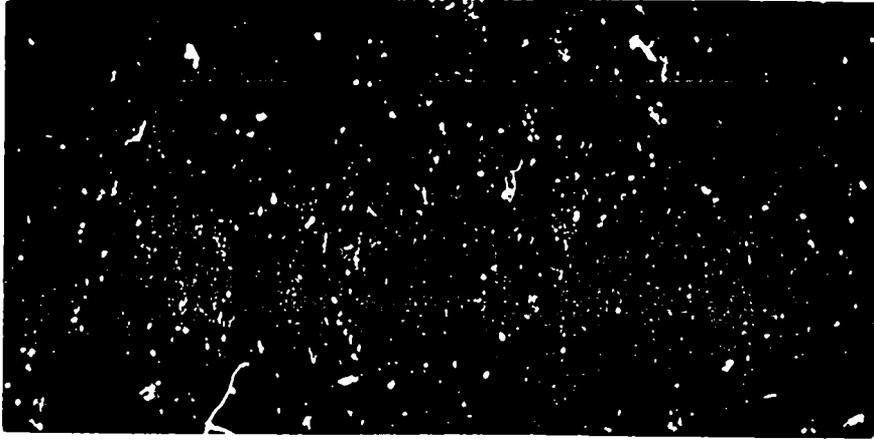
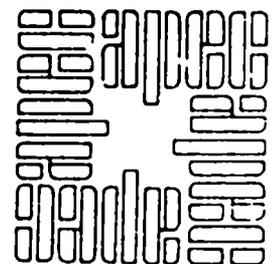


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APEC CONSULTANTS
architects planners engineers cost consultants

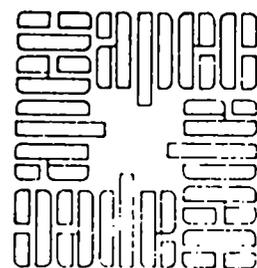


**USAID/GOJ
AGRICULTURAL PROJECT**

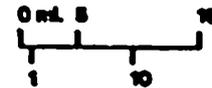
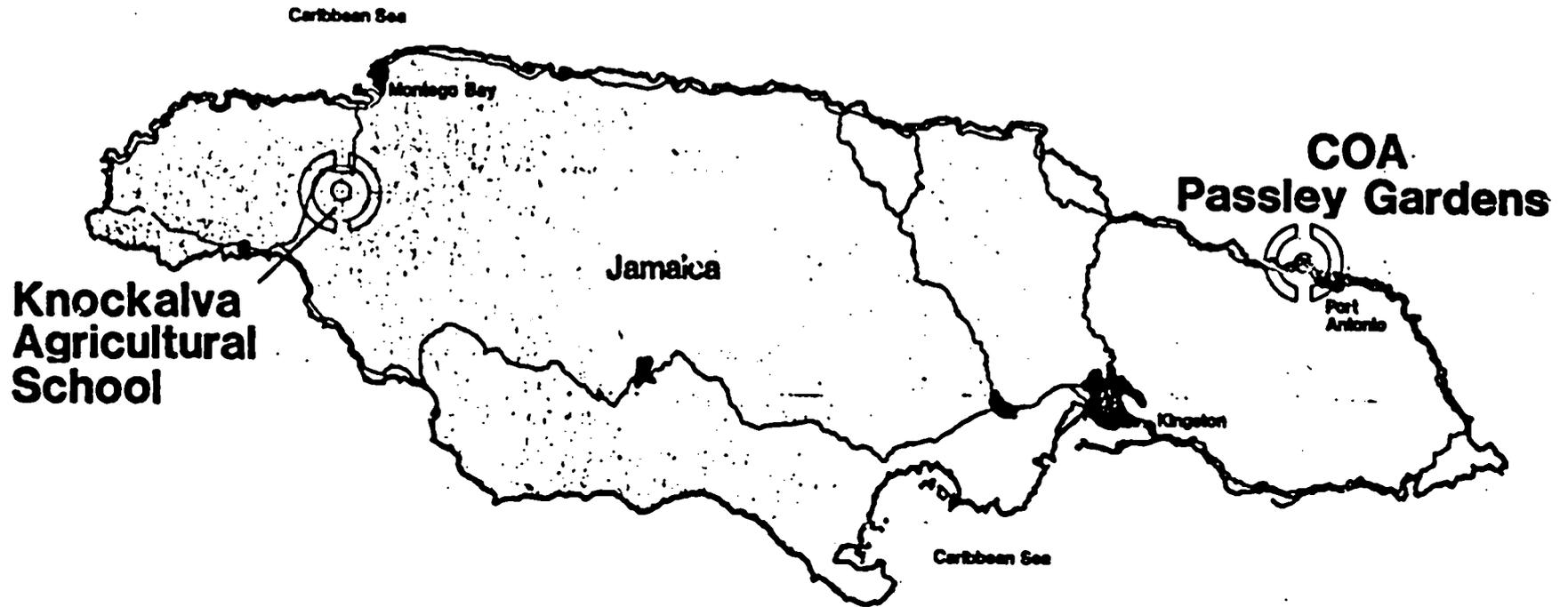
COLLEGE OF AGRICULTURE (Passley Gardens)

KNOCKALVA AGRICULTURAL SCHOOL

Final Report **MAY 1984**

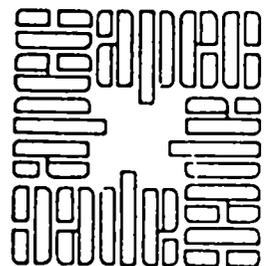


Location



INTRODUCTION

A.



PREFACE

Following the submission of technical proposals by a number of consulting firms, APEC Consultants were appointed by letter dated March 30, 1984 to prepare this report, entitled USAID/GOJ AGRICULTURAL PROJECT.

The purpose and objectives of the report are to examine existing conditions at the College of Agriculture, Passley Gardens, Portland, and at the Knockalva Agricultural School, near Ramble, Hanover, and to make recommendations for their expansion and development so as to provide an effective and complete educational system for the teaching of agricultural science at the secondary and tertiary levels.

In view of the short time available for its preparation it was agreed that a draft report covering all aspects of the brief would be submitted on 4th April 1984. It was further agreed that following a review of its recommendations, an edited Final Report, (covering those items which in order of priority could be encompassed by the available funds) should be completed by 18th May 1984.

We accordingly have pleasure in presenting this Final Report and wish to take this opportunity to express our appreciation for the assistance and advice willingly offered by the USAID representatives and the staff at both Campuses, without whose help this assignment could not have been accomplished in the time available.

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- B. COLLEGE OF AGRICULTURE - PASSLEY GARDENS
 - 1. GENERAL PLANNING
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 - . STUDENTS RESIDENCES: NEW ACCOMMODATION
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 - . STUDENT LAUNDRIES
 - . LIBRARY COMPLEX
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 - . MULTI-PURPOSE FACILITY
 - 3. STAFF RESIDENCES
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 - 5. LIVESTOCK COMPLEX
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 - 6. ENGINEERING/FARM COMPLEX
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C. KNOCKALVA SCHOOL OF AGRICULTURE

1. GENERAL PLANNING
2. CENTRAL CAMPUS
 - . STUDENT RESIDENCES
 - . MULTI-PURPOSE FACILITY
 - . CLASSROOM/LABORATORY COMPLEX
3. STAFF RESIDENCES
4. FARM COMPLEX
5. ENGINEERING
 - . STRUCTURAL CONSIDERATIONS
 - . SEWAGE DISPOSAL
 - . ROAD CONSTRUCTION
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1. COST ESTIMATES: COA (PASSLEY GARDENS)
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2. TERMS OF REFERENCE
3. PRELIMINARY BRIEFING: COA (PASSLEY GARDENS)
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INTRODUCTION

This report sets out to satisfy the requirements of the original brief, and the methods employed followed as closely as possible the programme of work set out in the Technical Proposal submitted in March 1984. (Copies of brief and proposal are attached at Appendix.)

At a preliminary briefing on the 31st March 1984 the scope of the project was outlined in detail by representatives of U.S.A.I.D. in Jamaica, who indicated the sources of pertinent information and agreed to liaise between the consultants and personnel attached to the College and School of Agriculture.

With their assistance, meetings were arranged with the Dean and faculty members at the College of Agriculture on 3rd April 1984 and with the Vice Principal and staff of Knockalva Agricultural School on 5th April 1984. At these meetings the expansion requirements visualised by the academic staff were discussed in relation to the guidelines established by the brief, and a first hand acquaintance was made with the existing facilities.

It was clear that the range of additional accommodation and services contemplated, (with the alternative options available) was very broad indeed, and some spatial and financial conflicts were evident, which meant that there were numerous permutations and combinations of solutions which could satisfy all the requirements - except those imposed by a limited budget.

Within the week following the meetings, therefore, draft proposals were prepared setting out the projected scope of work with tentative outline solutions, and these were circulated to all interested parties. Information was also assembled from consultants concerned with previous development programmes, Survey and Meteorological Departments, land surveyors and soils consultants, etc.

Following receipt of approval and comments on the draft proposals, these were analysed in greater detail to derive definitive solutions which were then used as a basis for spatial planning of accommodation and quantitative planning for support services.

In this phase of the exercise, although overall financial implications were not considered, specimen building layouts and outline specifications were prepared so that the economical cost of providing the facilities postulated by the brief and requested by the academic staff could be estimated.

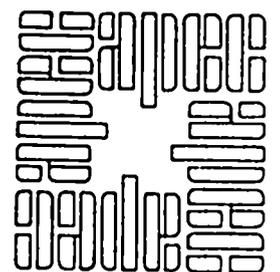
This work resulted in a voluminous draft report in which each aspect of development proposed for the College and School of Agriculture was assessed, analysed and recommendations made for its accomplishment with individual estimates and an overall summary of total cost.

As was to have been expected, the cost of providing everything which was desirable was considerably in excess of the minimum funds required to satisfy the basic need for institutions to produce secondary and tertiary level agricultural graduates in sufficient numbers.

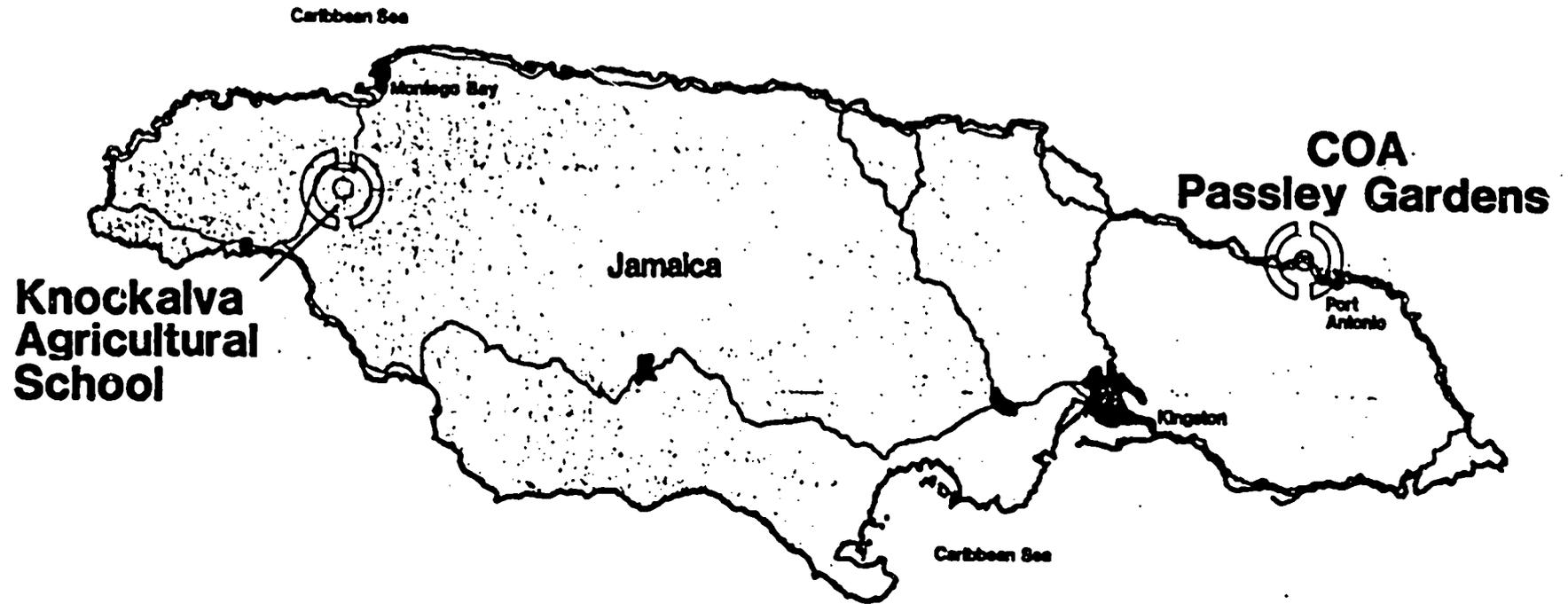
The review of the draft report, therefore, resulted in the elimination of certain elements of the earlier proposals, on the basis of diminishing priorities, and this Final Report deals only with those items which are considered essential. In each case, an explanation is given for the selection of the recommended solution, together with preliminary planning details. A summary of total estimated costs, including fees and expenses is given at the end of this report.

COA(PASSLEY GARDENS)

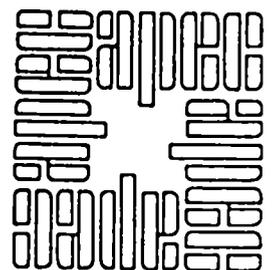
B.



Location

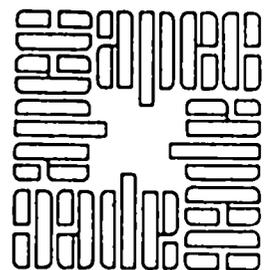


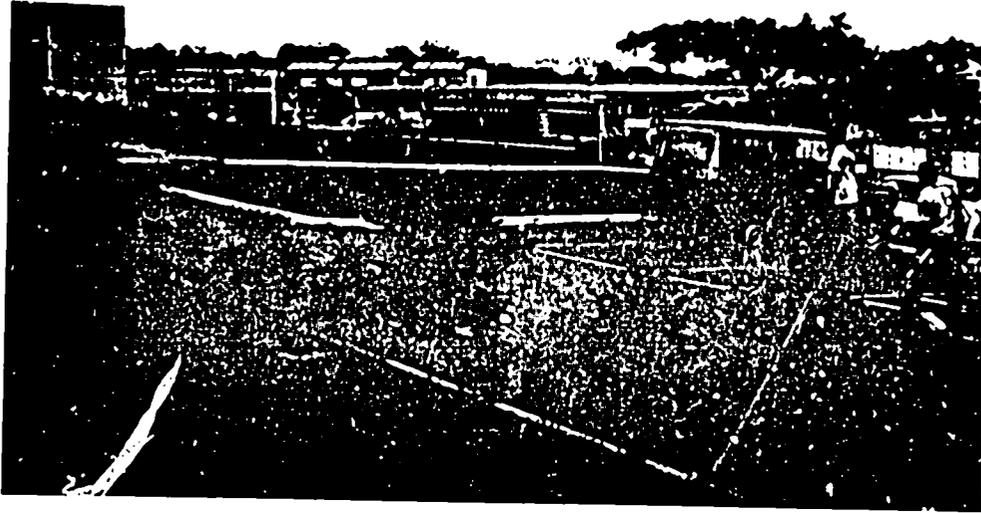
1. GENERAL PLANNING



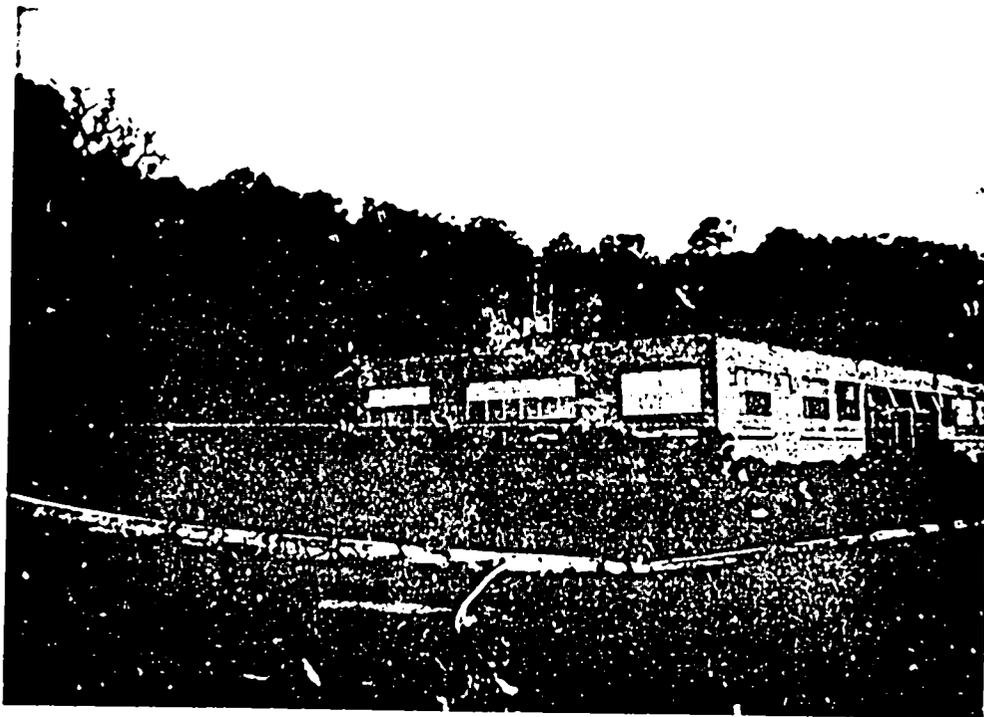


VIEW OF COLLEGE FROM SOUTHERMOST BOUNDARY



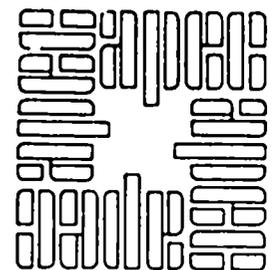


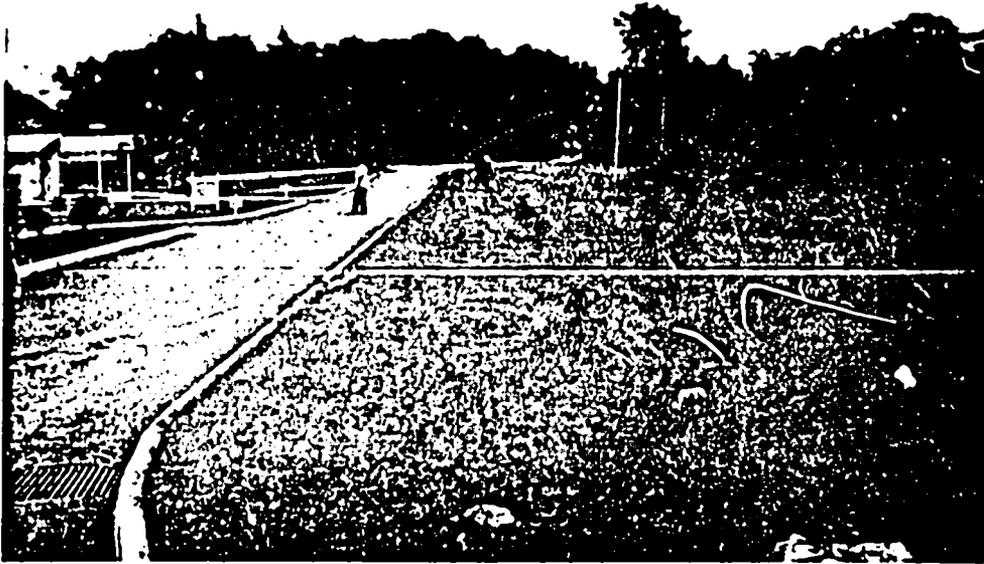
VIEW OF PART OF CENTRAL COMPLEX



VIEW OF ADMINISTRATIVE BUILDING

USAID/GOJ AGRICULTURAL PROJECT - COA (PASSLEY GARDENS)



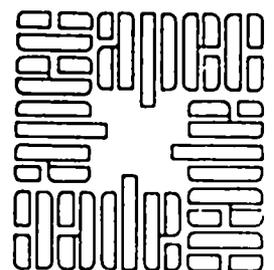


VIEW OF PROPOSED SITE FOR NEW CLASSROOM/LABORATORY COMPLEX



VIEW OF PROPOSED SITE FOR NEW STUDENTS RESIDENCES

USAID/GOJ AGRICULTURAL PROJECT - COA (PASSLEY GARDENS)



USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

GENERAL PLANNING

1.0 EXISTING FACILITIES

The College of Agriculture at Passley Gardens is located in the north-eastern Parish of Portland, on the main road between the town of Buff Bay and the Parish capital, Port Antonio.

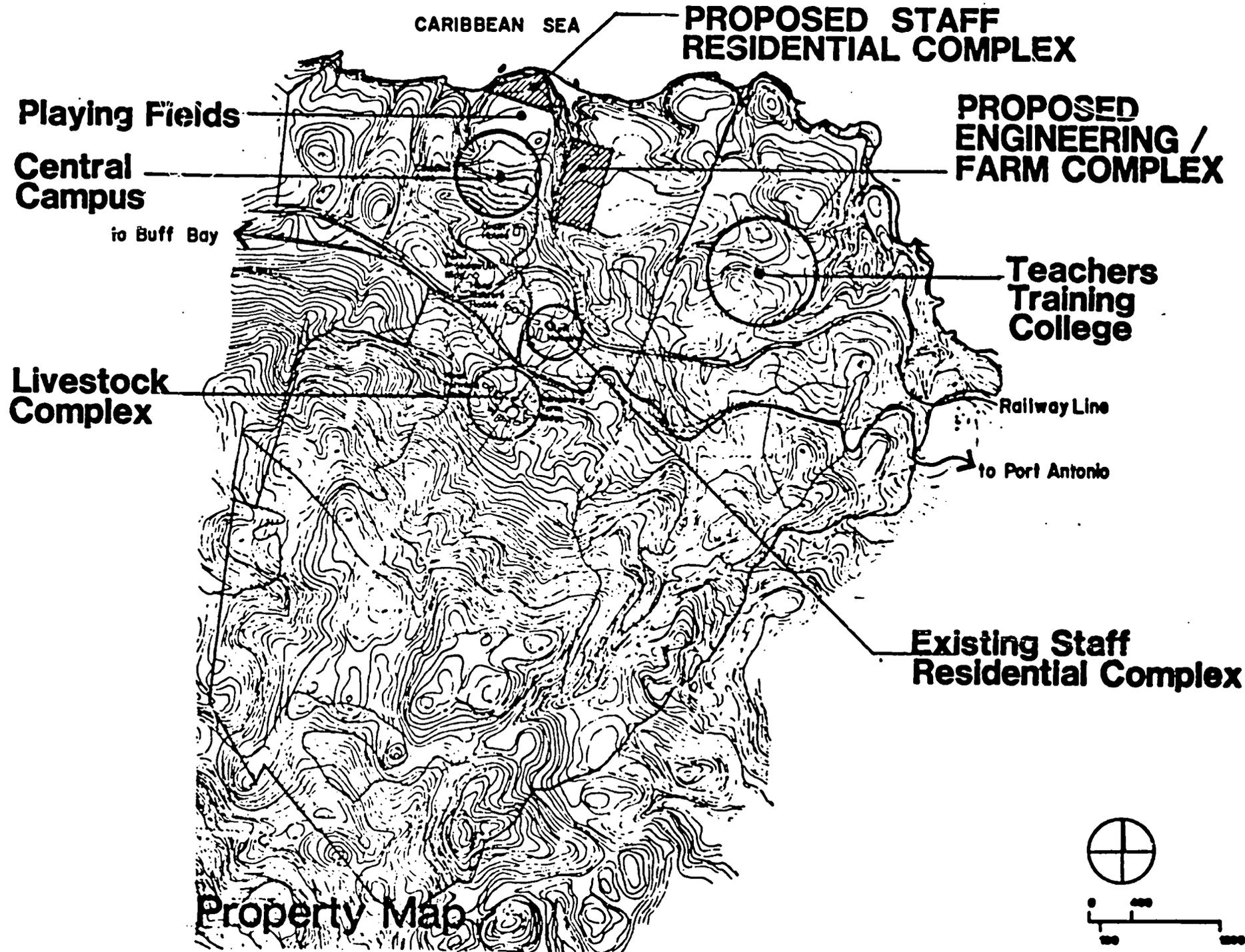
The approximately 450 acre site is bounded on the north by the Caribbean sea, on the west by a Teachers' Training College, and on the west and north by other properties. The main Buff Bay to Port Antonio highway runs through the site, as does a disused railway line, effectively dividing it into two separate areas.

