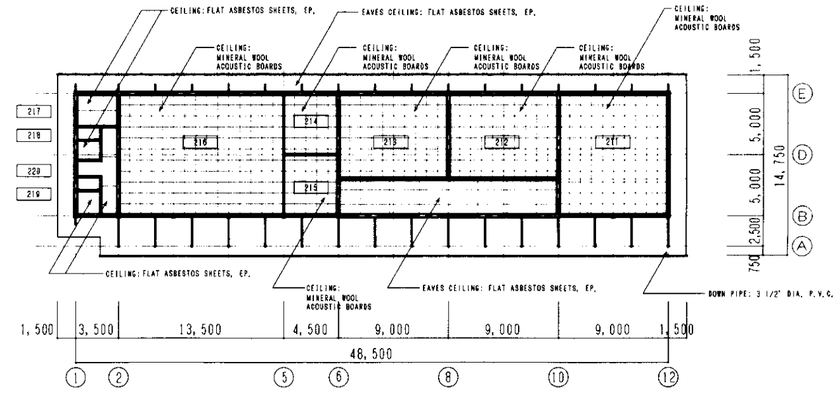
JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



TRAINING FACILITY PLAN 1:100

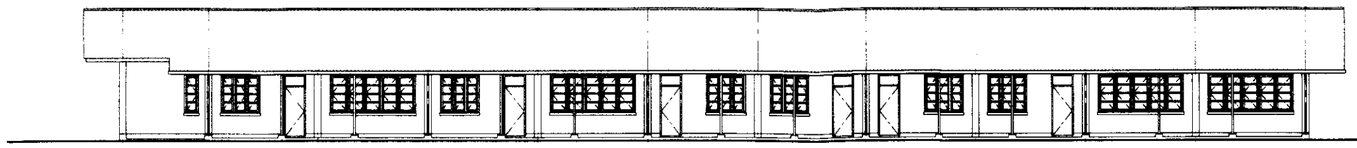


ROOF PLAN 1:100



CEILING PLAN 1:100

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
TRAINING FACILITY FINISH SCHEDULES, FLOOR, ROOF, & CEILING PLAN		
DATE: 26/APR./1996	DRAW. NO. A-02-01-01	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



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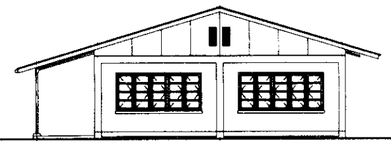
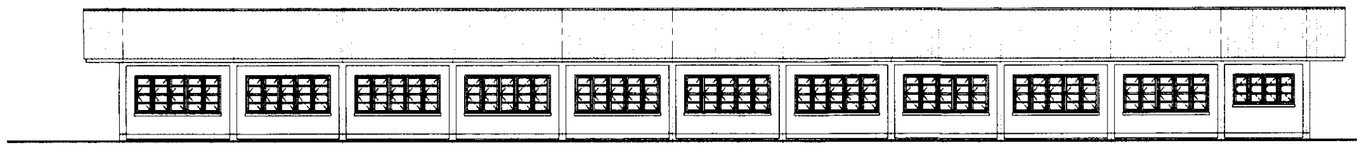
SOUTH SIDE ELEVATION 1:100



Ⓐ Ⓑ Ⓓ Ⓔ

EAST SIDE ELEVATION 1:100



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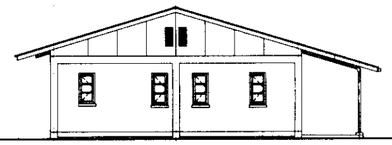
NORTH SIDE ELEVATION 1:100



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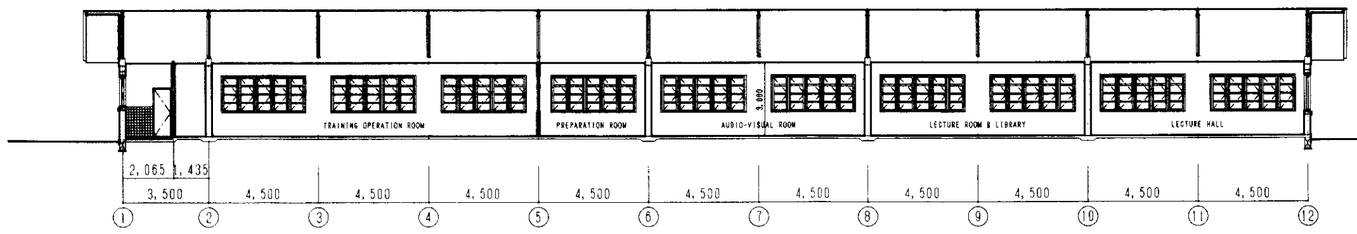
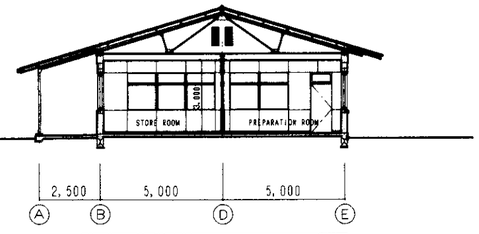
WEST SIDE ELEVATION 1:100



A－A SECTION 1:100



B－B SECTION 1:100

INTERIOR FINISH SCHEDULES A-02-01 TRAINING FACILITY

RM No.	ROOM NAME	FLOOR	BASE OR WAINSCOT	H	WALL	CEILING	C.H.	RM No.	REMARKS
211	LECTURE HALL	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	211	
212	LECTURE ROOM & LIBRARY	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	212	
213	AUDIO-VISUAL ROOM	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	213	
214	PREPARATION ROOM	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	214	
215	STORE ROOM	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	215	
216	TRAINING OPERATION ROOM	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	MINERAL WOOL ACOUSTIC BOARD	3,000	216	
217	PANTRY	CERAMIC TILE 4 1/4"X 4 1/4"	CERAMIC TILE 4 1/4"X 4 1/4"	1,320	CEMENT MORTAR TROWEL t=16, EP.	FLAT ASBESTOS SHEET t=6, EP.	3,000	217	CABINET & WORKTABLE, CABINET & WORKTABLE WITH SINK
218	STAFF'S LAVATORY (W)	CERAMIC TILE 4 1/4"X 4 1/4"	CERAMIC TILE 4 1/4"X 4 1/4"	1,320	CEMENT MORTAR TROWEL t=16, EP.	FLAT ASBESTOS SHEET t=6, EP.	3,000	218	1-MIRROR : 300X400
219	STAFF'S LAVATORY (M)	CERAMIC TILE 4 1/4"X 4 1/4"	CERAMIC TILE 4 1/4"X 4 1/4"	1,320	CEMENT MORTAR TROWEL t=16, EP.	FLAT ASBESTOS SHEET t=6, EP.	3,000	219	1-MIRROR : 300X400
220	PASSEGE	COLOUR CEMENT MORTAR TROWEL t=12	CEMENT MORTAR TROWEL t=16, EP.	100	CEMENT MORTAR TROWEL t=16, EP.	FLAT ASBESTOS SHEET t=6, EP.	3,000	220	

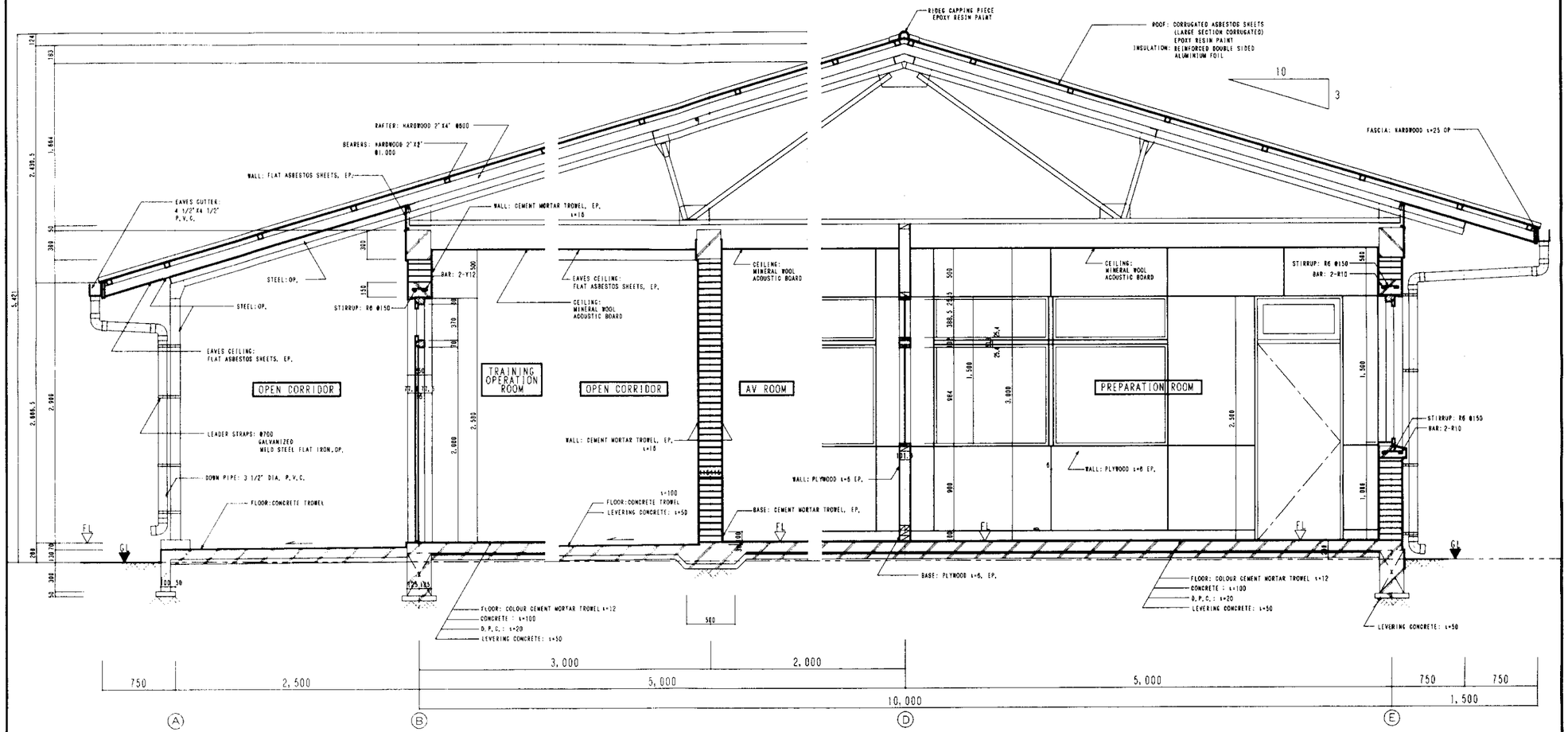
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

TRAINING FACILITY
ELEVATIONS, SECTIONS

DATE: 26/APR./1996	DRAW. NO. A-02-01-02	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



WALL SECTION 1:20

EXTERIOR FINISH SCHEDULES A-02-01 TRAINING FACILITY	
ROOF	CORRUGATED ASBESTOS SHEET t=6 (LARGE SECTION CORRUGATED), EPOXY RESIN PAINT INSULATION: REINFORCED DOUBLE SIDE ALUMINIUM FOIL
FASCIA	HARDWOOD t=25mm, OP.
EAVES GUTTER	P.V.C. EAVES GUTTER 4 1/2" SQUARE FIXED WITH P.V.C. BRACKETS
RAIN LEADER	P.V.C. DOWN PIPES 3 1/2" DIA.
EAVES CEILING	FLAT ASBESTOS SHEET t=6, EP.
EXTERIOR WALL	BRICK (TYPE-II, GRADE-I) 9" THICK, CEMENT MORTAR TROWEL t=16, EP., FLAT ASBESTOS SHEET t=6, EP.
SASH & FRAME	HARDWOOD, OP.
WINDOW SILL, JAMB & LINTEL	CONCRETE, CEMENT MORTAR TROWEL t=16, EP.
OPEN CORRIDOR	
ROOF	CORRUGATED ASBESTOS SHEET t=6 (LARGE SECTION CORRUGATED), EPOXY RESIN PAINT
EAVES GUTTER	P.V.C. EAVES GUTTER 4 1/2" SQUARE FIXED WITH P.V.C. BRACKETS
RAIN LEADER	P.V.C. DOWN PIPES 3 1/2" DIA.
COLUMN	MILD STEEL PIPE, OP.
FLOOR	CONCRETE TROWEL

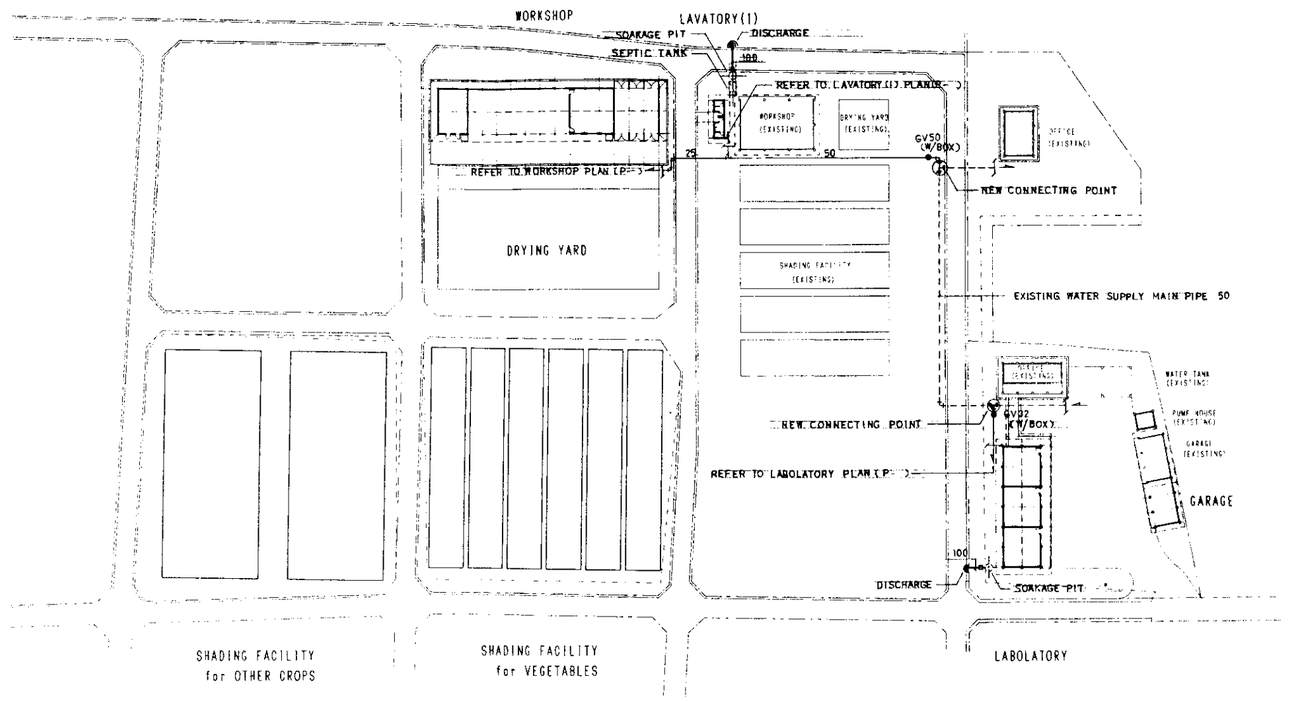
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

TRAINING FACILITY
WALL SECTIONS, DETAILS, DOOR & WINDOW SCHEDULES

DATE: 26/APR./1996	DRAW. NO. A-02-01-03	S=1:20

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

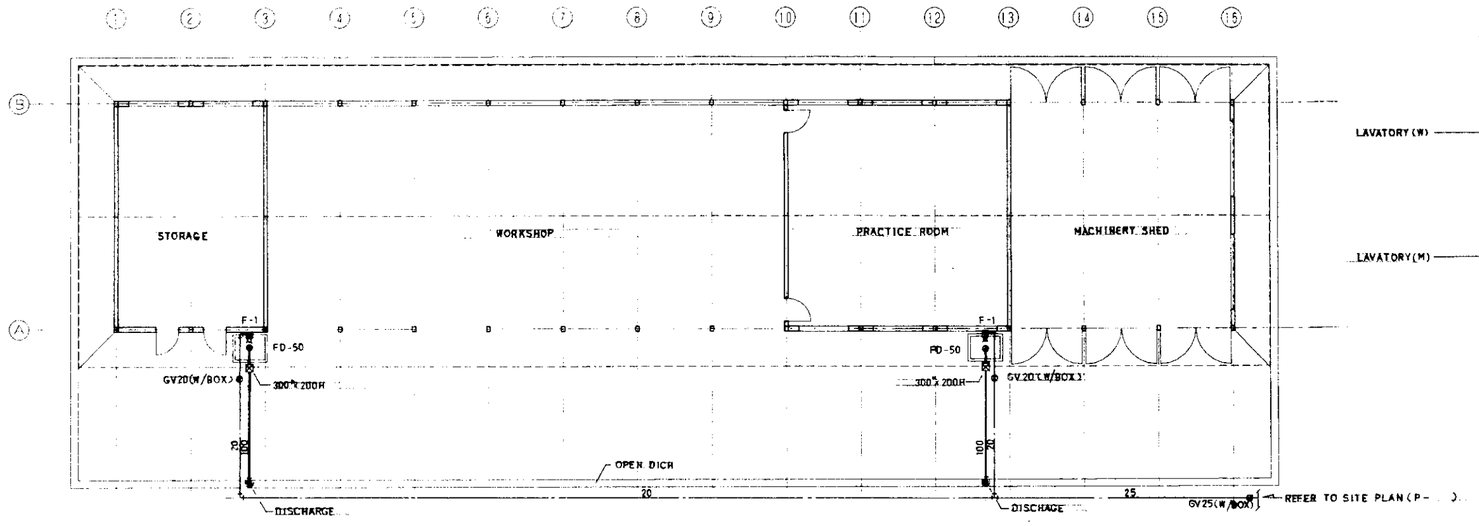
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

PRACTICE FACILITIES SITE PLAN

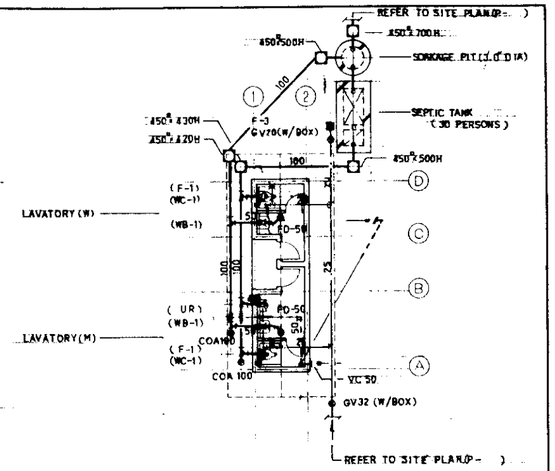
PLUMBING WORK

DATE: 26/APR./1995	DRAW. NO. P-01-01	S=1:500

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



WORKSHOP PLAN 1:100



LAVATORY(1) PLAN 1:100

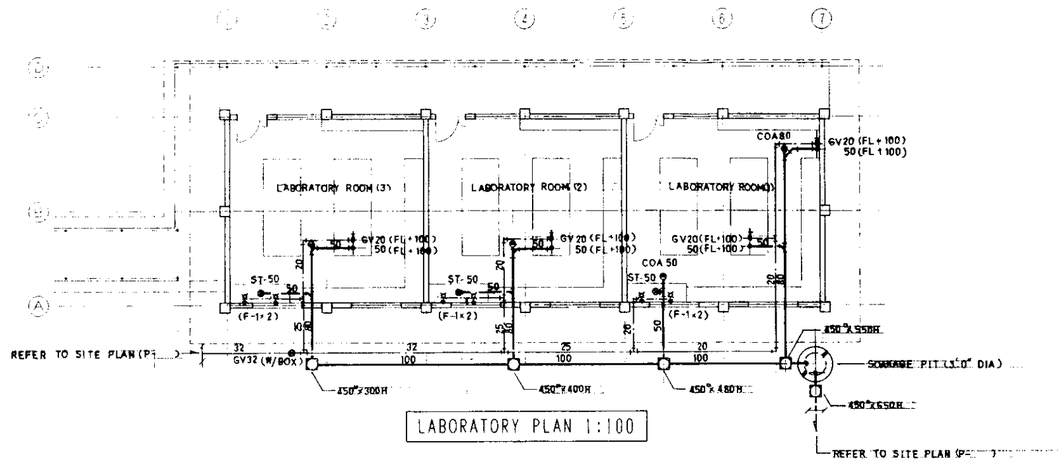
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

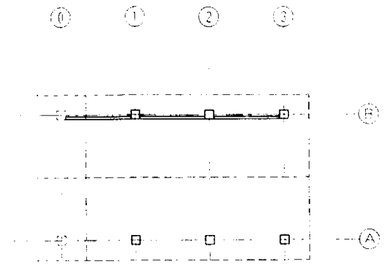
WORKSHOP & LAVATORY(1) PLAN
PLUMBING WORK

DATE: 26/APR./1995	DRAW. NO. P-01-02	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

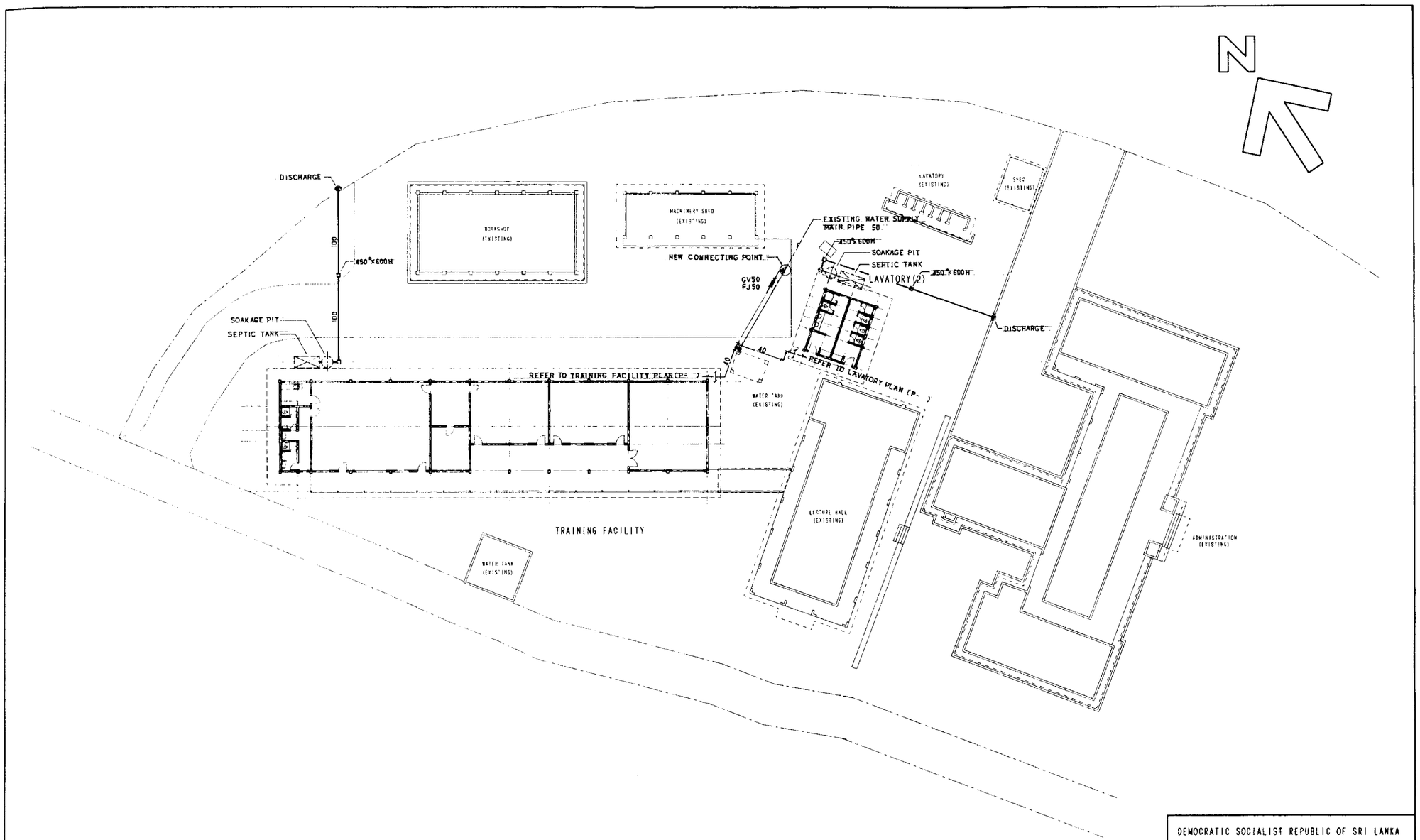


LABORATORY PLAN 1:100



GARAGE PLAN 1:100

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
LABORATORY PLAN PLUMBING WORK		
DATE: 26/APR./1995	DRAW. NO. P-01-03	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

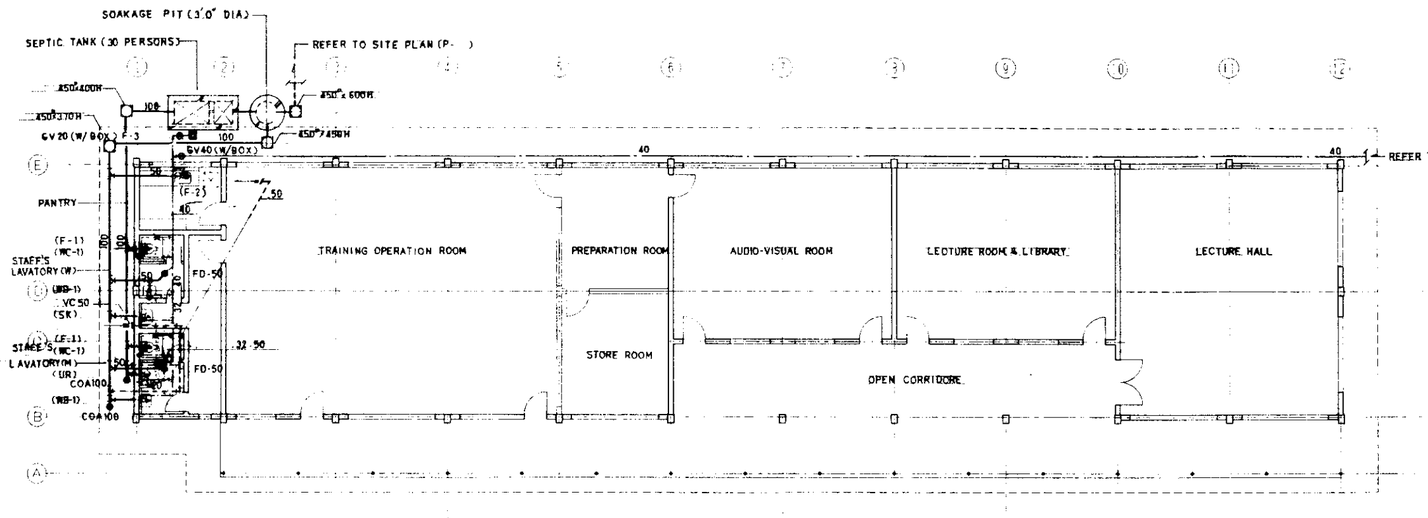
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

TRAINING OPERATION FACILITIES SITE PLAN

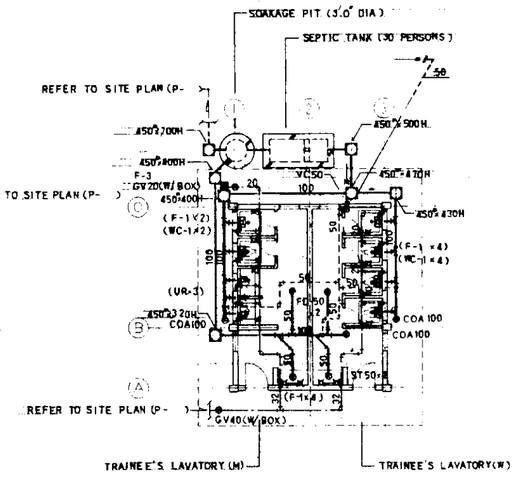
PLUMBING WORK

DATE: 26/APR./1995	DRAW. NO. P-02-01	S=1:200

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



TRAINING FACILITY PLAN 1:100



LAVATORY(2) PLAN 1:100

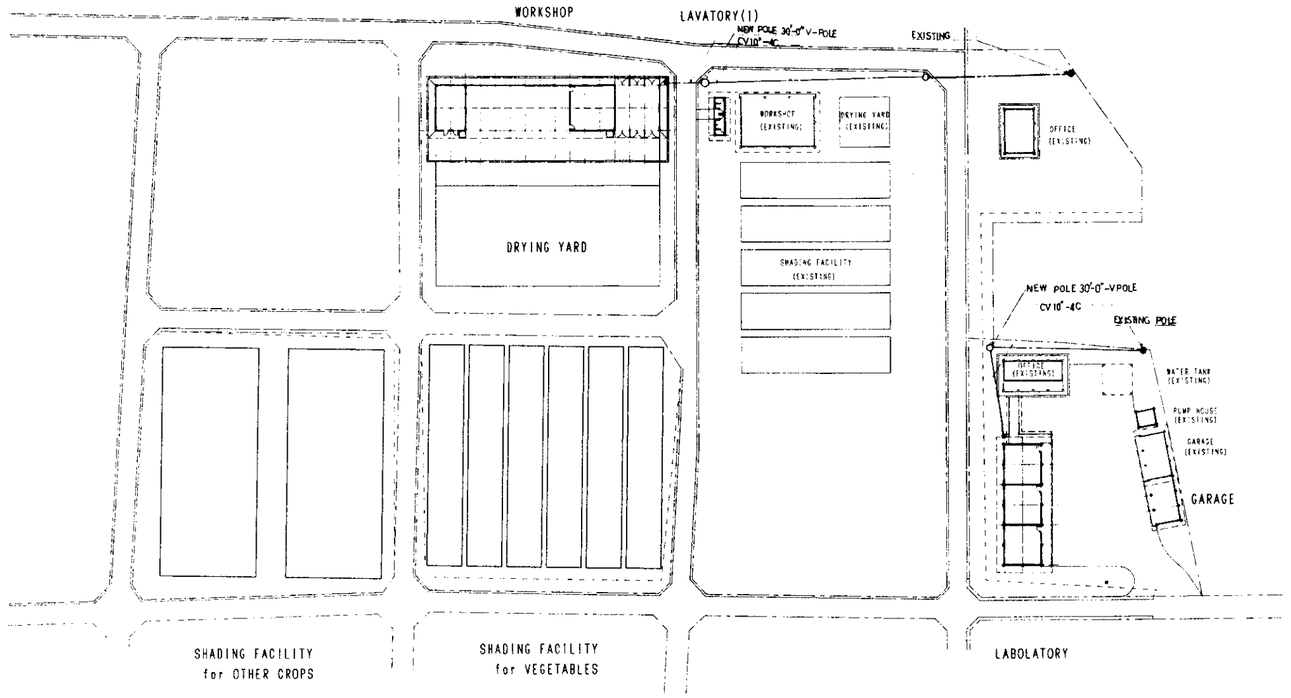
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

TRAINING FACILITY & LAVATORY(2) PLAN
PLUMBING WORK

DATE: 26/APR./1995	DRAW. NO. P-02-02	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



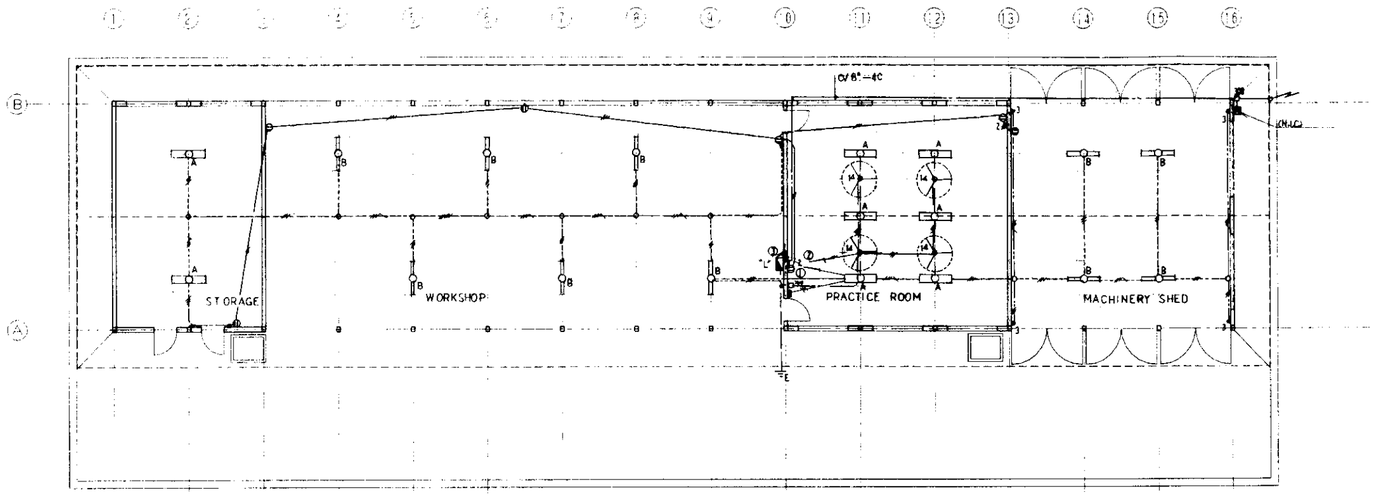
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

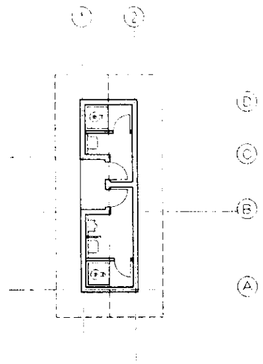
PRACTICE FACILITIES
ELECTRICAL & VETILATION WORK, SITE PLAN

DATE: 26/APR./1995	DRAW. NO. E&V-01-01	S=1:500

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

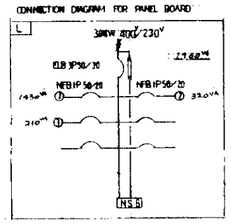


WORKSHOP PLAN 1:100



LAVATORY(1) PLAN 1:100

CONNECTION DIAGRAM FOR PANEL BOARD

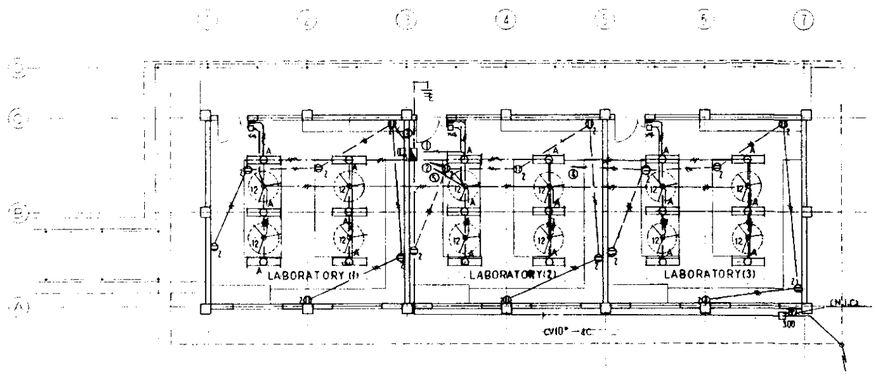


LIGHTING FIXTURE
A ; FL40WX2
B ; FL40WX1

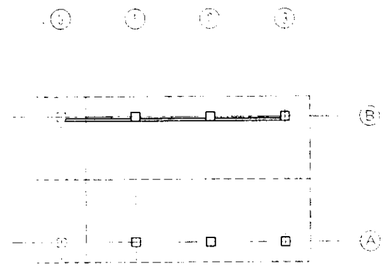
LEGEND

- FLUORESCENT LAMP (DUPLEX) V SAPED DIRECT MOUT
- DITTO (SINGLE)
- MAIN SWITCH BOARD (LIGHTING PANEL BOARD)
- CEILING FAN ; 14 ; 1400 Ø
- SNAP SWITCH
- POWER POINT ; DUPLEX 3P300 6A
- VV 2.5-2C + VV 2.5-1C
- VV 2.5-2C × 2

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
WORKSHOP, LAVATORY(1) ELECTRICAL & VENTILATION WORK		
DATE: 28/APR./1995	DRAW. NO. E&V-[illegible]-02	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



LABORATORY PLAN 1:100



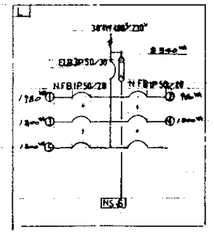
GARAGE PLAN 1:100

LIGHTING FIXTURE
..A ; FL40W X2

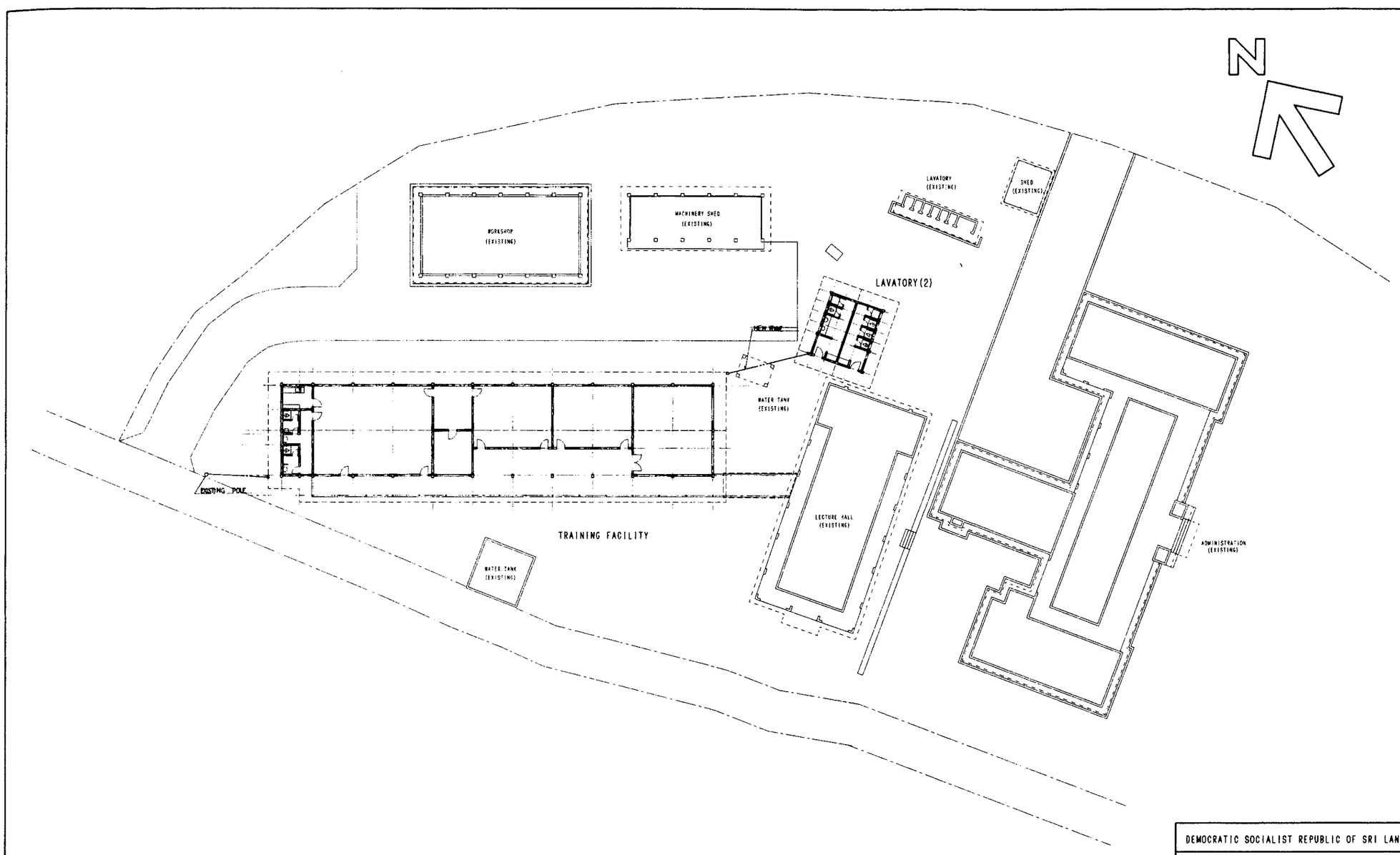
(LEGEND)

- FLUORESCENT LAMP (DUPLEX) V-SAPED DIRECTMOUNT
- SNAP SWITCH
- MAIN SWITCHBOARD (LIGHTIG PANEL BOARD)
- CEILIG FAN : DIAMETER 1200 — 8'
- SOCKET-OUTLET; DUPLEX (3P 300'6A)
- VV 2S"-2C + VV 2.5"-1C
- VV 2.5" 2C x2

CONNCTION DIAGM FOR PANEL BOARD



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
LABORATORY, GARAGE ELECTRICAL & VENTILATION WORK		
DATE: 26/APR./1995	DRAW. NO. E&V-01-03	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



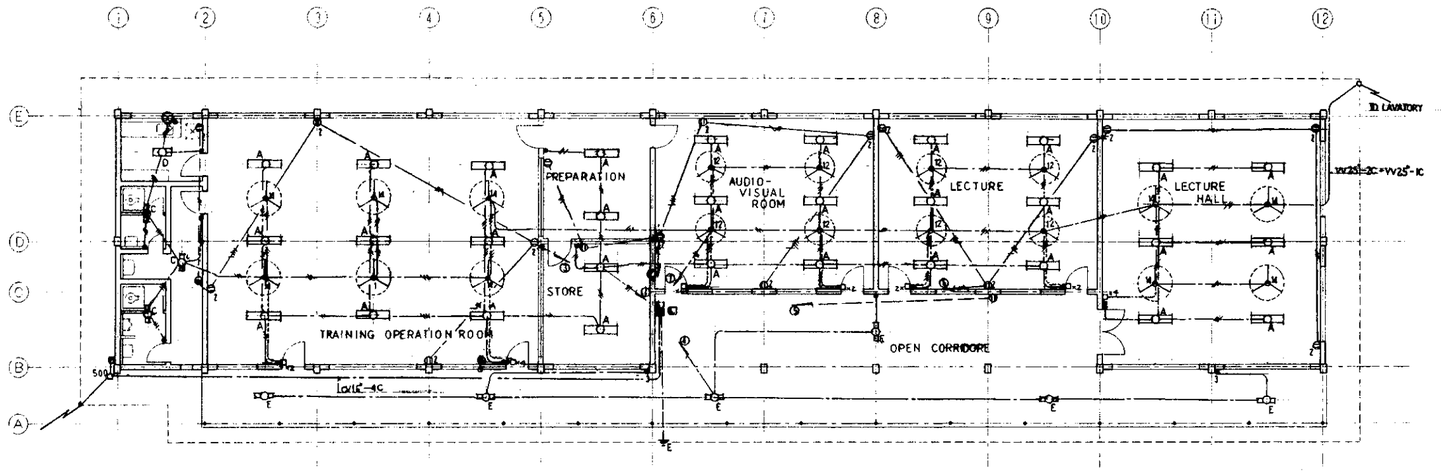
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

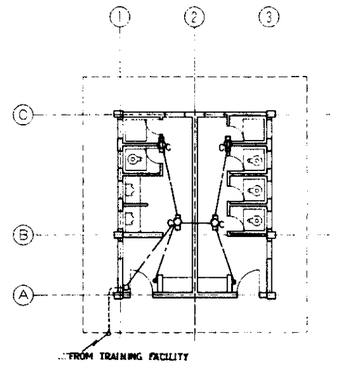
TRAINING OPERATION FACILITIES
ELECTRICAL & VENTILATION WORK, SITE PLAN

DATE: 26/APR./1995	DRAW. NO. E&V-02-01	S=1:200

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



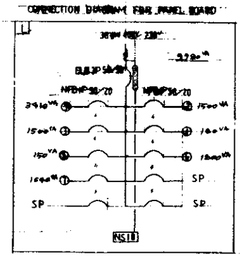
TRAINING FACILITY PLAN 1:100



LAVATORY(2) PLAN 1:100

LIGHTING FIXTURE
A ; FL40W X2
C ; FL20W X1
D ; FL20W X2 WITH ACRYLIC COVER
E ; FL20W X1 WATER TIGHT

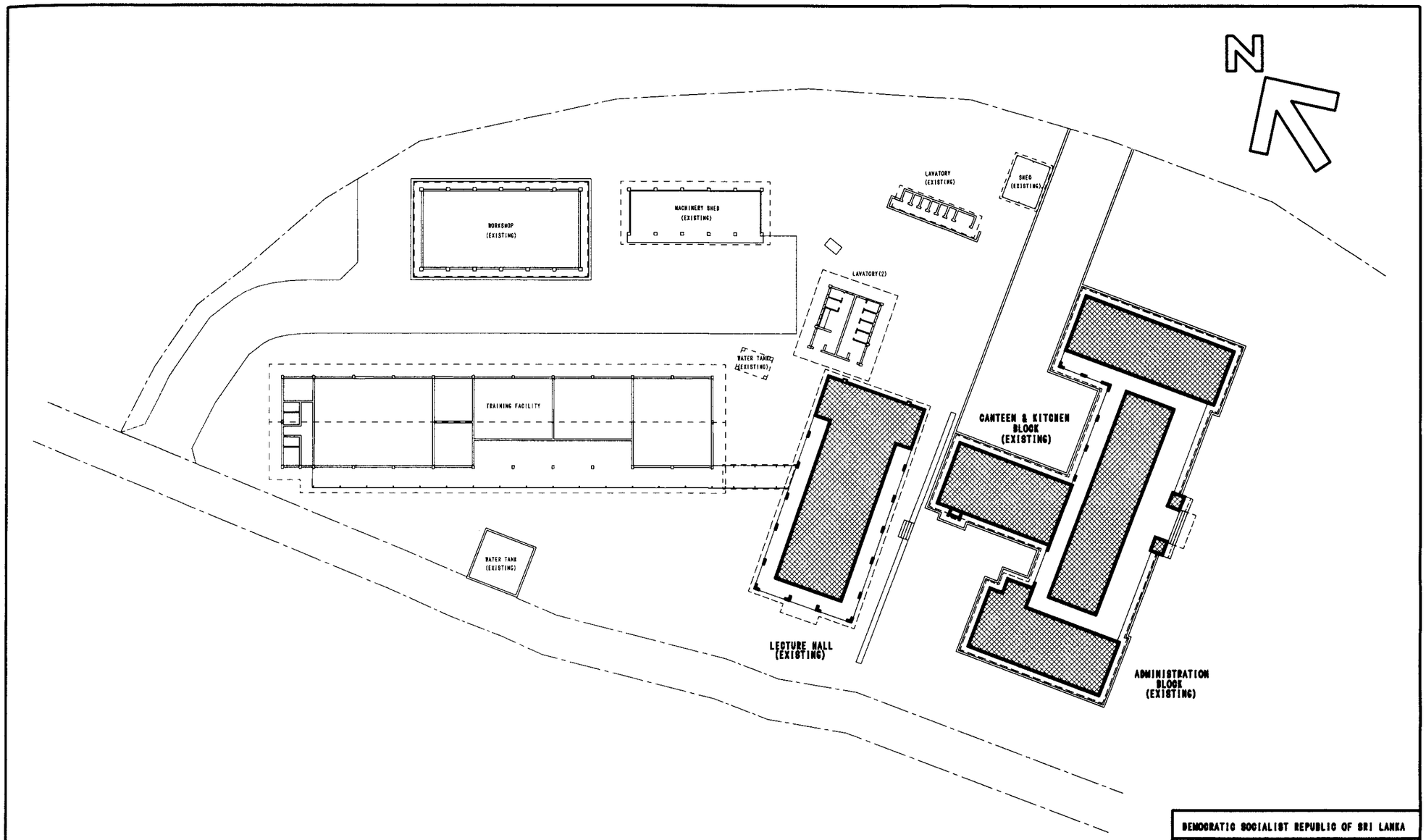
CONNECTION DIAGRAM FOR PANEL BOARD



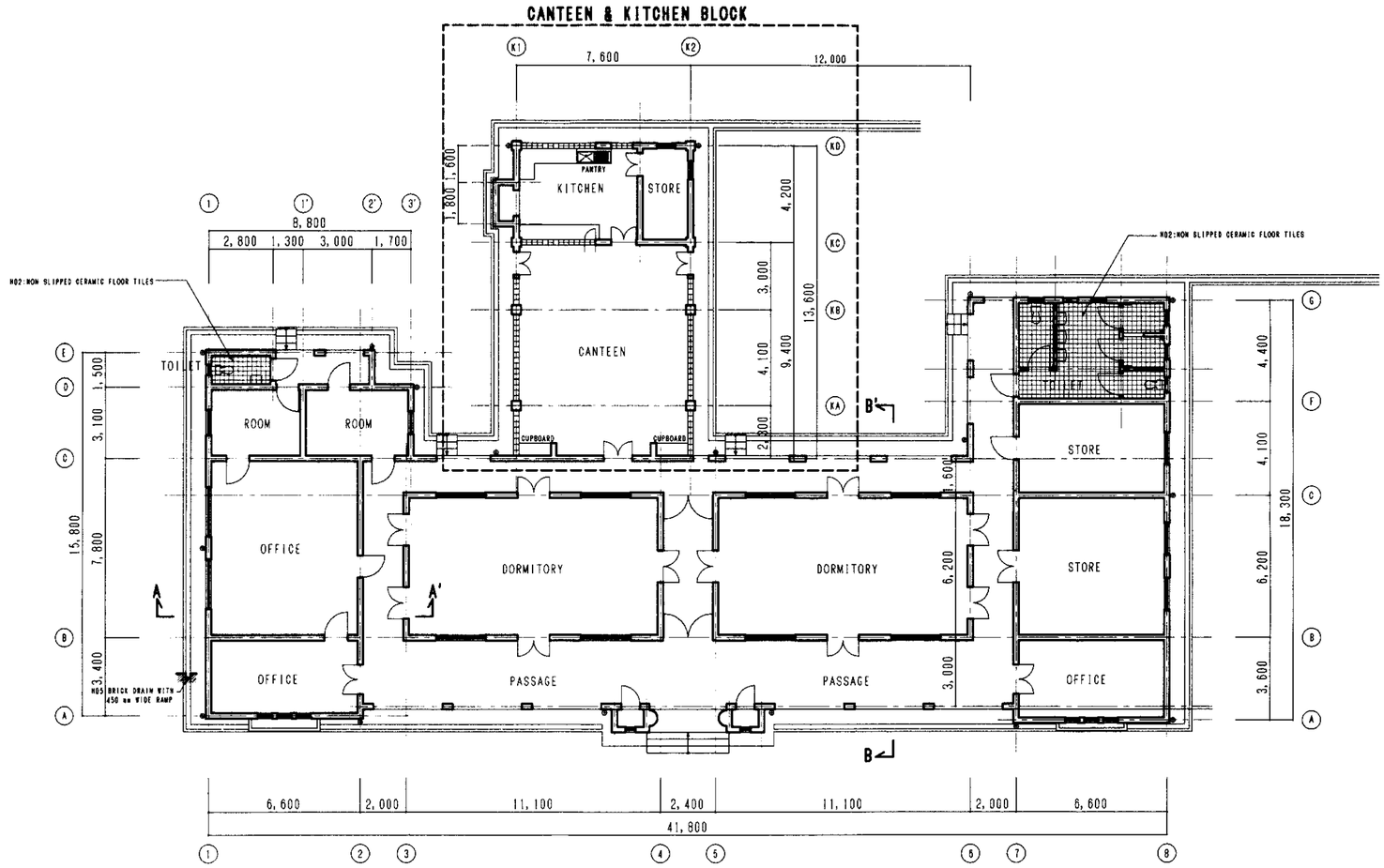
(LEGEND)

- FLUORESCENT LAMP (V-SAPED DIRECT MOUNT)
- DITTO (SINGLE)
- SNAP SWITCH
- MAIN SWITCH BOARD (LIGHTING PANEL BOARD)
- CEILING FAN : 14 DIAMETER 1400 Ø
- : 12 : DITTO 1200 Ø
- WALL MOUNTED FAN Ø 30 CM
- SOCKET - OUTLET (DUPLEX) 3P 300 6A
- TELEPHONE OUTLET
- VV 25-2C + VV 25-1C
- VV 25-2C×2

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
TRAINING FACILITY, LAVATORY(2) ELECTRICAL & VENTILATION WORK		
DATE: 26/APR./1995	DRAW. NO. E&V-02-02	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		

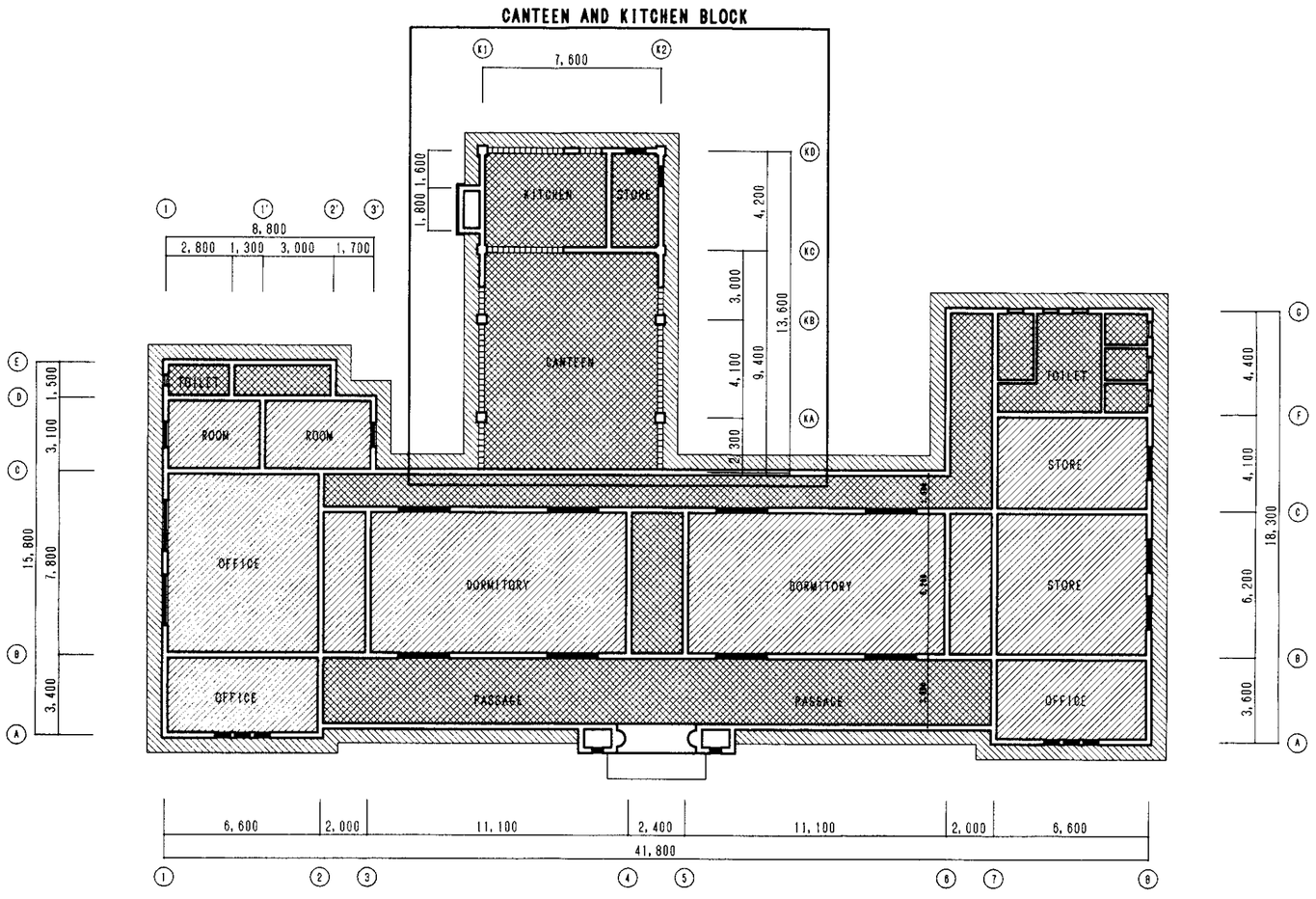


DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
RENOVATION OF ADMINISTRATION SITE PLAN		
DATE: 28/APR./1998	DRAW. NO. A-04-00-01	S=1:200
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



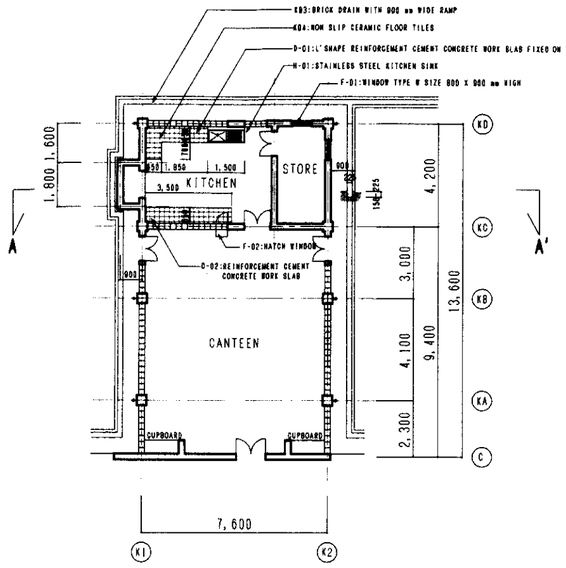
ADMINISTRATION BLOCK PLAN S=1:100

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA
RENOVATION OF ADMINISTRATION BLOCK FLOOR PLAN
DATE: 28/APR./1986 | DRAW. NO. A-04-01-01 | S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

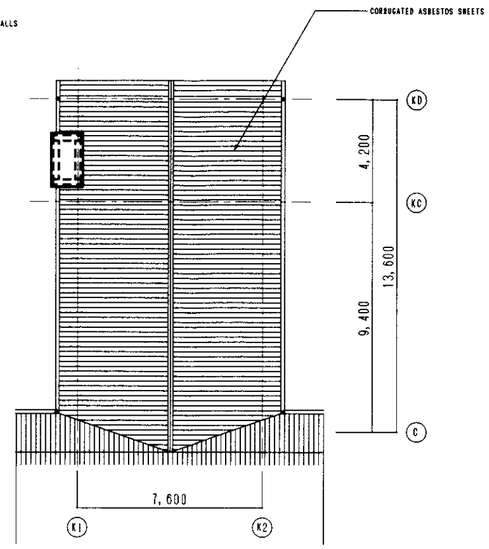


ADMINISTRATION BLOCK CEILING PLAN S=1:100

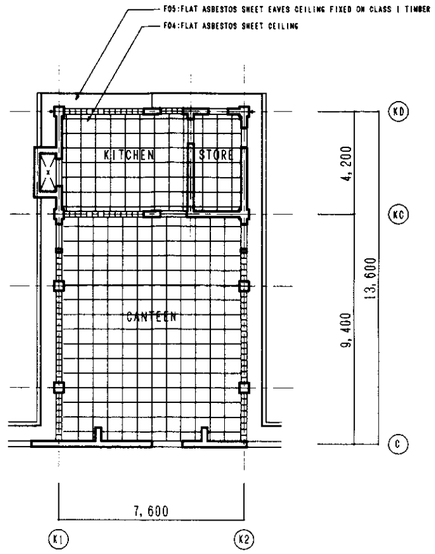
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA
RENOVATION OF ADMINISTRATION BLOCK CEILING PLAN
DATE: 28/APR./1995 | DRAW. NO. A-04-01-04 | S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



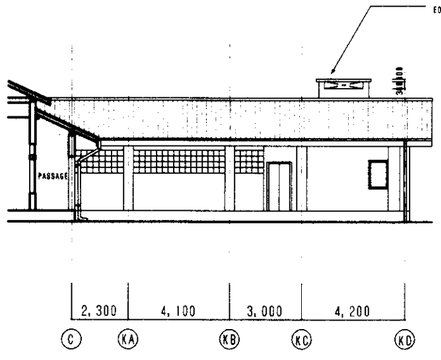
FLOOR PLAN



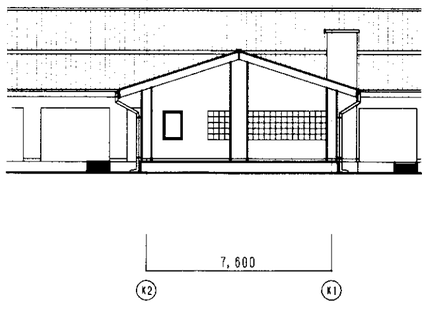
ROOF PLAN



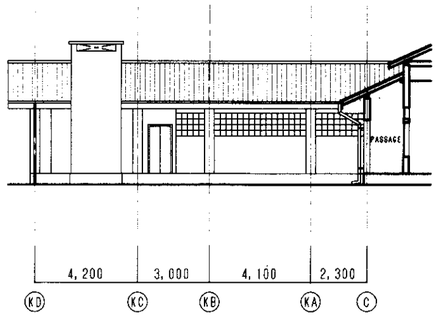
CEILING PLAN



EAST SIDE ELEVATION

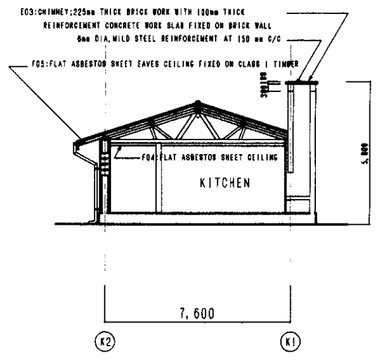


NORTH SIDE ELEVATION

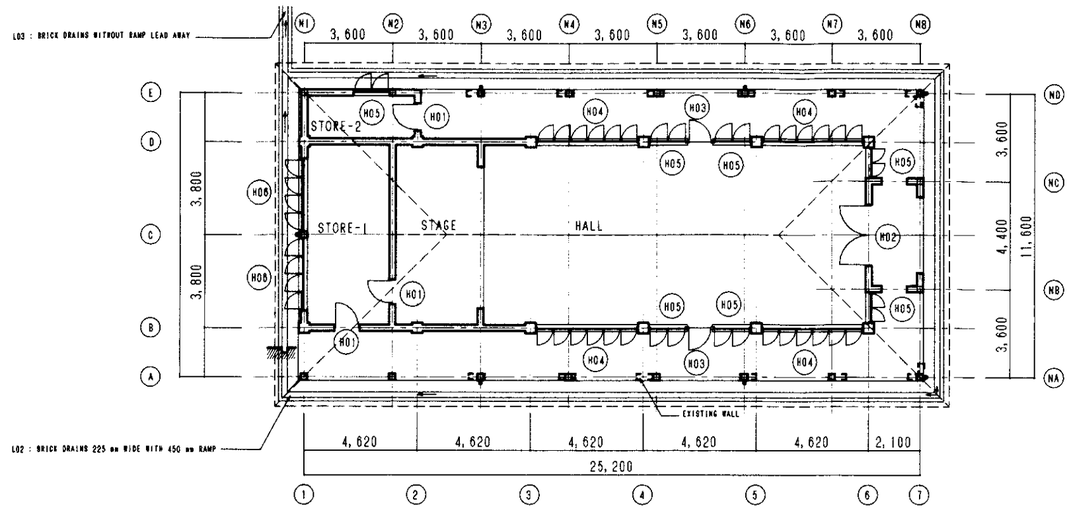


WEST SIDE ELEVATION

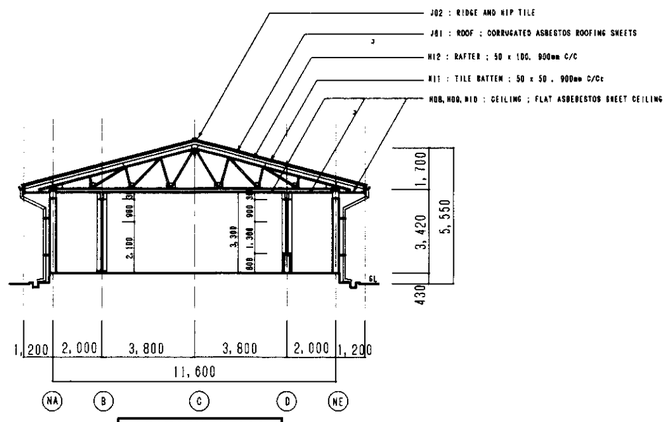
A-A' SECTION



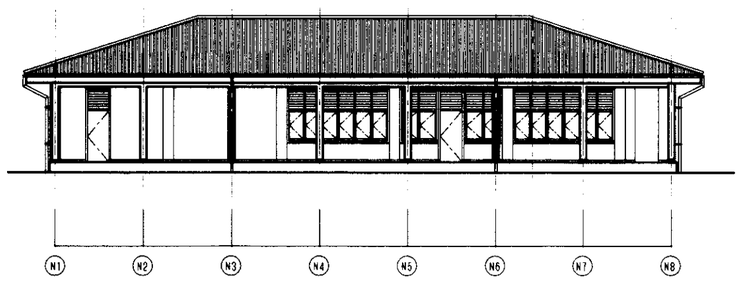
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA
RENOVATION OF CANTEEN AND KITCHEN BLOCK FLOOR, ROOF & CEILING PLAN, ELEVATIONS, SECTION
DATE: 29/APR./1988 | DRAW. NO. A-04-02-01 | S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