The land on the southern site slopes steeply from the south to the north, whilst the northern site slopes more gently from the south towards the sea.

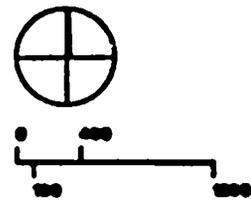
The Central Campus is located in a central position, of the northern position of the property overlooking the sea and its separate buildings provide accommodation for Students Residences, a Library, Classrooms/Laboratories, Administration, a multi-purpose Facility and a small Students' Centre. Playing Fields lie to the immediate north of the Central Campus.

To the south of the Central Campus is the original Great House of the property, adjacent to which a Plant Propagation complex is located.

The railway line divides the Central Campus and the Plant Propagation complex from the part of the northern portion of the property devoted to Staff Residences. The Staff Residences consist of a principal's house, 5 no. detached houses for married staff and 7 1BR Apartments for single staff.



Property Map



A central paved roadway from the main entrance off the main road provides direct access to all the building complexes on the northern property, whilst a tortuous unpaved roadway in poor condition provides access from the Central Campus to the eastern portion of the northern property presently under cultivation.

The southern property is where the Farm Complex is situated, with direct access from the main highway. The facilities include a Headman's House, a Farm Shop, a Piggery, a Dairy, Poultry Houses, a Food Processing Building, an Abattoir, an Engineering Teaching building and some unfinished buildings intended for a Feedmill, Hatchery and Welfare Facilities.

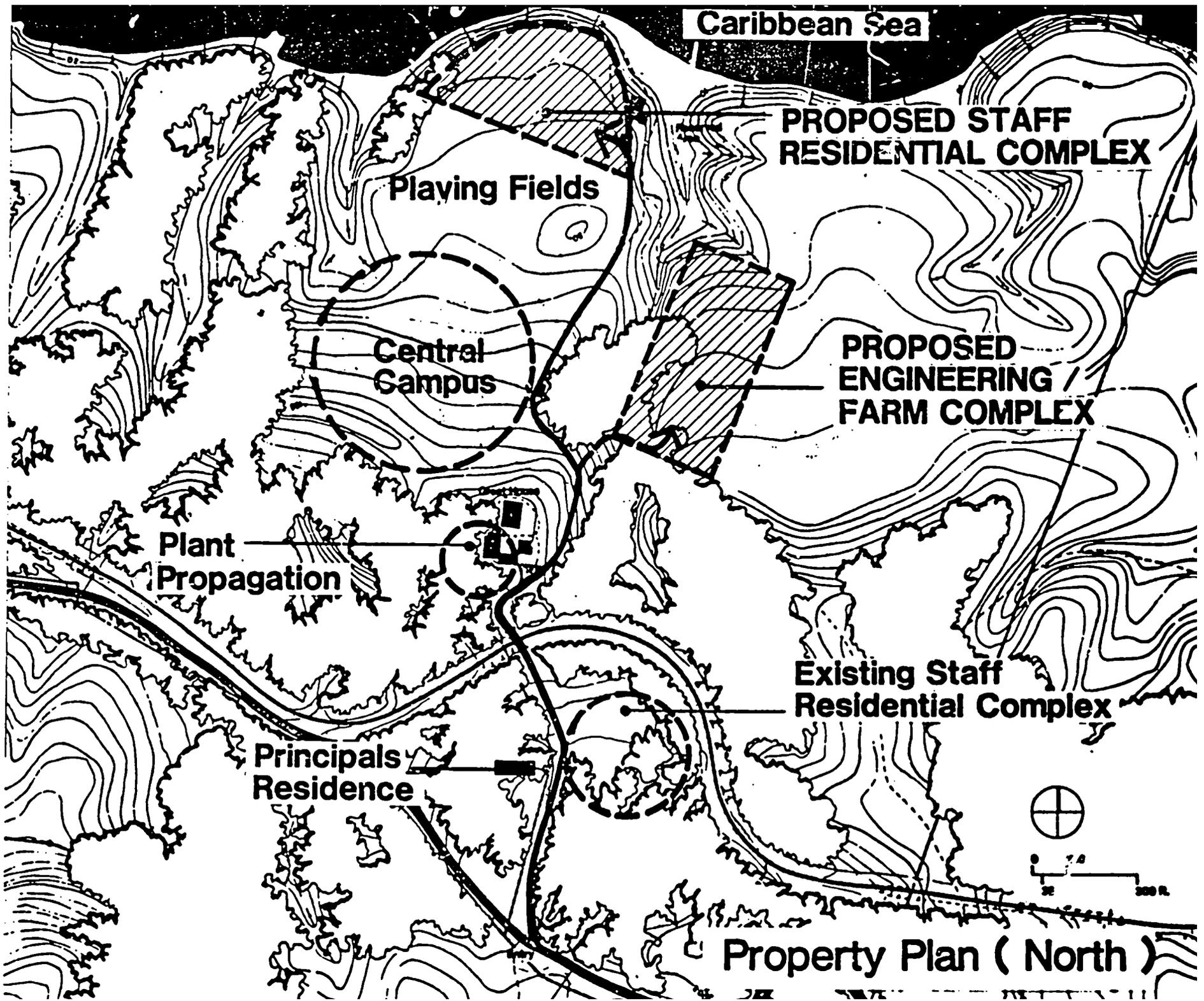
2.0 ADDITIONAL REQUIREMENTS

It is proposed that the College be expanded from the present residential student capacity of 300 to a total of 450 with complementary and consequential expansion in all other areas.

The additional requirements included in this report are described in more detail in the sections following, but they are summarized briefly below:

- .1 CENTRAL CAMPUS - expansion of Student Residences, the Library, the Classroom/Laboratory Complex, the Administration Building and a new central student Laundry.
- .2 PLANT PROPAGATION - additional teaching, propagation and lecturers' facilities.
- .3 FARM COMPLEX - expanded Piggery, Dairy, Poultry Houses and Abattoir; additional teaching and storage areas; a new Engineering Teaching facility, Maintenance Workshop and Ancillary Staff Residences; and the completion of unfinished structures.
- .4 STAFF RESIDENCES - new residential accommodation for 10 married and 20 unmarried staff.

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- COA (PASSLEY GARDENS)



Property Plan (North)

3.0 DEVELOPMENT STRATEGY

Provision for expansion of some facilities was made in the original master plan, but this was for the most part confined to the Central Campus area.

.1 CENTRAL CAMPUS

The area designated for expansion of student residences lies to the west of the present dormitories and is adequate to meet the proposed additional and future requirements.

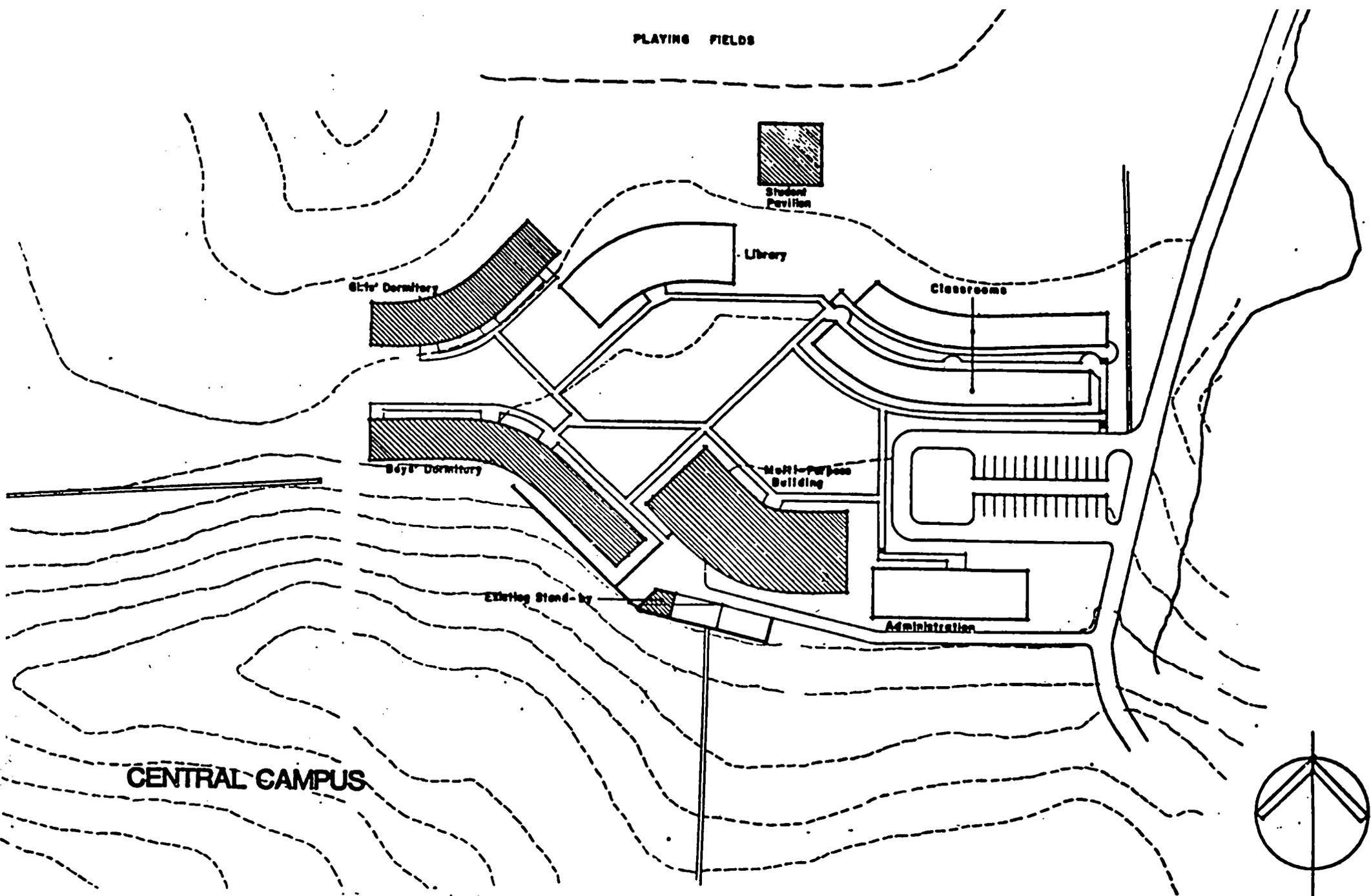
No provision for library expansion was made and additional needs have to be satisfied by adding another floor or by re-organisation/re-allocation of existing space. The latter alternative is proposed.

The area designated for Classroom/Laboratory expansion has been compromised by the construction of a small Student Centre. Consequently, the new accommodation required will have to be provided by upwards expansion or by new buildings on another site. By re-alignment of the main access road, a large enough area of land to the immediate east of the existing classroom/laboratory complex can be provided. Both alternatives are proposed.

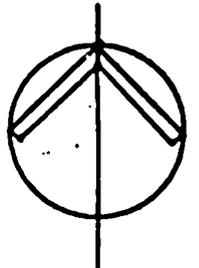
The Administration Building can be expanded either by the addition of another floor or by an extension to the east on land so designated. The upward extension is proposed as the eastward extension would have to be two floors to meet the requirements.

The development strategy proposed thus allows for future expansion of the Students Residences, the Library, the Classroom/Laboratory Complex, and the Administration Building. Allowance is also made for extensions to the Student Centre.

PLAYING FIELDS

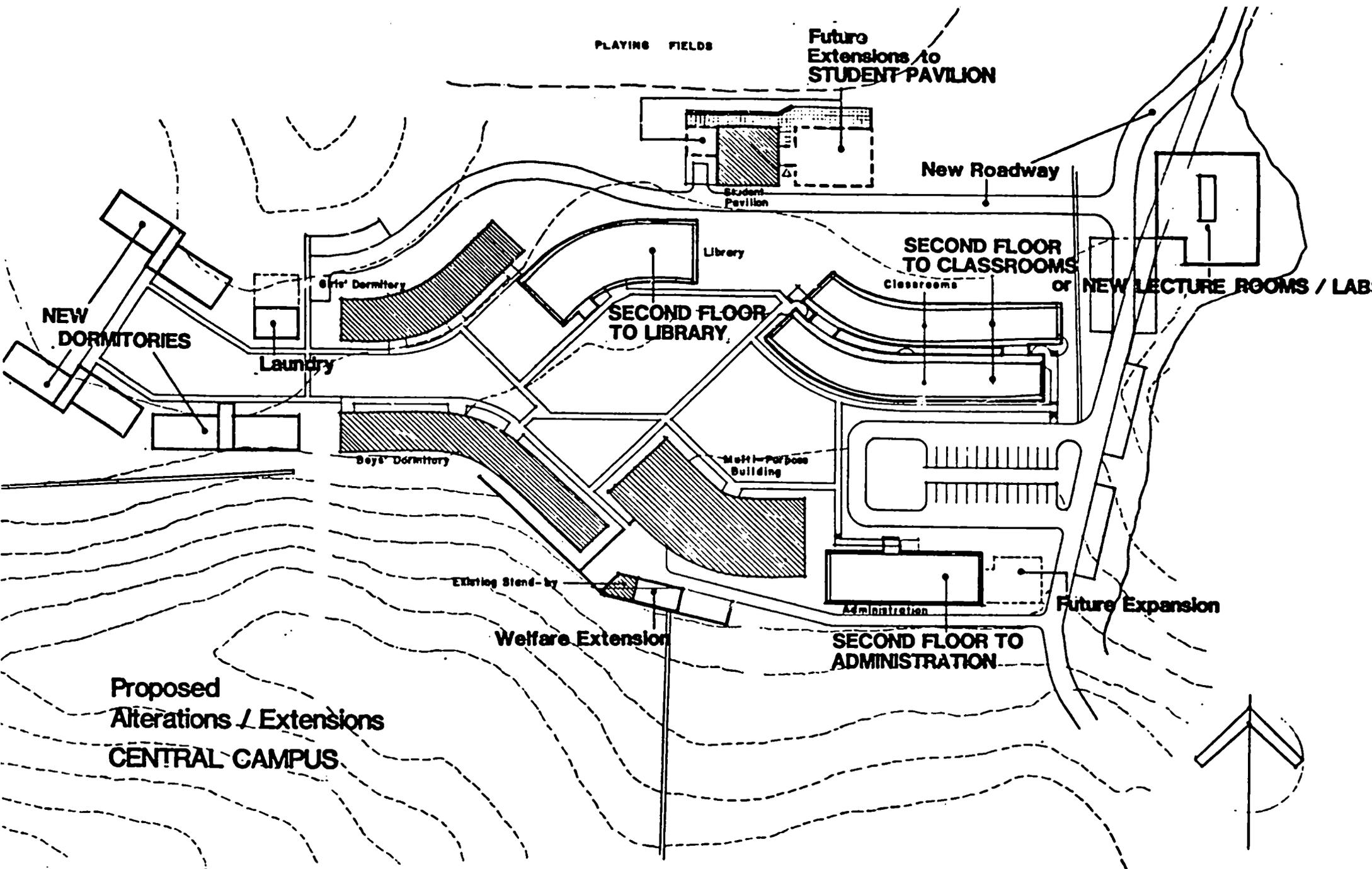


CENTRAL CAMPUS



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- COA (PASSLEY GARDENS)

APEC



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- COA (PASSLEY GARDENS)

APEC

.2 PLANT PROPAGATION

Although no specific areas were designated for the expansion of this facility, suitable sites were identified for the proposed and future additional requirements.

.3 FARM COMPLEX

The steeply sloping terrain of this area, the existing pattern of development of the site, combined with other environmental factors made it difficult to satisfy all the additional requirements on this site.

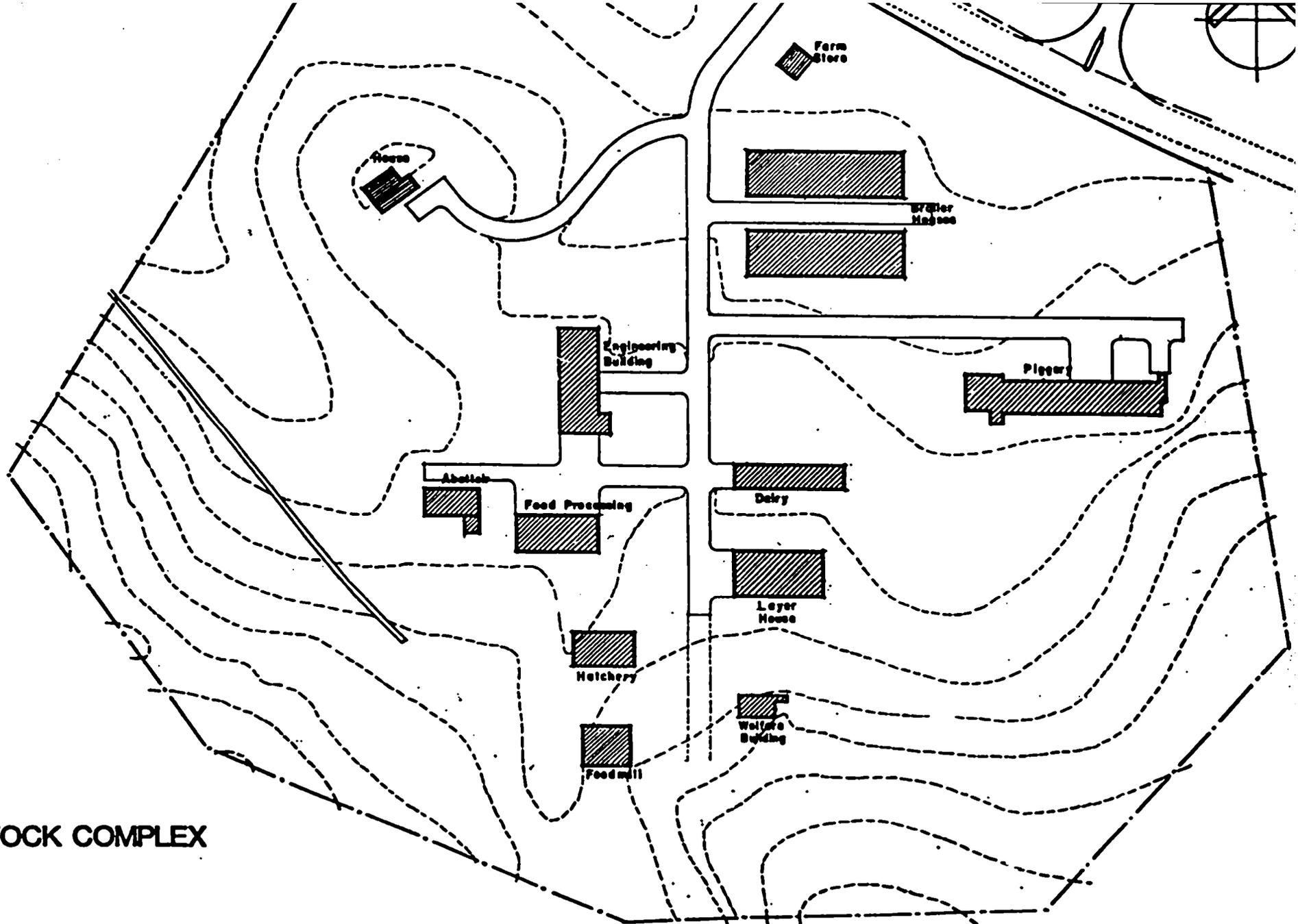
It was therefore decided to allocate this Complex entirely to Livestock purposes only and to propose the construction of a new complex elsewhere on the property to accommodate Engineering Teaching, Vehicle Maintenance and Crop Cultivation facilities.

The proposed expansion at the Livestock Complex involves separate extensions to the Piggery & Dairy; conversion of existing poultry houses to Layer Houses and the provision of new Broiler Houses elsewhere on the site; an extension to the Abattoir; the re-organisation of the existing Engineering Building to provide a Central Store and required teaching facilities; and the completion of the unfinished structures.

Some areas have been allocated for identified future requirements.

The site selected for the Engineering/Farm Complex is an area of gently sloping land to the east of the Central Campus, separated by a gully. A development plan of this site is illustrated which includes facilities for Engineering Teaching, Vehicle Maintenance, Storage & Welfare Facilities, Ancillary Staff Residences with provision for future expansions.

A roadway giving direct access to this Complex from the main access roadway is proposed.