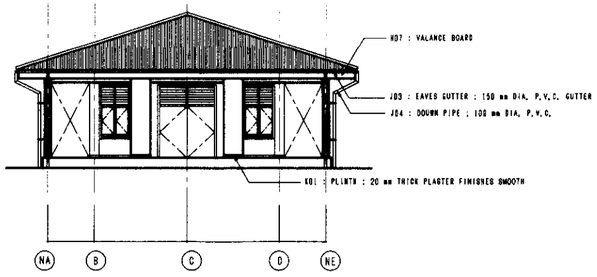
LECTURE HALL PLAN 1:100



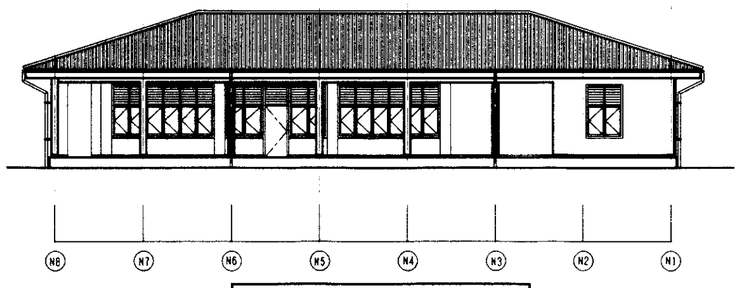
SECTION 1:100



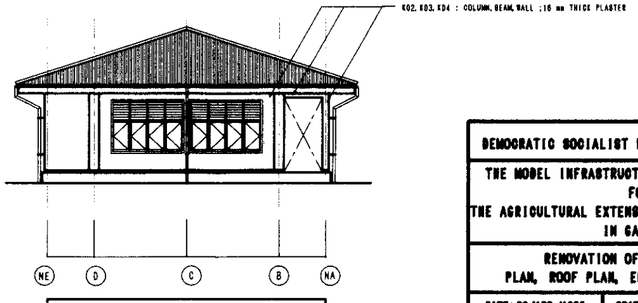
NORTH SIDE ELEVATION 1:100



WEST SIDE ELEVATION 1:100

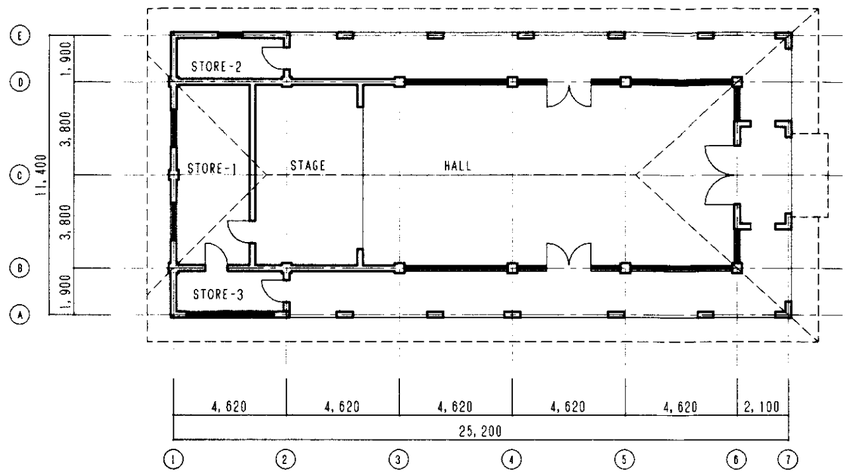


SOUTH SIDE ELEVATION 1:100

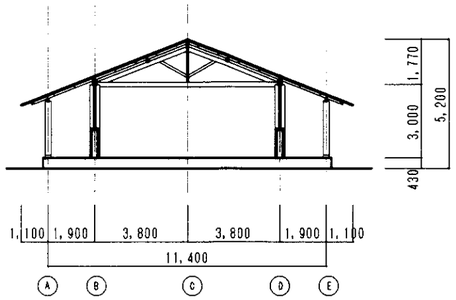


EAST SIDE ELEVATION 1:100

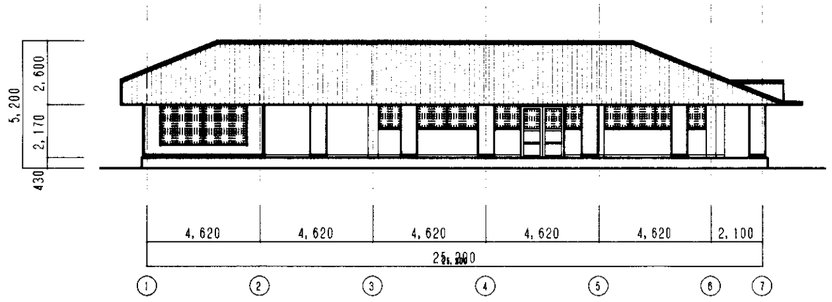
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA
RENOVATION OF LECTURE HALL PLAN, ROOF PLAN, ELEVATIONS, SECTION
DATE: 28/APR./1996 | DRAW. NO. A-04-03-01 | S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



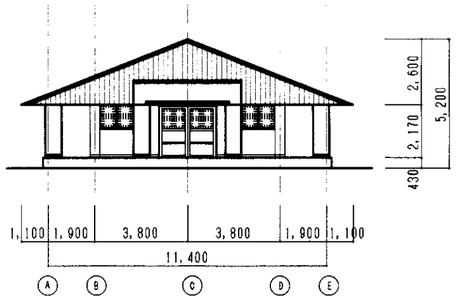
LECTURE HALL PLAN 1:100



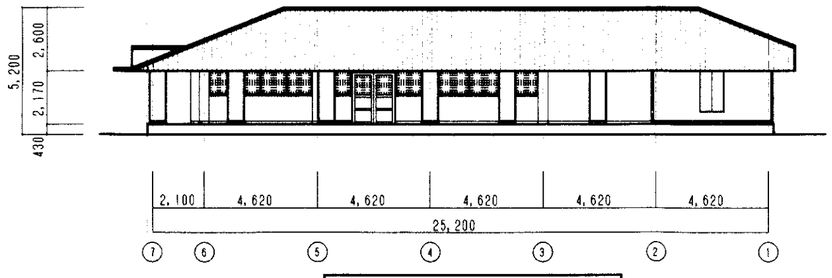
SECTION 1:100



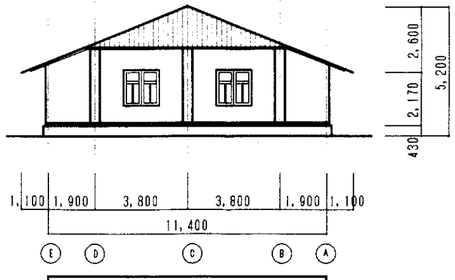
NORTH SIDE ELEVATION 1:100



WEST SIDE ELEVATION 1:100



SOUTH SIDE ELEVATION 1:100



EAST SIDE ELEVATION 1:100

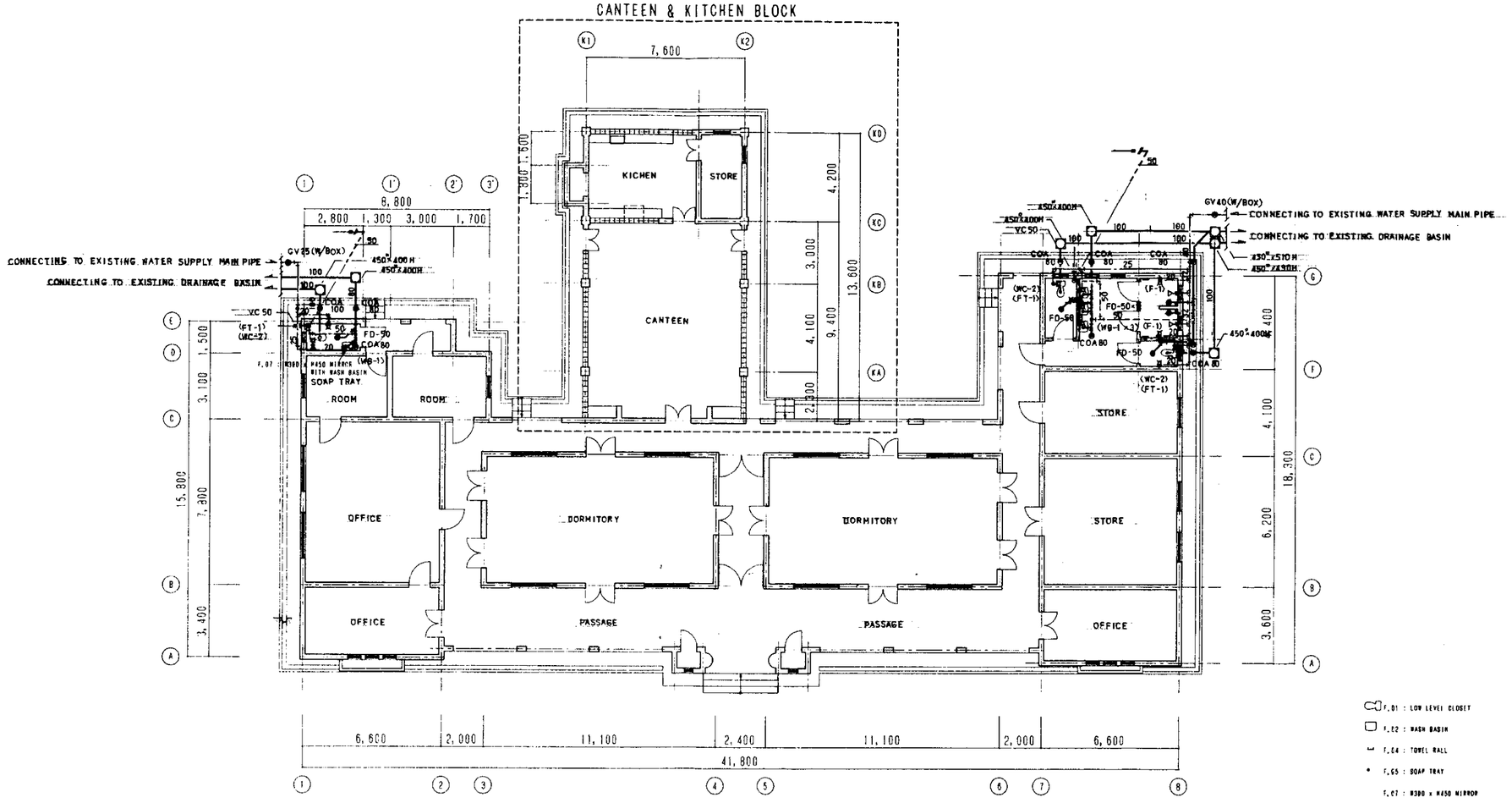
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

LECTURE HALL (EXISTING)
FLOOR PLAN, ELEVATIONS, SECTION

DATE: 28/APR./1996	DRAG. NO. A-64-23-23	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



ADMINISTRATION BLOCK PLAN S=1:100

F.01 : LOW LEVEL CLOSET	3 NO.
F.02 : WASH BASIN	4 NO.
F.04 : TOWEL RAIL	2 NO.
F.05 : SOAP TRAY	3 NO.
F.07 : W390 x H450 MIRROR	4 NO.

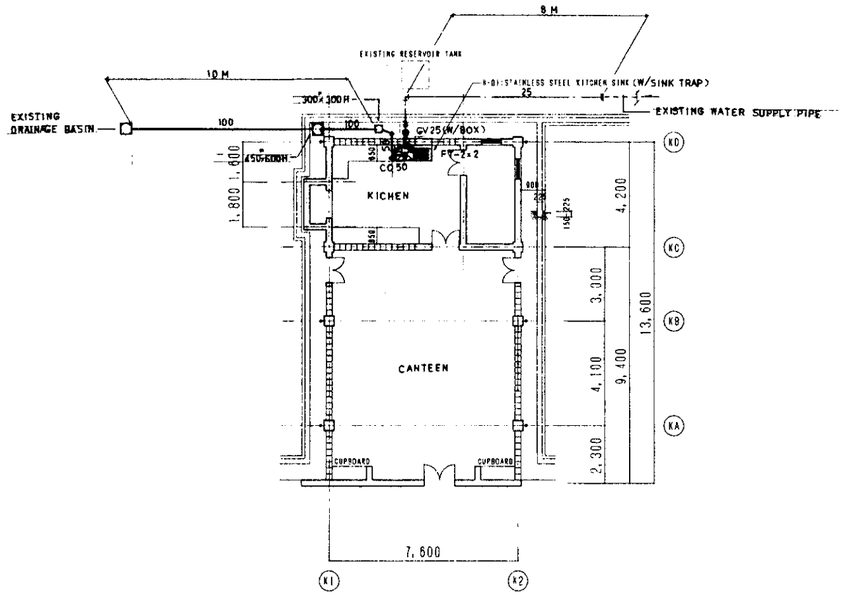
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

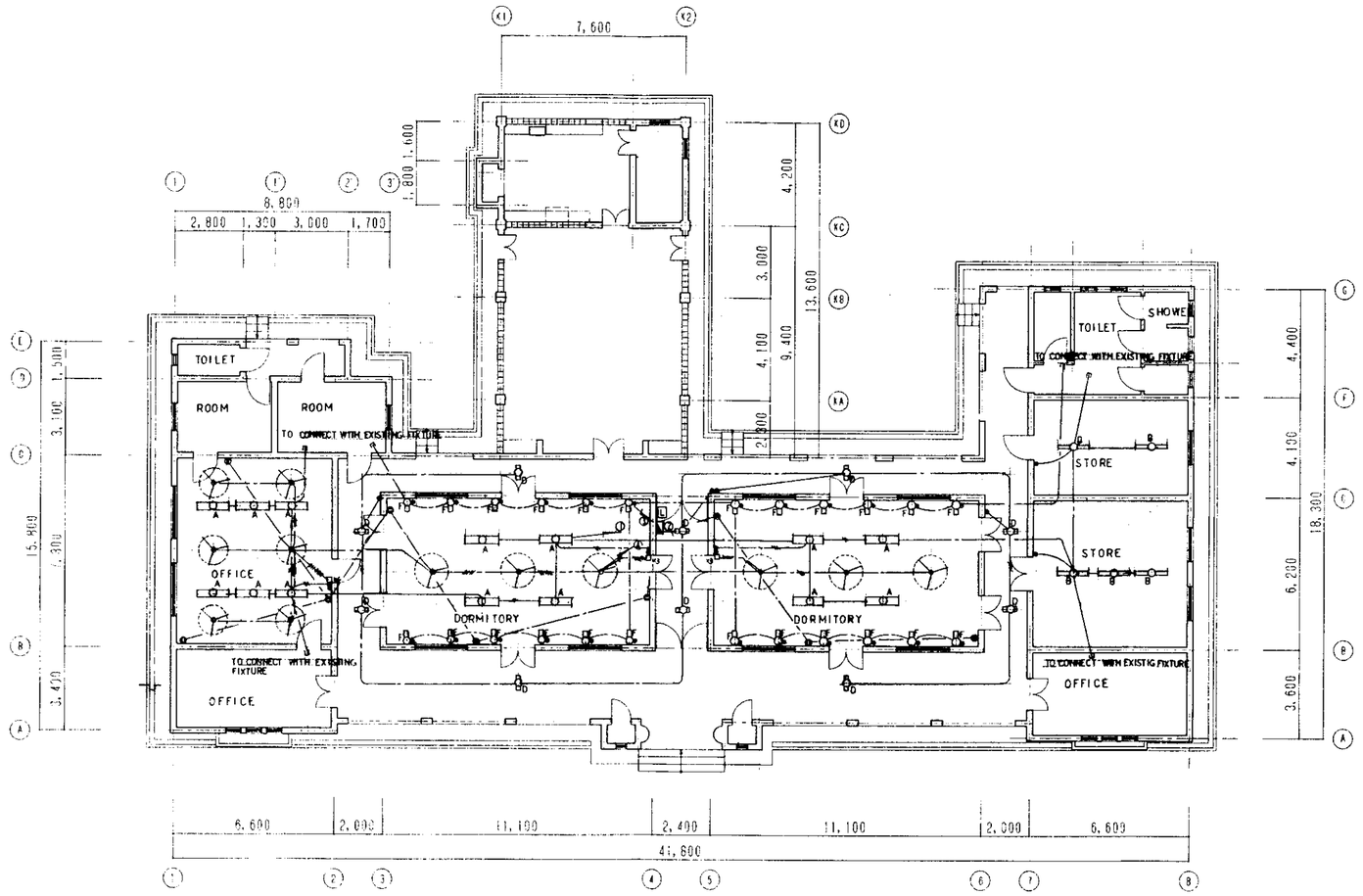
RENOVATION OF ADMINISTRATION BLOCK
PLUMBING WORK

DATE: 26/APR./1995	DRAW. NO. P-03-03	S=1:100

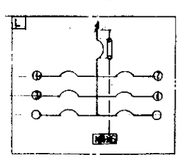
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
RENOVATION OF CANTEEN AND KITCHEN BLOCK PLUMBING WORK		
DATE: 28/APR./1995	DRAW. NO. P-03-04	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		



ADMINISTRATION BLOCK PLAN S=1:100



LIGHTING FIXTURE
A ; FL40×2
B ; FL40×1
D ; FL20×1
F ; FL20×1 BRACKET

LEGEND
; FL40W X 2
; FL20W X 2
; FL 20W x1
; SWAP SWITCH
; MAIN SWITCH BOARD (LIGHTING PANEL BOARD)
; CEILING FAN
; CEILING FAN CONTROL SWITCH
; CONVENIENCE OUTLET

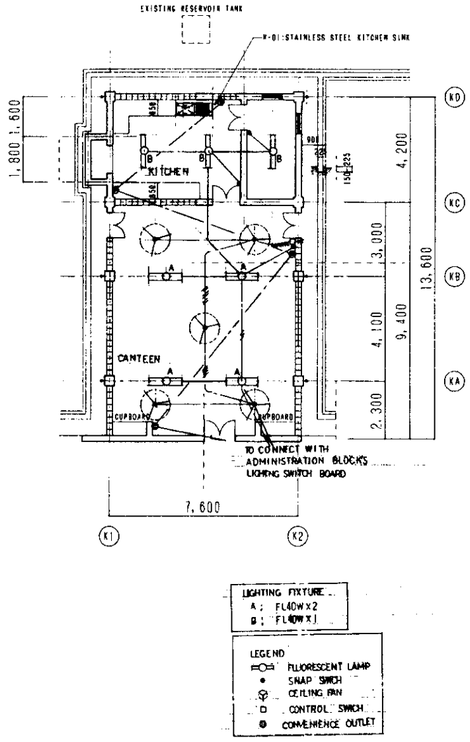
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

RENOVATION OF ADMINISTRATION BLOCK
ELECTRICAL & VENTILATION WORK

DATE: 26/APR./1995	DRAW. NO. E&V-03-01	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



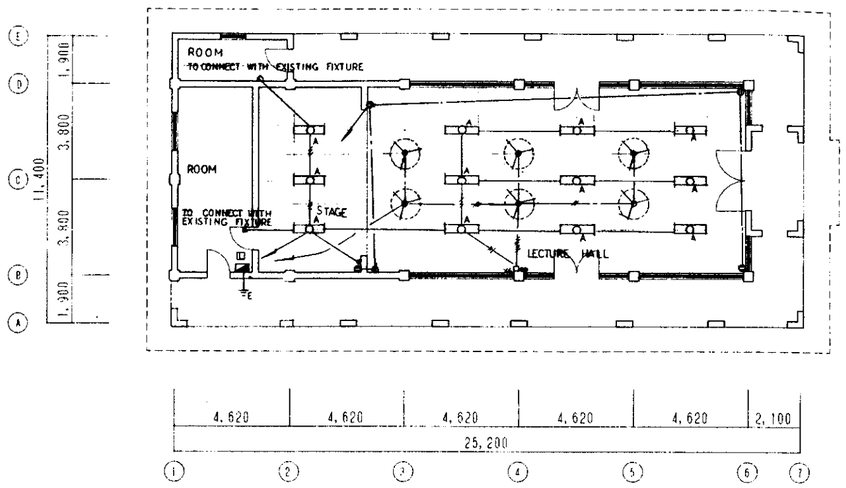
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS
FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT
IN GAMPAHA

RENOVATION OF CANTEEN AND KITCHEN BLOCK
ELECTRICAL & VENTILATION WORK

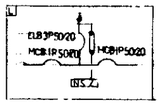
DATE: 26/APR./1995	DRAW. NO. E&V-03-02	S=1:100

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



LECTURE HALL PLAN 1:100

LEGEND
- ; FLUORESCENT LAMP FL40WX2 SYMBOL "A"
- ; LIGHTING PANEL BOARD
- ; CEILING FAN
- ; SNAP SWITCH
- ; CONTROL SWITCH
- ; CONVENIENCE OUTLET



DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA		
THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA		
RENOVATION OF LECTURE HALL ELECTRICAL & VENTILATION WORK		
DATE: 26/APR./1995	DRAW. NO. E&V-03-03	S=1:100
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		

第 7 章

事 業 費

第７章　事業費

７．１ 積算の条件

7.1.1　工事範囲

〔日本側分担工事〕

（１） 圃場整備

1） 遮光施設-１（その他栽培試験用）の遮光幕を除く枠組み

（２） 農業実習施設の建設

1） ワークショップおよび野外乾燥場

2） 便所棟

3） 実験棟

4） 車庫

（３） 研修施設の建設

1） 研修棟

2） 研修生用便所棟

注：圃場整備の遮光施設-２（野菜栽培試験用）は供与機材に含むこととし除外とする。

〔スリ・ランカ国側分担工事〕

（１） 研修施設改修

1） 本館

2） 食堂および厨房

3） 講堂

7.1.2　単価

単価は西部州制定の1995年度の単価を基準として積算された。西部州の単価は、現場における材料単価、労務賃金、建設機械の損料および現場経費の全てが含まれている。この供与された表に含まれていない単価は、無償資金協力案件で1986年に実施した医薬品・医療資材倉庫建設計画にかかる基本設計策定に採用された歩掛りおよび複合単価に、現地調査において収集した現在の材料および労務単価を反映させて設定した。

7.1.3　間接費

共通仮設費を直接工事費の５％とし、一般管理費を直接工事費の１０％として計上する。

7.1.4　取引税

スリ・ランカ国政府の規定により取引税は工事費総額の６％を計上する。

7.1.5　工事諸費

JICA事務所長が工事発注するにあたり必要となる経費であり、JICAで実施した類似条件を参考に、工事費の５％を計上する。

7.1.6　邦貨換算レート

邦貨(円) /現地貨(ルピー) の交換レートは、1995年３月９日付けの現地紙(Daily News)に発表された３月８日における下記のレートを採用する。

100円＝ 55.12ルピー(Rs)　：　ルピー＝ 1.8142円

なお当日の円の対米ドルレートは 1米ドル＝89.2838円

7.2 事業費

本モデルインフラ整備事業で日本側の分担範囲に要する建設費は、前節 5.1 積算条件に基づき見積られ、２，７９６万円であり、日本側分担の事業費総額は、２，９２８万円となる。その内訳を整理すれば、表７．２　事業費総括表-1の通りである。

表７．２　事業費総括表-1

Ⅰ　建　設　費

項　　目	現地貨(RS)	換算邦貨(円)
１．直接工事費	１，２６５万ﾙﾋﾟｰ	２，２９５万円
(1) 建築工事費	１，０９９万ﾙﾋﾟｰ	１，９９４万円
(2) 電気設備工事費	１１４万ﾙﾋﾟｰ	２０７万円
(3) 給排水・衛生設備工事費	５２万ﾙﾋﾟｰ	９４万円
２．間接工事費	１８９万ﾙﾋﾟｰ	３４３万円
(1) 共通仮設費	６３万ﾙﾋﾟｰ	１１４万円
(2) 一般管理費	１２６万ﾙﾋﾟｰ	２２９万円
３．工事費合計	１，４５４万ﾙﾋﾟｰ	２，６３８万円
４．取　引　税	８７万ﾙﾋﾟｰ	１５８万円
５．総　　計	１，５４１万ﾙﾋﾟｰ	２，７９６万円
Ⅱ　工事諸費	７３万ﾙﾋﾟｰ	１３２万円
Ⅲ　事　業　費	１，６１４万ﾙﾋﾟｰ	２，９２８万円

またスリ・ランカ国側の分担範囲に要する建設費を、西部州の単価及び積算システムに基づき算出すると事業費は４４３．３万ルピーでありその内訳を整理すると表7.2事業費総括表-2の通りである。

表７．２　事業費総括表-2

１．本館	１８６．１万ﾙﾋﾟｰ
２．食堂及び厨房	３０．０万ﾙﾋﾟｰ
３．講堂	２２７．２万ﾙﾋﾟｰ
合　計	４４３．３万ﾙﾋﾟｰ

第 8 章

施 工 計 画

第８章　施工計画

８．１　工事概要

本モデルインフラ整備事業により整備または建設される施設の構法は、軸組みを、鉄筋コンクリート(RC)造とし帳壁をレンガ積みとする在来のタイプと、プレストレス・コンクリート(PC)の構造部材およびコンクリート・ブロックのプレキャスト・コンクリート製品により構築するタイプの２種類に大別される。この異なる構法の採用は、施設のグレードおよび建築費の適切な配分を考慮し、検討の結果決定された。研修棟および実験棟は在来の構法によるが、圃場内の諸施設は後者によることとされた。在来の構法によるとグレードの高いものを得ることが可能であるが、大部分の作業を現場において行うことにより工期を要しその短縮は容易でない。後者は工場生産品の部材を現場で組み立てることから、現場における作業量は多くないことにより、在来の構法に比べると大幅な工期の短縮が可能である。しかしPC製品の構造部材は十分な在庫がないことにより、発注後納品まで２ヶ月を必要とされることに留意せねばならない。

８．２　基本計画

本モデルインフラ整備事業の実質的な工事の開始を1995年７月初旬と計画されており、そのためには施工業者との工事契約は、遅くとも６月中旬までに締結されることが必須の条件となる。

作業は月曜日～土曜日の実働６日/週とし、原則として日曜日および祭日は休日とする。予定されている工期（７月～12月）の間で、９月～11月は雨期に当たり降雨による作業の休止日として予備日を９日間（３日×３月）考慮しておく。降雨による作業休止日数が１ヵ月のうち３日間を超過する場合は日曜日を代替作業日として充当する。

８．３　工程計画

本モデルインフラ整備事業の実施に関して計画されている工期は、余裕はなく非常にタイトなものと判断されることから、作業効率の向上を勘案し、また作業の手戻りの起こらぬように作業工程を策定する。各施設にかかる作業内容、作業種目、作業量、作業工程を的確に把握するとともに、作業にかかわる技術労務者の作業能力を踏まえて工期を設定する。

8.3.1　作業能力の算定

過去の無償資金協力案件に採用されたスリランカ国における工種別の歩掛りに基づき、技能工の１日当りの作業能力を求め、別紙表 8.3.1.作業能力表に示す。

8.3.2　工事日数の算定

工事数量及び作業能力から各工種について工程の段階毎に所要日数を求め、別紙表8.3.2工事所要日数計算表に示す

8.3.3　工事工程計画

前期の工事所要日数を基に日曜日と祭日及び雨天による休日を考慮し、週間稼動日数を5.5日として各棟別に所要日数を修正すると、60日～180日となる。

各施設の中で最多の作業量を必要とされるのは研修棟であり、研修棟に要する工事期間が最長となることから、この棟にかかる作業工程を検討し工期を設定し、全体の工期とする。他の各施設の工期は、この全体の工期内に技能労務の作業効率を考慮した配置に基づく各施設の作業工程を検討し設定する。

上記に基づく検討により、本モデルインフラ整備事業による施設の整備、建設にかかる工期は工事契約締結の15日後に着工してから竣工まで別紙表8.3.3工事工程表に示すように６ヵ月必要とされる。

別表 8.3.1

作業能力表

	作業の種類		作業能力 /人/日	
1．土工事	－1	掘削（人力）	1.40	m^3
	－2	床付	14.00	m^2
	－3	埋戻し	4.20	m^3
2．地形	－1	砂利敷地形	1.70	m^3
3．コンクリート	－1	捨てコン打設	1.90	m^3
	－2	基礎コンクリート打設	1.90	m^3
	－3	床コンクリート打設	1.90	m^3
	－4	柱及び梁コンクリート打設	1.50	m^3
	－5	捨コン＋防湿	1.50	m^3
4．鉄筋工事	－1	加工	0.16	t
	－2	組み立て	0.08	t
	－3	溶接メッシュ敷き込み	40.00	m^2
5．型枠	－1	加工	7.50	m^3
	－2	建込（基礎）	7.50	m^2
	－3	建込（柱・梁）	6.00	m^2
	－4	解体撤去	30.00	m^2
6．鉄骨	－1	加工・組立	0.16	t
	－2	建方	0.08	t
7．木工事	－1	小屋組	0.03	m^3
8．レンガ	－1	レンガ１枚積	2.00	m^2
	－2	レンガ半枚積	3.20	m^2
9．屋根	－1	波形アスベスト板葺	7.60	m^2
10．建具	－1	窓枠及びドア枠取付	7.60	m
11．天井・軒裏	－1	吊天井	2.20	m^2
	－2	軒裏ボード貼	2.10	m^2
12．左官	－1	外壁プラスター塗り	2.50	m^2
	－2	内壁プラスター塗り	2.10	m^2
	－3	タイル下モルタル塗	2.50	m^2
	－4	床モルタル塗	2.50	m^2
13．タイル	－1	壁タイル貼	1.50	m^2
	－2	床タイル貼	1.50	m^2
14．塗装	－1	屋根	10.00	m^2
	－2	壁	10.00	m^2
	－3	建具		

別表 8.3.2

工事所要日数計算表－１（遮光施設－１）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
１．躯体工事									
	(1) 基礎	-1 遣方	1,716 m^2	m^2	4	m^2	1	1	
		-2 掘削	10.1 m^3	1.40 m^3	4	5.60 m^3	2	3	(4)
		-3 鉄筋組立	0.36 t	0.08 t	2	0.16 t	3	6	
		-4 型枠建込	41.2 m^2	7.50 m^2	2	15.00 m^2	3	9	
		-5 ｺﾝｸﾘｰﾄ打設	3.6 m^3	1.90 m^3	2	3.80 m^3	1	10	
		-6 養生					1	11	(14)
		-7 型枠解体撤去	41.2 m^2	30.00 m^2	2	60.00 m^2	1	12	
		-8 埋戻し	6.5 m^3	4.20 m^3	2	8.40 m^3	1	13	(17)
	(2) 柱	-1 PC柱建方	96 本	6 本		6 本	16	16	(20)
	(3) 梁	-1 軽量鉄骨梁組立	4.32 t	0.08 t	4	0.32 t	14	14	(18)
		-2 ﾀｲﾛｯﾄﾞ取付	190 本	6 本	4	24 m^2	8	22	(28)
		-3 ﾜｲﾔｰ張	2,700 m	36 m	4	144.00 m^3	19	41	(52)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

工事所要日数計算表－２（ワークショップ）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1．躯体工事									
	(1) 基礎及地中梁	-1 遣方	405.0 m^2	m^2	3	m^2	1	1	
		-2 掘削	84.0 m^3	1.40 m^3	15	21.00 m^3	4	5	
		-3 捨コン打設	4.9 m^3	1.90 m^3	3	5.70 m^3	1	6	(8)
		-4 墨出し	405.0 m^2	m^2		m^2	1	7	(9)
		-5 埋戻し	84.0 m^3	4.20 m^3	10	42.00 m^3	2	9	
	(2) 床	-1 捨てコン打設	25.2 m^3	1.90 m^3	8	15.20 m^3	2	2	
		-2 溶接ﾒｯｼｭ敷込	792.0 m^2	40.00 m^2	10	400.00 m^2	2	4	
		-3 ｺﾝｸﾘｰﾄ打設	83.2 m^3	1.90 m^3	12	22.80 m^3	4	8	(10)
		-4 養生							
	(3) PCﾌﾚｰﾑ建方	-1 PCﾌﾚｰﾑ建方	405.0 m^2	m^2		18.00 m^2	23	23	(29)
	(4) 梁	-1 鉄筋組立	1.19 t	0.08 t	4	0.32 t	4	4	
		-2 型枠建込－２	56.9 m^2	6.00 m^2	4	24.00 m^2	3	7	
		-3 ｺﾝｸﾘｰﾄ打設	4.0 m^3	1.50 m^3	4	6.00 m^3	1	8	
		-4 型枠解体撤去	56.9 m^2	30.00 m^2	2	60.00 m^2	1	9	(11)
	(5) 屋根	-1 波形ｱｽﾍﾞｽﾄ板葺	586.0 m^2	7.60 m^2	10	76.00 m^2	8	8	(10)
	(6) 壁	-1 ﾌﾞﾛｯｸ積	245.0 m^2	3.00 m^2	8	24.00 m^2	10	10	(13)
2．内外装									
	(1) 左官	-1 内壁ﾌﾟﾗｽﾀｰ塗り	118.0 m^2	2.10 m^2	6	12.60 m^2	10		(13)
	(2) 天井及軒裏	-1 室内吊天井	81.0 m^2	2.50 m^2	4	10.00 m^2	8		(10)
	(3) 塗装	-1 内壁	120.0 m^2	4.00 m^2	6	24.00 m^2	5		(7)