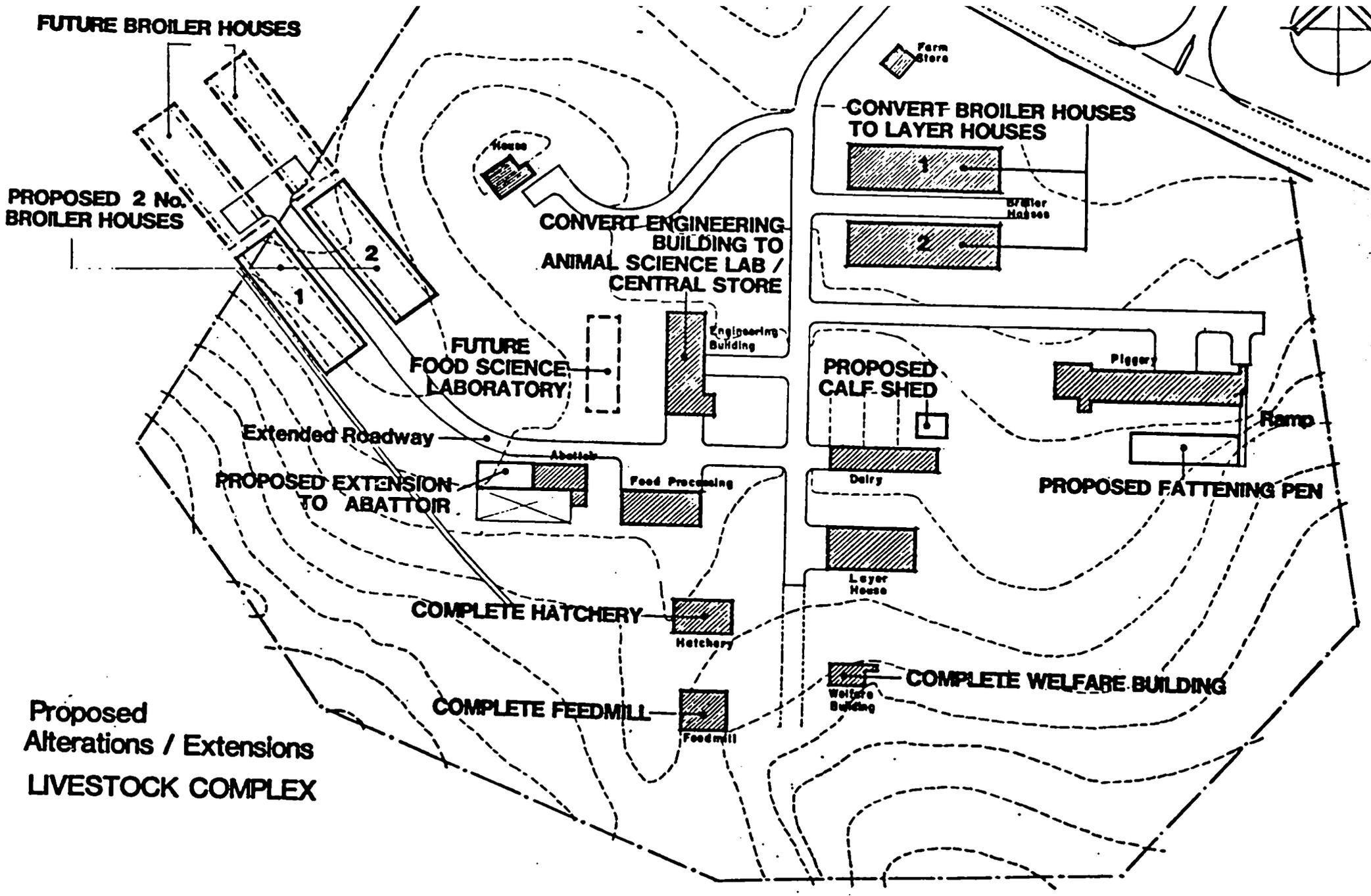


LIVESTOCK COMPLEX

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- COA (PASSLEY GARDENS)

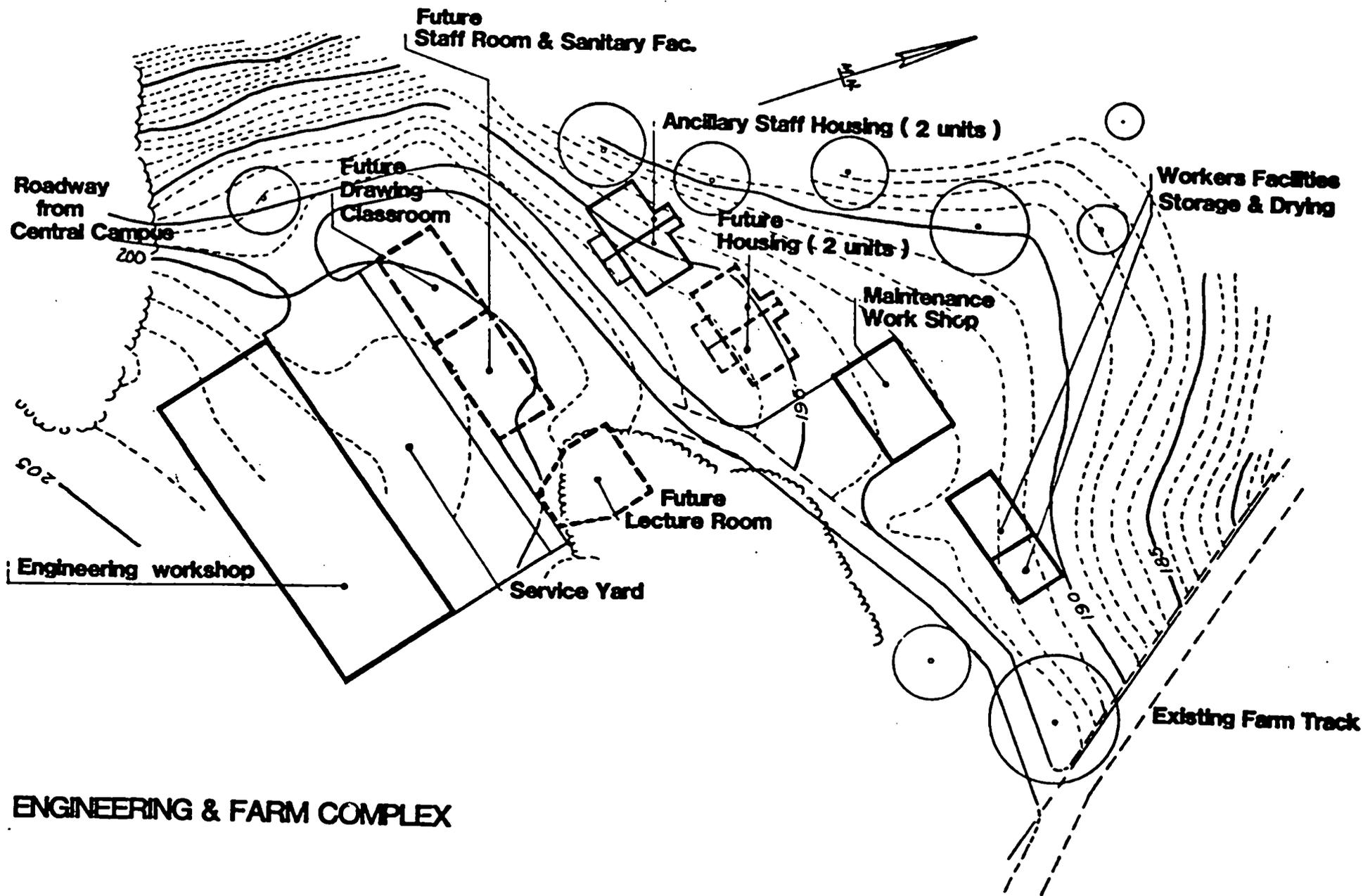
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- COA (PASSLEY GARDENS)

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ENGINEERING & FARM COMPLEX

**USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)**

APEC

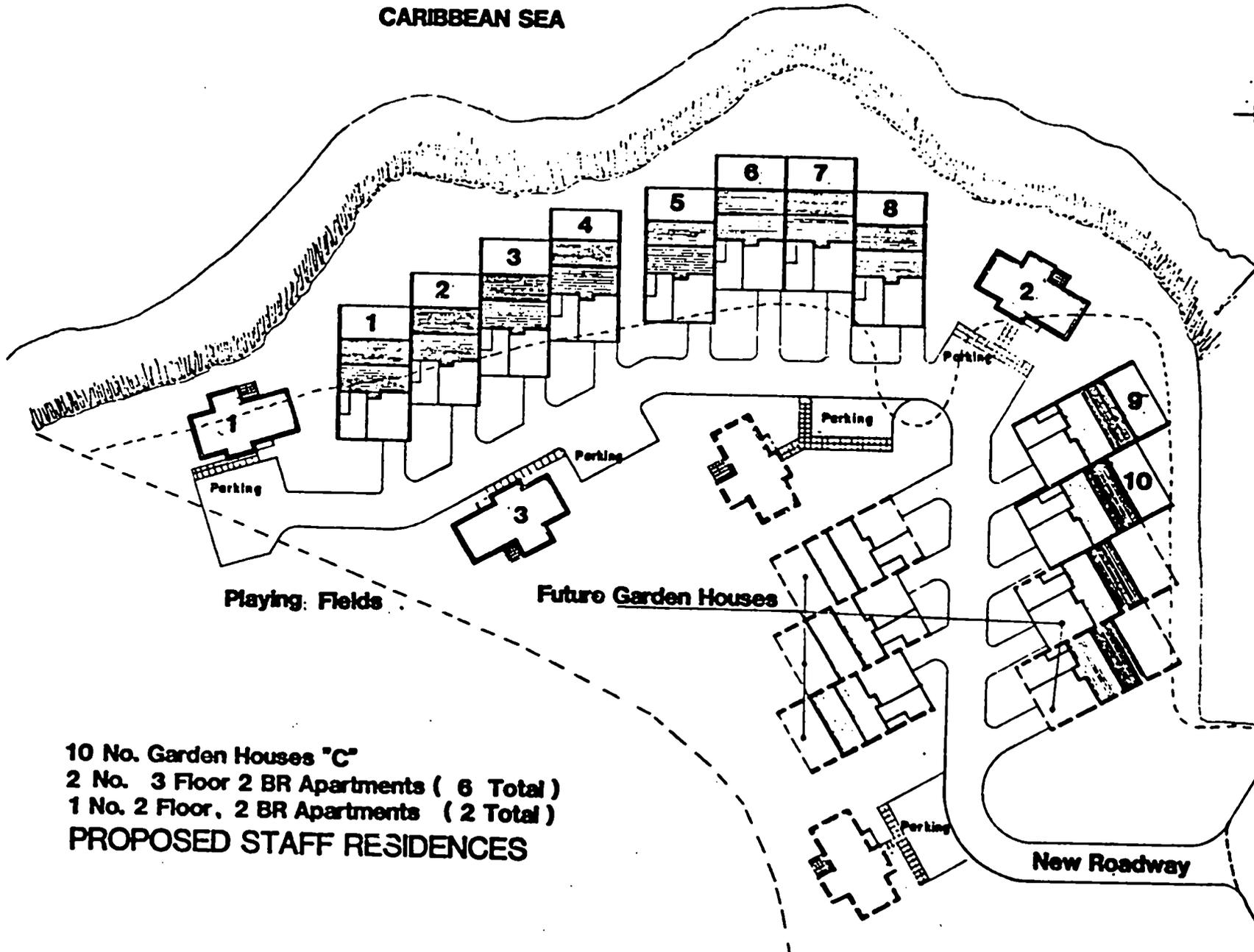
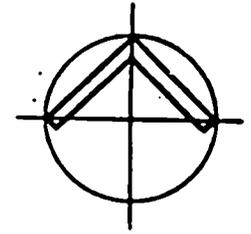
.4 STAFF RESIDENCES

As a result of the extensive development of the existing residential complex and the desire to preserve the well landscaped areas adjacent to the main road and surrounding the Principal's Residence, it was necessary to identify a completely new site for the proposed and future staff residences.

The site selected was an area of gently sloping land between the playing fields and the cliffs overlooking the sea. The development plan for this complex attempts to maximise the benefits of view and northern orientation. The accommodation for married staff is in the form of 2-floor 3-bedroom 'Garden Houses' and that for unmarried staff is in the form of 2 & 3-floor flexible 2-bedroom apartment blocks. In this way, economic use of available land is assured and provision for future residences is made.

It was also proposed that some of the unmarried staff accommodation can economically be provided by conversion of the existing Great House, whose basic structure is in good condition.

CARIBBEAN SEA

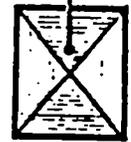


Playing Fields

Future Garden Houses

10 No. Garden Houses "C"
 2 No. 3 Floor 2 BR Apartments (6 Total)
 1 No. 2 Floor, 2 BR Apartments (2 Total)
PROPOSED STAFF RESIDENCES

Existing Bear House



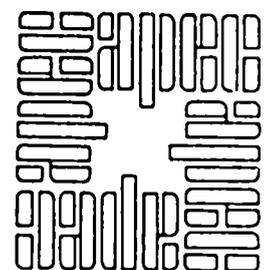
Existing Roadway from Central Campus

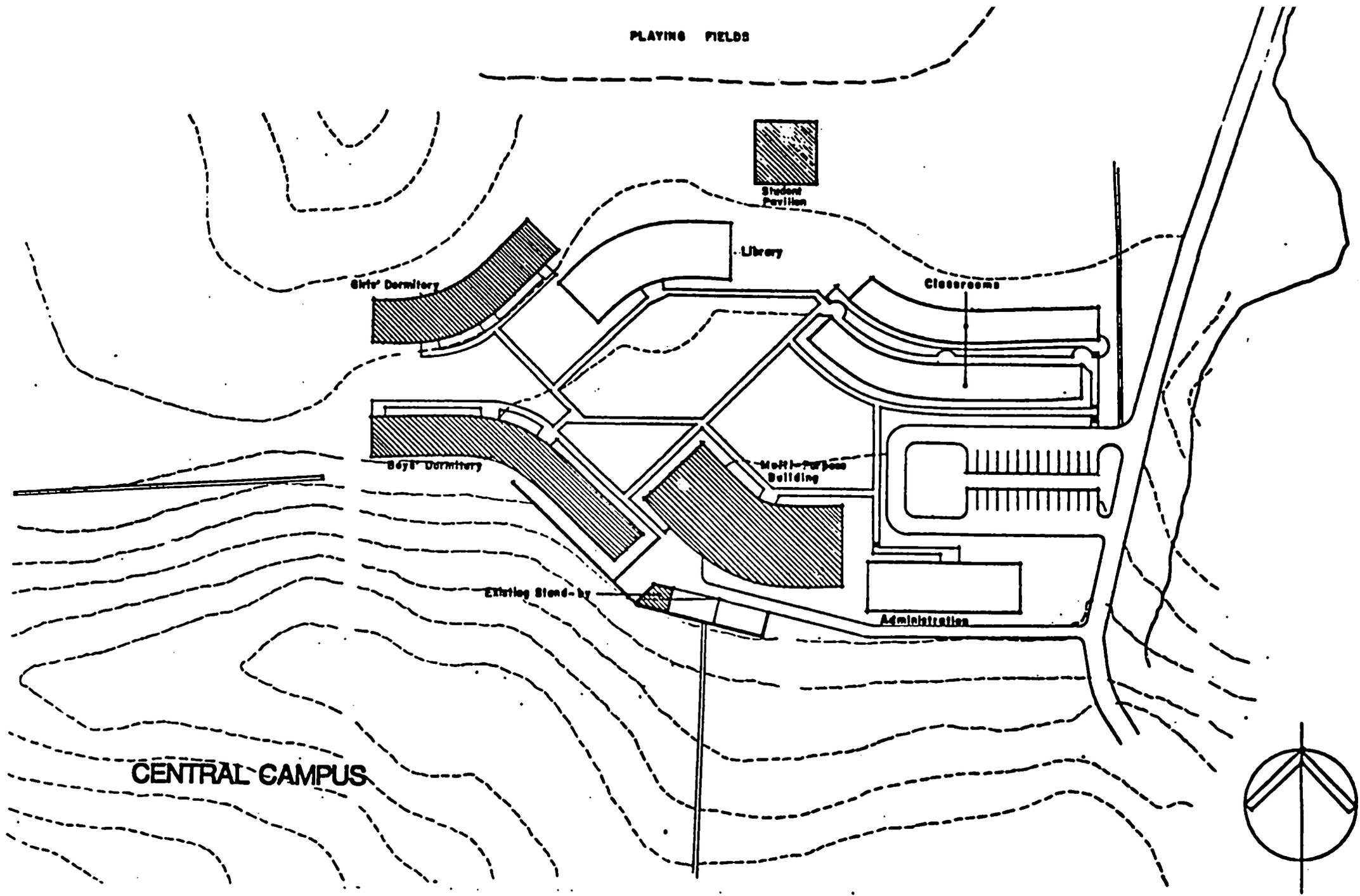
New Roadway

USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)

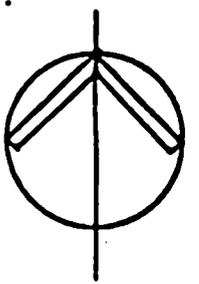
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2. CENTRAL CAMPUS

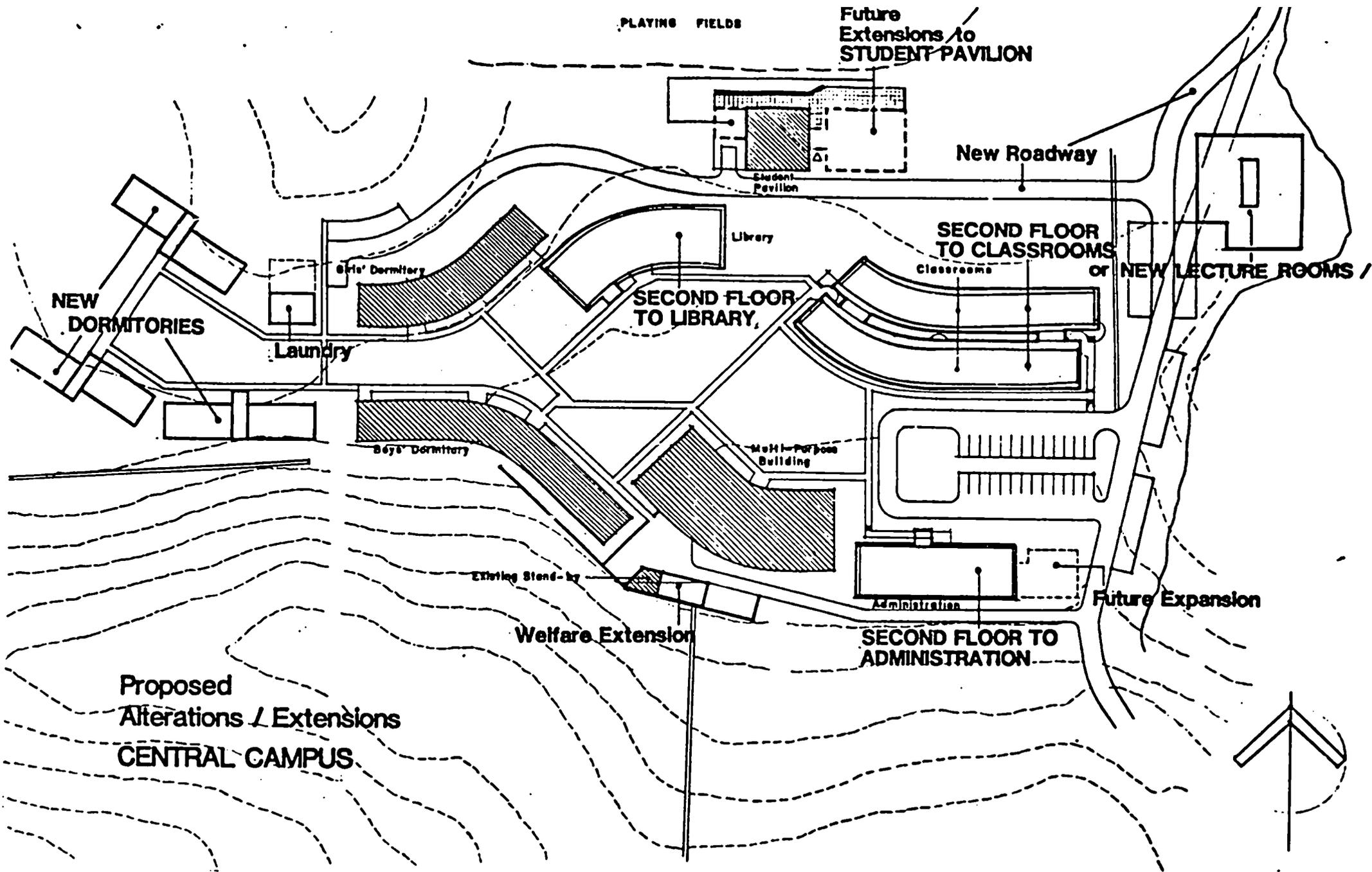




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- COA (PASSLEY GARDENS)**



APEC



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- COA (PASSLEY GARDENS)

APEC

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STUDENT RESIDENCES

EXISTING ACCOMMODATION

The existing student accommodation is provided in two dormitory blocks, one housing 100 women and the other housing 200 men giving a total of 300 students.

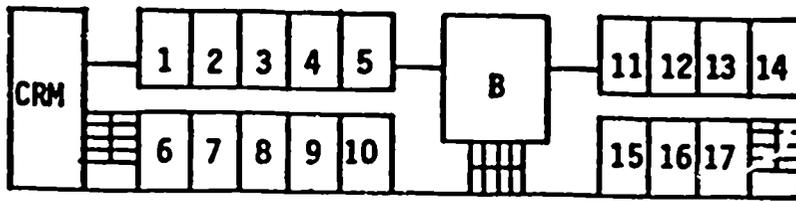
Both dormitory blocks are based on the principle of double study bedrooms with centralized bathrooms serving each floor.

The Boys Dormitory Block is four levels, the top two levels each housing 64 students, each level having a 1-BR staff apartment attached, Level 2 provides accommodation for 44 students, a sick bay and a 1-BR apartment for a nurse. Thirty (30) number boys occupy the smaller ground floor (Level 1), where a laundry is also provided.

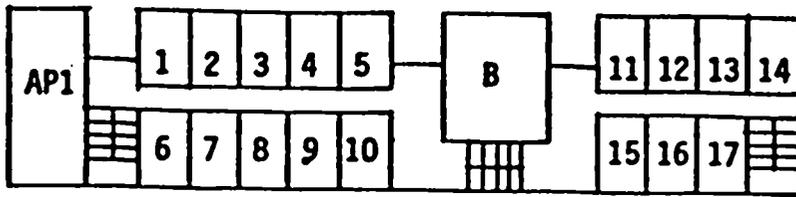
The Girls Dormitory Block is three levels, with Level 1(G) accommodating 32 girls and a laundry & Levels 2 & 3 housing 34 girls each. In addition, Levels 1 & 2 have 1BR staff apartments attached, whilst Level 3 has a common room.

The following pages contain an area analysis of the existing accommodation, identify some of the expressed shortcomings and explore the development potential relative to the criticisms and to the overall development objectives.

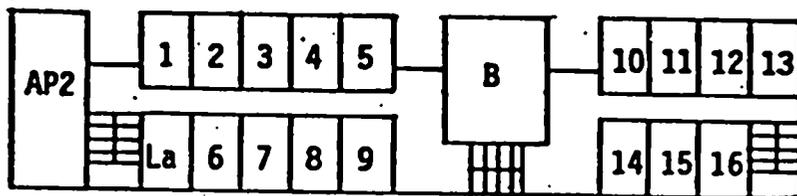
The existing accommodation is shown in diagrammatic form for ease of calculation & reference.



LEVEL 3 - 17 no. double s/bed:ooms (34 students)



LEVEL 2 - 17 no. double s/bedrooms (34 students)



LEVEL 1 (G) - 16 no. double s/bedrooms (32 students)

TOTAL (ALL LEVELS) = 50 no. double s/bedrooms

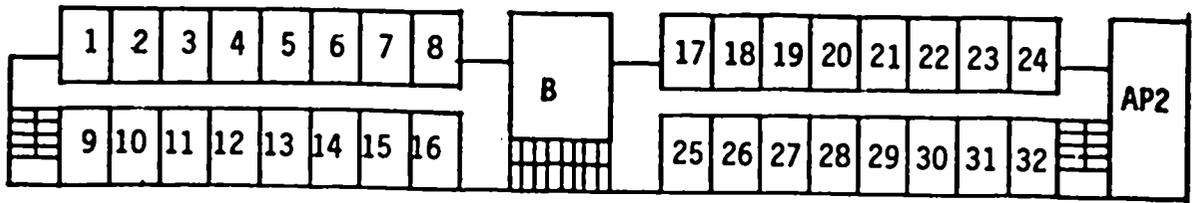
= 100 students

GIRLS DORMITORIES:

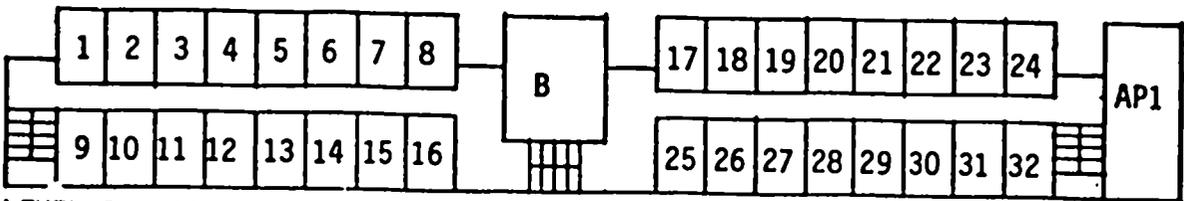
ANALYSIS OF EXISTING ACCOMMODATION

STUDENT RESIDENCES

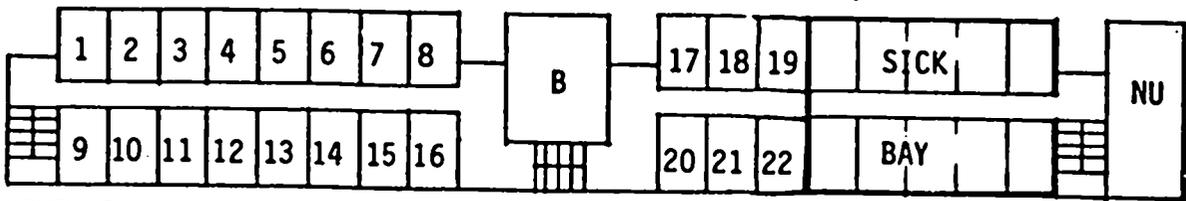
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



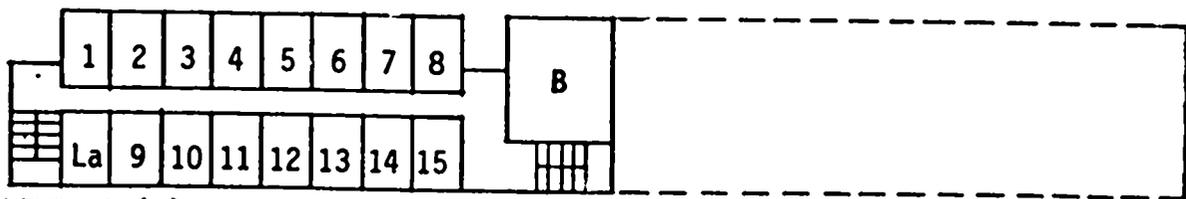
LEVEL 4 - 32 no. double s/bedrooms (64 students)



LEVEL 3 - 32 no. double s/bedrooms (64 students)



LEVEL 2 - 22 no. double s/bedrooms (44 students)



LEVEL 1 (G) - 15 no. double s/bedrooms (30 students)

TOTAL (ALL LEVELS) = 101 no. double s/bedrooms
 = 200 Students

BOYS DORMITORIES:

ANALYSIS OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

USAID/GOJ AGRICULTURE PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

EXISTING ACCOMMODATION/AREA ANALYSIS (centre line dimensions)

A. GIRLS DORMITORIES

	LEVELS (SQ.FT.)				Total	%
	1 (G)	2	3			
1. Double BRS	(16) 2052	(17) 2180.25	(17) 2180.25	(50) 6412.5	50.75	
2. Bathrooms	(1) 460	460	460	1380	10.92	
3. Circulation	1526.75	1526.75	1660.75	4714.25	37.31	
4. Laundry	(1) 128.25	-	-	128.25	1.02	
SUB TOTALS	4167	4167	4301	12,635	100.00	
5. Apartments	503.75	503.75	-	1,007.50		
6. Common Room	-	-	503.75	503.75		
BUILDING TOTALS	4,670.75	4,670.75	4,804.75	14,146.25		

GROSS AREA PER STUDENT (excluding 5 & 6) = $12,635 \div 100 = \underline{126.35}$

B. BOYS DORMITORIES

	LEVELS (SQ.FT.)				Total	%
	1 (G)	2	3	4		
1. Double BRS	(15)1923.75	(22)2821.5	(32)4104	(32)4104	(101)12,953.25	60.50
2. Bathrooms	460	460	460	460	1,840	8.60
3. Circulation	1008.5	1535.75	1914	2031	4,489.25	30.30
4. Laundry	128.25	-	-	-	128.25	0.60
SUB TOTALS	3520.5	4817.25	6478	6595	21,410.75	100.00
5. Apartments	-	503.75	503.75	503.75	1,511.25	
6. Sick Bay	-	(10)1543.75	-	-	1,543.75	
BLDGS. TOTALS	3,520.5	6,864.75	6,981.75	7,098.75	24,465.75	

GROSS AREA PER STUDENT (excluding 5 & 6) = $21,410.75 \div 202 = \underline{106}$

C. SICK BAY (part of Boys Dormitory Building - Level 2)

1.	3 no. Female Wards (6)	-	304.75
2.	1 no. Male Ward (2)	-	128.25
3.	1 no. Isolation Room (2)	-	128.25
4.	1 no. Doctor's Office	-	128.25
5.	1 Nurse's Station	-	128.25
6.	1 Bathroom	-	128.25
7.	1 Waiting Room	-	128.25
8.	1 Kitchenette	-	128.25
9.	Circulation	-	261.25
			1,543.75

SICK BAY CAPACITY (10 students) as a percentage of
TOTAL STUDENT CAPACITY = $\frac{10}{300} = 3.3\%$

D. BATHROOM ANALYSIS - no. of units (students per unit)

	Boys (202)		Girls (100)	
1. Water Closets	12	(16.83)	9	(11.11)
2. Urinals	12	(16.83)	-	
3. Lavatory basins	12	(16.83)	9	(11.11)
4. Showers	24	(8.42)	18	(5.55)
5. Cleaner's sinks	4	(50.5)	3	(33.33)

**USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES**

EXISTING ACCOMMODATION/DEVELOPMENT POTENTIAL OF ROOMS

The accompanying sketches show the following:

A. TYPICAL ROOM/EXISTING LAYOUT & SIZES

The major criticisms concerning these rooms were related to the restricted space available for the more mature students the College would have to cater for. In particular, storage (shelves & drawers) for clothing was inadequate, the space between beds was too small to accommodate 2 no. standard 18" wide bedside tables, the space allocated for study was too small for elbows, and no storage was provided for books or other study related items.

B. CONVERSION TO DOUBLE BEDROOMS WITH SEPARATE STUDY AREA

This proposal involves the conversions of groups of 4 existing rooms into 3 double bedrooms and 1 separate study area to hold six persons. This arrangement will alleviate most of the problems referred to in A above and the additional costs would only be in the provision of furniture and the demolition of the existing closet wall in the converted study area.

Because of the configuration of rooms in the Girls Dormitory Block, some groups of 4 rooms will not be possible and groups of three (2 bedrooms + 1 study area) would have to be substituted. This will only affect the overall area per student minimally, whilst it would not be necessary to remove the closet in the study area.

C. CONVERSION TO SINGLE STUDY BEDROOMS

It was expressed that there would be a need for some single study bedroom accommodation for the most mature or handicapped students. The sketch shows a possible arrangement of a typical existing room to allow this to take place.

USAID/GOJ AGRICULTURE PROJECT - COA (Passley Gardens)
STUDENTS RESIDENCES

EXISTING ACCOMMODATION/DEVELOPMENT ALTERNATIVES

- | | | |
|----|---|------------------|
| A. | GIRLS DORMITORIES | Total Students |
| 1. | LEAVE AS EXISTING - 50 double rooms - | <u>100 girls</u> |
| 2. | CONVERT TO BOYS DORMITORIES - 50 double rooms -
- install urinals in bathrooms | <u>100 boys</u> |
| 3. | CONVERT TO DOUBLE BEDROOMS WITH SEPARATE STUDIES
- convert 1 double bedroom in 4 to a 6-person study
- where not possible, convert 1 double bedroom in 3 to a 4-person study
- where either not possible, convert to a single study/bedroom
- where conversion is for boys, install urinals in bathrooms. | |

CONVERSION SCHEDULE

		Level			TOTAL	Total Students + Studies	
		1(G)	2	3			
a.	3 double BRS + 1 study (6)	3	3	3	9	54	9
b.	2 double BRS + 1 study (6)	1	1	1	3	12	3
c.	single study/bedrooms	1	2	2	5	5 study/bedrooms	
						<u>- 71 students</u>	
4.	CONVERT ALL DOUBLE BEDROOMS TO SINGLE STUDY/BEDROOMS - if conversion is for boys, install urinals in bathrooms					<u>- 50 students</u>	
5.	PERMUTATIONS OF 1 - 4						

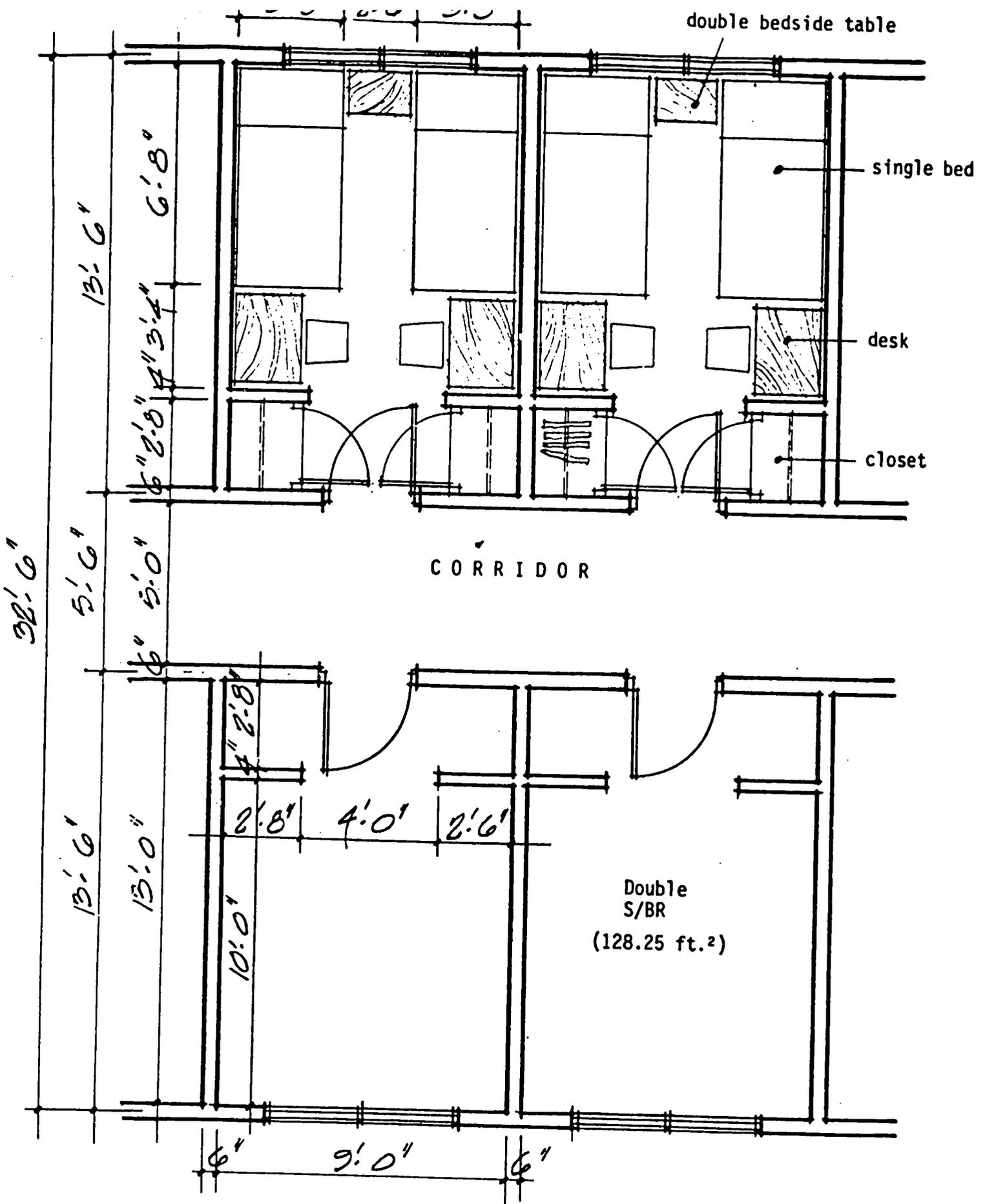
- | | | |
|----|---|--------------------|
| B. | BOYS DORMITORIES (assume 2 double rooms at level 2 converted to sick bay rooms & laundry used as bedroom) | |
| 1. | LEAVE AS EXISTING - 100 double rooms | - <u>200 boys</u> |
| 2. | CONVERT TO GIRLS DORMITORIES
- convert urinals to dressers or storage. | - <u>200 girls</u> |

3. CONVERT TO DOUBLE BEDROOMS WITH SEPARATE STUDIES
- convert 1 double bedroom in 4 to a 6-person study
 - where not possible, convert 1 double bedroom in 3 to a 4-person study
 - where either not possible, convert to a single study/bedroom
 - where conversion is for girls, convert urinals to dressers or storage.

CONVERSION SCHEDULE

		1(G)	2	3	4	TOTAL	Total Students	+ Studies	
a.	3 double BRS + 1 study (6)	4	5	8	8	25	150	25	
b.	2 double BRS + 1 study (4)	-	-	-	-	-	-	-	
c.	single study/bedrooms	-	-	-	-	-	-	-	
							-	<u>150 students</u>	
4.	CONVERT ALL DOUBLE BEDROOMS TO SINGLE STUDY/BEDROOMS							-	<u>100 students</u>
	- if conversion is for girls, convert urinals to dressers or storage.								

5. PERMUTATIONS of 1 - 4

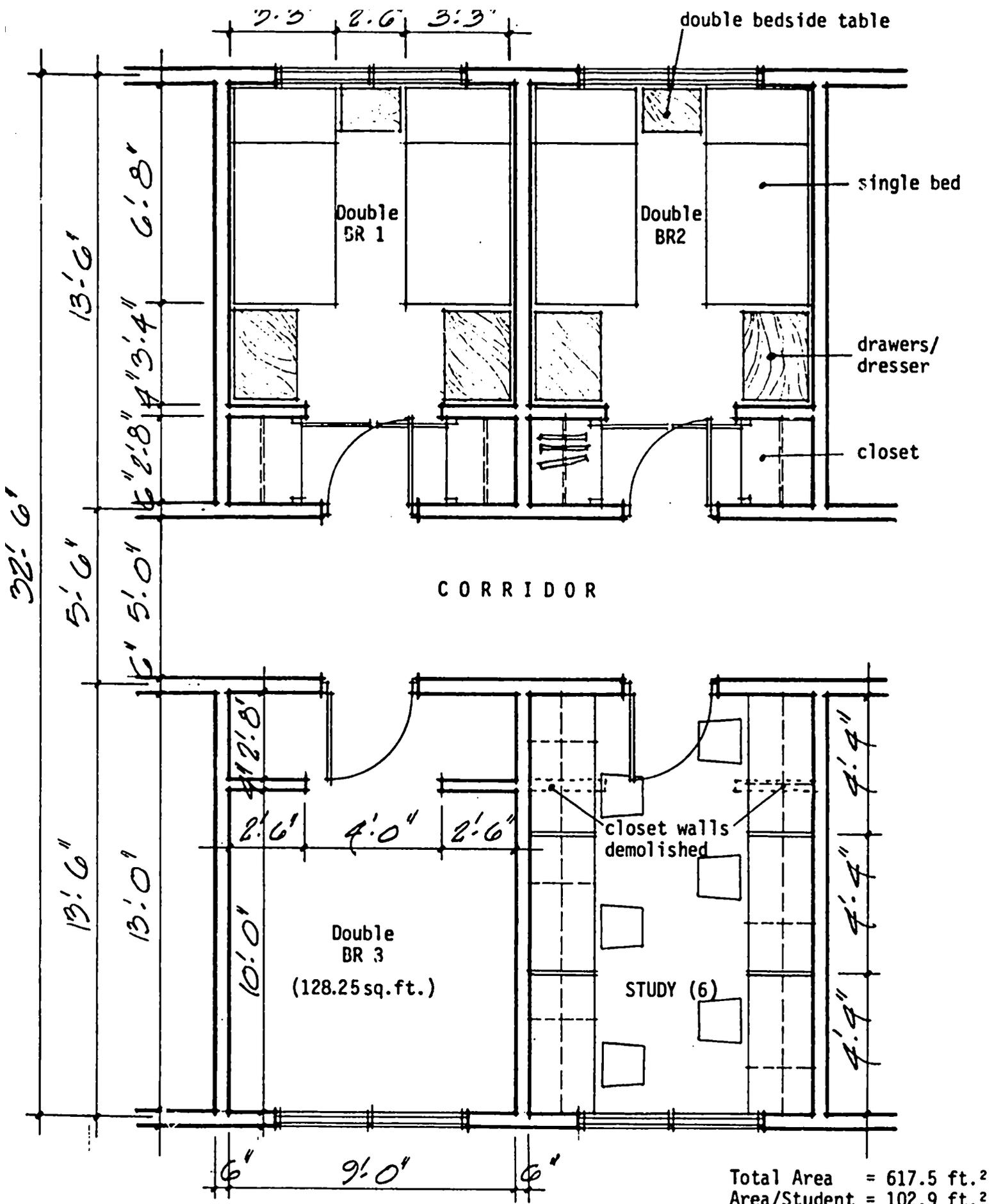


DOUBLE STUDY BEDROOMS

STUDENT RESIDENCE/EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

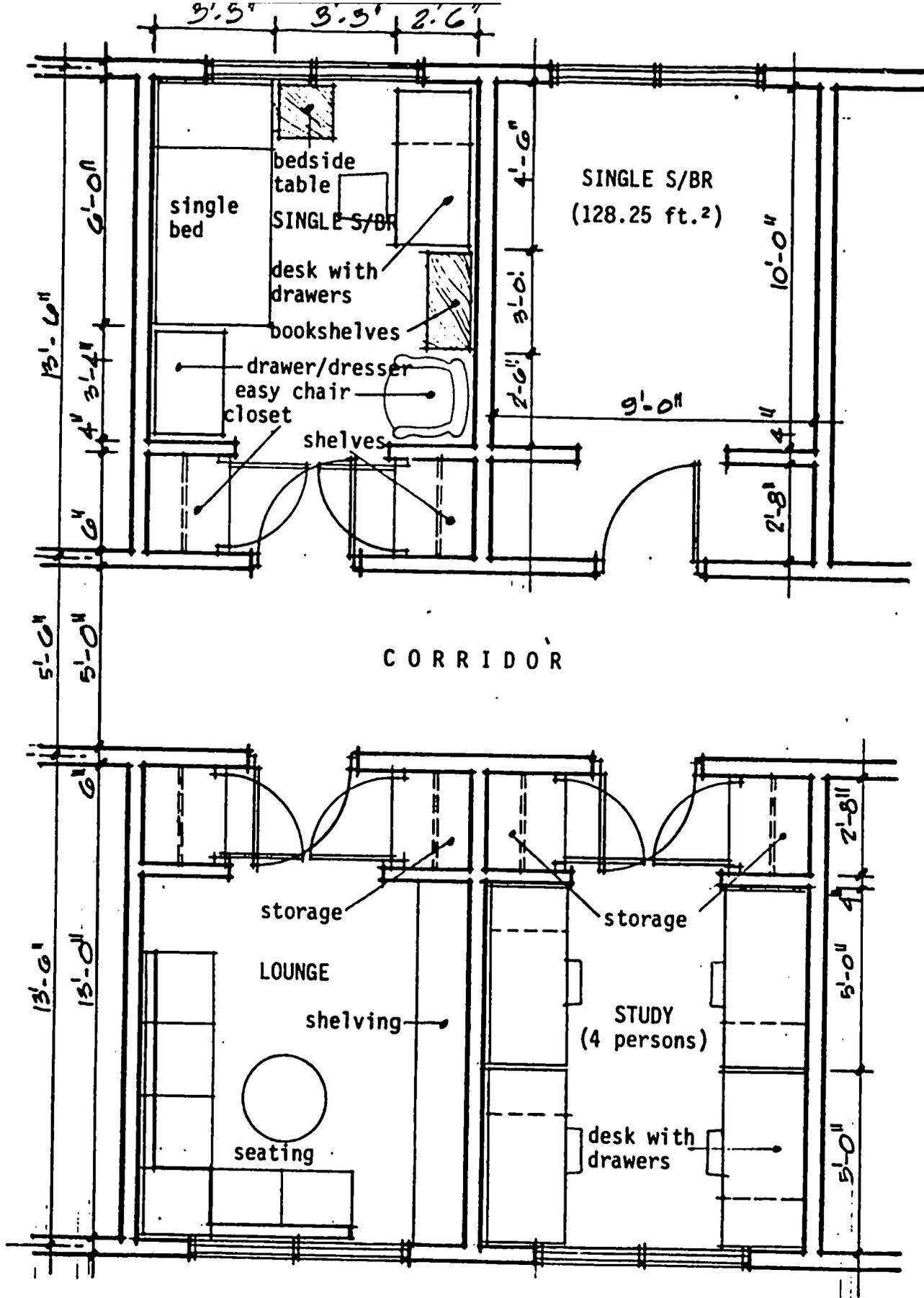
Total Area = 617.5 ft.²
 Area/Student = 77.2 ft.²