工事所要日数計算表－３（野外乾燥場）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1．躯体工事									
	(1) 基礎及地中梁	-1 遣方	900.0 m^2	m^2	2	m^2	1	1	
		-2 床付	900.0 m^2	14.00 m^2	15	210.00 m^2	5	6	(9)
		-3 ﾌﾞﾘｯｸ舗装	900.0 m^2	3.20 m^2	10	32.00 m^2	28	34	(44)
		-4 モルタル	900.0 m^2	2.50 m^2	10	25.00 m^2	36	70	(89)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

工事所要日数計算表－4（便所棟）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1．躯体工事									
	(1) 基礎及地中梁	-1 遣方	17.0 m^2	m^2		m^2	1	1	
		-2 掘削	7.1 m^3	1.40 m^3	5	7.00 m^3	1	2	(3)
		-3 捨コン打設	0.4 m^3	1.90 m^3	2	3.80 m^3	1	3	
		-4 鉄筋組立	0.2 t	0.08 t	3	0.24 t	1	4	
		-5 型枠建込	27.5 m^2	7.50 m^2	2	15.00 m^2	2	6	
		-6 ｺﾝｸﾘｰﾄ打設	1.9 m^3	1.90 m^3	2	3.80 m^3	1	7	(9)
		-7 養生						8	
		-8 型枠解体撤去	27.5 m^2	30.00 m^2	1	30.00 m^2	1	9	
		-9 埋戻し	1.9 m^3	4.20 m^3	1	4.20 m^3	1	10	(13)地業含む
	(2) 床	-1 捨てコン打設	0.7 m^3	1.90 m^3	2	3.80 m^3	1	1	
		-2 溶接ﾒｯｼｭ敷込	14.4 m^2	40.00 m^2	1	40.00 m^2	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	1.7 m^3	1.90 m^3	2	3.80 m^3	1	3	(4)
		-4 養生					1	4	(5)
	(3) 梁	-1 鉄筋組立	0.2 t	0.08 t	3	0.24 t	1	1	
		-2 型枠建込－2	15.7 m^2	6.00 m^2	3	18.00 m^2	1	2	側面型枠
		-3 ｺﾝｸﾘｰﾄ打設	1.6 m^3	1.50 m^3	2	3.00 m^3	1	3	(4)
		-4 養生					5	8	
		-5 型枠解体撤去	15.7 m^2	30.00 m^2	1	30.00 m^2	1	9	(12)
	(4) 屋根	-1 タルキ等	0.37 m^3	0.27 m^3	2	0.54 m^3	1	1	
		-2 ｱｽﾍﾞｽﾄ波形板葺	29.6 m^2	7.60 m^2	4	30.40 m^2	1	2	(3)
	(5) 壁	-1 8″レンガ積	63.4 m^2	3.00 m^2	6	18.00 m^2	4	4	(5)
		-2 4″ブロック	8.8 m^2	4.00 m^2	6				
2．内外装									
	(1) 左官・タイル	-1 ﾀｲﾙ下ﾓﾙﾀﾙ塗	37.2 m^2	2.50 m^2	4	10.00 m^2	4	4	
		-2 壁ﾀｲﾙ貼	37.2 m^2	1.50 m^2	4	6.00 m^2	9		
		-3 床ﾀｲﾙ貼	14.4 m^2	1.50 m^2	4			13	(17)
	(2) 塗装	-1 内壁	35.3 m^2	4.00 m^2	3	12.00 m^2	3	3	(4)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

工事所要日数計算表－５（実験棟）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1.	躯体工事								
	(1) 基礎及地中梁	-1 遣方	256.0 m^2	m^2	2	m^2	1	1	
		-2 掘削	61.0 m^3	1.40 m^3	15	21.00 m^3	3	4	(5)
		-3 捨コン打設	2.7 m^3	1.90 m^3	2	2.80 m^3	1	5	
		-4 墨出し	111.0 m^2	m^2	2	m^2	1	6	
		-5 鉄筋組立	0.73 t	0.08 t	5	0.40 t	2	8	
		-6 型枠建込	71.5 m^2	7.50 m^2	5	37.50 m^2	2	10	
		-7 ｺﾝｸﾘｰﾄ打設	11.5 m^3	1.90 m^3	7	13.30 m^3	1	11	(14)
		-8 養生					1	12	
		-9 型枠解体撤去	71.5 m^2	30.00 m^2	3	90.00 m^2	1	13	
		-10 埋戻し	29.7 m^3	4.20 m^3	8	33.60 m^3	1	14	(18) 地業含む
	(2) 床	-1 捨てコン打設	18.4 m^3	1.90 m^3	10	19.00 m^3	1	1	防湿を含む
		-2 溶接ﾒｯｼｭ敷込	282.0 m^2	40.00 m^2	8	320.00 m^2	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	28.3 m^3	1.90 m^3	15	28.50 m^3	1	3	(4)
		-4 養生					1	4	(5)
	(3) 柱	-1 墨出し	256.0 m^2	m^2		m^2			
		-2 鉄筋組立	0.47 t	0.08 t	6	0.48 t	1	1	
		-3 型枠建込	49.6 m^2	6.00 m^2	5	30.00 m^2	2	3	
		-4 ｺﾝｸﾘｰﾄ打設	3.1 m^3	1.50 m^3	3	4.50 m^3	1	4	(5)
		-5 養生					3	7	
		-6 型枠解体撤去	49.6 m^2	30.00 m^2	2	60.00 m^2	1	8	(9)
	(4) 梁	-1 型枠建込－１	14.7 m^2	6.00 m^2	3	18.00 m^2	1	1	底面型枠
		-2 鉄筋組立	0.58 t	0.08 t	4	0.32 t	2	3	
		-3 型枠建込－２	37.8 m^2	6.00 m^2	4	24.00 m^2	2	5	側面型枠
		-4 ｺﾝｸﾘｰﾄ打設	4.8 m^3	1.50 m^3	4	6.00 m^3	1	6	(8)
		-5 養生					7	13	
		-6 型枠解体撤去	52.5 m^2	30.00 m^2	2	60.00 m^2	1	14	(16) 梁底を除く
	(5) 屋根	-1 鉄骨トラス建方	10 基	3 基		3 基	4	4	加工別
		-2 タルキ等取付	3.62 m^3	0.27 m^3	7	1.89 m^3	2	6	
		-3 ｱｽﾍﾞｽﾄ波形板葺	326 m^2	7.60 m^2	10	76.00 m^2	5	11	(14)
	(6) 壁	-1 外壁レンガ積	150.0 m^2	2.00 m^2	10	20.00 m^2	8	8	
		-2 内壁レンガ積	43.5 m^2	3.20 m^2	10	32.00 m^2	2	10	(13)
2.	内外装								
	(1) 左官	-1 外壁ﾌﾟﾗｽﾀｰ塗り	178.5 m^2	2.50 m^2	10	25.00 m^2	8	8	
		-2 内壁ﾌﾟﾗｽﾀｰ塗り	265.5 m^2	2.10 m^2	10	21.00 m^2	13	21	
		-3 床ﾓﾙﾀﾙ塗	228.0 m^2	2.50 m^2	10	25.00 m^2	11	32	(41)
	(2) 天井及軒裏	-1 室内吊天井	189.0 m^2	2.50 m^2	10	25.00 m^2	8	8	
		-2 軒裏ボード貼	183.0 m^2	3.00 m^2	10	30.00 m^2	6	14	(18)
	(3) 塗装	-1 屋根	326.0 m^2	6.00 m^2	10	60.00 m^2	6	6	
		-2 外壁	178.5 m^2	4.00 m^2	10	40.00 m^2	5	11	
		-3 内壁	265.5 m^2	4.00 m^2	10	40.00 m^2	7	18	
		-4 軒裏	183.0 m^2	4.00 m^2	10	40.00 m^2	5	23	(29)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

工事所要日数計算表－6（車庫）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1．躯体工事									
	(1) 基礎及地中梁	-1 遣方	45.0 m²	m²	2	m²	1	1	
		-2 掘削	16.2 m³	1.40 m³	6	8.40 m³	2	3	
		-3 捨コン打設	0.7 m³	1.90 m³	2	1.90 m³	1	4	
		-4 墨出し	m²	m²		m²		4	
		-5 鉄筋組立	0.11 t	0.08 t	2	0.16 t	1	5	
		-6 型枠建込	12.4 m²	7.50 m²	2	15.00 m²	1	6	
		-7 ｺﾝｸﾘｰﾄ打設	2.2 m³	1.90 m³	2	3.80 m³	1	7	(9)
		-8 養生					1	8	
		-9 型枠解体撤去	12.4 m²	30.00 m²	2	60.00 m²	1	9	
		-10 埋戻し	12.8 m³	4.20 m³	4	16.80 m³	1	10	(13)
	(2) 床	-1 捨てコン打設	2.25 m³	1.90 m³	2	3.80 m³	1	1	
		-2 溶接ﾒｯｼｭ敷込	66.7 m²	40.00 m²	2	80.00 m²	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	6.0 m³	1.90 m³	4	7.60 m³	1	3	(4)
		-4 養生					1	4	(5)
	(3) 柱	-1 墨出し	45.0 m²	m²	2	m²			
		-2 鉄筋組立	0.18 t	0.08 t	2	0.16 t	2	2	
		-3 型枠建込	24.4 m²	6.00 m²	4	24.00 m²	1	3	
		-4 ｺﾝｸﾘｰﾄ打設	2.1 m³	1.50 m³	2	3.00 m³	1	4	(5)
		-5 養生					3	7	
		-6 型枠解体撤去	24.4 m²	30.00 m²	2	60.00 m²	1	8	(10)
	(4) 梁	-1 型枠建込－1	6.5 m²	6.00 m²	2	12.00 m²	1	1	
		-2 鉄筋組立	0.05 t	0.08 t	2	0.16 t	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	0.6 m³	1.50 m³	2	3.00 m³	1	3	(4)
		-4 養生					7	10	
		-5 型枠解体撤去	6.5 m²	30.00 m²	2	60.00 m²	1	11	(12)梁底を除く
	(5) 屋根	-1 鉄骨建方	0.58 t	0.08 t	4	0.32 t	2	2	加工別
		母屋取付							
		-2 波形ｱｽﾍﾞｽﾄ板葺	69.3 m²	7.60 m²	4	30.40 m²	3	5	(6)
	(6) 壁	-1 ｺﾝｸﾘｰﾄﾌﾞﾛｯｸ積	22.5 m²	3.00 m²	4	12.00 m²	2	2	(3)
2．内外装									
	(1) 左官	-1 外壁ﾌﾟﾗｽﾀｰ塗り	37.8 m²	2.50 m²	4	10.00 m²	4	4	(5)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

工事所要日数計算表－7（研修棟）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1.	躯体工事								
	(1) 基礎及地中梁	-1 遣方	606.0 m²	m²	4	m²	1	1	
		-2 掘削	82.1 m³	1.40 m³	20	28.00 m³	3	4	
		-3 床付	606.0 m²	14.00 m²	15	210.00 m²	3	7	(9)
		-4 捨コン打設	5.3 m³	1.90 m³	3	5.70 m³	1	8	
		-5 墨出し	606.0 m²	m²	4	m²	1	9	
		-6 鉄筋組立	1.31 t	0.08 t	6	0.48 t	3	12	
		-7 型枠建込	186.0 m²	7.50 m²	8	60.00 m²	3	15	
		-8 ｺﾝｸﾘｰﾄ打設	28.2 m³	1.90 m³	15	28.50 m³	1	16	(21)
		-9 養生					1	17	
		-10 型枠解体撤去	186.0 m²	30.00 m²	6	180.00 m²	1	18	
		-11 埋戻し	493.0 m³	4.20 m³	20	84.00 m³	6	24	(30)地業含む
	(2) 床	-1 捨てコン打設	24.9 m³	1.90 m³	15	28.50 m³	1	1	防湿を含む
		-2 溶接ﾒｯｼｭ敷込	485 m²	40.00 m²	12	480.00 m²	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	65.8 m³	1.90 m³	18	34.20 m³	2	4	(5)
		-4 養生					1	5	(6)
	(3) 柱	-1 墨出し	606.0 m²	m²		m²			
		-2 鉄筋組立	0.78 t	0.08 t	6	0.48 t	2	2	
		-3 型枠建込	80.6 m²	6.00 m²	8	48.00 m²	2	4	
		-4 ｺﾝｸﾘｰﾄ打設	5.04 m³	1.50 m³	4	6.00 m³	1	5	(7)
		-5 養生					3	8	
		-6 型枠解体撤去	80.6 m²	30.00 m²	3	90.00 m²	1	9	(11)
	(4) 梁	-1 型枠建込－1	28.0 m²	6.00 m²	6	36.00 m²	1	1	底面型枠
		-2 鉄筋組立	0.99 t	0.08 t	6	0.48 t	2	3	
		-3 型枠建込－2	70.0 m²	6.00 m²	6	36.00 m²	2	5	側面型枠
		-4 ｺﾝｸﾘｰﾄ打設	8.3 m³	1.50 m³	6	9.00 m³	1	6	(8)
		-5 養生					7	13	
		-6 型枠解体撤去	98.0 m²	30.00 m²	4	120.00 m²	1	14	(16)
	(5) 屋根	-1 鉄骨トラス建方	17 基	2 基		2 基	9	9	加工別
		-2 タルキ等取付	4.7 m³	0.27 m³	10	2.70 m³	2	11	
		-3 ｱｽﾍﾞｽﾄ波形板葺	793.0 m²	7.60 m²	10	76.00 m²	11	22	(28)
	(6) 壁	-1 外壁レンガ積	303.0 m²	2.00 m²	10	20.00 m²	15	15	
		-2 内壁レンガ積	63.0 m²	3.20 m²	10	32.00 m²	2	17	(23)
2.	内外装								
	(1) 左官	-1 外壁ﾌﾟﾗｽﾀｰ塗り	369.3 m²	2.50 m²	12	30.00 m²	12	12	
		-2 内壁ﾌﾟﾗｽﾀｰ塗り	495.3 m²	2.10 m²	12	25.20 m²	20	32	
		-3 ﾀｲﾙ下ﾓﾙﾀﾙ塗	79 m²	2.50 m²	12	30.00 m²	3	35	
		-4 床ﾓﾙﾀﾙ塗	606 m²	2.50 m²	12	30.00 m²	20	55	(70)
	(2) 天井及軒裏	-1 室内吊天井	396 m²	2.50 m²	10	25.00 m²	16	16	
		-2 軒裏ボード貼	260 m²	3.00 m²	10	30.00 m²	9	25	(32)
	(3) 塗装	-1 屋根	793 m²	6.00 m²	10	60.00 m²	13	13	
		-2 外壁	369.3 m²	4.00 m²	10	40.00 m²	9	22	
		-3 内壁	495.3 m²	4.00 m²	10	40.00 m²	12	34	
		-4 軒裏	260.0 m²	4.00 m²	10	40.00 m²	7	41	(52)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.2

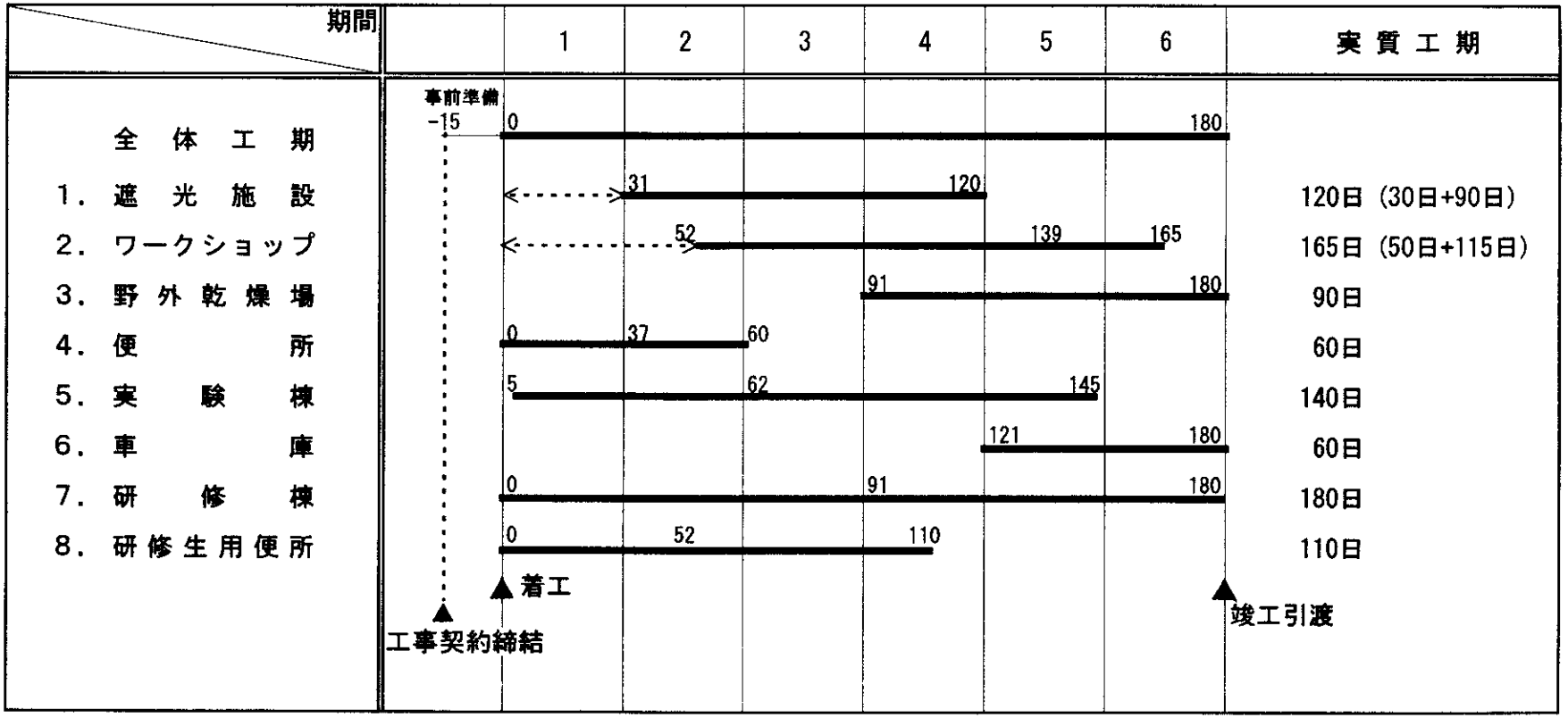
工事所要日数計算表－8（研修生用便所棟）

	部位	工種及工程	工事数量	作業			工事日数		修正日数
				能力/人/日	人数	量/日	所要	累計	
1．躯体工事									
	(1) 基礎及地中梁	-1 遣方	43.2 m^2	m^2		m^2	1	1	
		-2 掘削	19.0 m^3	1.40 m^3	14	19.60 m^3	1	2	(3)
		-3 捨コン打設	0.6 m^3	1.90 m^3	2	3.80 m^3	1	3	
		-4 墨出し	m^2	m^2		m^2	1	4	
		-5 鉄筋組立	0.28 t	0.08 t	2	0.16 t	2	6	
		-6 型枠建込	36.9 m^2	7.50 m^2	5	37.50 m^2	1	7	
		-7 ｺﾝｸﾘｰﾄ打設	3.7 m^3	1.90 m^3	2	3.80 m^3	1	8	(10)
		-8 養生					1	9	
		-9 型枠解体撤去	36.9 m^2	30.00 m^2	2	60.00 m^2	1	10	
		-10 埋戻し	19.0 m^3	4.20 m^3	5	21.00 m^3	1	11	(14)地業含む
	(2) 床	-1 捨てコン打設	2.0 m^3	1.90 m^3	2	3.80 m^3	1	1	
		-2 溶接ﾒｯｼｭ敷込	40.6 m^2	40.00 m^2	2	80.00 m^2	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	4.6 m^3	1.90 m^3	3	5.70 m^3	1	3	(4)
		-4 養生					1	4	(5)
	(3) 柱	-1 鉄筋組立	0.13 t	0.08 t	2	0.16 t	1	1	
		-2 型枠建込	20.6 m^2	6.00 m^2	4	24.00 m^2	1	2	
		-3 ｺﾝｸﾘｰﾄ打設	1.2 m^3	1.50 m^3	2	3.00 m^3	1	3	(4)
		-4 養生					3	6	
		-5 型枠解体撤去	20.6 m^2	30.00 m^2	1	30.00 m^2	1	7	
	(4) 梁	-1 鉄筋組立	0.22 t	0.08 t	2	0.16 t	2	2	
		-2 型枠建込－2	26.9 m^2	6.00 m^2	3	18.00 m^2	2	4	側面型枠
		-3 ｺﾝｸﾘｰﾄ打設	2.7 m^3	1.50 m^3	2	3.00 m^3	1	5	(7)
		-4 養生					3	8	
		-5 型枠解体撤去	26.9 m^2	30.00 m^2	2	60.00 m^2	1	9	
	(5) 屋根	-1 タルキ等取付	0.89 m^3	0.27 m^3	4	1.08 m^3	1	1	
		-2 ｱｽﾍﾞｽﾄ波形板葺	32.6 m^2	7.60 m^2	4	30.40 m^2	2	3	(4)
	(6) 壁	-1 外壁レンガ積	85.3 m^2	2.00 m^2	6	12.00 m^2	8	8	
		-2 内壁レンガ積	37.5 m^2	3.20 m^2	6	19.20 m^2	2	10	(13)
2．内外装									
	(1) 左官・タイル	-1 外壁ﾌﾟﾗｽﾀｰ塗り	72.3 m^2	2.50 m^2	6	15.00 m^2	5	5	
		-2 内壁ﾌﾟﾗｽﾀｰ塗り	97.1 m^2	2.10 m^2	6	15.00 m^2	6	11	
		-3 ﾀｲﾙ下ﾓﾙﾀﾙ塗	99.0 m^2	2.50 m^2	6	15.00 m^2	7	18	
		-4 床ﾀｲﾙ貼	42.0 m^2	1.50 m^2	4	6.00 m^2	7	25	
		-5 壁ﾀｲﾙ貼	99.0 m^2	1.50 m^2	4	6.00 m^2	16	41	(53)
	(2) 天井及軒裏	-1 天井ボード貼	46.0 m^2	3.00 m^2	4	12.00 m^2	4	4	(5)
	(3) 塗装	-1 屋根	62.6 m^2	6.00 m^2	4	24.00 m^2	3	3	
		-2 外壁	61.3 m^2	4.00 m^2	4	16.00 m^2	4	7	
		-3 内壁	80.8 m^2	4.00 m^2	4	16.00 m^2	5	12	
		-4 天井	46.0 m^2	4.00 m^2	4	16.00 m^2	3	15	(19)

注：修正日数は日曜及び休日（年間平均1.5日/週）を考慮した日数

別表 8.3.3.

工事工程表


期間
1
2
3
4
5
6
実 質 工 期
全 体 工 期
1．遮 光 施 設
2．ワークショップ
3．野 外 乾 燥 場
4．便 所
5．実 験 棟
6．車 庫
7．研 修 棟
8．研修生用便所
事前準備
-15
0
180
31
120
52
139
165
91
180
0
37
60
5
62
145
121
180
0
91
180
0
52
110
120日 (30日+90日)
165日 (50日+115日)
90日
60日
140日
60日
180日
110日
着工
工事契約締結
竣工引渡

8．4 工事契約

8.4.1 業者の選定

施工業者の選定にあたっては、本工事に関する以下の事項を考慮しておく必要がある。

(1) 本工事の発注は、国際協力事業団スリ・ランカ事務所が行う。

(2) 施設の設計は現地レベルと同等のグレードであること

(3) 建設費は西部州制定の単価に基づき積算されていること。

(4) 事業費はモデルインフラ整備事業の枠内であること。

以上により、日本の施工業者は採算上対応することが困難であると判断されることから、有能な現地業者から選定することになる。施工業者の選定は入札方式によるが、公開入札とせず、日本の施工業者の下請業者としての実績を有し、かつその推薦を受けた堅実な業者を指名し入札を行う。

入札は西部州の実施している B.O.Q. に基づく単価及び総額を提示する方式とする。入札後、最低値を提示しかつ入札条件を充足している入札者を落札者として契約交渉を行い、本工事の施工業者を選定する次第となる。

8.4.2 工事契約

前記により選定された施工業者と工事契約を締結することになるが、工事契約締結に至るまでの必要な期間として、インビテーションレター発送より約25日間必要であり、その日程はおよそ次のように考えられる。

業務内容		日順
(1).	インビテーションレター発送	1日
(2).	入札図書提示	3日
(3).	質問書受付	10日
(4).	回答書交付	12日
(5).	入札	17日
(6).	アウォードレター交付	22日
(7).	工事契約締結	25日

工事契約にかかる諸条件は、現地業者を対称として契約が締結されることを前提とし、西

部州が実施している書式・内容をふまえたものが適切と考えられる。

工事契約書類は次のように構成される。

(1) 工事契約書

(2) 工事契約書付属書 － 入札要綱

－ 質疑応答書

－ 入札書

－ 工事契約約款

－ ＢＯＱ（レート記入）

－ アゥォードレター

(3) 設計図書 － 技術仕様書（特記仕様書）

(4) 設計図書 － 設計図

契約金額の支払条件は国際協力事業団が実施したモデルインフラ整備事業の類似案件を参考にして

「前払い金30%、中間支払は１回とし、着工後90日目の出来高払い及び竣工後残金の支払」と設定する。

８．５ 施工監理

本工事は遮光施設の整備及び農業実習／研修施設工事に精通した建築士を専属の短期専門家として現地に派遣する必要がある。この派遣期間は、本工事の発注を国際協力事業団スリ・ランカ事務所が行うことをふまえ、入札・工事契約手続きにかかる協力に１ヶ月間および前期の工程計画に基づく施工期間６ヶ月の合計７ヶ月間とする。

第 9 章

入 札 図 書

第９章　入札図書

本モデルインフラ整備事業にかかる施工業者選定にあたり、実施する入札手続きに必要とされる入札図書は次のような構成となる。

（1）．インビテーションレター

（2）．入札書式

（3）．入札要綱

（4）．質疑書様式

（5）．工事契約書

（6）．契約約款

（7）．数量調書

（8）．技術仕様書

（9）．設計図面

INVITATION TO TENDER

INVITATION TO TENDERER
FOR
CONSTRUCTION WORK
FOR
MODEL INFRASTRUCTURE IMPROVEMENT WORKS
IN
AMBEPUSSA

Sealed Tenders are invited by Japan International Cooperation Agency (hereinafter referred to as "JICA") for the Construction Work for the Facilities in District Agricultural Training Center(DATC) Ambepussa.

Tender Documents are available from the office of JICA Sri Lanka Office in Colombo at the following address. Only one set of documents will be provided for each tenderer.

Japan International Cooperation Agency Sri Lanka Office
Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitiya, Colombo 3

The tender and all accompanying documents and letters must be prepared in duplicate clearly endorsed "Original" and "Duplicate" and must be submitted in sealed cover, and should be addressed to:

Mr. Yoshikatsu NAKAMURA
Resident Representative
Japan International Cooperation Agency Sri Lanka Office

The "Original" and "Duplicate" must be delivered to:

Japan International Cooperation Agency Sri Lanka Office

The delivery shall be no later than at 3:00 p.m. on the..... day ....., 1995.

All the Tenders shall be opened at the office of JICA Sri Lanka Office in Colombo at 3:00 p.m. on the.....day..... , 1995 by the representative of JICA Sri Lanka Office.
All the tenderers or their representatives are requested to attend the opening of the tender.

FORM OF TENDER

FORM OF TENDER

CONSTRUCTION WORKS
FOR
MODEL INFRASTRUCTURE IMPROVEMENT WORKS
IN
AMBEPUSSA

Attention: The Resident Representative
Japan International Cooperation Agency
Sri Lanka Office

We, _____ Tenderer's Name and Address _____, the undersigned, having examined the Form of Agreement, the Condition of the Contract, Conditions of Tender, Drawings, Specification, Bill of Quantities and the Schedule of Rate and Prices, do hereby offer and undertake to execute, complete and maintain the whole of the said works referred to in the schedule of the Form of Agreement in conformity with the said drawings, specification and all other works in connection therewith and incidental falls pertinent thereto, to your entire satisfaction and strict accordance with the Conditions of Contract, at the rates and prices set forth in the said Bill of Quantities and/or Schedule of Rate and Prices, amounting to a sum of Rupees_____
(Rs.) or such other sums as may be ascertained in accordance with the conditions of contract.

2. And. We do hereby undertake to commence the works within _____ days from the last date of acceptance of this Tender, if any or at the instance of the Engineer's order to commence, and to complete and deliver the whole of the works as aforesaid within _____ days calculated from the last day of the aforesaid period in which works are to be commenced.

3. And further, if required We do hereby undertake to obtain the guarantee of an Insurance Company or Bank of other Sureties with your approval, to be jointly and severelly bound with us in a sum not exceeding ..... percent of the aforementioned sum of Rs. ..... for the due performance of the contract under the terms of a Bond to be approved by you.

4. And We further agree, in the event of our failing to execute the said agreement or the

said Bond, if required within ..... days of my/our being called upon to do so, at the latest then any acceptance of this tender by you, may be revoked by you on behalf of the Employer and that We shall be held responsible for all and any damages suffered by the Employer in consequence of such delay or failure.

5. Unless and until the formal agreement is prepared and executed, We do hereby agree, that this tender together with your written acceptance thereof, shall constitute a binding contract between the two parties.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

7. We further undertake to abide by this tender for a period of ____ days from the last date fixed for "receiving of tenders" and that the same shall remain binding upon us and may be accepted at any time before the expiration of such period.

Please sign the attached form and submit with the Tender.

Note; The Appendix forms part of Tender, tenderers are required to fill up all blank spaces in this Tender Form and Appendix.

APPENDIX TO FORM OF TENDER

	Clause	
Amount of Bond Guarantee (if any)	10	..... percent
Minimum amount of third party Insurance	23 (2)	.....
Period for commencement from Engineer's order to commence	41	..... days
Time for Completion	43	..... days
Amount of Liquidated damages	47 (1)	..... per day
Limit of Liquidated damages	47 (1)	.....
Amount of Bonus (if any)	47 (3)	.....
Period of Maintenance	49	..... days
Percentage for adjustment of provisional sums	59 (4) (c)	..... percent
Mobilization Advance	61 (1) (a)	..... percent
Percentage of Retention	60 (4) (a)	..... percent
Limit of retention money	60 (4) (a)	.....
Minimum amount of Interim Certificates	60 (3)	.....
Time within which payment to be made after certificate	60 (7)	..... days

In witness whereof, I/We do set my hand/our respective hands hereto at ..... on this ..... day of One Thousand Nine Hundred and ..... .

Signature of .....

Tender/s .....

(in the capacity of ..... and/or duly authorized to sign this tender for and on behalf of

Witness Signature

Address

1.

2.

CONDITIONS OF TENDER

CONDITIONS OF TENDER

Construction Works for Model Infrastructure Improvement Works in Ambepussa
for Agricultural Extension Improvement Project in Gampaha

The Employer : Japan International Cooperation Agency
Sri Lanka Office

1. The Tenderer must agree to complete the work within _____ months from the date of award of Tender.

2. Japan International Cooperation Agency (hereinafter referred to as "JICA") does not bind itself to accept the lowest or any tender and will not consider any tender which is incomplete or which does not include the whole of the work covered by the Drawings, Specifications and Bill of Quantities, excepting the items of work and provisions specifically executed in the Form of Tender.

3. Where no prices are entered by the Tenderer against any items in the Bill of Quantities, it will be presumed that the cost of works described in those particular items are covered by the prices inserted against the remaining items in the Bill of Quantities. In such cases, the Resident Representative of JICA Sri Lanka Office, reserves the right of apportioning rates and amounts for payment against those items by reducing rates and amounts inserted against other items keeping the total amount the same.

4. JICA will not be responsible for or pay for any expenses or lessees which may be incurred by the Tender in the preparation of this tender.

5. The complete set of tender document consist of the following:

Vol. I Document
- Section 1. Foam of Tender
- Section 2. Conditions of Tender
- Section 3. Form of Interpretation
- Section 4. Form of Agreement & Article of Agreement
- Section 5 Conditions of Contract (Part- I & Part- II)

Vol. II Bill of Quantities

Vol. III Technical Specifications

Vol. IV Drawings

Addition : All addenda issued prior to the tender closing.

6. All tenderers should fully acquaint themselves with the Drawings, Specifications and the details and nature of the Proposed works generally and the form of Agreement which they will be required to sign in order that any special difficulties or peculiar features may be noted.

7. All tenderers submitting tenders should visit and inspect the site and tenderers themselves thoroughly conversant with all matters pertaining thereto with local conditions and with local labour and rates of pay and with the facilities for access to site, as no claims for time extensions or extras of any kind whatever will be considered or allowed on the plea of lack or want of such knowledge.

7A. It is obligatory on the part of the Tenderer to satisfy himself before tendering that materials which should be supplied by him are actually available as no consideration whatever will be given to the successful tenderer for failure to comply with the work under the contract by reasons of non availability of such materials.

8A. Non-Refundable Tender Fee

Before the Tender Forms can be issued prospective tenderers must deposit a sum of Rupees_____ (Rs.) as non-refundable tender fee at the bank account of Sri Lanka Office and the receipt must be handed over to JICA Sri Lanka Office in Colombo.

8B Tender Guarantee

All tenderers except Government owned Business under taking must furnish a tender guarantee along with the tender. Any tender not accompanied by a tender guarantee will be REJECTED.

8C. Value Of Tender Guarantee (Bid Bond/Refundable Tender Deposit)

Value of Tender guarantee/refundable deposit for Rupees_____ _____should be furnished in one of the following manner.

8D. Form of Tender Guarantee

Tender Guarantee should be an acceptable bank guarantee from a recognized bank payable to JICA Sri Lanka Office, Hotel Taj Samudra, 25, Galle Face Center Road,

Kollupitiya, Colombo 3. The bank guarantee shall be valid for a period of _____ from the date fixed for the opening of the tender.

No interest will be paid for such deposit.

Note: Any cheques drawn in favour of JICA Sri Lanka Office will NOT BE ACCEPTED.

9. Release of Tender Guarantee

(i) The tender guarantee of the successful tenderer shall be returned after the tenderer furnished a Guarantee or a Bond for the due performance of the contract.

(ii) In the event of the successful tenderer failing to sign the contract with JICA Sri Lanka Office within thirty (30) calendar days after receiving notice of award of the contract and submitting a contract guarantee or a bond as specified in clause 14 hereof, the tender guarantee submitted will be forfeited without prejudice to the right of JICA Sri Lanka Office to recover from the successful tenderer the full amount of damaged that may be sustained by JICA Sri Lanka Office in consequence of the said default on the part of the tenderer.

(iii) All correspondence regarding the release of the tender guarantee shall be addressed to the Resident Representative, JICA Sri Lanka Office.

In cases where the number of tenders received is three less, the tender deposits may be refunded immediately after the Agreement has been signed. If a tenderer within ten days of his being noticed to do so declines or fails to enter into an agreement on the bases of his tender and/or fails to deposit the security or execute the bond referred to in paragraph _____of these Conditions, the Tender Fee will be forfeited without prejudice to the right of Japan International Cooperation Agency to the recovery from the Tenderer the full amount of the damages sustained by Japan International Cooperation Agency by the Tenderer so declining or failing. Such notice will be considered to have been given on the date when a letter to that effect is posted to or left at the Tenderer's address.

10. Tenders should be submitted in duplicate on Forms which are obtainable from JICA Sri Lanka Office, with all the blanks in the Tender & in the Bill of Quantities dully filled in and signed. The Tender Price must include all incidental and contingent

expenses. They must be placed in separate sealed envelopes and marked respectively.

"ORIGINAL TENDER for Construction Works for Model Infrastructure Improvement Works for Agricultural Extension Improvement Project in Gampaha"

and

"Duplicate tender for Construction Works for Model Infrastructure Improvement Works for Agricultural Extension Improvement Project in Gampaha"

Both envelopes should be enclosed in one securely sealed cover and addressed to "The Resident Representative, JICA Sri Lanka Office, Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitiya, Colombo 3".
They must reach the Office of the foregoing offices at or before 3:00 p.m. on the_____day _____ , 1995.

Tenders must be sent by registered post or delivered personally at JICA Sri Lanka Office. If, either the ORIGINAL TENDER or the DUPLICATE thereof is not received by the specified time on the due date, the tender will be rejected.

The tenderer or his authorized representative may be present at the time of opening of tenders at _____ p.m. on the _____day_____ , 1995 at Japan International Cooperation Agency, Sri Lanka Office.

11. No alteration should be made in the Form of Tender or in the Bill of Quantities thereto, except in filling up and signing the Tender and Bill of Quantities as directed. If any such alteration is made or if these conditions be not fully complied with, the tender may be rejected.

12. The Quantity and Quality of the works included in the Contract sum will be deemed to be that which is set out in the Bill of Quantities and shown up on the Drawings or described in the Specifications excepting the items of work and precision specifically excluded in the Form of Tender. Any alterations made in filling up the Bill of Quantities must bear the initial of the Tenderer and all tenders containing alterations not so initialed will be treated as informal and rejected.

13. Should a scrutiny of the selected tender before the Contract is let, reveal that there are arithmetical errors in the rate or amounts quoted in the priced Bill of Quantities submitted with such tender which would vary the total amount quoted for the work

contracted for and/or if any items are priced unduly high or low, the matters will be brought to the notice of such tenderer and he will be required to correct to such rates and amounts quoted in the priced Bill of Quantities submitted by him so as to make the calculations upon which his tender is based agree with the total amount quoted by him in the priced Bill of Quantities and to rectify such rates that have been quoted unduly high or low and to initial such corrections before have been quoted unduly high or low and to initial such corrections before his tender is accepted. If such tenderer refuses to make such corrections or alterations in the rates in the priced Bill of Quantities, his tender will be rejected and the deposit made by him under Clause 8 of these Conditions shall be forfeited.

14. Before the Agreement is signed, the successful tenderer will be required to deposit a sum of money equivalent to Two and half percent of total value of Contract Price in an approved Bank in the name of JICA Sri Lanka Office as security or to execute a Bond in the same sum with the Bank approved by JICA Sri Lanka Office as surety, in favour of JICA Sri Lanka Office for the due and Satisfactory completion of the Contract and for the payment of all claims to which JICA Sri Lanka Office may be entitled under the provision of the Agreement to be entered into.

15A. The successful tenderer should insure the works in the Insurance Corporation of Sri Lanka of the National Insurance Corporation.

15B. The successful tenderer is required to submit within fourteen (14) days of issue of the Letter of Acceptance an item-wise and activity-wise time schedule drawn up for the successful completion of the entire work covered by the tender within the period stipulated in paragraph 2 of these conditions.

16. Tenders should be firm and valid for ninety (90) days from the date of closing of tenders and subject to no variation or fluctuation in prices.

17. If a tenderer quotes a % discount or addition on a total, such discount or addition will be deemed to apply to each and every rate quoted in arriving at the total. Payment for each item will be made on the reduced or increased rates computed on the % discount or addition as the case may be. The reduced or increased rates will also apply to extras, omissions and variations etc., where a such are relevant in terms of the Contract.

18. The tenderer must write the total amount of tender in figures as well as in words. Where the amount given in figures differ from the amount given in words the amount stated in words will be accepted as the correct tender amount.

19. No oral interpretation or clarification regarding the Tender Document shall be made to any tenderer or prospective tenderer. Should tenderers find any discrepancy in or omission from the Tender Documents, or should they be in doubt or obscurity whatsoever as to their meaning, or as to these instructions, or as to any matter or thing pertaining to the Contract, the tenderers must submit the relevant questions in writing to the Employer as follows:

(i) Question must be typed in English on the blank form attached as an Appendix to this Conditions of Tender and must be submitted to JICA Sri Lanka Office by 3:00 p.m. on the _____day _____ , 1995.

(ii) Replies to Questions will be furnished in writing and delivered by hand at JICA Sri Lanka Office at 3:00 p.m. on the _____ day _____ ,1995. These replies shall become part of the Tender Document as a Supplementary instructions.

20. Return of Tender Document

All tenderers shall return all tender document issued for this tender to JICA Sri Lanka Office at the same time as the priced tenders are due to be submitted, namely, 3:00 p.m. on _____ day _____, 1995.

In case the tenderer shall not return the provided tender document, the tender guarantee submitted by him will also be forfeited.

The Resident Representative
Japan International Cooperation Agency
Sri Lanka Office

Date:

_____

Signature of Contractor

Date:

SUPPLEMENTARY INSTRUCTION TO TENDERERS

SUPPLEMENTARY INSTRUCTION TO TENDERERS

1. Supplementary Instruction to Tenderers shall consist of any written instruction or interpretation during the Tendering period.

2. Tenderers shall request any interpretation of the meaning of the Tender Documents using the Form on the following page which should be submitted to JICA Sri Lanka Office before 3:00 p.m. ..... , 1995.

(FORM OF INTERPRETATION)

Date: .....

To : Japan International Cooperation Agency, Sri Lanka Office

Project Name : Construction Work for
Model Infrastructure Improvement Works in Ambepussa

Tenderer :

Name of the person

Designation

No.	Draw. No.	Item of Interpretation	Instruction and Reply

FORM OF AGREEMENT
&
ARTICLES OF AGREEMENT

FORM OF AGREEMENT

THIS AGREEMENT is made and entered into on this ..... days of .....One Thousand Nine Hundred and Ninety Five by and
between .... as .....
(Name of the person on behalf of employer) (designation)
of .....
(Official address)
(hereinafter called and referred to as "the Employer", which term or expression as herein used shall as and when the context so requires or admits, of construction, mean and include the said .....
(Name of the person signing on behalf of employer)
afoesaid and his successors in the said office for the time being and the officers, who for the time being are action in the office of, or are performing the functions now exercised by, the ..... or any assignee of the employer,
(designation)
or any assignee of the employer with the consent of the contractor hereinafter specified acting herein for and on behalf of Japan International Cooperation Agency of the ONE PART
and .....
(name of the company or person)
and having it's registered office at .....
(place of registered office)
(hereinafter called and referred to as "the Contractor", which term or expression as herein used shall as and when the context so requires or admits of construction mean, and include the said ..... it's heirs,
(name of the company or person)
executors, administrators, successors and permitted assigns) of the OTHER PART.

WHEREAS the Employer is desirous that the works more fully described in the schedule hereto be executed, completed and maintained and has accepted a tender dated ..... by the Contractor for the execution completion and maintenance of the said works.

NOW THIS AGREEMENT WITNESSETH as follows:

(1) The words and expressions in this agreement shall have the meaning assigned to them in the conditions of contract which is part and parcel of this agreement and hereinafter referred to.

(2) The following documents shall be deemed to form, be read with and construed as part and parcel of this agreement:

(a) The Tender aforesaid

(b) The Drawings

(c) The Conditions of Contract - Parts I & II

(d) The Specifications

(e) The Bill of Quantities

(f) The Schedule of Rates and Prices (as and when it applies)

(g) Memorandum of Understandings (if any)

(h) the Letter of Acceptance of the Tender

(3) The Contractor shall execute, complete and maintain the works more fully described in the schedule hereto, in conformity in all respects with the provisions of the contract, more fully described in the conditions of the contract aforesaid, in consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned.

(4) The Employer shall pay the Contractor the contract price at the times and in the manner described by the aforesaid contract. In consideration of the execution, completion and maintenance of the works aforesaid.

In witness whereof the party of the first part has set his hand hereunto and the party of the second part has caused its common seal be hereunto affixed and signed on the day and year aforementioned.

.....
(signature - Party of the first part)

.....
(signature - Party of the second part)

Common seal of .....Ltd.

Signed, sealed and delivered by the said parties in the presence of:

Witnesses

(1)

(2)

Schedule above referred to:

The works aforesaid are as follows fully described in

1. The Drawings
2. The Specifications
3. The Conditions of Contract
4. Schedule of Rates and Prices (as and when applicable)
5. Bill of Quantities

JAPAN INTERNATIONAL COOPERATION AGENCY

SRI LANKA OFFICE

Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitiya, Colombo 3

ARTICLES OF AGREEMENT

Contract No.: ..... Date: .....

Articles of Agreement made between ..... (holding the office of Resident Representative in Japan International Cooperation Agency Sri Lanka Office) hereinafter termed Resident Representative for himself and his successors in the said office for the time being, acting for and on behalf of Japan International Cooperation Agency (hereinafter sometimes referred to as JICA) of the one part and ..... of ..... trading under the name, firm and style of Messrs. ... . a company duly incorporated and having its registered office at .... (hereinafter designated the Contractor which expressions shall include his or their heirs, executors, administrators and legal representatives or where the context so admits, include its successor and permitted assigns) of the other part.

Whereas the Resident Representative acting as aforesaid is desirous of entering into a contract with the Contractor for the perfect construction and completion of the shading facilities and the training/agricultural practice facilities.

And whereas Drawings and Bill of Quantities or Schedule of Rates and Specifications describing the work to be done have been prepared by JICA Sri Lanka Office and whereas the said Drawings and the said Bill of Quantities or Schedule of Rates and the said specification have been signed by the parties hereto:

Now it is hereby agreed as follows:

1. For the consideration hereinafter mentioned, the Contractor will, upon and subject to the conditions hereto annexed, execute and complete the work shown upon the said Drawings or described or referred to in the Said Bill of Quantities or Schedule of Rates and in the said Specification and conditions in a good workmanlike and substantial manner with the best materials and to the entire satisfaction of the Engineer on or before the ..... day of ..... ONE THOUSAND NINE HUNDRED AND NINETY .....subject to extras, omissions, and variations to be determined by the Engineer as hereinafter provided.

   The said Drawings, the said Specifications, the said Bill of Quantities or Schedule of Rates, detailed as Group A, B, C respectively in the List A, B, C & D hereto annexed) Conditions of Tender, Form of Tender, Memorandum of Understanding (if any) and the Letter of Acceptance (hereto annexed) all duly

signed by the Resident Representative and the contractor shall be read, regarded and construed as part and parcel of this agreement; Provided that certain items of work and provisions (detailed as Group D in the List A, B, C & D hereto annexed) duly signed by the Resident Representative and the contractor are not included in this Agreement.

2. The Contractor will be paid for the said works the sum of Rupees .... (Rs. .....) hereinafter sometimes referred to as the Contract Price or such other sum as shall become payable hereunder according to the schedule of rates at the times and in the manner hereinafter specified.

3. As security for the due and punctual performance and fulfillment of this Agreement by the satisfactory completion of the said works as well as such extras, omissions and variations as may be ordered in terms of this Agreement and for the due maintenance in complete repair of the whole of the said works for the space of twelve months from the date of completion thereof and for the due payment of all claims to which JICA Sri Lanka Office may be entitled under the provisions of this Agreement, the contractor hereby undertakes to execute a bond in favour of Japan International Cooperation Agency with a bank approved by the Resident Representative as surety in the sum of Rupees ..... (Rs. .....) for the due and punctual performance and fulfillment of this agreement as aforesaid which said Bond No. ..... Dated ..... of ..... shall remain in force and will not be discharged until the Engineer shall issue us certificate to the effect that the contractor has duly discharged and completed all his obligations under this Agreement and that there is no sum whatever due to JICA Sri Lanka Office by way of charge at the date of such certificate under this Agreement or any other Agreement entered into between the Contractor and JICA Sri Lanka Office, the Contractor hereby acknowledges that he has deposited in the. .... (FDR/Pass Book No. .....) in the name of the Resident Representative, the sum of Rupees .....(Rs. .....) which said sum, the contractor doth hereby mortgage, hypothecate, assign and set over to, and with Japan International Cooperation Agency .

The Contractor shall not be entitled to be paid the said sum of any part thereof until he has duly completed the contract in this Agreement referred to and until he shall have duly paid and discharged all the liabilities arising under this Agreement.

In the event of the Contractor duly completing the contract herein and in these presents more particularly described and in the event of the contractor duly discharging and fulfilling all obligations, undertakings, conditions, stipulations and paying all dues as aforesaid, the said sum of Rupee..... .... (Rs. .....) or so much thereof as may then be due to the contractor, shall at the end of the period of defect liability herein referred to, (save as hereinafter provided), be refunded and repaid to the Contractor, accompanied by a certificate from the Engineer to the effect that the contractor has duly discharged and completed all his obligations under this agreement and

that there is no sum whatever due to JICA Sri Lanka Officeby way of charge on the said sum of
Rupees .....
(Rs. .....).

Provided however and it is hereby expressly agreed by and between the Contractor and the Resident Representative that in the event of any sum or sums of money whatsoever being due by the Contractor to JICA Sri Lanka Office at the time of completion of this contract of under any other contract or agreement entered into between the contractor and Japan International Cooperation Agency, the Resident Representative shall be entitled to retain the said sum of Rupees .....
(Rs. .....) deposited as security for the fulfillment of this contract or such part thereof as may be repayable hereunder to the contractor as aforesaid and to appropriate the same in payment of such sum or sums of money due by the contract Japan International Cooperation Agency in respect of such other contract or agreement as aforesaid.

The Contractor doth hereby further mortgage, hypothecate, assign and set over to and with Japan International Cooperation Agency the said sum of
Rupees ..... (Rs .....)
as security for any sum or sums of money whatsoever which may be due to JICA Sri Lanka Office under any other contract or agreement entered into between the contractor and .Japan International Cooperation Agency and the Resident Representative shall be entitled to appropriate the same in payment of any such sum as aforesaid.

IN WITNESS WHEREOF the said Resident Representative of JICA Sri Lanka Office and the said .Contractor .....
have set their hands in these presents at the places and dates hereinafter mentioned.

Signed by the said Resident-Representative of JICA Sri Lanka Office for and on behalf Japan International Cooperation Agency at Colombo on
this .....day of ..... One Thousand Nine Hundred and Ninety Five in the presence of the following witnesses:

Signature of the Resident Representative
Japan International Cooperation Agency
Sri Lanka Office

WITNESSES:

1. ----------
---------- (Contracts)

----

2. ----------

----

* Signed by the ...../The Common seal of the said .....(Co.) was affixed hereto/ ..... at Colombo on this ..... day of ..... One thousand Nine hundred and ..... in the presence of the following of witnesses/of .....

1. ..... Signature of Contractor

2. ..... Who do hereby attest the sealing thereof

WITNESS:

1. .....
Address .....
.....

2. .....
Address .....
.....

CONDITIONS OF CONTRACT

JAPAN INTERNATIONAL COOPERATION AGENCY

SRI LANKA OFFICE

Hotel TAJ Samudra, 25 Galle Face Center Road, Kollupitiya, Colombo 3

CONDITIONS OF CONTRACT

PART I - GENERAL CONDITION OF CONTRACT

1) General Condition of Contract is the Part I of the Condition of Contract for Works of Building and Civil Engineering Sri Lanka - ICTAD Publication No. SCA/1 - Revised Edition/January 1989.

2) This publication shall be available for purchase from Institute for Construction Training and Development (ICTAD), "Savsiripaya", 123, Wijerama Mawatha, Colombo 7.

JAPAN INTERNATIONAL COOPERATION AGENCY

SRI LANKA OFFICE

Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitiya, Colombo 3

--- CONDITIONS OF CONTRACT ---

PART II - CONDITIONS OF PARTICULAR APPLICATIONS

DEFINITIONS AND INTERPRETATION

1.1.2	The Employer:	The Employer is Japan International Cooperation Agency, Sri Lanka Office Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitaya, Colombo 3
1.1.3	The Engineer:	The Engineer is the Chief Engineer /Supervisor

CONTRACT DOCUMENTS

5(2) Add the following paragraphs:

DOCUMENTS MUTUALLY EXPLANATORY

Should there be any discrepancy between the Drawings and/or the Bill of Quantities or schedule of Rates and/or the Specification and/or any instructions which may be issued to him from time to time or any inconsistency, error or amission in any of them reference in writing must be made to the Engineer for an explanation and the Contractor will be held responsible for any errors that may occur in the work through neglect of this precaution.

Provided however that the Drawings and/or Specification and/or Bill of Quantities or schedule of Rates shall be taken to be superseded by the Articles of Agreement, insofar as the Drawings and/or Specification and/or Bill of Quantities or schedule of Rates are inconsistent with any terms or conditions contained in the Articles of Agreement, and that the Specification shall be taken to be superseded by the Bill of Quantities or schedule of Rates insofar as the description of an item is concerned and that the Bill of Quantities or schedule of Rates shall be taken to be superseded by the Drawings; and that small scale plans shall be taken to be superseded by larger scale plans insofar as the former are inconsistent with the latter.

GENERAL OBLIGATIONS

CONTRACT AGREEMENT

(9) Stamp Duty On The Contract Agreement is payable by the Contractor.

PERFORMANCE BOND

(10) The Performance Bond shall be 2½% of the Contract Sum stated in the letter of Acceptance.

Delete "Insurance Company or Bank" in 4th and 8th lines add "National Insurance Corporation or approved Bank".

WORK TO BE TO THE SATISFACTION OF THE ENGINEER

(13) All Work shall be executed on the site unless the written approval of the Engineer has been obtained for certain defined items to be executed elsewhere.

PROGRAMME TO BE FURNISHED

14(1) The programme called for shall be submitted within ..... days after receipt of letter of acceptance.

REMEDY ON CONTRACTOR'S FAILURE TO INSURE

25 In the 8th and 9th lines delete the words "Service charges of 5% of the amount so paid and substitute the words cost incurred for that purpose."

COMMENCEMENT TIME AND DELAYS

TIME FOR COMPLETION

43 Add the following sub clauses

43(1) Date of completion

The Contractor shall supply, erect, equip or construct the whole of the works and hand them over to the Engineer on the date hereinbefore referred to in Article I of this Agreement (which date is hereinafter referred to as the "Prescribed time") and save as herein provided no circumstances whatever shall extend or alter the date for the completion of the works.

Provided always that if in the opinion of the Engineer, the completion of the works shall be delayed by any change of original design or by the order of the Engineer of any altered, modified, substituted or additional works or materials or by the order of the Engineer of any works or materials to be omitted or by any strike or lock-out of any workmen employed by the Contractor or by the contractor not being given possession of the site or any part thereof, or by JICA Sri Lanka Office taking possession of or using the site or any part thereof or the works or any part thereof, whether under the powers herein contained or otherwise, or by any non-performance of work to be performed by JICA Sri Lanka Office or by the Contractor not receiving any orders, drawings, instructions or directions in time, or by the suspension of the works, or by fire, exceptionally bad weather, or by or from any unforeseen circumstances (and whether the same shall be due to any act or omission of JICA Sri Lanka Office). The Engineer shall, if in his uncontrolled discretion he shall think fit, either forthwith or any later time and from time to time notwithstanding that the prescribed or extended time for completion has expired, or that the works have been completed, by writing under his hand, extend the time for the completion of the works to such date as he shall appoint, provided always that unless the Contractor makes a written application to the Engineer at or before the time when the cause of delay is occurring or about to occur, and unless the time is extended by the Engineer, the prescribed time shall not be exceeded notwithstanding delays from the foregoing or any other causes of whatsoever kind.

BONUS FOR COMPLETION

47(3) No bonus shall be paid.

MAINTENANCE & DEFECTS

49 Add the following subclauses

DEFECTS LIABILITY PERIOD

(2a) For a period of nine/twelve calendar months, commencing immediately after the completion certificate shall have been issued by the Engineer, the Contractor shall be required to maintain the works & he shall be liable for the replacement of any part of work found to be defective from causes arising from faulty materials or workmanship. The Contractor will further be held responsible for and called upon

to make good at his own expense all damage to works and/or materials or loss caused through fire, accidents from explosion, seasonal foods and all insurable risks of every kind, other than war, rebellion and earthquakes, that occur during the period of defect liability period, if such damage or loss arises from a cause occurring prior to the commencement of the defect liability period or occasioned in the cause of any operation carried out by the Contractor for the purpose of complying with his obligations in maintaining the works or in replacing any part of work found to be defective from causes arising from faulty materials or workmanship.

(2b) If at any time during construction or after the certified date of completion of the works or any part of them and before the issue of the Final Certificate, any repairs may be considered necessary by the Engineer, and the Contractor shall refuse or neglect to execute the repairs with proper diligence after seven days notice by the Engineer to do so, the Engineer may execute the required works in any mode that he may deem advisable and charge the same to the Contractor and deduct it from any money due or to become due to him or JICA Sri Lanka Office may recover such expenses by action at law/or be recovered from the Surety who will be bound to pay the same for and behalf of the Contractor on receipt of a demand therefore from the Engineer with a certificate from the Engineer that the amount demanded is due by the Contractor, and/or to be recovered by action at law.

52(5) Delete and add the following paragraph. CLAIMS

PROCEDURE FOR CLAIMS

NOTICE OF CLAIMS

(a) Notwithstanding other provision of the contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen.

CONTEMPORARY

(b) Upon the happening of the event referred to in sub-clause (a) above the contractor shall keep such contemporary records as may reasonably be necessary to support any claim he may subsequently wish to make without necessary admitting the Employer's liability, the Engineer shall, on receipt of a notice under sub-clause (a) above inspect such contemporary records and may instruct the Contractor to keep any further contemporary records as are reasonable and may be material to the claim of which notice has been given. The contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineers instructs.

SUBSTANTIATION OF CLAIMS

(c) Within 28 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under Sub-Clause (a) above, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall, if required by the Engineer pursuant to this Sub-Clause.

FAILURE TO COMPLY

(d) If the Contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer or Resident Representative of JICA Sri Lanka Office pursuant to Clause 67 assessing the claim considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clauses (b) and (c) above.)

PAYMENT OF CLAIMS

(e) The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Clause 60 (2) such amount in respect of any claim as the Engineer, after due consultation with the Employer and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment in respect of such part of the claims as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the contractor of any determination made under this sub-clause, with a copy to the Employer.

CERTIFICATES AND PAYMENTS

60(1) Delete and add the following:

ADVANCE PAYMENT

Advance payment shall be calculated on the sum stated in the letter of acceptance excluding provisional sums included in the contract.

Payment of advance and recoveries thereto shall be made in accordance with the following rules:

(i) An advance of Rupees ..... (Rs. .....) shall be paid or caused to be paid upon the Contractor furnishing a Bank Guarantee on Forms acceptable to Japan International Cooperation Agency from a bank approved by the Resident Representative of JICA Sri Lanka Office to cover the said sum of Rupees

....
.....(RS.....)

(ii) The amounts to be recovered in respect of the advance payment made as aforesaid shall be twenty percent (20%) of the value of work duly executed and or the assessed value of the non-perishable materials and goods brought upon the site (in accordance with Clause 49 (b) above) until the amounts so recovered aggregate forty percent (40%) of the total advance payment made. Thereafter, the recovery to be made shall be thirty percent (30%) of the value of work and or assessed value of the materials as aforesaid until the amount so recovered aggregate the total aforesaid advance payment of Rupees ....(RS. .....) provided always that the Resident Engineer shall in his discretion be at liberty to recover enhanced percentage of the value of work done and or assessed value of materials as he deems fit, until the amount so recovered aggregate the aforesaid advance of Rupees ..... (Rs. .....)

MONTHLY STATEMENTS

60(2) The monthly statement shall mean the monthly Bill which should submit on or before 10th day of each month.

60(4) (a) & (b) Delete and substitute the following paragraphs.

The amounts to be retained as aforesaid shall be sum of Rupees ..... (Rs. .....) the limit of retention money stated in appendix to the form of Tender.

The amounts so retained shall be held by JICA Sri Lanka Office as security for the due completion of the works until the whole of the works have been completed in accordance with this contract and to the satisfaction of the Engineer and until the Engineer has issued a completion certificate referred to in Clause 48 hereinbefore in respect of the whole works. Whereupon one moiety of the amounts retained shall be paid to the Contractor and the other moiety thereof shall be held as aforesaid until the issue of the Maintenance Certificate referred to in Clause 62 hereof whereupon the said moiety shall be paid to the Contractor.

Provided also that if at such time, there shall remain to be executed by the Contractor any work ordered, pursuant to Clauses 49 and 50 hereof, in respect of the whole or any parts of the works, the Engineer shall be entitled to withhold certification until completion of such work of so much of half of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

60(7) No interest will be paid for over due payments.

REMEDIES AND POWERS

63(1) Delete

DEFAULT OF CONTRACTOR

63(2) Delete

VALUATION AT DATE OF FORFEITURE

63(3) Delete

PAYMENT AFTER FORFEITURE

Add the following paragraphs.

(i) If the Contractor shall be declared bankrupt or petition any Court having jurisdiction in bankruptcy for the liquidation of his affairs by Court or takes steps otherwise to compound with his creditors before the completion of this Contract, it is hereby expressly agreed that this Agreement shall thereupon immediately terminate and that it shall be lawful for the Engineer to take immediate possession on behalf of JICA Sri Lanka Office of the said works and thereupon either to engage other persons as contractors to finish and complete the same or himself to employ sufficient workmen, overseers and materials to finish and complete the same at the cost and expense of the Contractor or of his estate in bankruptcy. In such event the Contractor or his legal representative shall not be entitled to any compensation by reason of such termination of this Agreement, but shall be entitled only to payment for work done up-to-the date of termination of the Agreement, subject to any claims which JICA Sri Lanka Office may have against the Contractor or against his estate in bankruptcy under the terms of this Agreement. And it shall be lawful for the Engineer to deduct and retain all such sum or sums of money as may be required for the completion of the said work from and out of any sum or sums of money that shall be due to the Contractor under the terms of the Agreement or from the sums of money deposited or the Bond executed by the Contractor for the performance of the Contract under the Agreement; provided, however, that nothing herein contained shall prevent JICA Sri Lanka Office from recovering from the Contractor or from his legal representative by action at law/or be recovered from the Surety who will be bound to pay the same for and on behalf of the Contractor receipt of a demand therefor from the Engineer with a certificate from the Engineer that the amount demanded is due by the Contractor, and or to be recovered by action at law any sum that may still be due by him to JICA Sri Lanka Office under the terms of the Agreement.

BANKRUPTCY OF CONTRACTOR

(ii) In the even of the death of the sole proprietor/ dissolution of partnership/winding up of the Company before the completion of the said work; it is hereby expressly agreed that this Agreement shall thereupon, immediately terminate and that the Engineer shall be entitled to take the work into his own hands and either to engage other persons as contractors to finish and complete the same, anything herein contained to the contrary notwithstanding, without prejudice to the rights of JICA Sri Lanka Office to recover from the estate or legal representative of the Contractor any sum that may be due to JICA Sri Lanka Office at the date of his death/its dissolution/its winding up under the terms and conditions of the Agreement.

DEATH OF THE SOLE PROPRIETOR DISSOLUTION OF PARTNERSHIP OR WINDING-UP OF COMPANY

The legal representative of the contractor shall not be entitled to any compensation by reason of such termination of the Agreement, but shall be entitled only to payment for work done up to the date of death/ dissolution/windingup, subject to

any claim which JICA Sri Lanka Office may have against the Contractor or against his estate or legal representative under the terms and conditions of the Agreement. And it shall be lawful for the Engineer to deduct and retain all such sum or sums of money as may be due to JICA Sri Lanka Office as aforesaid from and out of any sum or sums of money that shall be due to the Contractor to his/its estate or legal representative under the terms of the Agreement or otherwise and/or the sum of money deposited or the Bond executed by the Contractor for the performance of the contract under the Agreement. Provided, however, that nothing herein contained shall prevent JICA Sri Lanka Office from recovering from the estate legal representative of the Contractor by action at Law/or be recovered from the Surety who will be bound to pay the same for and on behalf of the Contractor on receipt of a demand therefore from the Engineer with a certificate from the Engineer that the amount demanded is due by the Contractor, and/or to be recovered by action at law, any sum that may still be due to JICA Sri Lanka Office under the terms of the Agreement.

POWER TO FORFEIT CONTRACT

(iii) If the Contractor in the opinion and according to the determination of the Engineer:

(a) does not commence the work at the time, or in the manner required by the Engineer;

(b) does not exercise, or is not exercising due diligence or making due progress with the works at any time during the currency of the contract or before or after the original and substituted time for the completion of the works.