HC



Total Area = 617.5 ft.²
 Area/Student = 102.9 ft.²

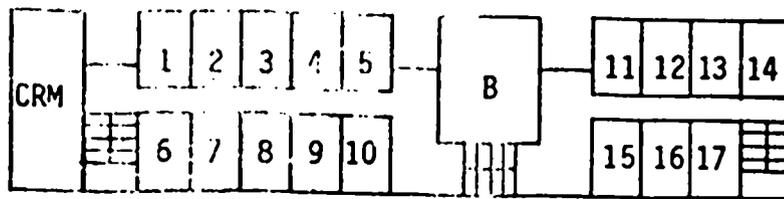
DOUBLE BEDROOMS (3 no.) with SEPARATE STUDY (6 persons)
 STUDENT RESIDENCES/CONVERSION OF EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



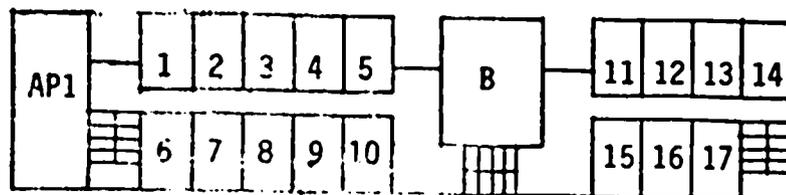
SINGLE BEDROOMS/4 person STUDY/LOUNGES

STUDENT RESIDENCES/CONVERSION OF EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

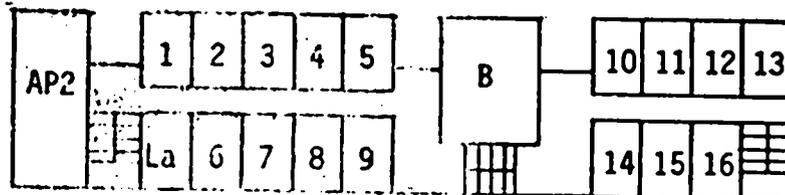
BEST AVAILABLE DOCUMENT



LEVEL 3 - 17 no. double s/bedrooms (34 students)



LEVEL 2 - 17 no. double s/bedrooms (34 students)

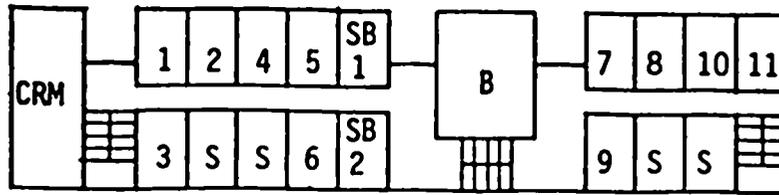


LEVEL 1 (G) - 16 no. double s/bedrooms (32 students)

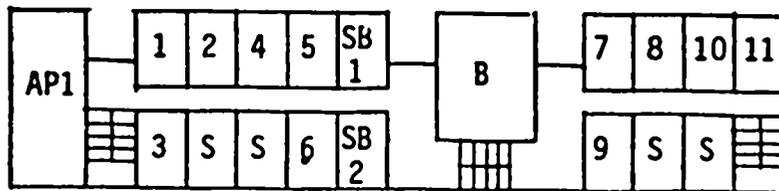
TOTAL (ALL LEVELS) : 50 no. double s/bedrooms

= 100 students

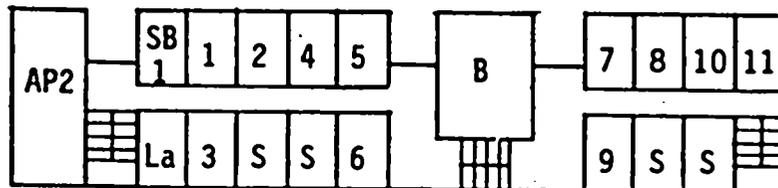
GIRLS DORMITORIES: 1. LEAVE AS EXISTING & 2. CONVERT TO BOYS DORMITORIES
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 ULAYD GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



- LEVEL 3 - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 2 no. single study bedrooms



- LEVEL 2 - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 2 no. single study bedrooms

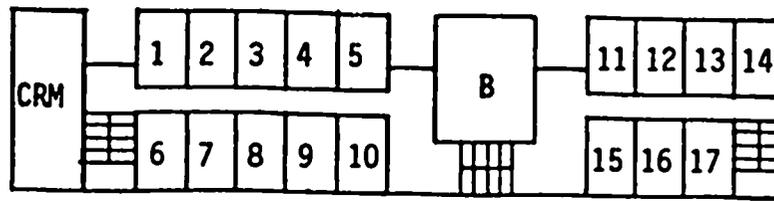


- LEVEL 1 (G) - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 1 no. single study bedroom

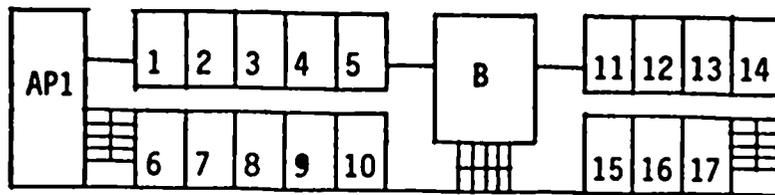
TOTAL (ALL LEVELS)

- 27 no. double BRS + 9 no. separate 6-person studies (54)
 - 6 no. double BRS + 3 no. separate 4-person studies (12)
 - 5 no. single study bedrooms (5)
- = 71 no. students

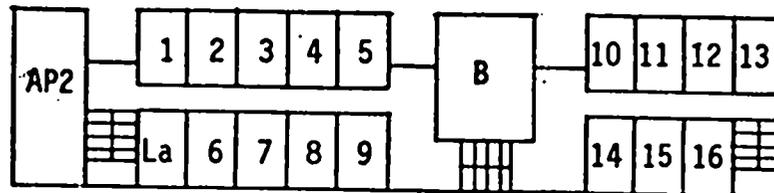
GIRLS DORMITORIES: 3. CONVERT TO DOUBLE BRS WITH SEPARATE STUDIES
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



LEVEL 3 - 17 no. single study/bedrooms



LEVEL 2 - 17 no. single study/bedrooms



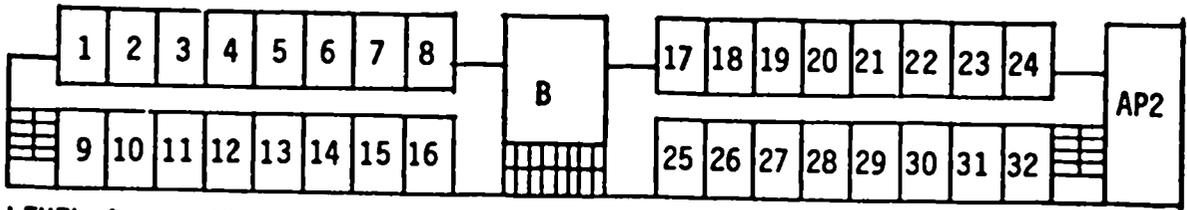
LEVEL 1 (G) - 16 no. single study/bedrooms

TOTAL (ALL LEVELS) = 50 no. single study/bedrooms

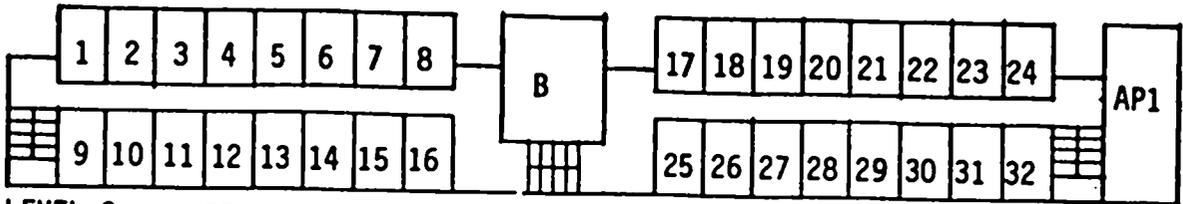
= 50 no. students

GIRLS DORMITORIES: 4. CONVERT TO SINGLE STUDY BEDROOMS
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

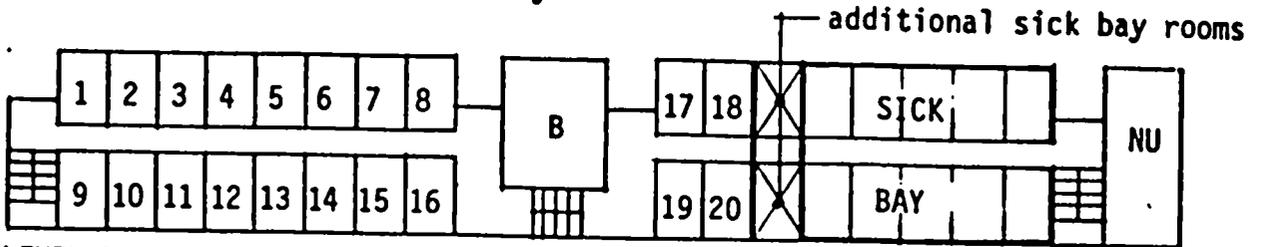
H.S.



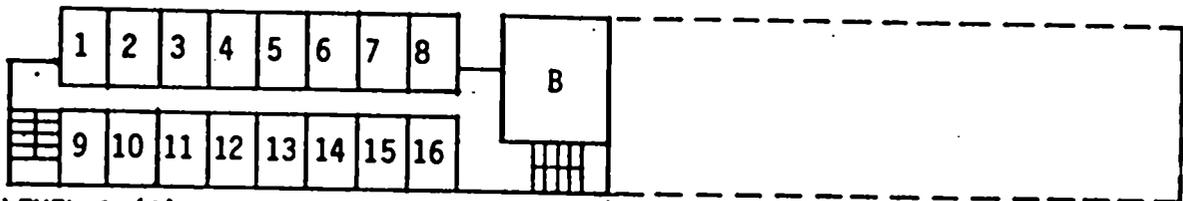
LEVEL 4 - 32 no. double s/bedrooms (64 students)



LEVEL 3 - 32 no. double s/bedrooms (64 students)



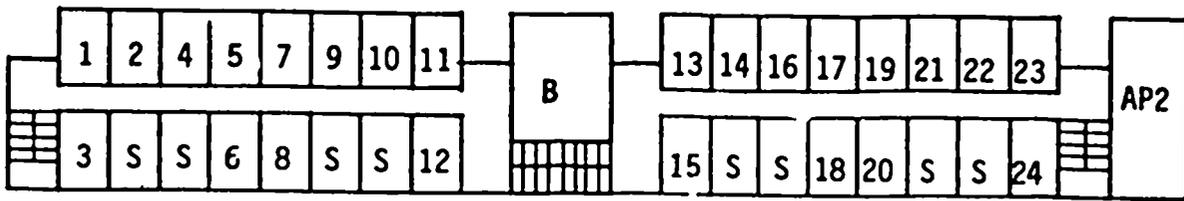
LEVEL 2 - 20 no. double s/bedrooms (40 students)
 - sick bay expanded by 2 double rooms (4 students)



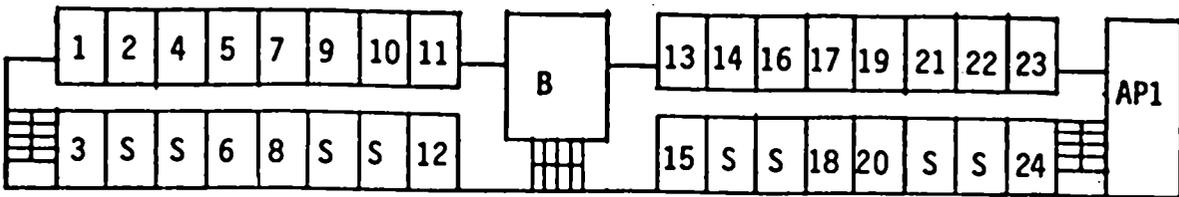
LEVEL 1 (G) - 16 no. double s/bedrooms (32 students)

TOTAL (ALL LEVELS) = 100 no. double s/bedrooms
 = 200 students

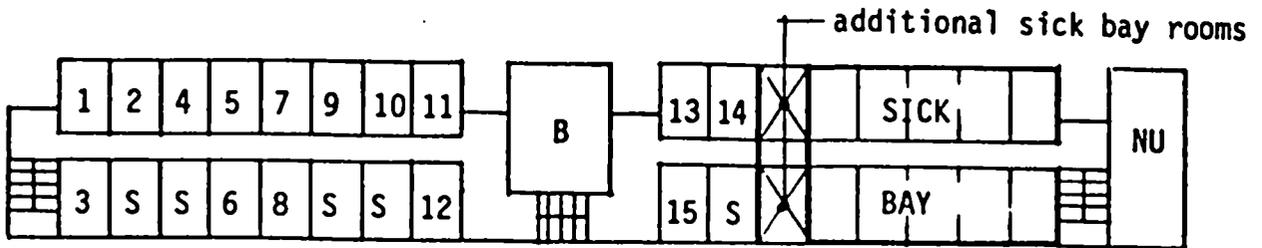
BOYS DORMITORIES: 1. LEAVE AS EXISTING or 2. CONVERT TO GIRLS DORMITORIES
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



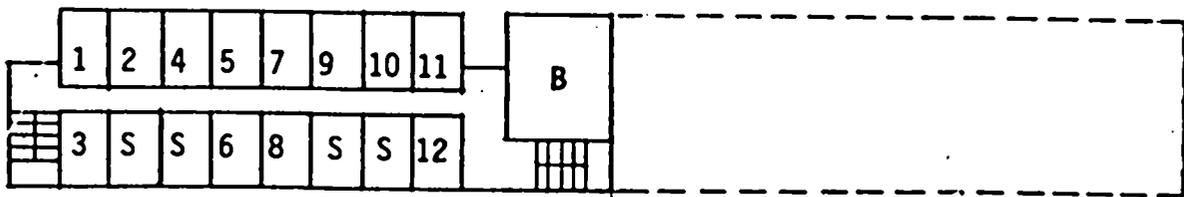
LEVEL 4 - 24 no. double bedrooms + 8 no. separate 6-person studies (48 students)



LEVEL 3 - 24 no. double bedrooms + 8 no. separate 6-person studies (48 students)



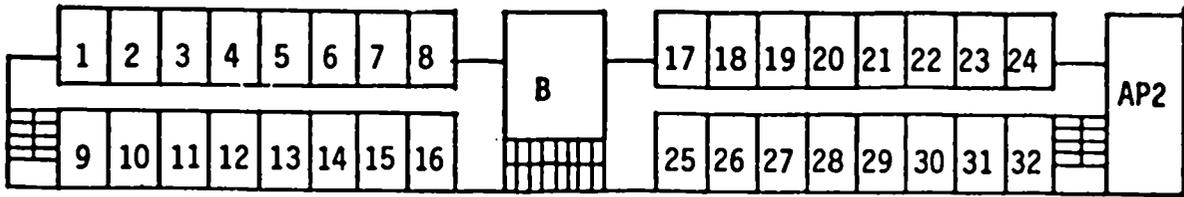
LEVEL 2 - 15 no. double bedrooms + 5 no. separate 6-person studies (30 students)
 - sick bay expanded by 2 double rooms (4 students)



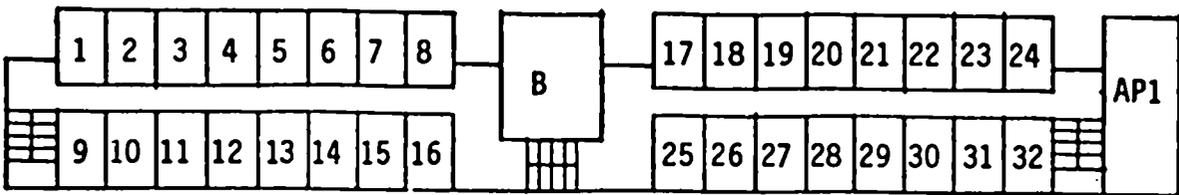
LEVEL 1 (G) - 12 no. double bedrooms + 4 no. separate 6-person studies (24 students)

TOTAL (ALL LEVELS) - 75 no. double bedrooms + 25 no. separate 6-person studies
 = 150 students

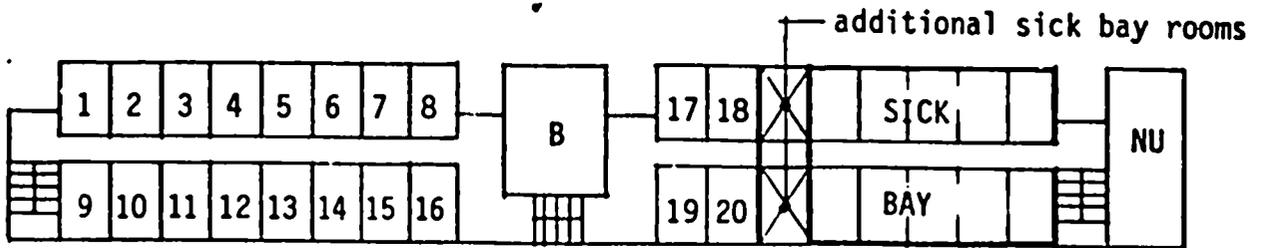
BOYS DORMITORIES: 3. CONVERT TO DOUBLE BEDROOMS WITH SEPARATE STUDIES
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



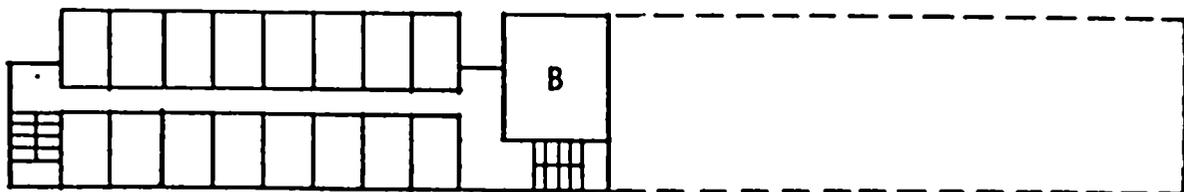
LEVEL 4 - 32 no. single s/bedrooms (32 students)



LEVEL 3 - 32 no. single s/bedrooms (32 students)



LEVEL 2 - 20 no. single s/bedroom (20 students)
 - sick bay expanded by 2 double rooms (4 students)



LEVEL 1 (G) - 16 no. single s/bedrooms (16 students)

TOTAL (ALL LEVELS) = 100 no. single s/bedrooms
 = 100 students

BOYS DORMITORIES: 4. CONVERT TO SINGLE STUDY BEDROOMS
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

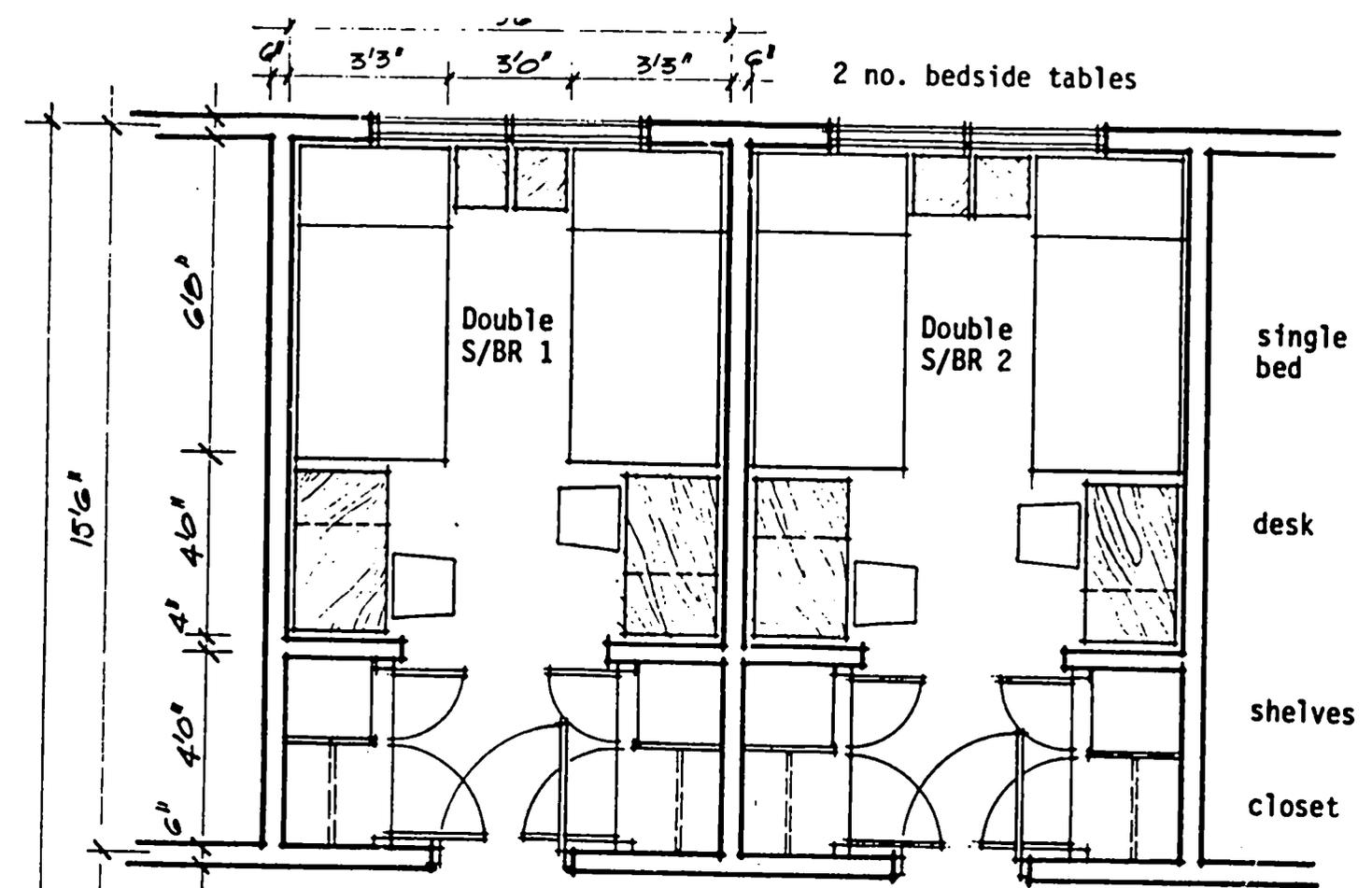
NEW ACCOMMODATION

A necessary first stage in deciding on the nature and type of new residential accommodation to be provided is a comparison of the likely alternatives.