(c) does not comply the works until after the time of substituted time for the completion thereof;

(d) does not comply with the requirements or notices if the Engineer in any one particular;

(e) does not execute or is not executing the works according to the Drawings, Specifications and these conditions;

(f) does not complete or maintain or is not maintaining the works to the satisfaction of or in the manner required by the Engineer;

(g) abandons the Contract;

(h) does not perform or fails or is failing in the performance of any of his obligations under this contract;

(i) is removing or attempting to remove from the works or the site thereof any materials or plant;

it shall be lawful for the Engineer to give the Contractor notice in writing requiring the contractor forthwith to proceed with the due execution of the works in an efficient manner, and in the event of the Contractor delaying for the space of seven days after the service of such notice to proceed with the due execution of the said works in an efficient manner to the satisfaction of the Engineer, it shall be lawful for the Employer by a notice in writing to the Contractor forthwith to determine this contract and to take the work into his own hands and thereupon either to engage other persons as contractors to finish and complete the same or himself to employ sufficient workmen, overseers and materials to finish and complete the same at the cost and expense of the Contractor including such alternations, omissions and variations as may be determined by the Engineer in terms of the contract subsequent to the determination thereof under this Clause. And the Contractor shall in such event be liable to pay and make good to JICA Sri Lanka Office all such sum and sums of money as may be expended by JICA Sri Lanka Office in finishing and completing the said works as aforesaid over and above such sum as would have been payable to the Contractor under this Agreement if he had completed the works himself and shall in addition thereto pay to JICA Sri Lanka

Office the sums of money as ascertained and liquidated damages for each and every day after the final authorized extended date until the said work be completely finished, either by such other persons as may be employed by the Engineer as contractor to finish and complete the said works or by himself employing sufficient workmen, overseers and materials to finish and complete the same at the cost and expense of the Contractor; provided however, that no such damaged shall be payable by the Contractor for any period intervening between the date of termination of this Contract, under this Clause and the date of commencement of the work of completing the said works either by the employment by the Engineer or any other persons as contractors, to complete the same or by the Engineer himself employing sufficient workmen, overseers and materials for this purpose.

FRUSTRATION

67 Delete and add the following paragraph. — SETTLEMENT OF DISPUTES

All disputes or differences whatsoever which shall at any time arise between the parties hereto, touching or concerning the works or the execution or maintenance thereof or this Contractor effect thereof or to the rights or liabilities of the parties do arising out of or in relation thereto whether during or after completion of the Contract or whether before or after termination, abandonment, foreclosure or breach of the Contract (other than those in respect of which the decision of any person is by the Contract expressed to be final and binding) shall after written notice by either party to the Contract to the other be referred for adjudication to the Secretary, Ministry of.....
.....
....

The work under the Contract shall, if reasonably possible, continue during the period in which, any matters referred to hereinbefore the being under the consideration of the Secretary, Ministry of.....
.....
.....and
no payment due or payable to the Contractor shall be withheld on account of such proceedings.

NOTICES

68(1) All notices to Contractor shall be delivered to: — SERVICE OF NOTICES ON CONTRACTOR
....
....
....

68(2) All notices to Employer shall be delivered to: — SERVICE OF NOTICES ON EMPLOYER OR ENGINEER

Resident Representative
Japan International Cooperation Agency
Sri Lanka Office
Hotel Taj Samudra, 25 Galle Face Center Road, Kollupitaya, Colombo 3

All notices to Engineer shall be delivered to:

c/o JICA Sri Lanka Office

69(1) Delete (a) and (b) — DEFAULT OF EMPLOYER

69(3) In 8th line delete the words "any loss or damage" and add the word "cost"

INCREASE OR DECREASE OF COSTS

70 Delete and add the following:

Adjustment to the contract price shall be made in respect of

RISE IN MATERIAL LABOUR AND TRANSPORT

(a) for any rise in prices only in respect of steel manufactured and supplied by Ceylon Steel Corporation, Cement Manufactured and supplied by Sri Lanka Cement Corporation, Timber distributed by State Timber Corporation, any building material the import and distribution of which is the sole monopoly of the State Corporations of Govt. Department; provided such rise is over and above five percent (5%) of the prices prevailing on the day 14 calendar days prior to the date set for the closing of the tender.

(b) for any rise in labour wages authorized or stipulated by the Republic of Sri Lanka or by rules and regulations made by it provided; such rise is over and above five percent (5%) of the wages prevailing on the day 14 calendar days prior to the date set for the closing of the tender.

(c) for any rise in Transport Rate as fixed by the Commissioner of Motor Traffic (C.M.T.) provided, such rise is over and above five percent (5%) of the rates fixed by the Commissioner of Motor Traffic prevailing on the day 14 calendar days prior to the date set for the closing of the tender.

ASSESSMENT OF QUANTUM PAYABLE

The quantum payable in respect of labour and materials shall be determined in accordance with the Building Schedule of Rates of the Department of Buildings. In case of items not covered in the Building Schedule of Rates, the decision of the Engineer as to the quantum payable shall be final and conclusive and shall be binding on the Contractor.

Payments in respect of rise in transport rates will be calculated on the percentage increase on the basis that five percent (5%) of the contract rates of the work carried out represents transport expenses and provided further such works were carried out during the period such increase in the G.M.T's rates occurred. Any claims arising under this provision shall be submitted within one month from the date of such increase or increases with all necessary documents and dates to established the increase claimed in such form and manner as organized by the Engineer.

The contractor shall absolutely barred from any claim not included in such bills and no payment shall be made by the Engineer or claims not rendered as aforesaid.

BILL OF QUANTITIES
(SUMMARY)

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

		ARCHITECTURAL WORK	ELECTRICAL & VENTILATION WORK	PLUMBING WORK	**TOTAL (Rs)**
	SHADING FACILITY (FOR OTHER CROPS)				
	SHADING FACILITY (FOR VEGETABLES)				
	WORKSHOP				
	DRYING YARD				
	LAVATORY (1)				
	LABORATORY				
	OPEN CORRIDOR (LABORATORY)				
	GARAGE				
	TRAINING FACILITY				
	OPEN CORRIDOR (TRAINING FACILITY)				
	LAVATORY (2)				
	TOTAL				

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

	ARCHITECTURAL WORK						ELECTRICAL & VENTILATION WORK					PLUMBING WORK	GRAND TOTAL
	1-0 29-6 SPAN BUILDING	1-1 TEMPORARY WORK	1-2 EXCAVATION & FOUNDATION	1-3 STRUCTURAL WORK	1-4 FINISH WORK	TOTAL	2-1 MAIN FEEDER	2-2 LIGHTING & PLUG SOCKET SYSTEM	2-3 COMMUNICATION SYSTEM	2-4 VENTILATION INSTALLATION	TOTAL	3-1 PLUMBING SYSTEM	
SHADING FACILITY (FOR OTHER CROPS)													
SHADING FACILITY (FOR VEGETABLES)													
WORKSHOP													
DRYING YARD													
LAVATORY (1)													
LABORATORY													
OPEN CORRIDOR (LABORATORY)													
GARAGE													
TRAINING FACILITY													
OPEN CORRIDOR (TRAINING FACILITY)													
LAVATORY (2)													
TOTAL													

LETTER OF AWARD

JAPAN INTERNATIONAL COOPERATION AGENCY

SRI LANKA OFFICE

LETTER OF AWARD

M/s

.....

.....

Dear Sir/Sirs,

Re: Construction Works for
Model Infrastructure Improvement Works for
Agricultural Extension Improvement Project in
Gampaha

I have the honor to inform you that (your tender for the above work has been awarded to you for Rupees _____
(RS.)
for the above service has been accepted and that the period of completion is _____
( ) months/weeks from today. In accordance with Clause O2 of the conditions of Tender, the date of completion will therefore be, _____.

2. You are hereby instructed to insure the works for the full contract value with the Insurance Corporation of Sri Lanka or the National Insurance Corporation and produce an All Risks Insurance Policy within ten days from the date of receipt of this letter.

   The all Risks Insurance Policy should cover the contract period of _____ ( ) months and the Defects Liability period of _____ ( ) months.

3. For the satisfactory completion of this work, please deposit a sum of Rupees _____ (Rs.) as security in any of the following manner.

   (a) In the Ceylon Savings Bank
   (b) In the form of a Fixed Deposit Receipt from an approved Bank.

The security deposit should be in the name of Sri Lanka Office, Japan International Cooperation Agency and if security is in the form of a Bond, it should cover the construction period and the Defects Liability period.

The security deposit should be furnished within ten days from the date of receipt of this letter. The Ceylon Savings Bank/FDR/Security Bond should be produce to me. If you are unable to produce the All Risks Insurance Policy and the Security within the stipulated period, you should immediately bring this matter to my notice indicating also the extension of time required for depositing security, so that a waiver of tender condition may be applied for.

4. The Tender has been checked and is being further checked by me and you will notified of the date on which you should call over at this office to correct arithmetical and other errors and to adjust unduly high and low rates etc., before incurring any commitments on this contract (other than the Insurance Policy and the Security), you should satisfy yourself that all errors in your tender are rectified and all unduly high and low rates are adjusted while keeping the total amount of your tender unaltered.

5. You should also satisfy yourself regarding the Drawings, Contract Documents, Site and all other matters connected with this contract and any errors, omissions or discrepancies detected should be brought to my notices immediately and satisfactorily adjusted. Should any such errors go undetected, you will take upon yourself all risks arising from such errors or omissions.

6. Please acknowledge receipt of this letter early.

Yoshikatsu Nakamura
The Resident Representative,
Sri Lanka Office,
Japan International Cooperation Agency

Copy to: 1.....

TECHNICAL SPECIFICATION
(PARTICULAR SPECIFICATION)

PARTICULAR SPECIFICATION

PART-1 GENERAL PROVISION

1. GENERAL

1.1 Definition

Specifications to complete this construction work shall be complied with the Specifications of the Institute of Construction Training and Development (ICTAD)unless otherwise specified in this specification and on the drawings and the said specifications are as follows:

A. Specification for Building Works (SCA/4 Volume I)
B. Specification for Sanitary Installation (SCA/4 Volume II)
C. Specification for Water Supply, Sewerage and Storm Water Drainage Works (SCA/3/2)
D. Specification for Electrical and Mechanical Works Associated with Building and Civil Engineering (SCA/8)

Standard for materials shall conform to appropriate Sri Lanka Standard unless otherwise specified in this specification and on the drawings.

1.2 Employer

The word "Employer" refers to the Japan International Cooperation Agency, represented by the Resident Representative of Sri Lanka Office.

1.3 Engineer

The word "Engineer" refers to the expert for construction attached to the Employer. The Engineer shall have general supervision and direction of the work.

The Engineer is the sole interpreter of the intent and meaning of the drawings, schedules and specifications. The Engineer has authority to stop the work wherever such stoppage may be necessary to insure the proper execution of the contract.

The Engineer shall, with reasonable promptness, furnish additional inspections and drawings, render decisions on the intent of drawings, schedules and specifications, and approve or return for correction of shopdrawings and samples, as may be necessary for the proper execution of the work.

1.4 Supervisor

The word "Supervisor" refers to the authorized representative of the Engineer. The Supervisor shall direct, inspect and approve the work in accordance with the specifications and the drawings.

1.5 Contractor

The word "Contractor" refers to that individual, partnership or corporation mentioned as such in the Contract.

The Contractor shall furnish all materials, labour, tools, equipment, light, power, transportation and other facilities, and perform all work required to complete and deliver the buildings and facilities within the time stipulated in the Contract in accordance with attached drawings, schedules and this specifications and according to the direction of the Engineer.The Contractor shall complete the buildings and facilities ready for delivery to the Employer without any inconvenience in use of the buildings and facilities, in accordance with the attached drawings, schedules and this specifications, therefore it includes all work which is necessary in architectural common sense although they are not shown in any of above documents.

1.6 Superintendent

The word "Superintendent" refers to the authorized representative of the Contractor and Sub-contractor.

The Contractor shall keep competent superintendent and any necessary assistants on the work during its progress. The Superintendent shall not be replaced expert with the consent of the Engineer, unless the Superintendent proves unsatisfactory to the Contractor and ceases to be in his employ.

1.7 State

The word "State" refers to the Democratic Socialist Republic of Sri Lanka.

1.8 Site

The word "Site" refers to the construction site located in the premises of Ambepussa District Agricultural Training Center, Mirigama Division, Gampaha District.

1.9 Discrepancy

If any discrepancy is found between the various contract documents and the requirement of any ordinances, regulations or by-laws which apply to the work, the Contractor shall inform the Supervisor and subsequently the Contractor shall base his tender on the Contract documents in the following order of procedure:

A. The Conditions of Contract,
B. The Specifications,
C. Any schedule of finishes, doors and windows, etc.,
D. Any information in writing on the drawings,

E. Any information shown on the drawings but not in writing.

The Contractor shall submit a note of any such discrepancies to the Supervisor for interpretation.

1.10 Minor Change

The Engineer shall have authority to direct minor change in the work without an adjustment in the contract cost and the contract period.

1.11 Alteration

The Employer may order changes in the design work not covered in the above clause 7 and 8, within the general scope of the Contract. In that case the Contractor shall prepare the cost estimate of the above changes, and that cost estimate shall be approved by the Employer before start of the work. The cost estimate shall be based on the unit prices of the corresponding works and the rate of preliminary work and overhead expense in the Contract, but the contract price set force in the Agreement is not subject to escalation.

2. SCOPE OF WORK

2.1 Work Included

All works to be completed in accordance with the Contract and attached drawings, schedules and specifications shall be as follows:

A. To erect and fabricate the frames of the Shading Facility for other crops,
B. To construct the Agricultural Practice Facilities i.e. Workshop, Outdoor Drying Yard, Toilet, Laboratory Building and Garage,.
C. To construct Training Facilities i.e. Training Building and Trainee's Toilet.
D. To connect the electric power supply and water supply.

2.2 Work Excluded

All works other than stated in the above clause 2.1 shall be excluded. The main items of work under separate contract shall be as follows:

A. Landscaping include gardening,
B. Furniture, curtain and carpet other than as shown on the drawings.

3. EXECUTION OF WORK

3.1 Construction Schedule and Execution Plan

The Contractor shall prepare and submit the construction schedule and an execution plan of temporary facilities, stock yards, etc. to the Supervisor for approval, before the commencement of the work.

The Contractor shall also submit the work experience of his Chief Superintendent and the list of sub-contractors to the Supervisor for approval.

3.2 Shop Drawing

The Contractor shall prepare and submit shop drawings, setting drawings and model to the Supervisor in time for approval and correction.

3.3 Material

A. Materials shall be mostly domestic product of the State, however, it shall be allowed to use non-domestic material of popular in the market in case of the material is not produced. All materials shall conform to Sri Lanka Standards (hereinafter called SLS)
B. All materials shall be new when delivered to the Site, and stored with care and properly protected with approval of the Supervisor. However, those materials rejected by the Supervisor immediately be replaced.
C. The materials stated in the Specification to be tested shall be selected with attendance of the Supervisor and sealed, marked, and tested in the approved laboratory. The results shall be submitted to the Supervisor for approval.
D. Standard of inspection and test shall be in accordance with ICTAD-Specification and SLS unless otherwise specified, or directed by the Supervisor.
E. Cost of inspection and test shall be borne by the Contractor.
F. Samples called for shall be submitted to the Supervisor for approval.

3.4 Material to be Provided

The materials to be provided shall be stated in the Specification. The aforesaid materials shall be inspected by the Supervisor when delivered and stored by the Contractor.

3.5 Performance Inspection

All works shall be inspected and approved by the Supervisor in the designated stages of progress. Those works unable to inspect after completion shall be inspected during the execution.

3.6 Order for Execution

All the contractors and concerns shall plan and cooperate in right order for execution of the work.

3.7 Permit and License

The Contractor shall cooperate with the Employer to apply, and obtain all permits and licenses for execution of the work. The necessary expenses charged by the Authorities concerned shall be borne by the Contractor.

3.8 Order of Construction Premises

The Contractor shall secure order of labourers, protect from fires, thefts and accidents at the premises according to the law and regulations concerned.

The Contractor shall be held responsible for all the damages before delivery and acceptance of the work and repair the work to its original conditions. The construction premises shall be kept in order and shall be cleaned up with reasonable frequency.

3.9 Protection

The Contractor shall properly protect all works and continuously maintain adequate means to protect adjacent properties, road and the public from damage.

3.10 Report

The Contractor shall submit the necessary report to the Supervisor on the work progressed, labourers attended, materials delivered, weather and so forth. And all report must be duplicated.

3.11 Cleaning on Completion

On completion, the buildings, facilities and premises shall be left clean.

3.12 Final Inspection

Before delivery of the buildings and facilities, the Employer shall inspect the work with attendance of the Engineer and the Contractor. Any work uncompleted or defected shall be completed or corrected by the Contractor for further inspection and acceptance before delivery date in the Contract.

3.13 As-Built Drawing

The Contractor shall prepare and submit As-Built Drawings of plot plan, floor plans, detail sections, mechanical, electrical, plumbing and other drawings directed by the Supervisor within two week from delivery of the buildings and facilities.

3.14 Execution Drawing

The Contractor shall prepare and submit all required execution drawings to the supervisor.

3.15 Construction Photograph

The Contractor shall prepare and submit photographs of progress and completion of the construction.

3.16 Guarantee

The contractor shall be responsible for faulty materials and workmanship even after the delivery of the buildings and facilities, and shall repair any defect due hereto and pay for any damage to other work resulting therefrom, unless otherwise specified.

3.17 Contract

All work shall be bound by the Agreement.

PART 2 ARCHITECTURAL WORK

1. PRELIMINARY WORK

1.1 Lay-Out

Prior to commencement of the work, the building position shall be confirmed by lay-out with attendance of the Supervisor.

1.2 Maintenance of Road

Access roads, whether public or private, shall be maintained and any damage caused during construction shall be repaired.

1.3 Safety Precaution

Temporary fence or appropriate facilities shall be provided on the premises of working area as a safety precaution in accordance with law and regulation concerned. The Contractor shall be responsibility for any damage to adjacent properties and the public.

2. EXCAVATION

2.1 Surplus Earth

Surplus earth and removed materials shall be disposed within the premises of Ambepussa DATC with direction of the Supervisor.

3. HARDCORE

The work shall be complied with particular specifications described on the structural drawings.

4. REINFORCED CONCRETE

The work shall be complied with particular specifications described on the structural drawings.

5. STRUCTURAL STEEL

The work shall be complied with particular specifications described on the structural drawings.

6. BRICKWORK and BLOCKWORK

6.1 Brickwork

Bricks shall be common burnt clay bricks and Grade I of Type II.

Nominal dimension of individual bricks shall be 220 x 105 x 65mm.

6.2 Blockwork

Blocks shall be hollow cement blocks and nominal dimension of blocks shall be 200 x 190 x 390mm for bearing wall and 150 or 100 x190 x 390mm for partitioning wall.

Hollow cement blocks shall be products of AMSTRAD DISTRIBUTORS or equivalent approved by the Supervisor.

7. PRESTRESSED CONCRETE STRUCTURE

Prestressed concrete structure to be used for Workshop building shall be the product of STATE ENGINEERING CORPORATION. The structure shall be erected and fabricated by the manufacture in accordance with the drawing and specification.

8. CARPENTRY and JOINERY

All timbers to be used for the work shall be Class I timber and approved by the Supervisor.

Timbers to be used for joinery shall be selected from following category.

Frames: Milla, Kolon, Palu, Imported Balue

Sashes: Mahogany, Halmilla, Welang, Imported Kapock.

9. ROOF COVERING and ROOF DRAINAGE

9.1 Roof Covering

Roofing shall be asbestos corrugated sheet with large corrugation.

9.2 Roof Drainage

Eaves gutters and down pipes shall be product of PVC (polyvinyl chloride).

10. PLASTERING

Surfaces to be plastered shall be cleaned and wetted prior to execute plastering.

11. PAINTING

Colour samples shall be made under the direction of the Supervisor and submitted for approval.

Abbreviation of paint finish are as follows,

OP : Synthetic resin mix paint finish

VP : Solvent-polyvinyl chloride resin paint finish

EP : Polyvinyl acetate resin emulsion paint finish.

12. INTERIOR and EXTERIOR FINISH

12.1 Material

Samples of any material shall be submitted to the Supervisor for approval.

12.2 Ceramic Tile

Ceramic tile shall be glazed tile for wall and non-slip type tile for floor. Shape and colour sample of tiles shall be submitted to the Supervisor for approval.

PART-3 ELECTRICAL WORK & VENTILATION WORK

Those Sections and Clauses of ICTD do not be applied to those works

SPECIFICATION for ELECTRICAL and MECHANICAL WORKS ASSOCIATED with BUILDING AND CIVIL ENGINEERING --- SRI LANKA (SCA/8)

PART I ELECTRICAL INSTALLATION

Section 1	General Requirements
	--- all Clauses
Section 2	Wiring System using PVC Insulated PVC Sheathed Cables
	--- all Clauses
Section 3	Wiring System using PVC Cables enclosed in Conduit or Trunking
3.6	Metal Cable Trunking Ducting and Fittings
Section 4	Wiring System using Elastomer or PVC Insulated Multi-core Cables
	--- all Clauses
Section 5	Switch Gear, Distribution Boards, Circuits Breakers, Contractors and Bus Bar Chambers
	--- all Clauses
Section 6	Apparatus, including Wiring Accessories
	--- except from 6.1 to 6.8 and 6.10,6.11
6.9	Fused Connection Units for Electric Clocks
6.12	Shaver Sockets
6.13	Cooker Control Unit
6.14	Operating Theatre Power Column
6.15	Time Switches
6.16	Insulated Terminal Blocks
6.17	Insulation of Accessories
Section 7	Lighting Fittings and Ancillary Equipment
	--- except 7.1, 7.2, and 7.3
7.4	Ceiling Roses

7.5 Operating Theater Lamp

7.6 Pendants

7.7 Flexible Cord

7.8 Flexible Steel Conduits and Adaptors

7.9 Flexible Non-metallic Reinforced Type Conduit

Section 8 Pperforated Metal Cable Ttray and Aaccessories

8.1 Perforated Cable Tray

8.3 Installation

Section 9 Bell and Audible Wiring Systems

--- all Clauses

PART II VENTILATION and AIR CONDITIONING

Section 1 Ggeneral Requirements

--- all Clauses

Section 2 Pipe Work Installation

--- all Clauses

Section 3 Ventilation Installation

--- except 3.1, 3.14 and 3.16

3.2 Sheet Metal Ducts

3.3 Material

3.4 Fabrication

3.5 Fire and Smoke Dampers

3.6 Flexible Air Ducts

3.7 Hangers and Supports

3.8 Plenums and Casings

3.9 Eliminators

3.10 Drip Pans

3.11 Diffusers, Registers, Grills and Troffers

3.12 Louvers

3.13 Test Holes

3.15 Air Cleaning Devices

3.17 Sound Attenuators

3.18 Controls and Sensing Devices

Section 4 Air Conditioning Plant

--- all Clauses

Section 5 Cooling and Chilled Installation

--- all Clauses

Section 6 Controls and Instrumentation

--- all Clauses

Section 7 Insulation

--- all Clauses

Section 8 Electrical Equipment

--- except from 8.1 to 8.5 and from 8.10 to 8.13

PART Ⅲ LIFTS

All sections do not be applied to those works

Part- 4 PLUMBING WORK

SPECIFICATINS for BUILDING WORKS - SRI LANKA (SCA/4 Volume II)
SANITARY INSTALLATION

Chapter 18 Sanitary Installation

18.1 Appliances
--- except from 1.4 to 1.7 and from 1.9 to 1.14

18.2 Pipe Work
--- except from 2.1 and 2.1.2 to 2.5.1 and 2.5.2

18.3 Installation of Sanitary Appliances
--- all Clauses

List of Figures
--- except from figures 18.1 and 18.3 to fig. 18.4

Chapter 19 Drainage
--- except from 19.1.1 to 19.1.5 and 19.1.4, 19.1.7

all Clauses from 19.2 to 19.9 do not be applied to those works.

Chapter 20 Water Supply

20.1 Materials
--- except from 20.1.1 to 20.1.3. and from 20.1.5 to 20.1.7 and 20.1.9

20.2 Laying and Jointing of Pipes and Fittings General
--- all Clauses

20.3 Laying and Jointing of Cast Iron Pipes and Fittings
--- except 20.3.3

20.4 Laying and Jointing of Galvanized Iron Pipes External Work
--- all Clauses

20.5 Unplasticized PVC Pipes for Water Supply
--- all Clauses

20.6 Laying and Jointing Galvanized Iron Pipes Internal Work
--- all Clauses

20.7 Laying and Jointing PVC Pipes Internal Work
------ all Clauses

20.8 Connection of a Galvanized Iron Distribution Branch with a Galvanized Iron Main
--- all Clauses

20.9 PVC Pipes - Service Connection

--- all Clauses

20.10 Fixing of Brass and Gun Metal Water Fittings

--- all Clauses

20.11 Fixing of Ferrules

--- all Clauses

20.12 Installation of Water Meter and Stop Cock

--- all Clauses

20.13 Fixing of Surface Box

--- all Clauses

List of Figures

--- all Figures

SPCIFICATIONS for WATER SUPPLY, SEWERAGE and STORM DRAINAGE WORKS - SRI LANKA (SCA 3/2)

all Chapters of PART Ⅰ and PART Ⅱ do not be applied to works.

付 属 資 料 目 次

付－1　調 査 団 62
1．1　調査団の構成 62
1．2　現地調査日程 62
1．3　面談者リスト 65
1．4　団長レター 67
付－2　収集資料 77
2．1　西部州単価基準 77
2．2　気象データー 87
付－3　建設費内訳 89
3．1　日本側分担工事 89
3．2　スリ・ランカ側分担工事 91

付－I　調査団

1．1　調査団の構成

団長	安藤　洋子	国際協力事業団　農業開発協力部 農業技術協力課
研修施設設計	西嶋　泰親	株式会社レーモンド設計事務所 海外計画室長
圃場/農業施設設計	小池　徳之	株式会社レーモンド設計事務所 海外計画室

1．2　現地調査日程

現地調査日程（平成７年２月11日～３月11日）

	月　日(曜)	行　程	調査業務内容	
1	2月　11日(土)	成田－－ﾊﾞﾝｺｯｸ	(ｺﾝｻﾙﾍﾞｰｽ団員)往路 成田発－(TG641)-ﾊﾞﾝｺｯｸ着	[官ﾍﾞｰｽ団員(団長)] 計画打合わせ調査(業務調整)から引続き滞在
2	12日(日)	ﾊﾞﾝｺｯｸ－ｺﾛﾝﾎﾞ	ﾊﾞﾝｺｯｸ発－(TG307)-ｺﾛﾝﾎﾞ着 団内ミーティング プロジェクトチームと調査団の協議	
3	13日(月)		JICA事務所表敬－調査日程協議 大蔵省対外資源局(DOER, MFPEANI)表敬 西部州政府エンジニアリング機構(EO, W.P.C.)表敬 西部州政府農業局(DOA, W.P.C.)表敬	
4	14日(火)	ｺﾛﾝﾎﾞ－ｱﾝﾍﾞﾌﾟｯｻ －－ﾜﾙﾋﾟﾀ －－ｺﾛﾝﾎﾞ	ﾌﾟﾛｼﾞｪｸﾄｻｲﾄ踏査及び関連施設視察(ﾎﾟﾔﾃﾞｨにつき休日) ｱﾝﾍﾞﾌﾟｯｻDATC(実施設計施設建設地) 踏査 ワルピタDTC・種苗生産センター視察 団内ミーティング	
5	15日(水)		合同会議、於大蔵計画民族問題国家統合省地域開発局(RDD, MFPEANI)、建設事情調査、団内ミーティング	
6	16日(木)	ｺﾛﾝﾎﾞ－ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	レター準備 ﾌﾟﾛｼﾞｪｸﾄｻｲﾄにおけるｶｳﾝﾀｰﾊﾟｰﾄとの協議 団内ミーティング	

	月　日(曜)	行　程	調 査 業 務 内 容	
7	17日(金)		団長レター提出 (RDD, MFPEANI) JICA事務所に調査概要報告 日本大使館に調査概要報告 建設企業調査	
8	18日(土)		収集資料整理、団内ミーティング	
9	19日(日)		建設事情調査	団長帰国 ｺﾛﾝﾎﾞ発 (TG308) －ﾊﾞﾝｺｯｸ
10	20日(月)	ｺﾛﾝﾎﾞ －ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	研修棟サイトの平板及びレベル測量 測量結果の整理	(JL718) －成田着
11	21日(火)	ｺﾛﾝﾎﾞ －ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	ﾌﾟﾛｼﾞｪｸﾄﾁｰﾑと研修棟の配置にかかる協議 研修棟の配置ﾚｲｱｳﾄ及び施設の接地位置のレベル測量 測量結果の整理	
12	22日(水)	ｺﾛﾝﾎﾞ －ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	農業実習施設の各サイト、平板及びレベル測量 測量結果の整理	
13	23日(木)	ｺﾛﾝﾎﾞ －ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	既存施設の実測及び既存施設及び研修棟サイト撮映 西部州政府エンジニアリング機構に資料提供の確認	
14	24日(金)	ｺﾛﾝﾎﾞ －ｱﾝﾍﾞﾌﾟｯｻ －－ｺﾛﾝﾎﾞ	建設関連資料収集 (ｽﾘﾗﾝｶ･ｴﾝｼﾞﾆｱ、学会及びICTAD) 西部州政府ｴﾝｼﾞﾆｱﾘﾝｸﾞ機構ｶｳﾝﾀｰﾊﾟｰﾄと協議 ﾌﾟﾛｼﾞｪｸﾄﾁｰﾑと施設附帯設備にかかる協議 農業実習施設サイト撮映 収集資料整理	
15	25日(土)		建設関連資料収集	
16	26日(日)		収集資料整理	
17	27日(月)		(Maha Sivarathri Day - 休日) 収集資料整理及び概算工事費の検討	
18	28日(火)		気象庁 (DOM) －気象データー交付申請 西部州政府ｴﾝｼﾞﾆｱﾘﾝｸﾞ機構ｶｳﾝﾀｰﾊﾟｰﾄと協議 建設資材調査 施設実施設計図ドラフト作成	
19	3月 1日(水)		建設資材調査 JICA事務所調査経過中間報告 施設実施設計図ドラフト作成	
20	2日(木)		建設関連調査 気象庁－気象データ入手 施設実施設計図ドラフト作成	
21	3日(金)		(Ramazan Festival Day - 休日) 収集資料及び協議内容の確認整理	

	月　日(曜)	行　程	調 査 業 務 内 容
22	4日(土)		施設実施設計図ドラフト作成
23	5日(日)		
24	6日(月)	ｺﾛﾝﾎﾞｰｱﾝﾍﾞﾌﾟｯｻ ーーｺﾛﾝﾎﾞ	施設設計にかかる補足調査 実務レベルのｶｳﾝﾀｰﾊﾟｰﾄ及びﾌﾟﾛｼﾞｪｸﾄﾁｰﾑと実施設計図ﾄﾞﾗﾌﾄにかかる協議 日本大使館－調査結果報告
25	7日(火)		西部州政府エンジニアリング機構　調査結果説明 西部州 Chief Secretary 表敬 大蔵計画民族問題国家統合省地域開発局調査結果説明
26	8日(水)		協議資料整理/建設関連調査
27	9日(木)		JICA事務所調査結果報告/建設関連調査
28	10日(金)	ｺﾛﾝﾎﾞーーﾊﾞﾝｺｯｸ	コロンボ発　－ (TG308)-バンコック着
29	11日(土)	ﾊﾞﾝｺｯｸーー成田	バンコック発－ (TG640)-成田着

1．3 主要面談者リスト

［スリ・ランカ側］

（1） 大蔵計画民族問題国家統合省 (MFPEANI)

Mr. S. Amarasekara	地域開発部(RDD) 部長
Mr. T.V.K. Jagathsoma	地域開発部　次長
Mr. B.H. Passaperuma	対外資源局　次長

（2） 西部州政府（WPC)

Mr. R.W. Piyasena	大臣官房　次官
Mr. N.A. Gunawardhenae	農業局　局長
Mr. D.S. Haputhanthiri	農業局　次長
Mr. G.V.S. Perera	大臣官房　次官補（計画担当）
Mr. L.W. Jirasinghe	大臣官房　次官補（建設担当）

（3） 西部州政府　建設部

Mr. Ranasingha	主席技官
Mr. J.A.S. Jayasuriya	主任技官
Mrs. Sita Pathiratna	土木技官
Mr. Sarath Perera	積算士
Mr. H.P. Jayawardene	ミヌワンゴドゥ支所　技官

（4） 農村総合開発計画(IRDP) ガンパハ事務所

Mr. M.D.W. Ariyawansa	事務所長/プロジェクト　ダイレクター

（5） 気象庁

Mr. T.K. Fernando	気候資料部　次長

（6） アンベプッサ農業研修センター(DATC)　カウンターパート(C/P)

Mr. L.M. Somawardene	ガンパハ県農業部　次長（農業普及）
Mr. S.A. Pramatilaka	農業普及員（研修）
Mr. K.W.S.W. Wikramatilaka	農業普及員（高地作物栽培-野菜）

[日本側]

（1） 在スリ・ランカ日本大使館

森本　康祐　　三等書記官

（2） JICA スリ・ランカ事務所

中村　欣功　　所長

鈴木　晃　　次長

飯田　次郎　　職員

（3） プロジェクト(AEIP-Gampaha)-日本人専門家

長期専門家

高橋　修　　リーダー

大泉　泰雅　　業務調整

羽根渕　隆　　農業普及

西野　寛　　畑作栽培(野菜)

仁部　輝彦　　畑作栽培(その他)

鶴木　逸郎　　水管理

短期専門家

平塚　俊夫　　研修計画

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
DETAILED DESIGN SURVEY TEAM FOR
THE AGRICULTURAL EXTENSION IMPROVEMENT
PROJECT IN GAMPAHA

February 17, 1995

Mr. S. AMARASEKARA
Director,
Regional Development Division,
Ministry of Finance, Planning, Ethnic Affairs
and National Integration,
Democratic Socialist Republic of Sri Lanka

Dear Sir,

The Detailed Design Survey Team (hereinafter referred to as "the Team") has been organized by Japan International Cooperation Agency (JICA) for the purpose of formulating detailed plan on the Model Infrastructure Improvement Works for the Agricultural Extension Improvement Project in Gampaha (hereinafter referred to as "the Project").