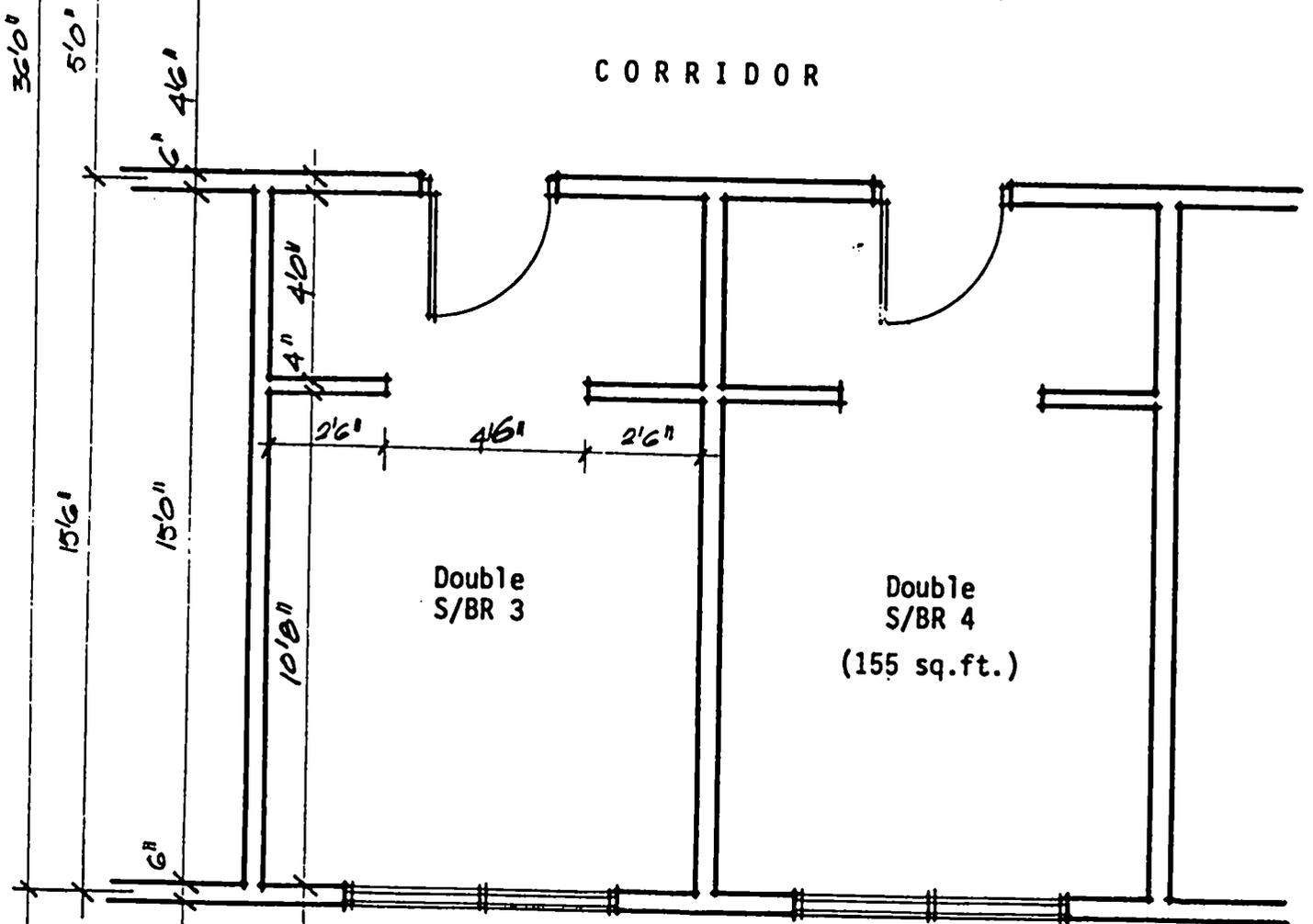
Bearing in mind the criticisms of the existing accommodation and the suggestions made for new types of residences, three major alternatives are studied on the following pages.

1. **DOUBLE STUDY BEDROOMS** - A typical double study bedroom is proposed which provides adequate space for comfortable studying and for storage of clothing and other personal effects. These double study bedrooms are then used to design typical floor layouts for both girls and boys dormitories and the areas per student computed, using similar standards of sanitary facilities and circulation as the existing.
2. **DOUBLE BEDROOMS WITH SEPARATE STUDIES** - A typical double bedroom with a separate 6-person study for every 3 double bedrooms (6 students) is proposed. As with the previous alternative, typical floor layouts for girls and boys dormitories are designed, using similar standards of circulation and sanitary facilities as those existing, and the areas per student computed.
3. **SELF-CATERING LIVING UNITS** - Two alternatives for 10-person living units are developed, one using double study-bedrooms and the other using double bedrooms with separate studies. Each living unit contains a bathroom, a kitchen, a dining room & a living room and every two units share a common laundry. Detailed preliminary designs for the specialized areas in each living unit are illustrated. The areas per student are again computed for the purposes of comparison.

A suggested design for a single study bedroom is also illustrated, should this be required.



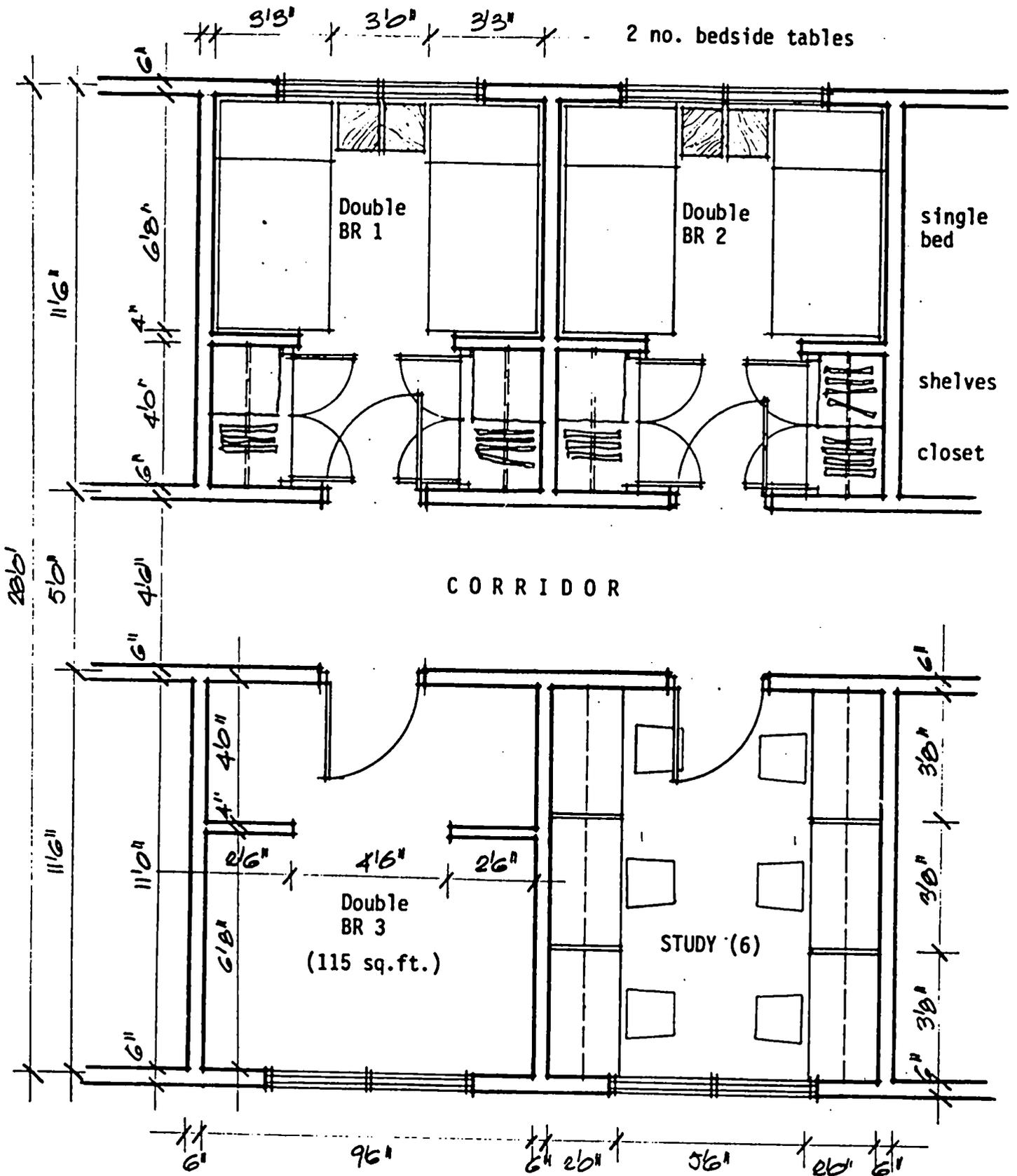
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DOUBLE STUDY BEDROOMS (4 no.)

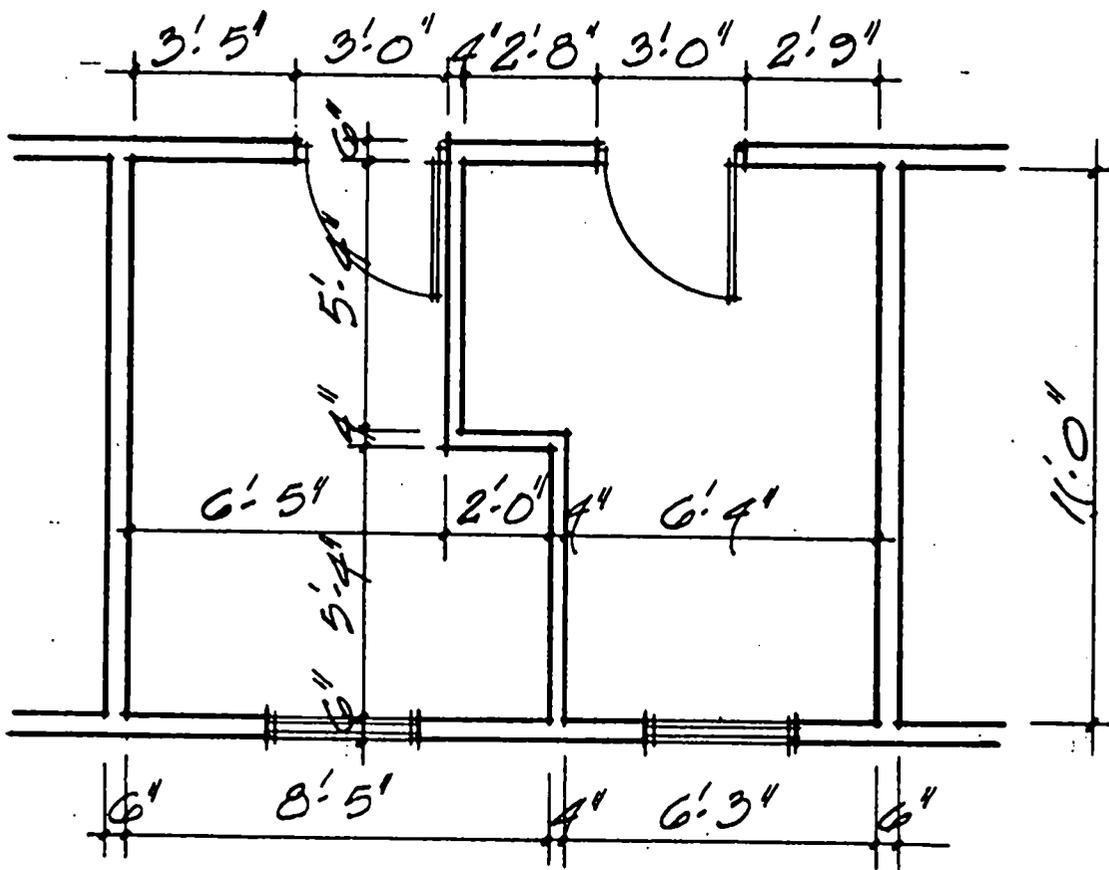
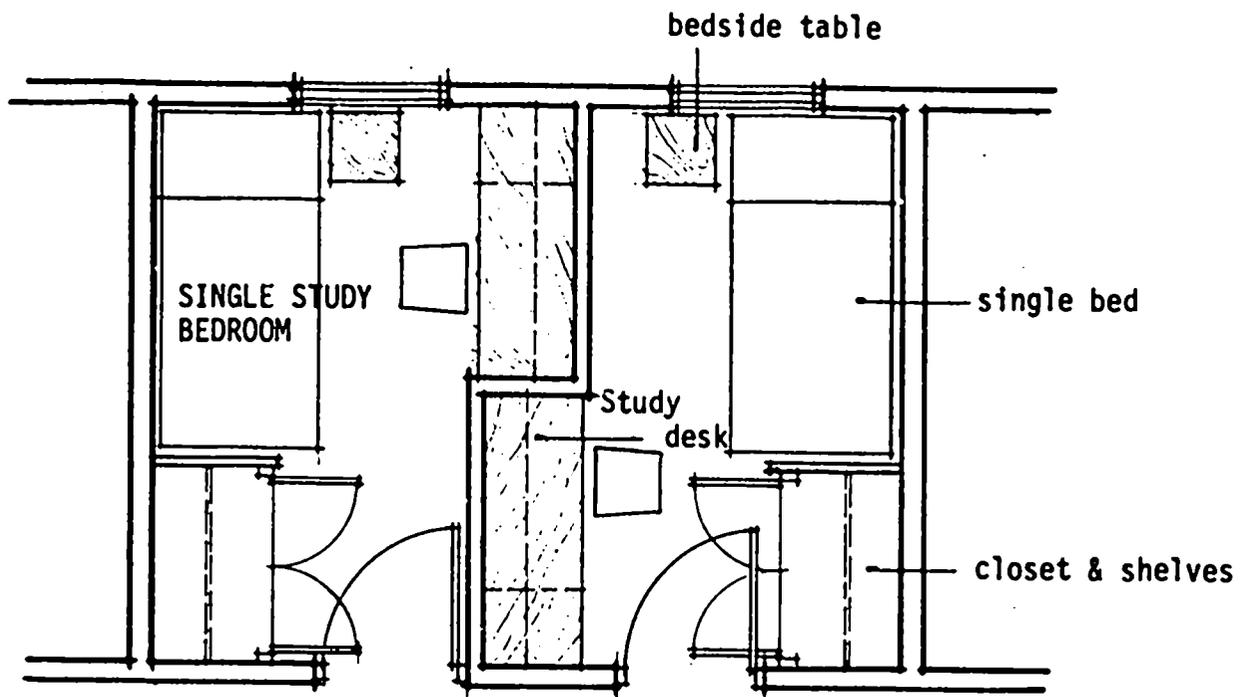
STUDENT RESIDENCES/NEW ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

Total Area = 720 ft.²
Area/Student = 90 ft.²



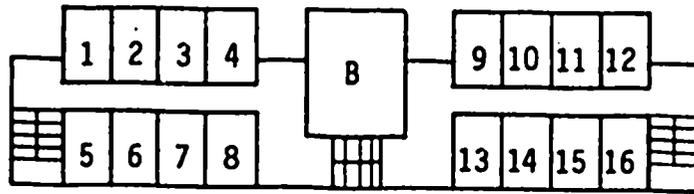
DOUBLE BEDROOMS (3 No.) with SEPARATE STUDY (6 persons)
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

Total Area = 560 ft.²
 Area/Student = 93.3 ft.²



SINGLE STUDY/BEDROOMS
 STUDENT RESIDENCE/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

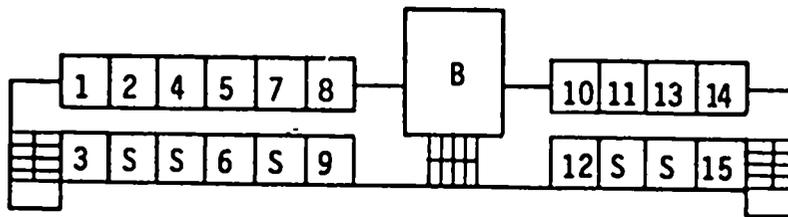
A. DOUBLE STUDY BEDROOMS



TYPICAL FLOOR/16 no. DOUBLE STUDY BEDROOMS*

1.	Bedrooms 16 @	=	2,496 ft. ²
2.	Sanitary Facilities	=	460
3.	Circulation	=	<u>1,440</u>
	TOTAL AREA	=	<u>4,396 ft.²</u>
	AREA PER STUDENT	=	4,396/32 = <u>137.37 ft.²</u>

B. DOUBLE BEDROOMS WITH SEPARATE STUDIES



TYPICAL FLOOR/15 no. DOUBLE ROOMS + 5 no. SEPARATE STUDIES*

1.	Bedrooms + studies 20 @ 115	=	2,300 ft. ²
2.	Sanitary Facilities	=	460
3.	Circulation	=	<u>1,380</u>
	TOTAL AREA	=	<u>4,140 ft.²</u>
	AREA PER STUDENT	=	4,140/30 = <u>138 ft.²</u>

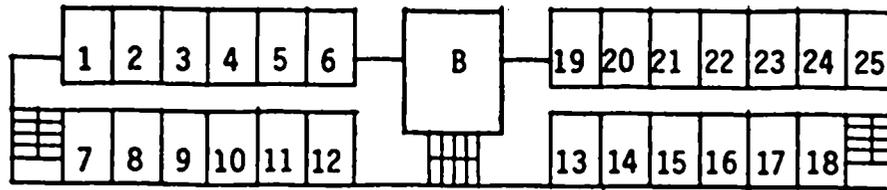
* using similar sanitary facility & circulation standards to existing

NEW ACCOMMODATION/GIRLS

STUDENT RESIDENCES

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

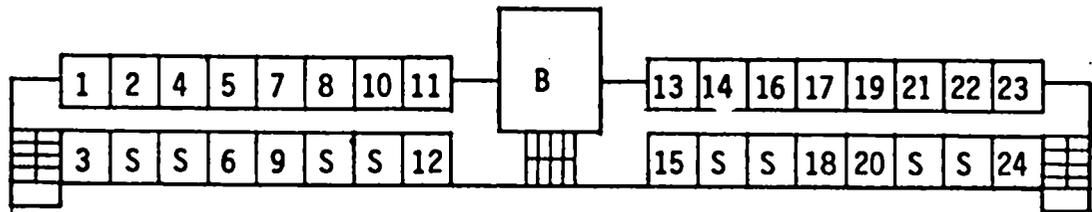
A. DOUBLE STUDY BEDROOMS



TYPICAL FLOOR/25 no. DOUBLE STUDY BEDROOMS*

1.	Bedrooms 24 @ 156	=	3,600 ft. ²
2.	Sanitary Facilities	=	460
3.	Circulation	=	1,640
	TOTAL AREA	=	<u>6,000 ft.²</u>
	AREA PER STUDENT	=	6,000/50 = <u>120 ft.²</u>

B. DOUBLE BEDROOMS WITH SEPARATE STUDIES



TYPICAL FLOOR/24 no. DOUBLE ROOMS & 8 no. SEPARATE STUDIES*

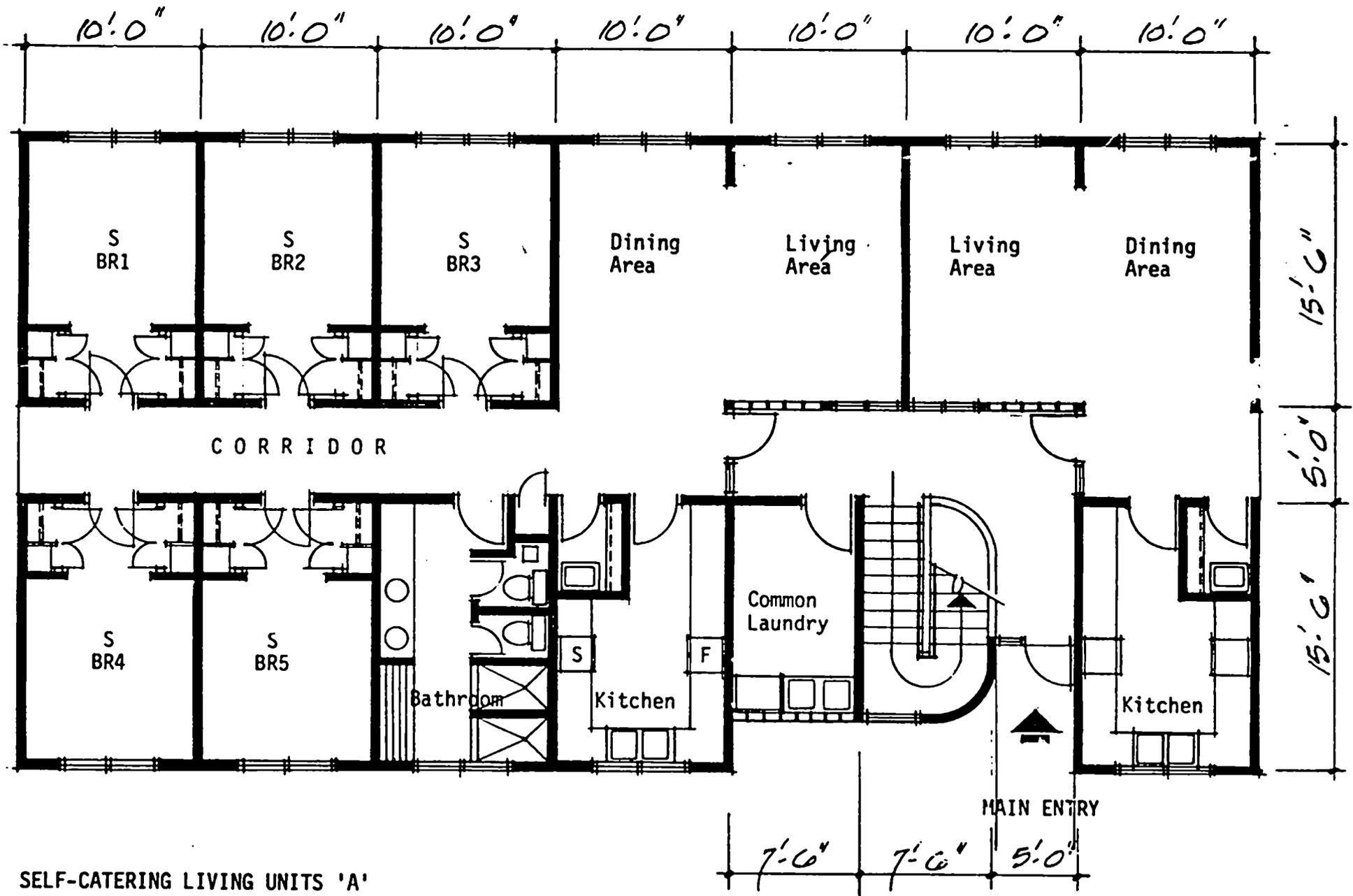
1.	Bedrooms/Studies 32 @ 115	=	3,680 ft. ²
2.	Sanitary Facilities	=	460
3.	Circulation	=	1,680
	TOTAL AREA	=	<u>5,820 ft.²</u>
	AREA PER STUDENT	=	5,820/48 = <u>121.25 ft.²</u>