The Team has made a series of site inspection and discussions with the personnel concerned in order to determine the scope of design for the shading facilities for crop cultivation in the Trial Farm, farm facilities, training facility, and renovation of existing buildings. As a result, we agreed to the basic items for designing the facilities as shown in the document attached hereto.

Two members of the Team, Mr.Yasuchika NISHIJIMA and Mr..Noriyuki KOIKE will proceed with the personnel concerned to conduct further field surveys and investigations at the site and to make the detailed design on the basis of those surveys. After the completion of the detailed design and assessment of its cost estimate by JICA, you will be informed of its result through the JICA Sri Lanka office.

For the timely commencement of the construction, you are kindly requested to take the necessary action in due consultation with JICA Sri Lanka office.

Lastly, we would like to express our appreciation for the kind cooperation of the personnel concerned during our stay.

Sincerely Yours,

Yoko ANDO
Team Leader
Detailed Design Survey Team
Japan International Cooperation Agency

cc: 1. Mr. Chandrasena MALIYADDE
Additional Secretary, Ministry of Finance, Planning, Ethnic Affairs and National Integration (MFPEANI)

2. Mr. B.H. Passaperuma
Deputy Director, Department of External Resources, MFPEANI

3. Mr. R.W. Piyasena
Chief Secretary, Western Provincial Council (WPC)

4. Mr. D.A.D. Jeyawardhana
Secretary, Ministry of Agriculture, WPC

5. Mr. N.A.Gunawardhane
Director, Department of Agriculture, WPC

6. Mr. M.D.W. Ariyawansa
Project Director, IRDP Gampaha

7. Mr. G.V.S. Perera
Deputy Secretary (Planning), WPC

8. Mr. L.W. Jirasinghe
Deputy Secretary (Engineering), WPC

9. Mr. Y. Morimoto
Third Secretary, Embassy of Japan

10. Mr. .Y. Nakamura
Resident Representative, JICA Sri Lanka Office

11. Mr. O. Takahashi
Leader of Japanese Expert Team

Attached Document

1. Objective

The objective of this survey is to make the detailed design on the following works based upon the Record of Discussion (attached document II 4), which was signed between both Governments on April 6, 1994 and Minutes of Understanding (attached document 6), which was signed on February 9, 1995.

(1) The construction of the shading facilities for crop cultivation in the Trial Farm, farm facilities, and training facility, which will be undertaken by the Government of Japan
(2) The renovation of existing buildings, which will be undertaken by the Government of Sri Lanka.

The purposes of the said construction and renovation is to ensure the smooth implementation of the following Project activities.

(1) Improvement of crop production technology in the Trial Farm (Upland Crop Model Farm)
(2) Development of extension training materials and implementation of extension training programs

2. Scope of Design

(1) The location of the shading facilities, farm facilities, training facility, and existing buildings are at District Agricultural Training Centre (DATC) Ambepussa as shown in Fig-1.
(2) The site and facilities' layout plan is shown in Fig-2.
(3) The drawings for shading facilities are shown in Fig-3 and 4.
(4) The drawings for farm facilities and training facility are shown in Fig-5,6,7, and 8.
(5) The detail design for the renovation of existing facilities will be made according to the detail required items prepared by the Government of Sri Lanka. The said items and the architectural drawings for existing facilities will be provided to the Team by February 24, 1995.
(6) The required land leveling for construction work will be done by the Government of Sri Lanka.
(7) There is a limit to the budget of Government of Japan for the construction cost. It is necessary to discuss the work contents, priority, etc. after the construction cost is accurately estimated.

3. Component of Construction works

(1) Construction of facilities
  1) Shading facilities for crop cultivation in the Trial Farm
  2) Laboratories
  3) Garage for agricultural machinery
  4) Workshop comprising practice room, store room, etc.
  5) Drying yard
  6) Training facility comprising lecture hall, library and lecture room, training operation room, preparation room, etc.

4. Component of Renovation works

(1) Existing buildings comprising lecture hall, hostel, canteen, store room, office room and toilets.

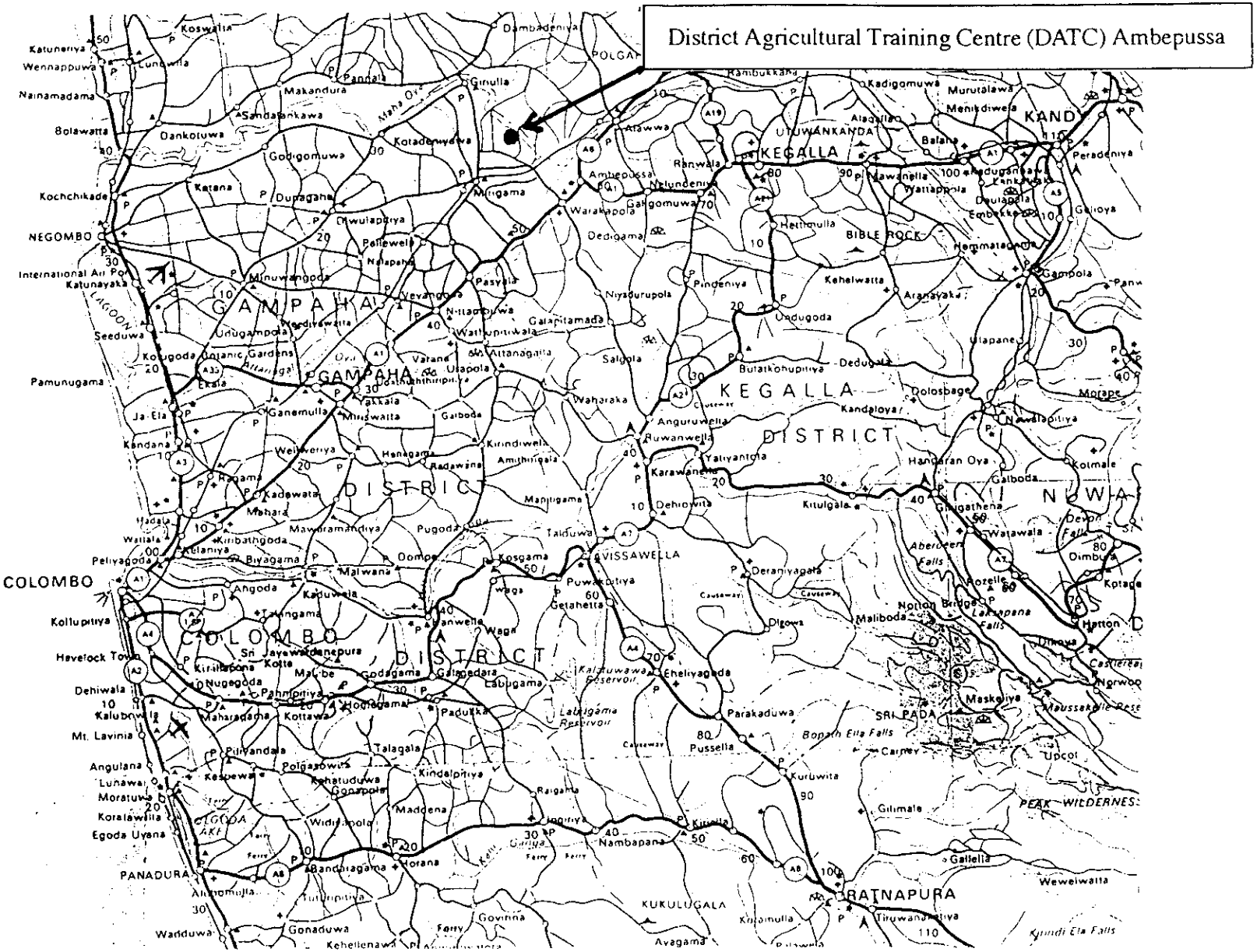
5. Tentative schedule

The tentative schedule for the detailed design survey and procedure for the construction works is shown in Table-1.

(Table-1)

THE TENTATIVE SCHEDULE
FOR THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS

Month	Japanese Side	Sri Lankan Side
1995		
February	Detailed design survey (Basic plan of construction and renovation works) - February 11 to March 11 -	
mid March	Detailed Design in Japan	Preparation of A1 Form for JICA experts on construction supervision
late April	Submission of Final Report	
early May		Receipt of Final Report Request for construction works (through JICA Sri Lanka office)
←←←←←←←←←←Exchange of Note Verbal→→→→→→→→→→		
early June	Dispatch of supervising experts	
	Tender Contract for construction between JICA Sri Lanka Office and local contractors Start of construction works	


District Agricultural Training Centre (DATC) Ambepussa
COLOMBO
COLOMBO DISTRICT
GAMPAHA
GAMPAHA DISTRICT
KEGALLA
KEGALLA DISTRICT
KANDY
MATALE
NEGOMBO
PANADURA
KELANI
KOLONNAWA
KESBEWA
KOTTAWA
MAHARAGAMA
KOSGAMA
AVISSAWELLA
KITULGALA
KARAWANELLA
RUWANWELLA
YATIYANTOTA
DEHIOWITA
DEDIGAMA
WARAKAPOLA
GALIGAMUWA
AMBEPUSSA
RANWALA
NITTAMBUWA
VEYANGODA
MINUWANGODA
DUNAGAHA
KOTADENIYAWA
GINIULLA
DAMBADENIYA
MAKANDURA
DANKOTUWA
GODIGOMUWA
KATANA
KOCHCHIKADE
KATUNAYAKA
SEEDUWA
PAMUNUGAMA
JA-ELA
KANDANA
WELIVERIYA
GANEMULLA
MINUWATTA
GARBODA
KIRINDIWELA
HANAGAMA
RADAWANA
AMUTHIGALA
MANUGAMA
TALDUWA
PUWAKDUTIYA
GETAHETTA
KOSGAMA
DERANIYAGALA
DIGOWA
MALIBODA
NOTTON BRIDGE
LAKSAPANA FALLS
HATTON
NORTON
MASKELIYA
SRI PADA
BOPATH ELLA FALLS
PUSSELLA
KURUWITA
PEAK WILDERNESS
GILIMALE
GALLELLA
WEWELWATTA
RATNAPURA
KUKULUGALA
AVAGAMA
KIRIELLA
KIRIMULLA
TIRUWANDUWA
KIRINDI ELA FALLS
ABERDEEN FALLS
DEVON FALLS
KOTMALE
HANGARAN OYA
GALBODA
NAWALAPITIYA
MORAPE
DOLOSBAGE
KANDALOYA
ARANAYAKA
GAMPOLA
PERADENIYA
GALIOYA
EMBEKKE
DEULGALA
KANDUGANNAWA
WATTAPPOLA
LAWANELLA
BALANA
MENIKDIWELA
MURUTALAWA
KADIGOMUWA
RAMBUKKANA
ULAPANE
UNDUGODA
KEHELWATTA
PINDENIYA
NIYADURUPOLA
GALAPITAMADA
SALGOLA
BUTAKOHUPITIYA
DEDUGALA
ANGURUWELLA
WAHARAKA
ULAPOLA
ATTANAGALLA
VARANE
EKALA
YAKKALA
KOTUGODA
ORUWALAPITIYA
PELLEWELA
NALAPENA
MINUWANGODA
WATTUPITIWALA
NITTAMBUWA
PASYALA
ORUWALAPITIYA
BIBLE ROCK
HETTIMULLA
KOSWATTA
KATUNERIYA
WENNAPPUWA
LUNUWILA
NAINAMADAMA
BOLAWATTA
SANDALANKAWA
KOTADENIYAWA
DUNAGAHA
KATANA
GODIGOMUWA
MAKANDURA
PANNALA
GINIULLA
POLGAHAWELA
KOTADENIYAWA
ATAWWA
AMBEPUSSA
NITTAMBUWA
GALIGAMUWA
WARAKAPOLA
DEDIGAMA
NIYADURUPOLA
GALAPITAMADA
SALGOLA
WAHARAKA
ANGURUWELLA
RUWANWELLA
YATIYANTOTA
KARAWANELLA
DEHIOWITA
KITULGALA
GALBODA
KOTMALE
HANGARAN OYA
NAWALAPITIYA
MORAPE
DOLOSBAGE
KANDALOYA
ARANAYAKA
GAMPOLA
PERADENIYA
GALIOYA
EMBEKKE
DEULGALA
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RAMBUKKANA
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PINDENIYA
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HETTIMULLA
BUTAKOHUPITIYA
DEDUGALA
ULAPOLA
ATTANAGALLA
VARANE
EKALA
YAKKALA
KOTUGODA
ORUWALAPITIYA
PELLEWELA
NALAPENA
MINUWANGODA
WATTUPITIWALA
NITTAMBUWA
PASYALA
ORUWALAPITIY

SITE & FACILITIES' LAYOUT PLAN 1:800

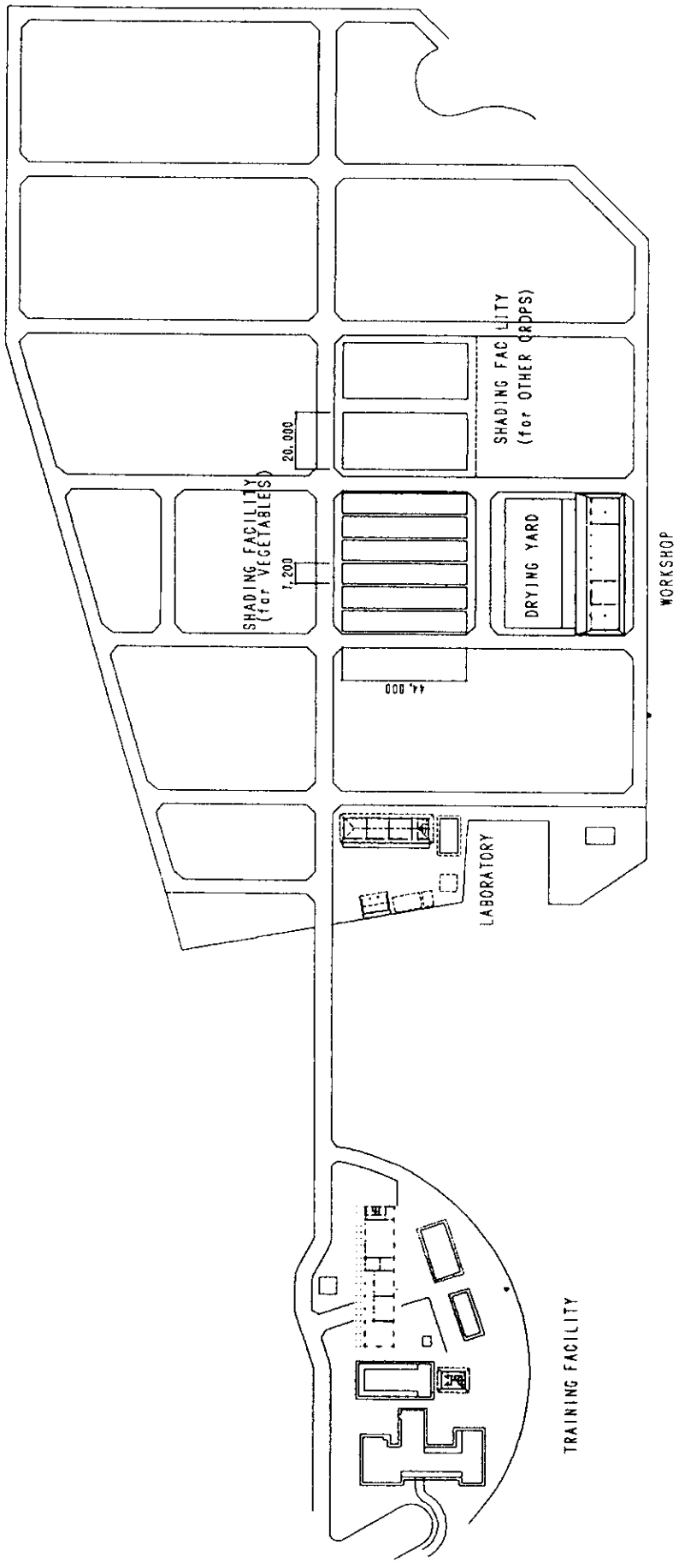
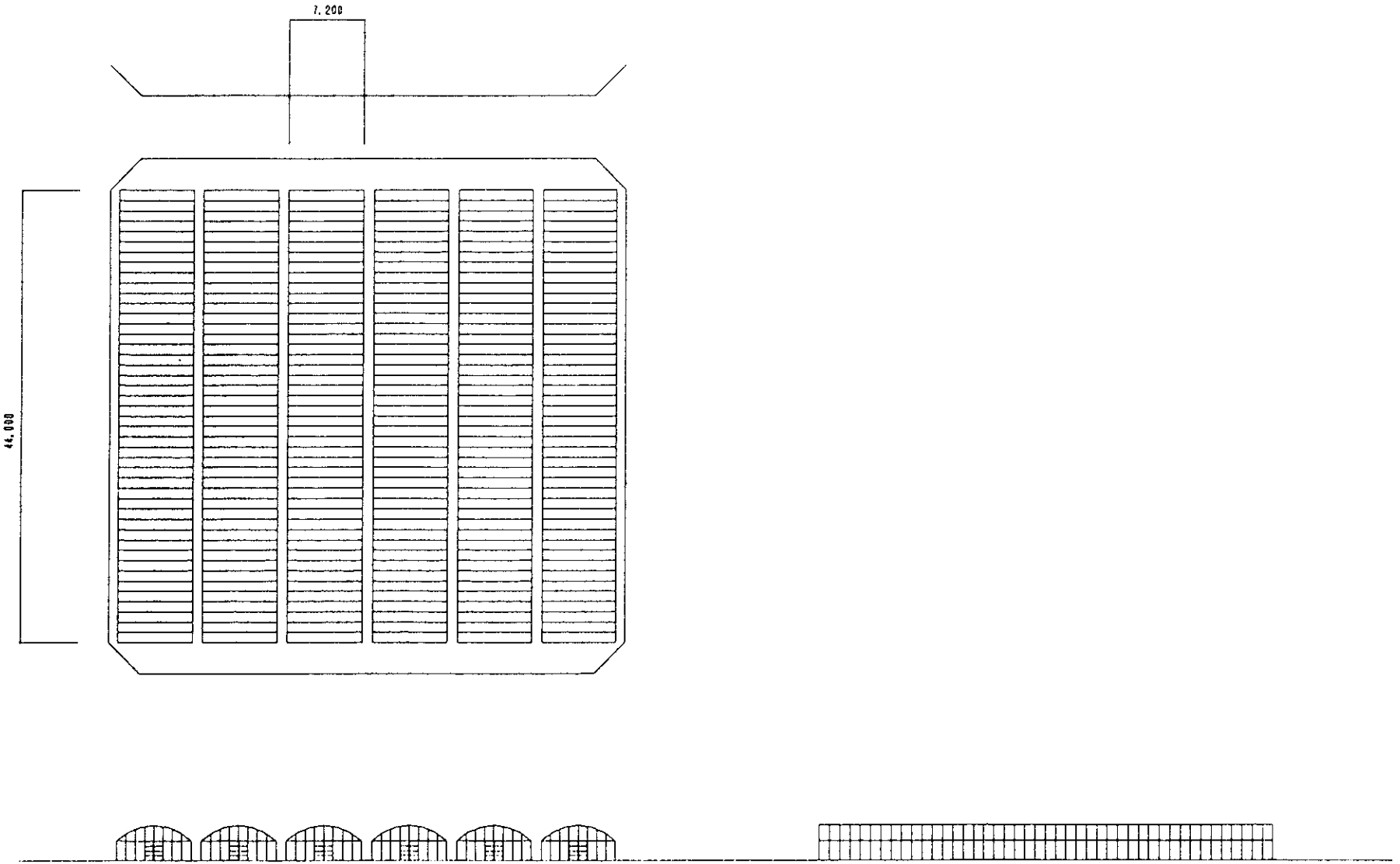
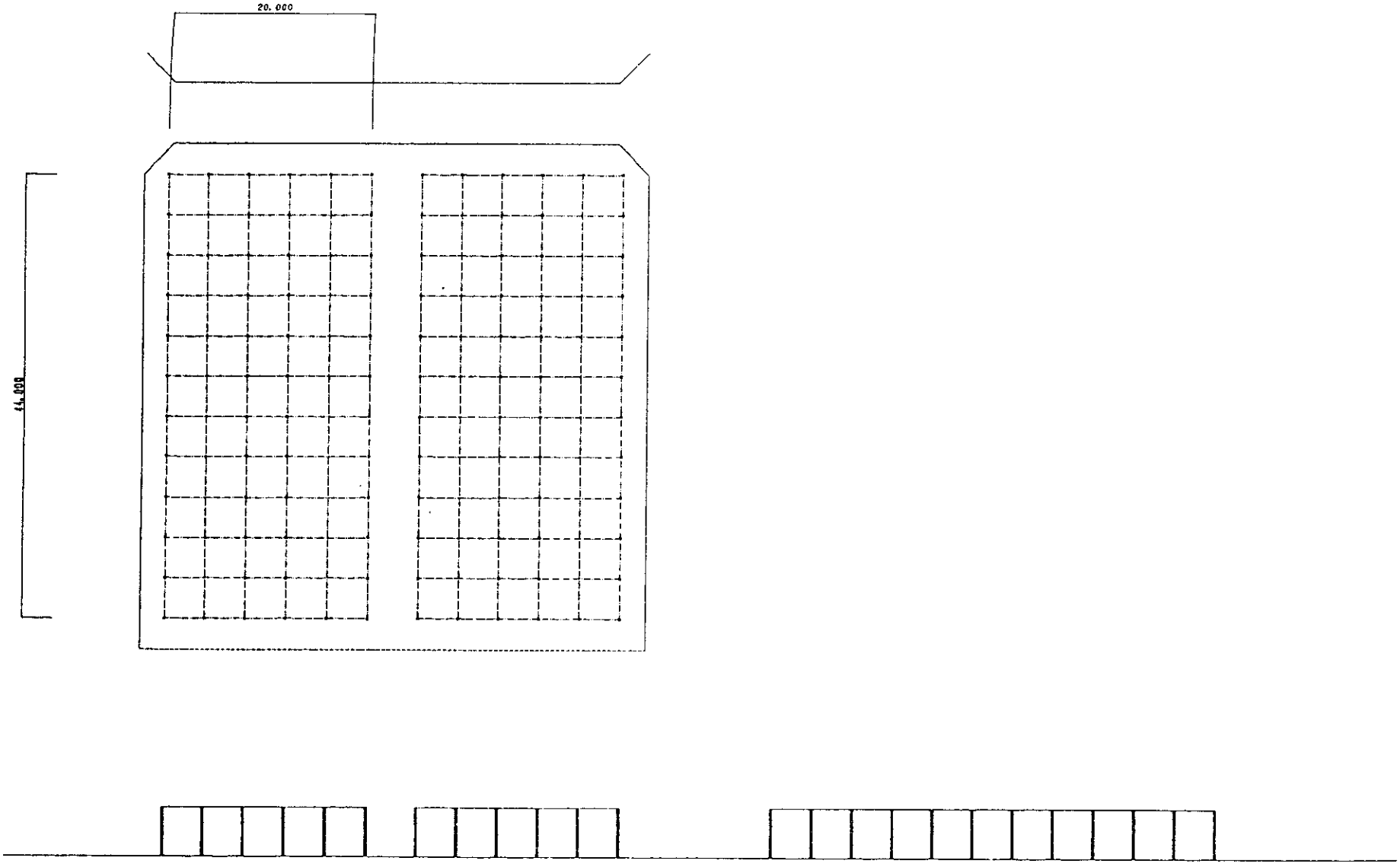


Fig-2



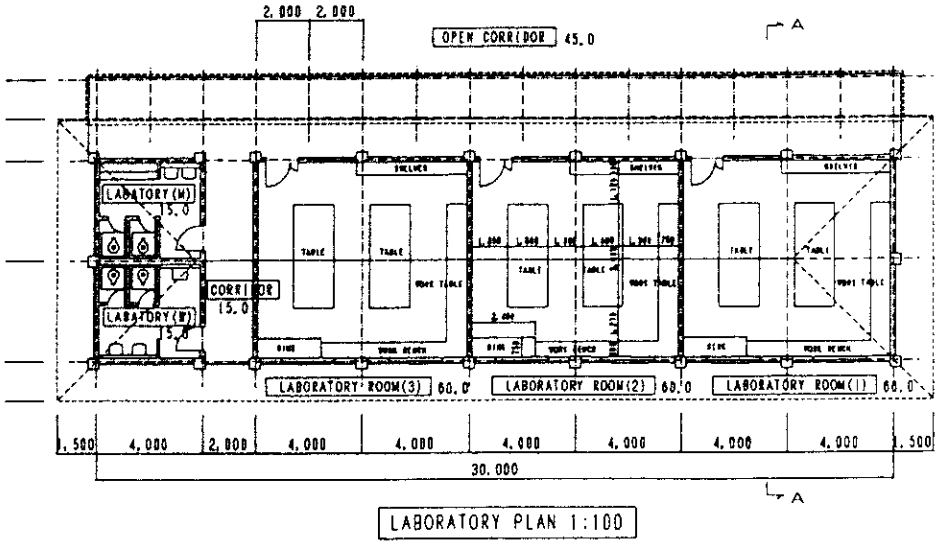
SHADING FACILITY FOR VEGETABLES 1:200

Fig. 3

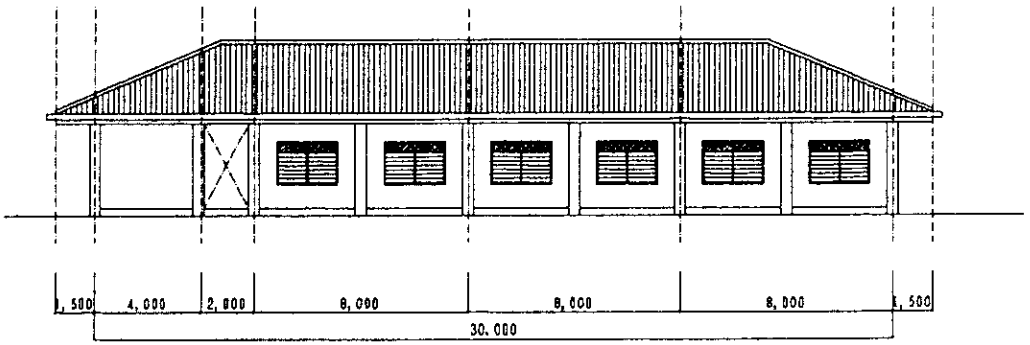


SHADING FACILITY FOR OTHER CROPS 1:200

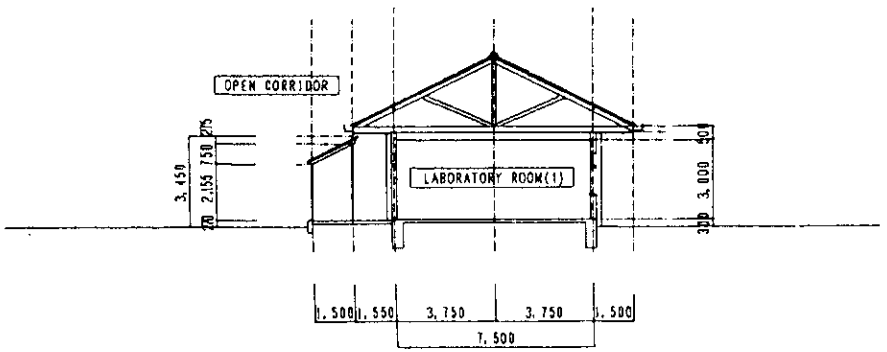
Fig. 4



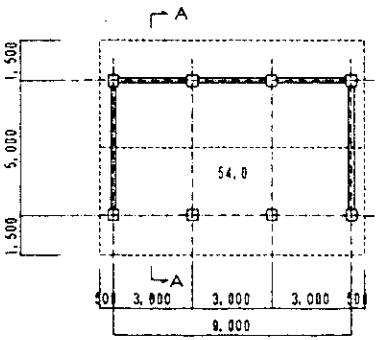
LABORATORY PLAN 1:100



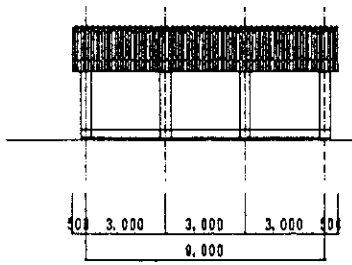
LABORATORY ELEVATION 1:100



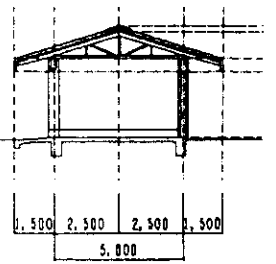
A – A SECTION 1:100



GARAGE PLAN 1:100



GARAGE ELEVATION 1:100



A – A SECTION 1:100

Fig-5

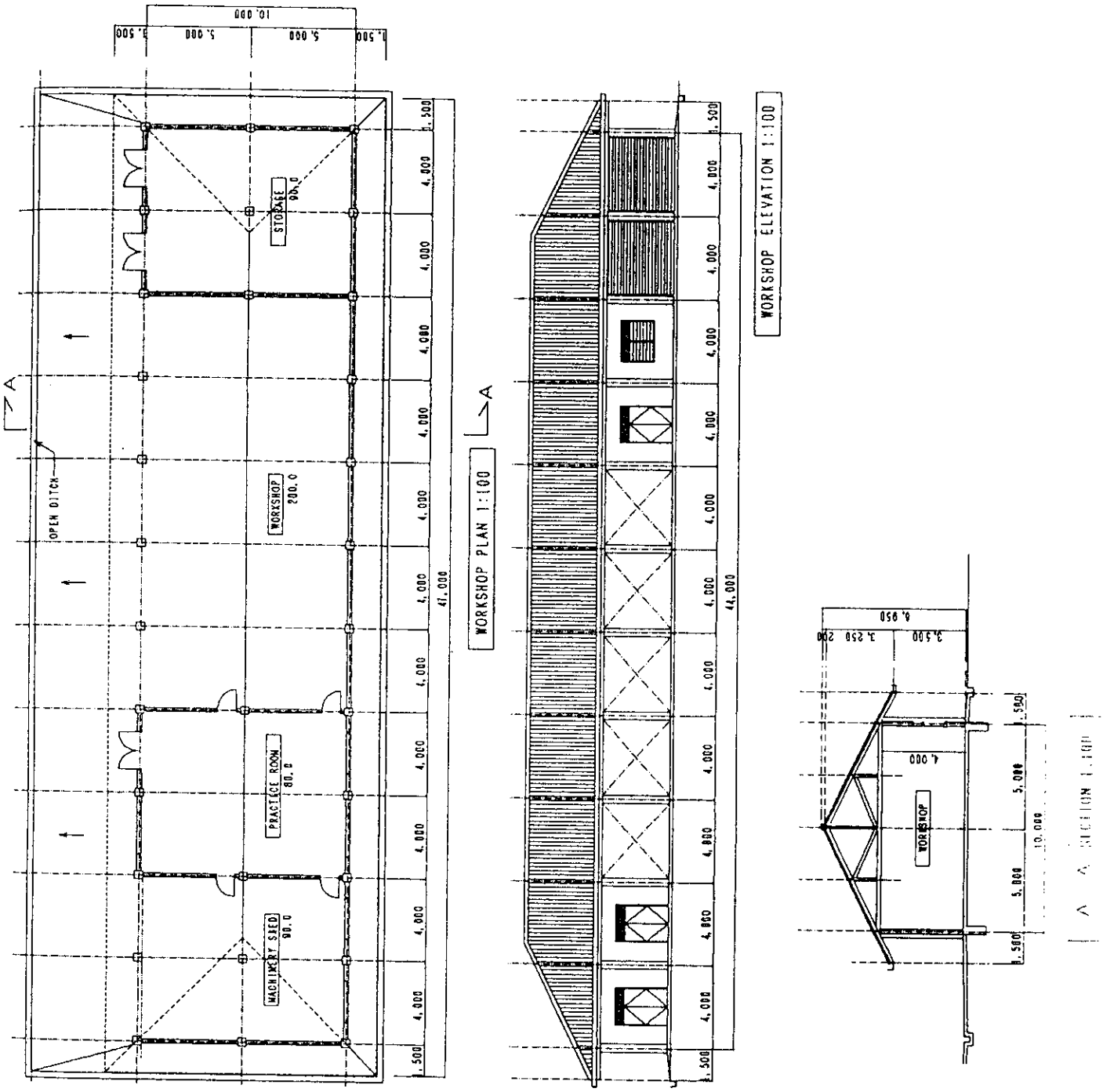

WORKSHOP PLAN 1:100
WORKSHOP ELEVATION 1:100
OPEN DITCH
STORAGE 90.0
WORKSHOP 200.0
PRACTICE ROOM 80.0
MACHINERY SHED 90.0
WORKSHOP
10,000
5,000
1,500
4,000
41,000
44,000
6,950
3,500
3,250
200

Fig. 6

APPENDIX -2.1 TYPICAL NOTES FOR RATES
西部州基準単価

A-NOTES

SPECIFICATIONS

A.01 All items of work are to be done strictly as shown in drawings and accordance with and read in conjunction with the following ICTAD specifications.

a) Specification for Building works (SCA/4 Volume I)

b) Specification for Sanitary Installation (SCA/4 volume II)

c) Specification for Water Supply Sewerage and Storm Water Drainage Works (SCA/3/2)

d) Specification for Electrical and Mechanical Works Associated with building and Civil Engineering (SCA/8)

The Director of Buildings may direct a special order of works.