* using similar sanitary facility 7 circulation standards to existing

NEW ACCOMMODATION/BOYS

STUDENT RESIDENCES

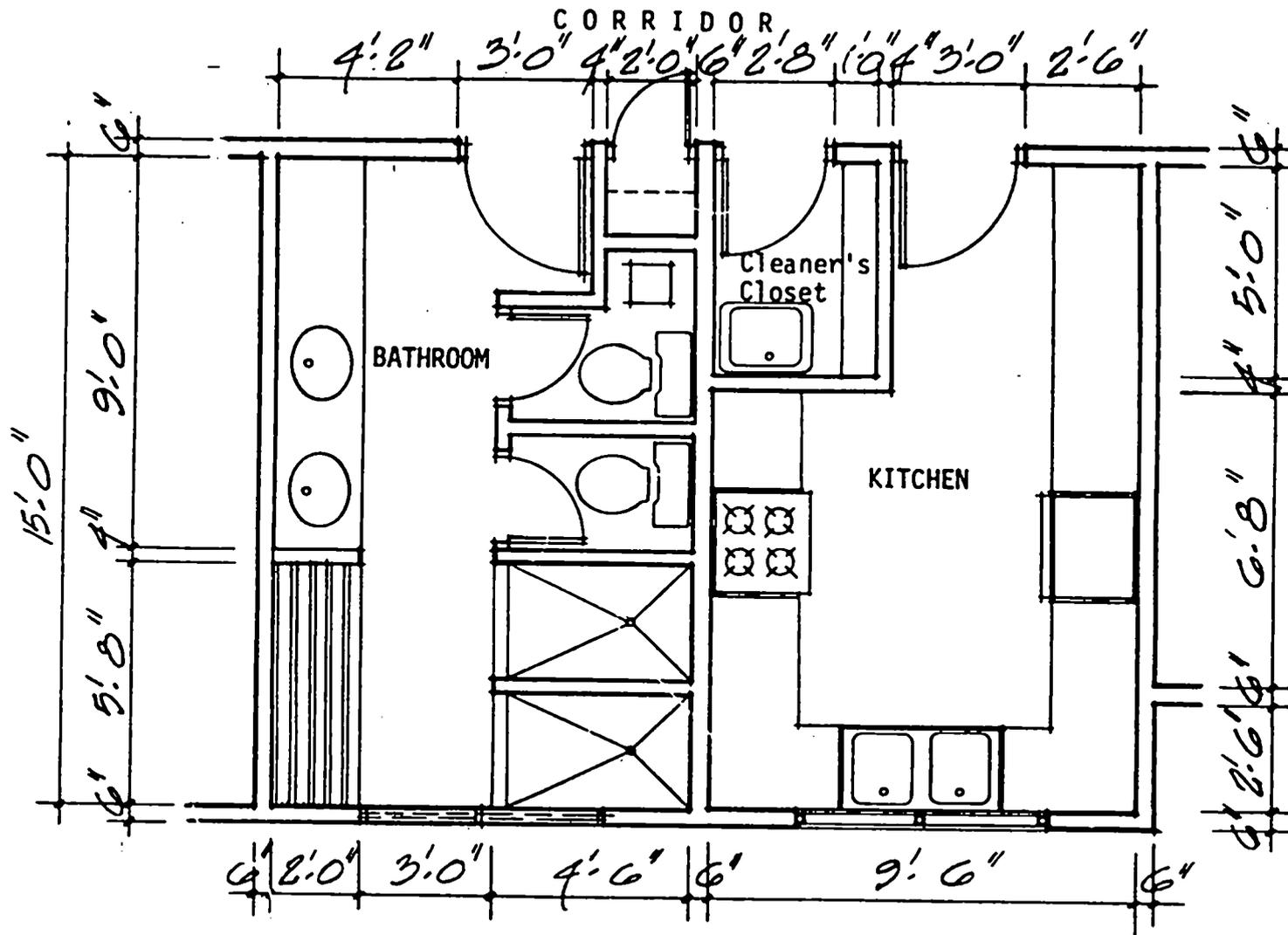
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



SELF-CATERING LIVING UNITS 'A'

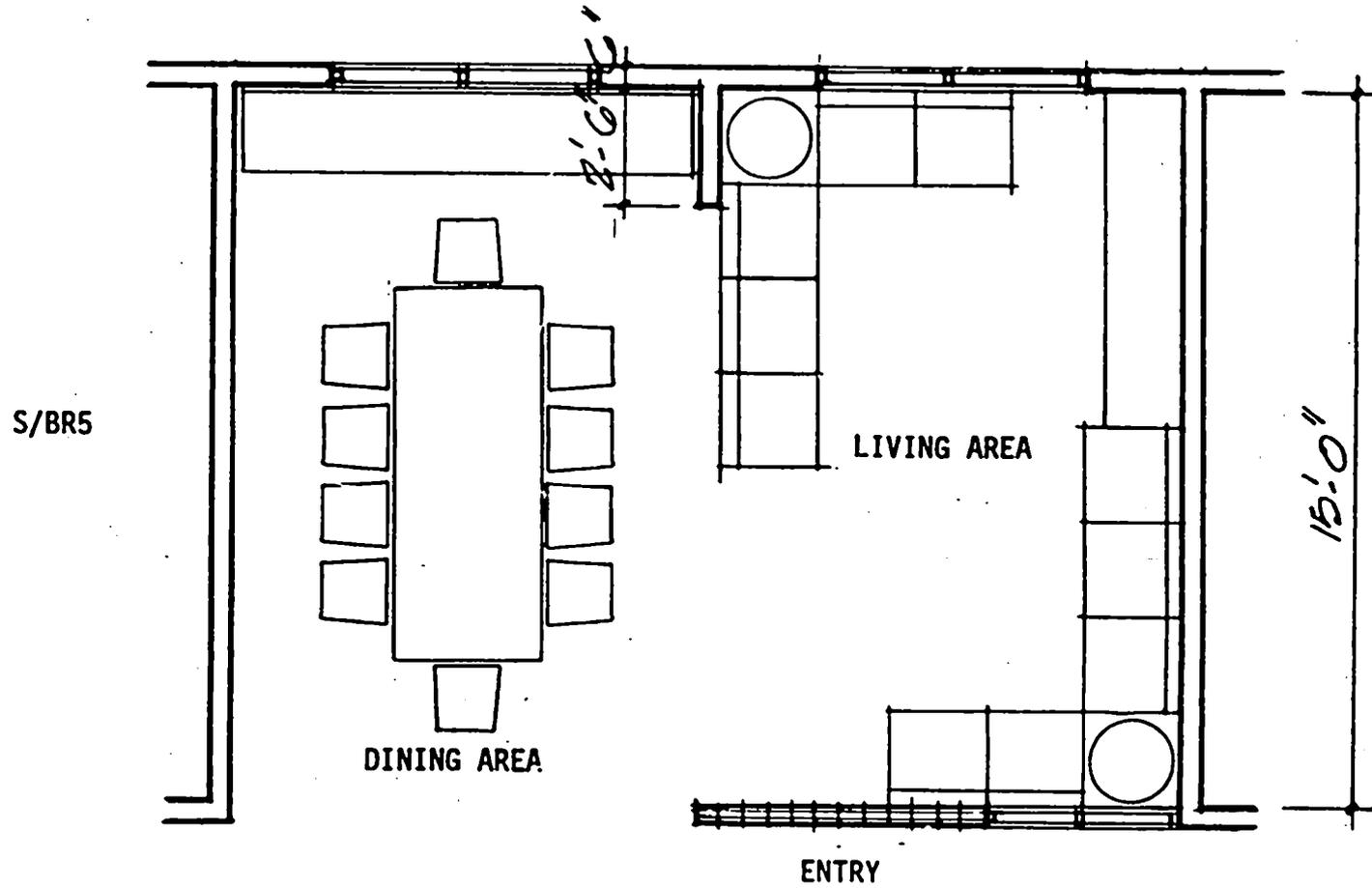
**STUDENT RESIDENCE/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)**

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TYPICAL BATHROOM & KITCHEN
 SELF-CATERING LIVING UNIT 'A'
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

21

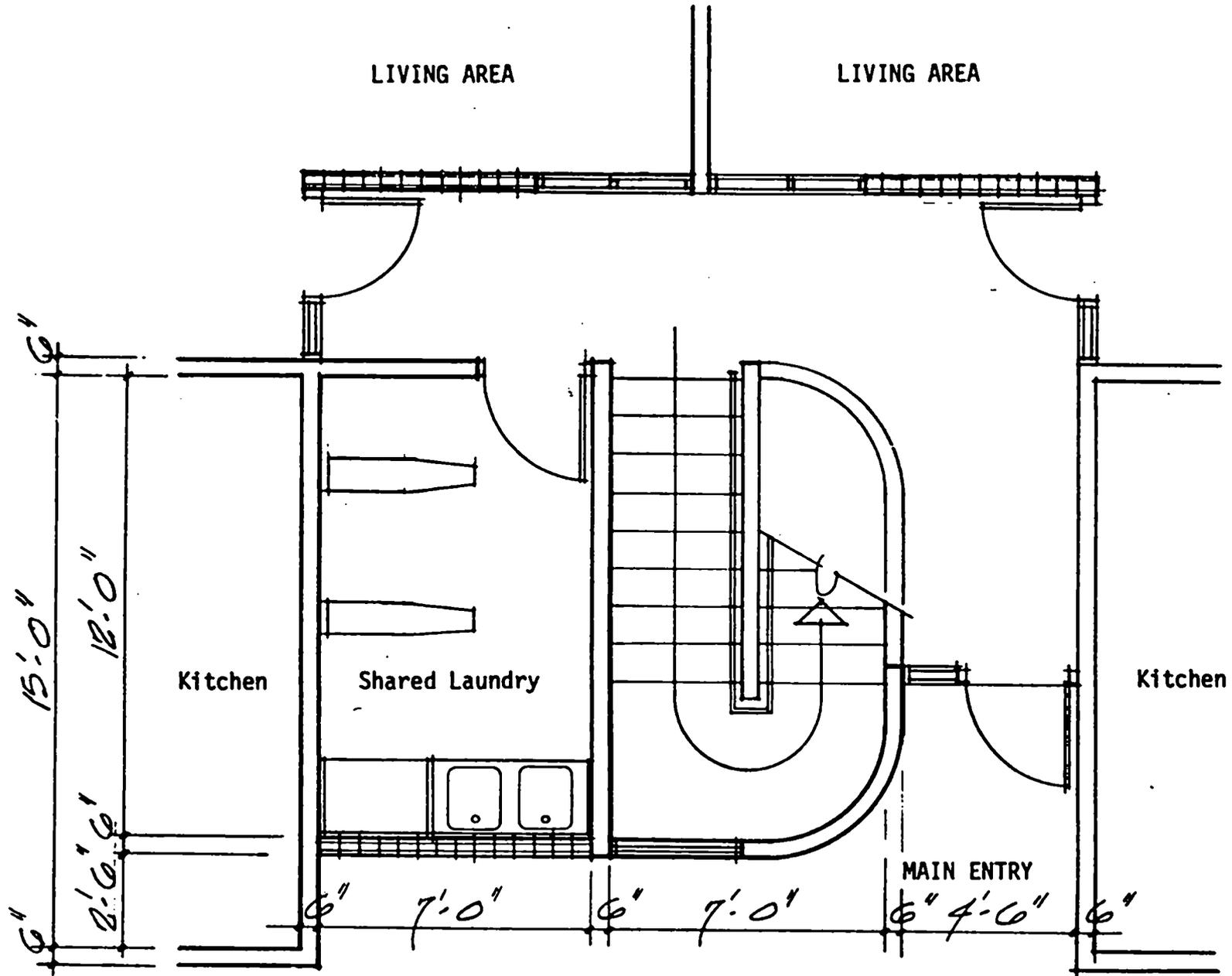


C O R R I D O R

TYPICAL LIVING & DINING AREAS
 SELF-CATERING LIVING UNIT 'A'

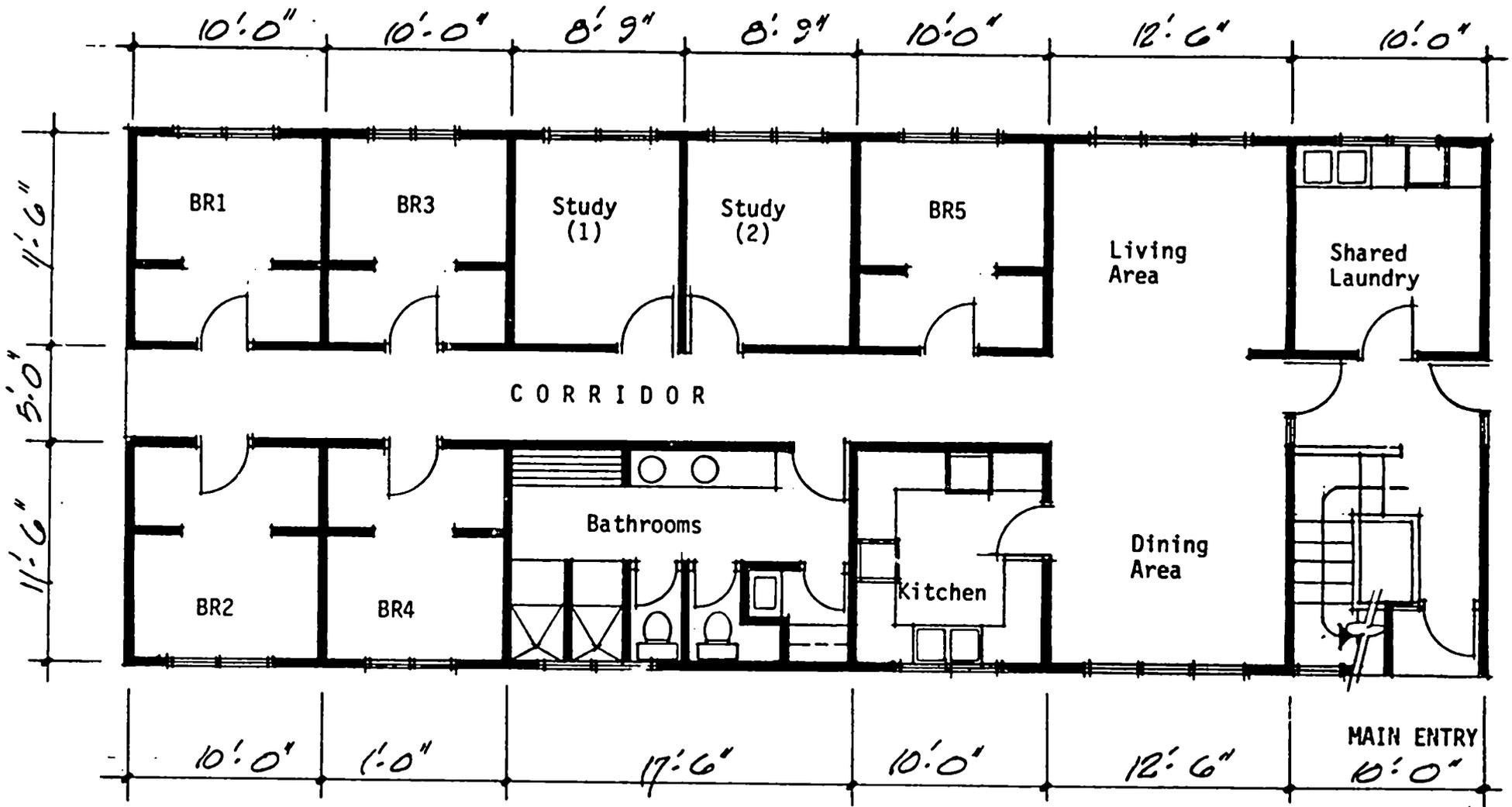
STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

22

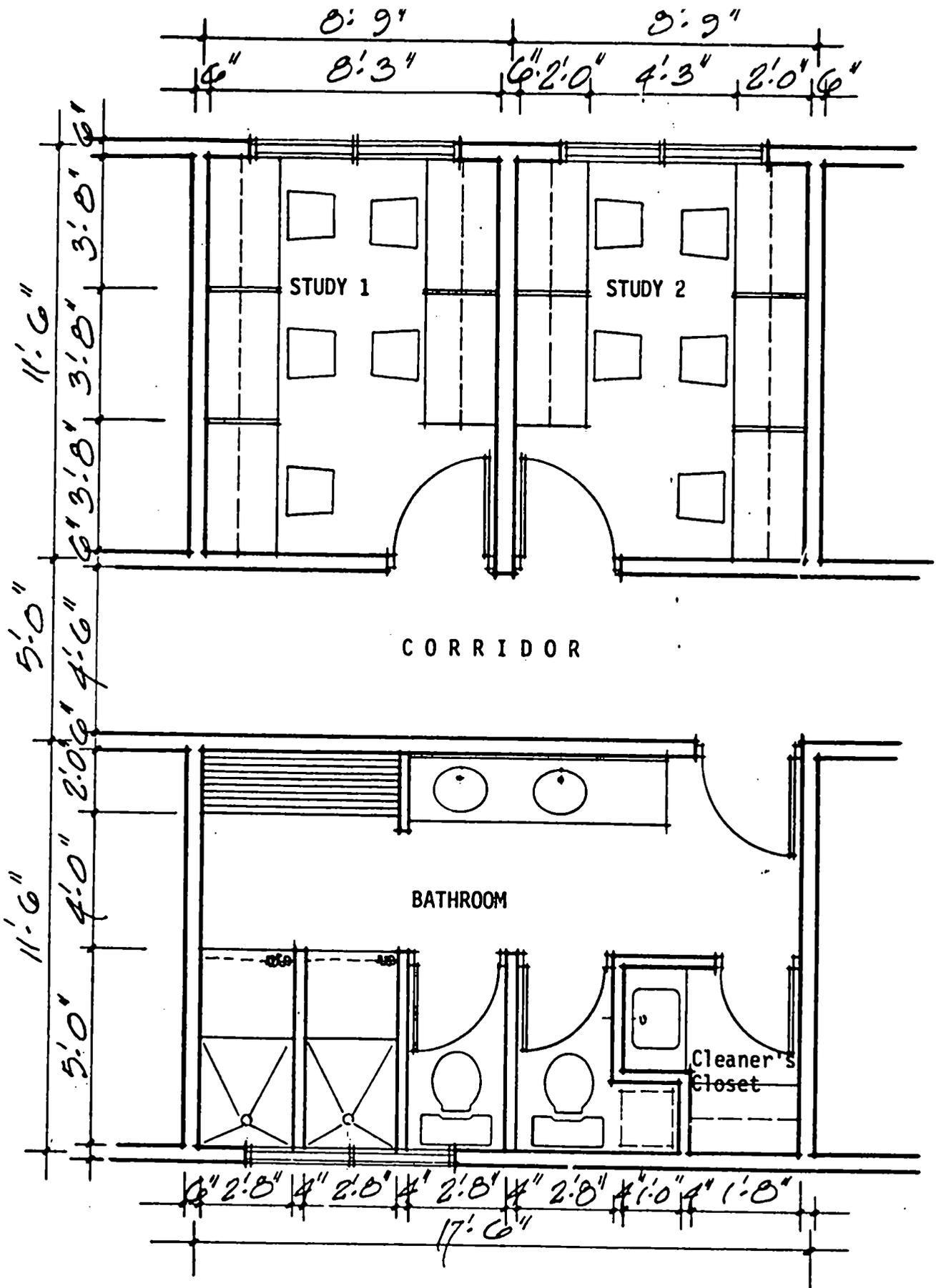


TYPICAL SHARED LAUNDRY & MAIN ENTRY
 SELF-CATERING LIVING UNITS 'A'
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURE PROJECT - COA (Passley Gardens)

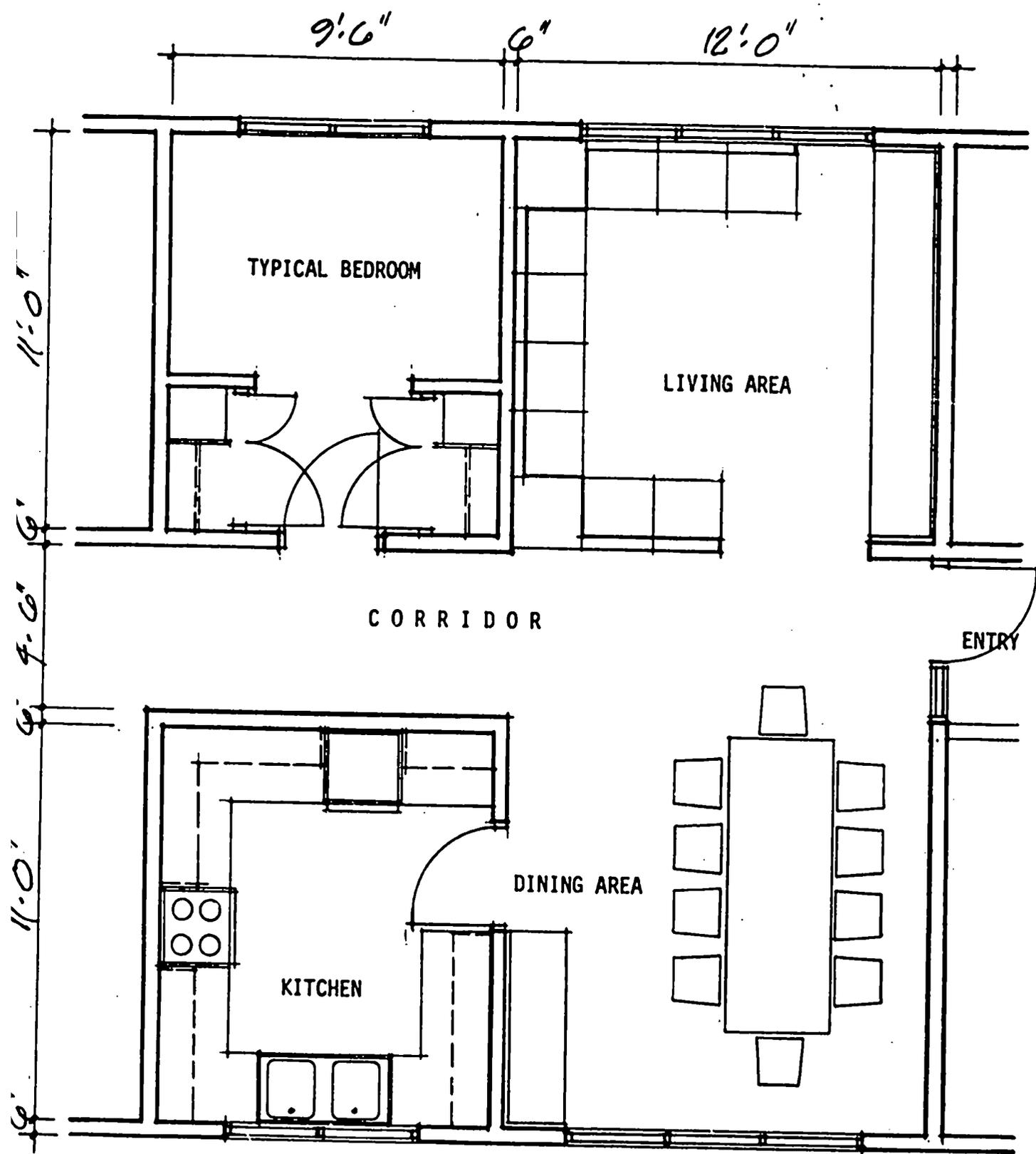
25



SELF-CATERING LIVING UNIT 'B'
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