INSPECTION OF SITE

A.02 Tenderers are requested to visit the site and acquaint themselves with all existing condition and with the nature and extent of work to be done under this contract as no extras will be allowed on the plea of want of information due to the neglect on there part in this regard.

TIMBER

A.03 Unless otherwise specified in the respective trades, sections, the timber for all trades shall be as specified in the carpentry and joinery.

TRADE NAMES

A.04 Where trade names, brands and/or catalogue numbers are referred to sole preference to any material or equipment is not intended, any other material or equipment may be used, provided that the characteristics of type, quality, appearance, finish, method of construction and/or performance is not less than specified and provide also that approval is first obtained.

METHOD OF MEASUREMENTS

A.05 This Bill of Quantities has been prepared generally in accordance with the principles of the standard method of measurements for Building works in Sri Lanka (SLS 573, 1982) issued by the bureau of Sri Lanka standards in conjunction with the S.MM. issued by the Quantity Surveying Section, Department of buildings in August, 1980.

PREAMBLE NOTES FOR TRADES

A.10 Unless otherwise specified in the respective trades, sections the following preamble notes from A.01 to A.74 shall be inclusive for respective trades.

DEMOLITION

A.11 Rates for DEMOLITION shall Include demolishing, dismantling and removing, etc. With the minimum damage to the materials in the process of dismantling, temporary supporting and protecting existing works and adjacent properties against damage, dust and weather and

stacking all serviceable materials as directed and disposal of debris from site including spraing water periodically to reduce the amount of dust.

A.12 All serviceable materials in demolished structures shall be the property of the client.

A.13 Necessary approvals to be taken form suitable authority prior to disposal of demolished parts.

EXCAVATION AND EARTH WORK

A.14 Rates for Excavation & Earthwork shall include:

a) Leveling an grading bottom of trenches and keeping sides plumb.
b) Keeping trenches in a clean and dry condition and free from water and disposal of surplus soil.
c) Back filling and consolidating.
d) Any necessary additional excavation for working space as such as for planking and strutting, form work etc.

A.15 Rates for Cleaning Site shall include;

Removal of roots and growth of every description, removing top soil up to a depth of 6" (150 mm.) and extended up to 10'0" (3 Meter) beyond the outer walls of the proposed structure and carting away the waste materials from the site where directed.

A.16 Existing trees or other plants shall not be removed or cut without instructions from suitable Authority.

A.17 Trees to retained shall be protected form damage of any sort.

A.18 Excavations, where found necessary, shall not cause damage to roots of trees.

A.19 Rates for PLANKING AND STRUTTING (provisional) shall include for risk and any additional excavation required.

A.20 Payment for planking and strutting will be made on the actual quantities of work executed.

A.21 Planking and strutting shall be carried out only If specifically instructed to do so.

A.22 Rate for HARD EARTH FILLING shall include filling in layers, (not more than 1'0") well ramming and consolidating.

CONCRETE

A.23 Unless otherwise specified all concrete work shall be:

a) 1:2:4 (3/4") mix./1:2:4 (20 mm.) mix.
b) Made dense with a vibrator.
c) So cast as to receive only that finishing on its exposed surfaces as specified in the respective items.

A.24 Unless otherwise specified in the items, all formwork and reinforcement are measured separately.

A.25 Rates for CONCRETE shall include, plant for mixing, handling, hoisting, depositing, compacting, etc. and curing removal of formwork and making good after removal of formwork etc.

A.26 Rates for FORMWORK shall include, necessary boarding, supporting, erecting, framing, cutting angles, striking or removal, cleaning and wetting.

A.27 Formwork is measured in same order as the concrete items.

A.28 Formwork is measured as the nett contract surface measurement between concrete and formwork.

A.29 Formwork to columns and beams is given as a girth measurements.

REINFORCEMENT

A.30 a) Rates for REINFORCEMENT shall include cutting, bending, fabricating, and placing in position holding and supporting, including temporary fixing, supports, hangers and binding wire.

b) No allowance have been for rolling margine.

A.31 Rates for PRE CAST CONCRETE shall include, formwork, reinforcement, finished faces, bedding, mortar, hoisting and setting.

BRICKWORK

A.32 Rates for BRICWORK shall include rough and fair cutting, plumbing angles, forming arches, raking out joists for pointing, plastering etc., cutting and pinning, making good and Sundry items of a like nature.

A.33 Unless otherwise specified mortar for brick work and block work shall be cement and sand 1:5.

A.34 Mortar for brick paved floors shall be lime, and sand 2:5 with the joints, granted to the full depth of the brick with mortar of the same proportion.

CEMENT SAND HOLLOW BLOCK WORK

A.35 a) Notes in A.32 shall be applicable to CEMENT SAND HOLLOW BLOCK WORK as well.

b) Cement sand hollow blocks shall confirm to the S.L.S. 855.

A.36 Unless otherwise specified motor for cement sand hollow block work shall be cement and sand 1:5.

MASONRY

A.37 rates for MASONRY shall include all joggles, cramps, dowels, ties, templates, rough and fair cutting, forming splays, angles, reveals, settings, jointing, fixing in position and pointing including hoisting not exceeding 20'-0" above ground level, protecting and cleaning down.

STRUCTURAL STEEL WORK

A.38 a) RATES FOR STRUCTURAL STEEL WORK shall include shop fabrication work including cutting, drilling, bolting, riveting, welding, grinding, marking, delivering, unloading, hoisting, erecting and fixing in position. Applying one coat of metal primer and two coats of enamel paint (approved color)after inspection of the fabrication by relevant authorities.

b) Unless otherwise specified all structural steel shall be grade 43A.

METAL WORK

A.39 a) Notes in A.38 shall be applicable to METAL WORK as well.

b) Flashing shall be 22 s.w.g. aluminum.

SPECIMEN NOTES FOR ALUMINUM DOORS WINDOWS & FANLIGHTS

c) The aluminum alloy to be used shall confirm to the requirements of B.S.1474: 1972/A6063T5

d) Physical properties:
Minimum tensile strength 150Mpa
Elongation 7%

e) Anodic oxidation coating should confirm to B.S.1615:1987 and B.S.3987:1974 and the minimum coating thickness should be 20 ±5 microns. The supplier should furnish the manufactures certificate that the anodized finish complies with the specified microns content.

f) Joints shall be made mechanically sound by welding or by concealed mechanical connectors. A water-tight joint shall be made at the junctions and side frames members and water will not be trapped anywhere in or around frames.

g) All ironmongery shall be of the same material and satisfactorily perform the function for which intended and shall be securely attached.

h) Caulking compound shall be the best quality available for caulking between the contact surfaces of the structure and the aluminum windows conforming the adhering qualities, temperature resistance from 50° F - 180° F and humidity changes of 5%-100%.

j) Screws used in the construction of frames shall be high tensile stainless steel or a non-corrosive material compatible with aluminum.

k) Neoprene weather stripping shall be of the heihest commercial standards for normal temparature, water and abrasion resistance.

l) Frames shall be fixed to the structural opening with proper fixing devices. If any discrepancies occurring between approved drawings and site conditions these shall be brought to the notice of the Engineer.

m) Materials and dimensions should be confirmed before any fabrication and installation.

n) A ten year guarantee period is required and this to be transferred to the client after practical completion.

ROOF COVERING AND ROOF PLUMBING

A.40 Rates for ROOF COVERING shall include laps, straight cutting and waste, nails, screws, clips rivets, straps and the like including hoisting and fixing complete.

A.41 Rates for ROOF PLUMBING shall include solder, rivets, screws, nails, clips, straps, straight cutting and waste for patterns mould or templates and for all hoisting and fixing complete with type 400 P.V.C. fittings.

CARPENTRY AND JOINERY

A.42 No application of any description shall be made on any timber unless and until the timber is approved by the suitable Authority.

A.43 Rates for CARPENTRY shall include all cutting, notching, drilling, sinking, trimming, framing jointing splayed edges and the like, fixing in position complete with nails spikes, screws and priming to joints and ends, application of two coats of wood preservative for all frame works and one coat of wood primer for unexposed sides of ceiling boards. Treating roof and ceiling timber (imported timber) in approved kiln.

A.44 Rates for JOINERY shall include:

a) All labour in framing, jointing and fixing in position complete with all nails, spikes, screws etc.

b) Application of one coat of hot tar to the surfaces come in contact with brick or concrete.

c) Application of one coat of wood primer for unexposed surfaces.

A.45 Unless otherwise specified door, window, fanlight and other frames shall be 3 3/4" x 2 3/4"(finished size) in section and out of Jak, Milla or Mahogany. Sashes and counter tops shall be 1" thick (finished size) out of "Jak" or Mahogany". Valance, barge boards & valley gutter boarding shall be 1" thick Ginisapu.

Brass screws shall be used for all fittings.

A.46 All exposed faces of timber in JOINERY are to be wrot the sizes given below are nominal without allowance for planing, except where described as finished sizes.

IRONMONGERY

A.47 Rates for IRONMONGERY shall include all fitting, cutting, sinking, boring, mortising and the like and fixing complete including supplying matching screws.

A.48 a) Unless otherwise stated. All fitting shall be polished brass with oxidized finish, heavy quality, type and make of the lock shall be "Union" of "Yale".

b) BRASS FITTING & FURNITURE

For doors, windows, cupboards etc. shall be of heavy type oxidized brass fittings to approved samples hinges shall have steel pins with the ends welded.

c) PARLIAMENTARY HINGES, BRASS

Size A x B	2 1/2" x 3 1/2"	4"x3"	4"x4 1/2"	4 1/2" x 5"
Weight per pair	1 1b. 14 ozs.	1 1b.2 ozs.	1 11b.5 ozs.	1 1b.11 ozs.
Diameter of pin	0.170"	0.170"	0.184"	0.184"

c) BUTT HINGES

Size AxB	4" x 2 1/2"	4" x 3"	5" x 2 1/2"	5" x 3"
Weight per pair	1 1b. 1 ozs.	1 1b.3 ozs.	1 11b.7 ozs.	1 1b.12 ozs.
Diameter of pin	0.184"	0.184"	0.184"	0.184"

e) CASEMENT STAYS

	size 10" straight	10" curved	12" straight	12" curved
Channel Type	9ozs.	10ozs.	12 ozs.	14 ozs.
	10ozs.	11ozs.	14 ozs.	17 ozs.

f) BOLTS

The handles of bolts shall be cast in one piece with the shoot which shall be not less than 3/8 dia. for bolts 6" and above and not less than 5/16" for smaller bolts.

The distance of travel of the shoot shall not be less than 1 1/4" in the case of bolts 6" and above.

A.49 SANITARY PLUMBING

a) Unless otherwise specified rate for wash basin shall include 22"x15" overall white vitreous China wash basin as per model No. 2001 as detailed in Ceylon Ceramic Ltd. leaflet or approved equivalent with 1/2" dia. chromium plated pillar tap. 1 1/4" dia. rubber plug, chromium plated chain waste and brackets in painted iron, screwed to plastic rawl plugs buried in wall. Water supply and waste water connections all fixed complete to working order.

b) Unless otherwise specified rate for low level closet shall include white vitreous China low level closet as per model No. 3001 as details in Ceylon Ceramic Ltd. leaflet or approved equivalent comprising closet with "p" of "S" Trap as directed and hinged seat with lid in black plastic all fixed complete to working order.

c) Unless otherwise specified rate for low level cistern shall include white vitreous China low level cistern as per Model No.4001 as detailed in Ceylon Ceramic Ltd. leaflet or approved equivalent comprising shell and cover with supporting brackets screwed to plastic rawl plugs buried in wall. Water supply and discharge connections all complete to working order.

d) Unless otherwise specified rate for Eastern Closet shall include (21 1/2"x15 3/2") overall white vitreous China closet as per model No.1001 as detailed in Ceylon Ceramic Ltd. leaflent or approved equivalent "p" or "S" trap as directed and foot rest in cement concrete 1:2:4 (3/4") rendered with grooved in cement and sand 1:2 fixed complete to working order.

e) Unless otherwise specified rate for High Level cistern shall include plastic cistern of approved manufacture comprising shell and cover with supporting brackets screwed to plastic rawl plugs buried in wall P.V.C. flush bend and all other necessary accessories with supply and discharge connections all complete to working order.

f) Unless otherwise specified rate for Mirror above wash basin shall include ovel shape plate glass mirror of super quality free from effect of wavy image with fiber glass frame fixed to wall with plastic rawl plugs and chromium plated brass screws.

g) Rates for SANITARY PLUMBING shall include:

1) Screws, nails, pipe hooks, saddles, brackets, sockets, connections, short lengths, back nuts, nipples, all laps, straight cutting and waste.

2) All excavations, supports to sides of trenches, if necessary keeping trenches free form water, back filling disposal of surplus soil all jointing and other incidental materials and testing upon completion.

A.50 Unless otherwise stated P.V.C. piping for water service and waste water etc. shall be rated to TYPE 1000 P.V.C. such plastic piping and fittings shall comply with the S.L.S. 147 or latest B.S.S.

A.51 Copper piping shall be used for Hot water service and such copper piping and fittings shall comply with the latest B.S.S. specification.

A.52 Unless otherwise stated separately in the B.O.Q. any special water supply and drainage fittings such as bends, tees, reducers etc. shall be deemed to have been included the relevant items and such items should accordingly be rated to include for such specials etc. and for any extra work involved for the satisfactory completion of such items.

DRAINAGE

A.53 Notes in A48, 49 and A52 shall be applicable to DRAINAGE WORK as well.

A.54 Unless otherwise specified pipes in Drainage shall be Type 600 P.V.C.

PLASTERING

A.55 Rates for PLASTERING shall include all temporary rules, screeds, grounds etc. for raking out joints of new brick work or hacking new concrete for key, internal and coved angles, joints between different surfaces and between new and old plastering, arises, quickies, intersection between curved or irregular surfaces etc., and making good around pipes, sanitary fittings and similar fixtures.

A.56 Unless otherwise stated internal wall plaster shall be 5/8" thick in cement, lime and sand 1:1:5 finished smooth with lime putty.

A.57 Unless otherwise stated external wall plaster shall be 5/8" thick in cement, lime and sand 1:1:5 finished semi rough.

S.58 Unless otherwise stated plinth plaster shall be 5/8" thick in cement and sand 1:3 finished smooth with neat cement floating.

A.59 Unless otherwise stated Soffit plaster shall be 3/8" thick in cement and sand 1:3 finished smooth with lime putty.

PAVING

A.60 Rates for Paving shall include all temporary rules, screeds, ground etc. all normal cutting arrises, rounded angles and the like bedding & point making good between different surfaces and around pipes sanitary fittings and other fixtures and cleaning down upon completion including curing.

A.61 Unless otherwise stated Cement rendering shall be 1/2" thick in cement and sand 1:3 finishes smooth with thick coat of coloured pigment mixed neat cement floating and smooth with Caberendum stone.

A.62 Unless otherwise stated skirting shall be 4" high (100 mm high) 1/2" thick (12 mm thick) in cement and sand 1:3 laid with the floor rendering finished smooth with a sunk beed of Junction of the skirting with the plaster above the angle between the floor and the skirting to be rounded off to a radius of one inch.

TILING

A.63 Rates for tile work shall include the cost of cement and sand screed, pointing joints with neat cement to match the colour of tiles.

A.64 Notes in A.60 shall be applicable to TILE WORK as well.

A.65 Unless otherwise stated floor tile paving shall be 8" x 8" non skid pattern ceramic floor titles of approved local manufacture, bedded with cement and sand 1:3 1/2" thick screed.

A.66 Unless otherwise stated wall tiling shall be 4 1/4" x 4 1/4" Glazed Ceramic wall tiles of approved. Local manufacture fixed on cement and sand 1:3 backing 3/8" thick.

A.67 Approval of floor and wall tile colours to be obtained from suitable Authority.

PAINTING

A.68 Rates for PAINTING shall include preparation of surfaces, cleaning down, smoothing, knotting, stopping etc. protection of floors and fittings, removing and replacing door and window furniture and cleaning doors, & windows upon completion.

A.69 Unless otherwise specified internal wall paint shall be one coat of alkali resistant primer and two coats of emulsion paint of approved make and colour.

A.70 Unless otherwise specified External wall paint shall be one coat of alkali resistant primer and two coats of weather shields emulsion paint of approved make and colour.

A.71 Unless otherwise specified paint for wooden surfaces shall be one coat of aluminum primer and two coats of enamel paint of approved make and colour.

GRAZING

A.72 Unless otherwise specified thickness of glass panes shall be not less than 4.0 mm and rates for GRAZING shall include waste in cutting to required seizes, brass pins, screws, " Teak" or "Halmilla" beads, fixed complete and protecting.

ELECTRICAL INSTALLATION

A.73 a) Unless otherwise specified internal lighting wiring shall comply with the drawings and shall be in full P.V.C. insulated copper cables. All conduits shall be buried into brick walls, slabs, beams or columns to the entire satisfaction of the Engineer. All switches and socket outlets shall be "Tenby", M.K., Clipsall or similar approved sunk type unless otherwise specified. All fluorescent fittings should be complete with good quality power factor correcting capacitor and choke, starter etc. and the tube should be "Thorn", "Philips" of good quality of similar approved make. All fans and regulators shall be "National", "Usha", "Hitach", KDK, Singer or similar approved make to approved colour. Rate to include for all necessary P.V.C. switch boxes, plugs, round or square blocks. Chromium plated chains, brass hooks, ceiling roses, holders (Angle batten & ordinary battens) and any other item necessary, whole installation shall be carried out according to CEB/IEE regulations. All other distribution boards should be Merlin Gerin flush mounting type or similar approved type. Switch gears

shall be MEM or similar approved type. Earth leakage circuit breakers shall be Crabtree, Fugi or approved make, MCCB's and MCB's shall be "Square D" or similar approved make.

UNLESS OTHERWISE SPECIFIED WIRING SHALL BE AS FOLLOWS:

A.73 b) All lamp points wired through a 5 Amp. Sunk switch using 2 x 1 x 1/1.13 PVC insulated copper wire and 1 x 1 x 7/0.67 PVC insulated copper earth wire in concealed PVC conduits.

A.73 c) Ceiling fan points wired through regulator using 2 x 1 x 1/1.13 PVC insulated copper wire and 1 x 1 x 7/0.67 PVC insulated copper earth wire in concealed PVC conduits.

A.73 d) All flush mounted 5 Amp. switched socket outlets wired using 2 x 1 x 1/1.13 PVC insulated copper wire and 1 x 1 x 7/0.67 PVC insulated copper earth wire in concealed PVC conduits.

A.73 e) All flush mounted 15 Amp. switched socket outlet wired using 2 x 1 x 7/0.67 PVC insulated copper wire and 1 x 1 x 7/0.67 PVC insulated copper earth wire in concealed PVC conduits.

AIR-CONDITIONING

Unless otherwise specified Air-conditioning work shall confirm the following design creteria and conditions.

a) Inside temperature should be maintained at 25℃±1.5℃

b) The inside relative humidity should be maintained at 55%±15%

c) Outside conditions to be taken as

dry bulb temperature	-33℃
wet bulb temperature	-29℃
i.e. relative humidity	-75%

d) Noise level should be not more than 35 d.b.

e) A minimum of 1.3 Litres/S/㎡ of fresh air should be supplied.

f) Air Velocity should be maintained at between 0.3m/s at a height of 1.5m from ground level.

g) The Co_2 content should be less than 0.1%.

h) The Contractor should give a guarantee to the client that he will maintain the above design conditions inside the air conditioned areas.

j) The attached plans indicate the areas to be air-conditioned.

k) The contractor should indicate as an extra item the conditions and cost of an annual maintenance contract.

l) The contractor should submit the Technical Literature with the quotation.

m) A guarantee that spares will be available for all equipment supplied for at least a period of 5 years should be given by the local agent.

n) Performance tests to ascertain that the specified design conditions are maintained should be carried out at the time of commissioning.

CLIMATE DATA

STATION: Katunayake

Year : 1993

Latitude = N
Longitude = E
Elevation =

MONTH	TEMPERATURE Maximum Mean °C	Offset °C	Highest °C		Minimum Mean °C	Offset °C	Lowest °C	Date	Humidity % Day	Night	Cloud Amount Oktas	Rainfall Amount mm.	Offset %	Greatest Daily Rainfall	Date	Raindays No.	Offset	Resultant Wind Direction	Speed Km/h	Hours of Bright
Jan.	32.9	+1.1	35.2	10th	21.3	-0.3	17.8	20th	60	85	3.9	8.2	-81	7.9	26th	02	-03	NNE	22.9	
Feb.	33.3	+0.8	36.3	08th	22.0	+0.2	16.6	9th	61	84	2.3	12.1	-84	5.1	14th	03	-02	NNE	20.4	
Mar.	32.9	+0.4	35.9	06th	23.0	±0	20.1	9th	67	91	3.5	88.5	-39	38.9	2nd	09	-01	VRB	13.7	
Apr.	32.7	+0.5	33.7	20th	24.1	+0.2	22.1	26th	72	93	3.9	206.6	-21	62.8	25th	13	-03		11.8	
May	31.7	+0.4	33.8	9th	24.9	-0.2	22.1	18th	79	91	6.1	408.2	+22	108.6	17th	19	-01			
Jun.	31.0	+0.4	32.0	20th 21st	25.5	-0.4	22.3	25th	80	88	5.9	76.7	-56	23.4	24th	13	-05			
Jul.	30.1	-0.2	31.3	2nd	25.3	+0.4	23.3	4th	80	88	6.3	56.7	-47	26.3	3rd	10	-03			
Aug.	30.7	+0.3	31.6	16th 19th	25.5	+0.7	23.7	7th 8th	77	87	5.9	48.5	-54	13.7	29th	13	+01			
Sep.	30.8	+0.2	32.1	11th	24.9	+0.6	22.5	18th	77	88	5.9	260.7	+13	98.2	28th	19	+02		14.2	
Oct.	30.5	+0.2	31.9	29th	24.1	+0.5	22.0	19th	81	93	5.7	378.0	-12	60.9	18th	25	+04		13.7	
Nov.	30.9		33.0	14th	23.5		22.1	14th 22nd	79	95	5.9	284.4		55.8	21st	17				
Dec.	30.5		32.3	31st	23.3		21.4	20th	78	93	5.7	204.8		37.2	6th	14				
Total	378.0		399.1		287.4		256.0		891	1076	61.0	2033.4		538.8		157				
Mean	31.5		33.3		23.9		21.3		74	90	5.1	—		44.9		—				

Buddhaloka Mawatha,
Colombo 7.

(Issued by the Climat and Data Division of the Department of Meteorology)

87

42.2

CLIMATE DATA

STATION: Katunayake

Year : 1994

Latitude = N
Longitude = E
Elevation =

MONTH	TEMPERATURE Maximum Mean °C	Offset °C	Highest °C	Date	TEMPERATURE Minimum Mean °C	Offset °C	Lowest °C	Date	Humidity % Day	Night	Cloud Amount Oktas	Rainfall Amount mm.	Offset %	Greatest Daily Rainfall	Date	Raindays No.	Offset	Resultant Wind Direction	Speed Km/h	Hours of Brigh
Jan.	31·3		33·5	20th	22·6		19·9	31st	71	91	4·5	59·9		26·2	23rd	08				
Feb.	31·9		34·6	28nd	22·3		19·1	01st	71	92	4·5	66·9		40·8	06th	08				
Mar.	32·5		34·1	10th 06th	23·7		19·7	03rd	70	91	4·0	111·4		31·7	28th	09				
Apr.	32·4		33·7	25th	24·5		22·3	02th	74	92	4·7	98·7		23·7	15th	12				
May	31·7		33·3	08rd	25·5		22·4	29th	79	90	5·9	326·7		167·3	27th	18				
Jun.	30·8		32·0	02nd	25·6		22·5	04th	79	88	5·9	90·6		35·3	05th	12				
Jul.	30·7		32·1	14th	25·2		21·6	16th	77	88	7·0	97·9		25·1	16th	11				
Aug.	30·7		32·3	31st	25·0		23·0	19th	77	88	5·7	36·2		10·3	21st	10				
Sep.	30·4		32·2	01st	24·1		21·1	29th	79	92	5·8	326·0		60·5	29th	18				
Oct.	30·0		31·4	09th	23·3		22·2	18th	81	96	6·3	430·5		72·2	08rd	22				
Nov.																				
Dec.																				
Total																				
Mean																				

Buddhaloka Mawatha,
Colombo 7.

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88

付2. 2

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

		ARCHITECTURAL WORK	ELECTRICAL & VENTILATION WORK	PLUMBING WORK	TOTAL (Rs)
	SHADING FACILITY (FOR OTHER CROPS)	919,970.00	0.00	0.00	**919,970.00**
	SHADING FACILITY (FOR VEGETABLES)	0.00	0.00	0.00	**0.00**
	WORKSHOP	2,433,009.09	278,630.00	124,491.30	**2,836,130.39**
	DRYING YARD	323,100.00	0.00	0.00	**323,100.00**
	LAVATORY (1)	210,019.87	0.00	104,658.40	**314,678.27**
	LABORATORY	1,906,230.70	381,430.00	61,865.50	**2,349,526.20**
	OPEN CORRIDOR (LABORATORY)	93,999.71	0.00	0.00	**93,999.71**
	GARAGE	189,709.67	0.00	0.00	**189,709.67**
	TRAINING FACILITY	4,359,096.16	418,960.00	103,722.76	**4,881,778.92**
	OPEN CORRIDOR (TRAINING FACILITY)	55,716.69	0.00	0.00	**55,716.69**
	LAVATORY (2)	498,805.58	58,740.00	125,325.60	**682,871.18**
	TOTAL	**10,989,657.47**	**1,137,760.00**	**520,063.56**	**12,647,481.03**

THE MODEL INFRASTRUCTURE IMPROVEMENT WORKS FOR THE AGRICULTURAL EXTENSION IMPROVEMENT PROJECT IN GAMPAHA

	ARCHITECTURAL WORK						ELECTRICAL & VENTILATION WORK					PLUMBING WORK	GRAND TOTAL
	1-0 29-6 SPAN BUILDING	1-1 TEMPORARY WORK	1-2 EXCAVATION & FOUNDATION	1-3 STRUCTURAL WORK	1-4 FINISH WORK	TOTAL	2-1 MAIN FEEDER	2-2 LIGHTING & PLUG SOCKET SYSTEM	2-3 COMMUNICATION SYSTEM	2-4 VENTILATION INSTALLATION	TOTAL	3-1 PLUMBING SYSTEM	
SHADING FACILITY (FOR OTHER CROPS)						919,970.00					0.00	0.00	919,970.00
SHADING FACILITY (FOR VEGETABLES)													0.00
WORKSHOP	1,192,320.00	26,183.25	15,800.40	716,549.14	482,156.30	2,433,009.09	39,450.00	217,980.00		21,200.00	278,630.00	124,491.30	2,836,130.39
DRYING YARD			17,100.00		306,000.00	323,100.00					0.00	0.00	323,100.00
LAVATORY (1)		1,099.05	1,134.30	102,421.80	105,364.72	210,019.87					0.00	104,658.40	314,678.27
LABORATORY		16,550.40	44,560.60	688,435.90	1,156,683.80	1,906,230.70	41,500.00	276,330.00		63,600.00	381,430.00	61,865.50	2,349,526.20
OPEN CORRIDOR (LABORATORY)		2,004.15	537.70	37,185.86	54,272.00	93,999.71					0.00	0.00	93,999.71
GARAGE		2,909.25	3,562.60	149,779.42	33,458.40	189,709.67					0.00	0.00	189,709.67
TRAINING FACILITY		39,177.90	22,433.30	1,607,867.56	2,689,617.40	4,359,096.16	28,500.00	300,560.00	100.00	89,800.00	418,960.00	103,722.76	4,881,778.92
OPEN CORRIDOR (TRAINING FACILITY)		1,099.05	906.80	33,004.84	20,706.00	55,716.69					0.00	0.00	55,716.69
LAVATORY (2)		2,792.88	4,617.00	161,783.20	329,612.50	498,805.58		58,740.00			58,740.00	125,325.60	682,871.18
TOTAL	1,192,320.00	91,815.93	110,652.70	3,497,027.72	5,177,871.12	10,989,657.47	109,450.00	853,610.00	100.00	174,600.00	1,137,760.00	520,063.56	12,647,481.03

RENOVATION WORK
FOR
ADMINISTRARION BLOCK
SUMMARY

C	DEMOLITION	Rs.	54,907.0
D	CARPENTRY AND JOINERY	Rs.	340,513.0
E	ROOFER & ROOF PLUMBER	Rs.	486,268.0
F	PLUMBER	Rs.	32,440.0
G	PLASTERER	Rs.	136,408.0
H	PAVIOR	Rs.	267,542.4
J	PAINTER	Rs.	235,267.0
K	ELECTRICAL INSTALLATION	Rs.	134,600.0
L	PROVISIONAL SUM	Rs.	84,397.3
	5% CONTINGENCIES	Rs.	88,617.2
	GRAND TOTAL	**Rs.**	**1,860,959.9**

RENOVATION WORK
FOR
CANTEEN & KITCHEN BLOCK
SUMMARY

C	DEMOLITION	Rs.	3,764.0
D	CONCRETE WORK	Rs.	4,007.0
E	BRICK WORK	Rs.	5,600.5
F	CARPENTRY AND JOINERY	Rs.	98,568.2
G	ROOFER & ROOF PLUMBER	Rs.	23,629.0
H	PLUMBER	Rs.	29,288.0
J	PLASTERER	Rs.	8,485.0
K	PAVIOR	Rs.	23,093.2
L	PAINTER	Rs.	41,455.0
M	ELECTRICAL INSTALLATION	Rs.	34,480.0
N	PROVISIONAL SUM	Rs.	13,618.5
	5% CONTINGENCIES	Rs.	14,299.4
	GRAND TOTAL	**Rs.**	**300,287.8**

RENOVATION WORK
FOR
LECTURE HALL
SUMMARY

C	DEMOLITION	Rs.	24,742.0
D	EXCAVATION	Rs.	4,256.0
E	CONCRETE WORK	Rs.	257,014.1
F	BRICK WORK	Rs.	19,152.0
G	STRUCTURAL STEEL WORK	Rs.	580,212.0
H	CARPENTRY AND JOINERY	Rs.	443,915.0
J	ROOFER AND ROOF PLUMBER	Rs.	493,282.0
K	PLASTERER	Rs.	46,057.0
L	PAVIOR	Rs.	42,892.0
M	PAINTER	Rs.	90,756.0
N	ELECTRICAL INSTALLATION	Rs.	58,395.0
P	PROVISIONAL SUM	Rs.	103,034.0
	5% CONTINGENCIES	Rs.	108,185.0
	GRAND TOTAL	**Rs.**	**2,271,892.1**

ADMINISTRARION BLOCK	**1,860,959.9**
CANTEEN & KITCHEN BLOCK	**300,287.8**
LECTURE HALL	**2,271,892.1**
GRAND TOTAL	**4,433,139.8**