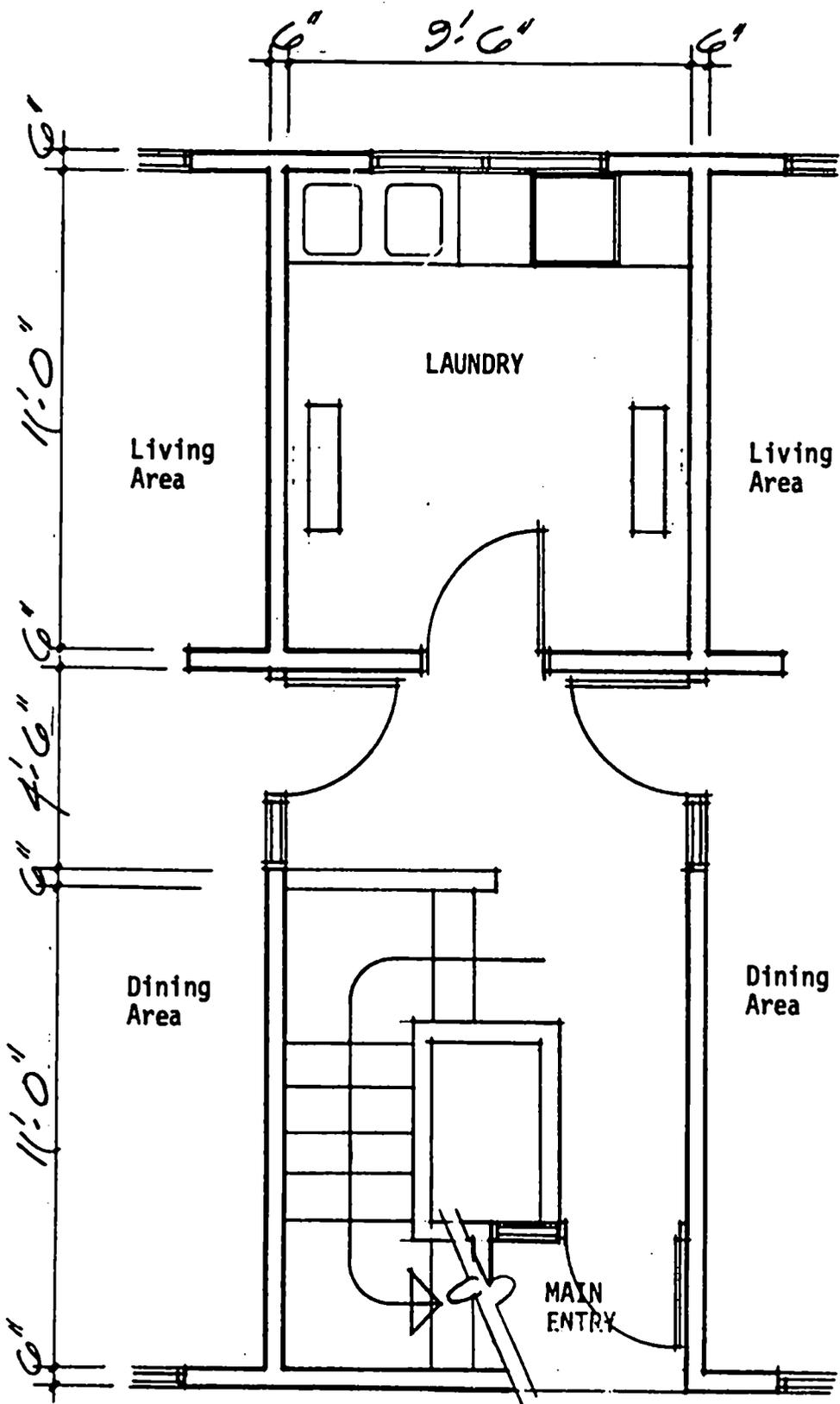


TYPICAL STUDY & BATHROOM
 SELF CATERING LIVING UNITS 'B'
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



TYPICAL KITCHEN, DINING & LIVING AREAS
 SELF-CATERING LIVING UNITS 'B'

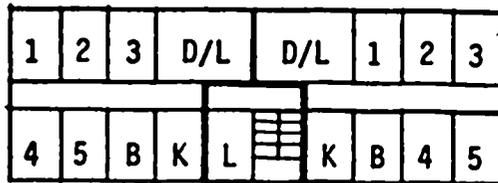
STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



TYPICAL MAIN ENTRY & SHARED LAUNDRY
 SELF-CATERING LIVING UNITS 'B'

STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

SELF-CATERING LIVING UNIT 'A'

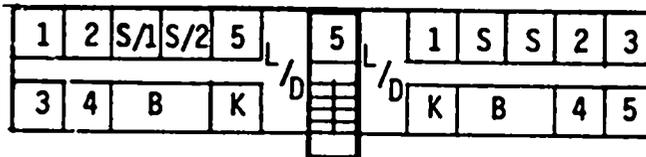


TYPICAL FLOOR/10 no. DOUBLE STUDY BEDROOMS (2 Living Units)

Total area = 36' x 100' = 3,600 ft.²

Area per student = 3,600/20 = 180 ft.²

SELF-CATERING LIVING UNIT 'B'



TYPICAL FLOOR/10 no. DOUBLE ROOMS + 40 no. SEPARATE STUDIES (2 Living Units)

Total area = 28' x 130' = 3,640 ft.²

Area per student = 3,640/20 = 182 ft.²

NEW ACCOMMODATION/SELF-CATERING LIVING UNITS
 STUDENT RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT.- COA (Passley Gardens)

63

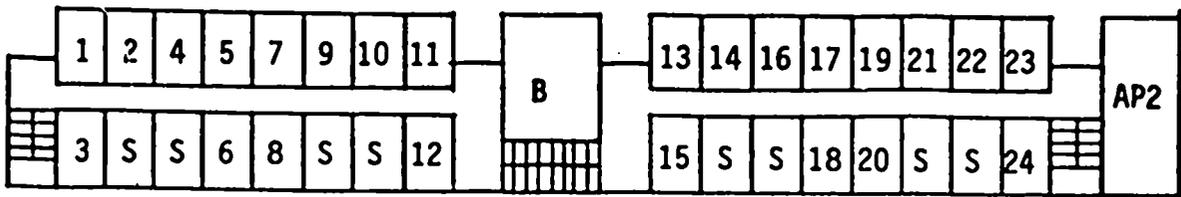
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

OVERALL DEVELOPMENT ALTERNATIVES

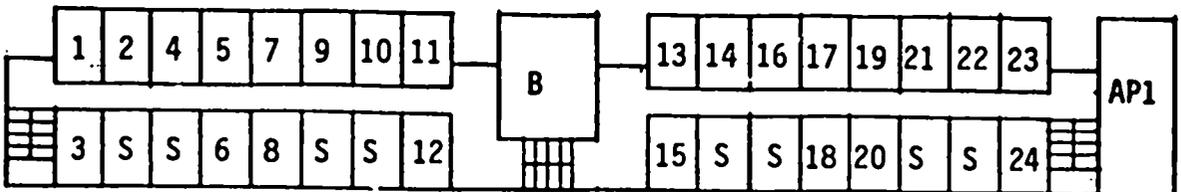
Having explored the development potential of the existing accommodation and having studied the new development alternatives, it is now possible to propose overall development strategies using combinations of the two, in order to meet the design objective of 240 boys and 110 girls.

Some of the more likely combinations are set out, including their sub-options and these are then compared, assuming the inclusion or non-inclusion of self-catering living units for girls only. (No proposals for boys self-catering were put forward as experience elsewhere has shown it to be unworkable and uneconomic).

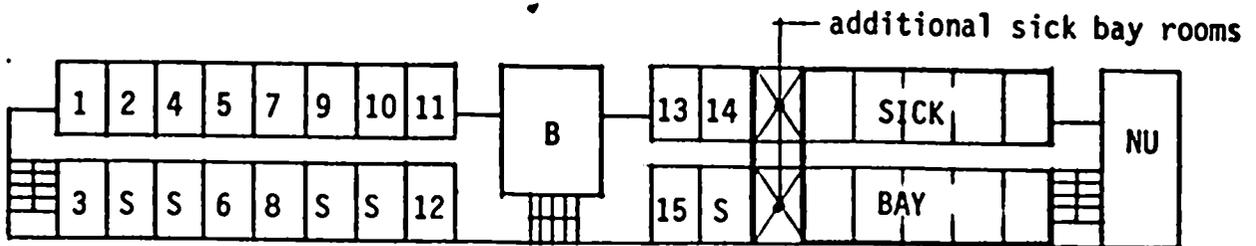
Arising from the comparisons, two development alternatives are suggested and analysed for decision-making purposes.



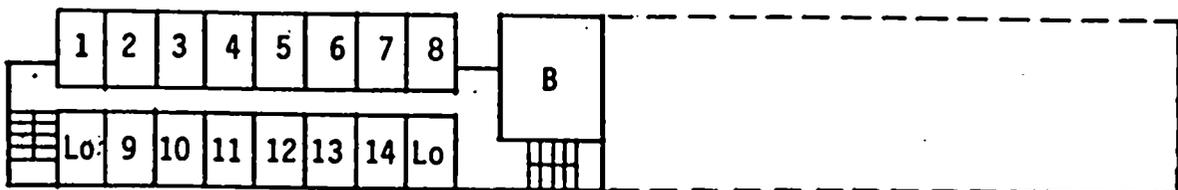
LEVEL 4 - 24 no. double BRS + 8 no. separate 6-person studies (48 students)



LEVEL 3 - 24 no. double BRS + 8 no. separate 6-person studies (48 students)



LEVEL 2 - 15 no. double bedrooms + 5 no. separate 6-person studies (30 students)
 - sick bay expanded by 2 double rooms (4 students)

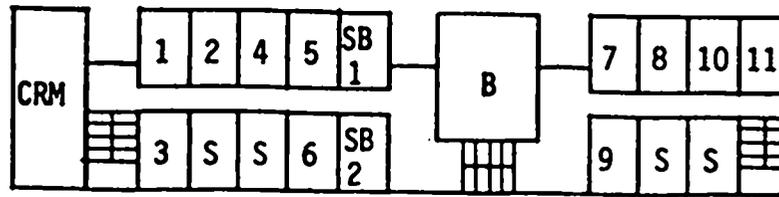


LEVEL 1 (G) - 14 no. single study/BRS + 2 no. Lounges

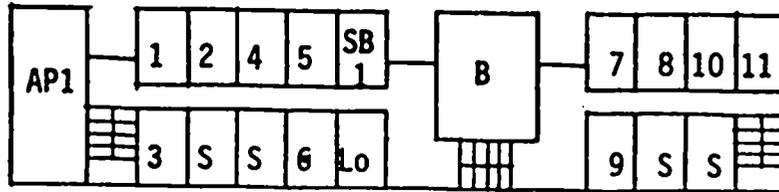
TOTAL (ALL LEVELS) = 63 no. double BRS + 21 no. separate 6-person studies
 = 14 no. single study/BRS
 = 140 students

BOYS DORMITORIES: CONVERT TO DOUBLE BEDROOMS/SEPARATE STUDIES + SINGLE S/BRS
 CONVERSION OF EXISTING ACCOMMODATION
 STUDENT RESIDENCES/OVERALL DEVELOPMENT ALTERNATIVE 'F'
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

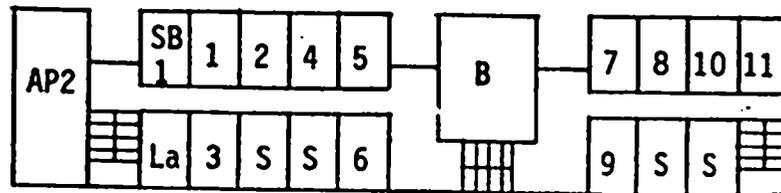
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- LEVEL 3** - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 2 no. single study bedrooms



- LEVEL 2** - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 1 no. single study bedroom



- LEVEL 1 (G)** - 9 no. double BRS + 3 no. separate 6-person studies
 - 2 no. double BRS + 1 no. separate 4-person studies
 - 1 no. single study bedroom

TOTAL (ALL LEVELS)

- 27 no. double BRS + 9 no. separate 6-person studies
- 6 no. double BRS + 3 no. separate 4-person studies
- 4 no. single study bedrooms
- 70 no. students

GIRLS DORMITORIES: CONVERT TO DOUBLE BRS WITH SEPARATE STUDIES

CONVERSION OF EXISTING ACCOMMODATION

STUDENT RESIDENCES/OVERALL DEVELOPMENT ALTERNATIVE 'C', 'D', 'F' & 'G'
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

OVERALL DEVELOPMENT ALTERNATIVES

COMPARISONS

1. ASSUME NO SELF-CATERING

	EXISTING ACCOMMODATION			NEW ACCOMMODATION				TOTAL		
	Boys	Girls	Tot.	Boys No.	Area	Girls No.	Area	No.	Area	Area/Student
A	200	100	300	140	17,080	10	1,380	150	18,460	123.07
B	300	-	300	40	4,880	110	15,180	150	20,060	133.73
C	150	70	220	190	23,180	40	5,520	230	28,700	124.78
D	220	-	220	120	14,640	110	15,180	230	29,820	129.65
E	100	50	150	240	29,280	60	8,280	300	37,560	125.5
F	140	70	210	200	24,400	40	5,520	240	29,920	124.67
G	100	70	170	240	29,280	40	5,520	280	34,800	124.29
H	150	50	200	190	23,180	60	8,280	250	31,460	125.84

Conclusions

- a. If one assumes that (i) the existing accommodation is unacceptable as is (ii) conversion of all the existing to single study bedrooms is uneconomic then alternatives 'A', 'B', 'E', 'G' & 'H' are ruled out.
- b. The new accommodation requirements in 'C' are lower in floor area and area per student than in 'D'. 'F' is lower in area per student than 'D', but slightly larger in floor area.
- c. In both 'C' & 'F' approximately 5% of the total accommodation for girls (5 in 110) is provided in single study bedrooms (consequent on the conversion of the existing girls dormitories).
- d. If it is desirable that a similar percentage of single study BRS should be provided for boys, then alternative 'F' would satisfy the requirement, where the ground floor of the existing boys dormitories are converted to single study bedrooms (14 in 340).

2. ASSUME SELF CATERING FOR GIRLS ONLY

	EXISTING ACCOMMODATION			NEW ACCOMMODATION				TOTAL		
	Boys	Girls	Tot.	Boys		Girls		No.	Area	Area/Student
				No.	Area	No.	Area			
A	200	100	300	140	17,080	10	1,780	150	18,860	125.73
B	300	-	300	40	4,880	110	19,580	150	24,460	163.07
C	150	70	220	190	23,180	40	7,120	230	30,300	131.74
D	220	-	220	120	14,640	110	19,580	230	34,220	148.78
E	100	50	150	240	29,280	60	10,680	300	39,960	133.2
F	140	70	210	200	24,400	40	7,120	240	31,520	131.33
G	100	70	170	240	29,280	40	7,120	280	36,400	130.00
H	150	50	200	190	23,180	60	10,680	250	33,860	135.44

Conclusions

- a. If one assumes that (i) the existing accommodation is unacceptable as is (ii) conversion of all the existing accommodation to single study bedrooms is uneconomic then alternatives 'A', 'B', 'E', 'G' & 'H' are ruled out.
- b. The new accommodation requirements for 'C' & 'F' are lower in area and area per student than 'D'. Alternative 'F' is slightly greater in area but lower in area per student for new accommodation than 'C'.
- c. As before, 'C' provides approximately 5% (5 in 110) of the total accommodation for girls only in the form of single study BRS, whilst 'F' provides approximately 5% (14 in 340) single study BR accommodation for boys in addition.
- d. If self-catering for all girls is desirable, then 'D' must be used, whilst 'C' or 'F' provide approximately 36% (40 girls) in this type of accommodation.

3. SUGGESTED DEVELOPMENT ALTERNATIVES

ALTERNATIVE F.a. - NO SELF CATERING

1. EXISTING ACCOMMODATION

	Boys	Girls	TOTAL
Level 1 (G) -	14 *1	23 *2	37
2 -	30	23 *2	53
3 -	48	24 *2	72
4 -	48	None	48
Total	140	70	210

*1 - 14 no. in single study bedrooms

*2 - 5 no. in single study bedrooms.

2. NEW ACCOMMODATION

Boys		Girls		TOTAL		Area/Student
No.	Area	No.	Area	No.	Area	
200	24,400	40	5,520	240	29,920	124.67

ALTERNATIVE F.c. - PARTIAL SELF-CATERING FOR GIRLS

1. EXISTING ACCOMMODATION - as for Alternative F.a.

2. NEW ACCOMMODATION

Boys		Girls		TOTAL		Area/Student
No.	Area	No.	Area	No.	Area	
200	24,400	40	7,120	240	31,520	131.33

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

OVERALL DEVELOPMENT ALTERNATIVES*

A. 1. EXISTING ACCOMMODATION

- no change - (200 boys + 100 girls in double rooms)

TOTAL = 300 students.

2. NEW ACCOMMODATION (140 boys + 10 girls) - 150 total.

	Boys (140)	Girls (10)	Total (150)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	17080	1380	18,460	123.07
b. Self-Catering, boys & girls 178	24920	1780	26,700	178
c. Double BRS - (boys) & self-catering girls	17080	1780	18,860	125.73

B. 1. EXISTING ACCOMMODATION

- convert girls dormitories to boys - no change to boys
(urinals in bathrooms)

TOTAL = 300 boys.

2. NEW ACCOMMODATION

(40 boys + 110 girls) - 150 total

	Boys (40)	Girls (110)	Total (150)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	4880	15180	20,060	133.73
b. Self-catering, boys & girls @ 178	7120	19580	26,700	178
c. Double BRS (boys) & Self-catering (girls)	4880	19580	24460	163.07

C. 1. EXISTING ACCOMMODATION

- convert boys dormitories to double BRS
+ studies - 150 boys

- convert girls dormitories to double BRS
+ studies - 70 girls

TOTAL = 220 students.

* all alternatives assume the conversion of 2 no. double rooms in the boys dormitory to sick bay rooms.

2. NEW ACCOMMODATION
 (190 boys + 40 girls) - 230 total

	Boys (190)	Girls (40)	Total (230)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	23180	5520	28,700	124.78
b. Self-catering, boys & girls @ 178	33820	7120	40,940	178
c. Double BRS (boys) & Self-catering (girls)	23180	7120	30,300	131.74

D. 1. EXISTING ACCOMMODATION

- convert boys dormitories to double BRS + Studies - 150 boys
 - convert girls dormitories to double BRS + Studies for boys - 70 boys
- TOTAL - 220 boys.

2. NEW ACCOMMODATION (120 boys + 110 girls) - total 230 students

	Boys (120)	Girls (110)	Total (230)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	14640	15180	29,820	129.65
b. Self-catering, boys & girls @ 178	21360	19580	40,940	178
c. Double BRS (boys) & Self-catering (girls)	14640	19580	34,220	148.78

E. 1. EXISTING ACCOMMODATION

- convert boys dormitories to single study BRS - 100 boys
 - convert girls dormitories to single study BRS - 50 girls
- TOTAL = 150 students.

2. NEW ACCOMMODATION (240 boys + 60 girls) - 300 total

	Boys (240)	Girls (60)	Total (300)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	29280	8280	37,560	125.2
b. Self-catering, boys & girls @ 178	42720	10680	23,580	178
c. Double BRS (boys) & Self-catering (girls)	29280	10680	39,960	133.2

- F. 1. EXISTING ACCOMMODATION
- convert ground floor of boys dormitories to single study BRS with 2 rooms as lounges - 14 men
 - convert remainder of boys dormitory to double BRS + studies - 126 boys
 - convert girls dormitories to double BRS + studies - 70 girls
- TOTAL - 210 students.

2. NEW ACCOMMODATION (200 boys + 40 girls) - 240 total.

	Boys (200)	Girls (40)	Total (240)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	24400	5520	29,920	124.67
b. Self-catering, boys & girls @ 178	35600	7120	42,720	178
c. Double BRS (boys) & Self-catering (girls)	24400	7120	31,520	131.33

- G. 1. EXISTING ACCOMMODATION
- convert boys dormitories to single study/BRS - 100 boys
 - convert girls dormitories to double BRS + studies - 70 girls
- TOTAL - 170 students.

2. NEW ACCOMMODATION (240 boys + 40 girls) - 280 total.

	Boys (240)	Girls (40)	Total (280)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	29280	5520	34,800	124.29
b. Self-catering, boys & girls @ 178	42720	7120	49,840	178
c. Double BRS (boys) & Self-catering (girls)	29280	7120	36,400	130

- H. 1. EXISTING ACCOMMODATION
- convert boys dormitories to double rooms + studies - 150 boys
 - convert girls dormitories to single study/BRS - 50 girls
- TOTAL = 200 students.

2. NEW ACCOMMODATION (190 boys + 60 girls) - 250 total.

	Boys (190)	Girls (60)	Total (250)	Area/ Student
a. Double BRS, boys @ 122, girls @ 138	23180	8280	31,460	125.84
b. Self-catering, boys & girls @ 178	33820	10680	44,500	178
c. Double BRS (boys) & Self-catering (girls)	23180	10680	33,860	135.44

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
STUDENT RESIDENCES

PROPOSED DEVELOPMENT ALTERNATIVE

In the previous section, the whole matter of student accommodation has been examined and analysed in detail, resulting in some suggested development alternatives. The analysis and suggested alternatives for development were reviewed by the COA staff and the USAID project team and it was agreed that a new proposal should be prepared for consideration.

Briefly, the proposal agreed entails the following

1. CONVERSION OF EXISTING ACCOMMODATION

- .1 Expand the sick bay in the Boys Dormitories by 2 no. double rooms to provide an additional 4 sick bay beds.
- .2 Convert 75% (3 in 4) of the existing inadequate double study bedrooms in both dormitories to double bedrooms only.
- .3 Convert 25% (1 in 4) of the existing double study bedrooms in both dormitories to study areas, each room having a capacity of 6 study desks.
- .4 Where conversion on a strict 1 in 4 basis is not possible, provide a lower ratio or convert to single study bedrooms (which could be used for more mature or handicapped students).

The resultant complements are

A. GIRLS DORMITORIES

- 27 no double bedrooms with 9 no. separate 6-person studies
- 6 no. double bedrooms with 3 no. separate 4-person studies
- 4 no. single study bedrooms

TOTAL = 70 no. students

B. BOYS DORMITORIES

- sick bay for 8 students
- 75 no. double bedrooms with 25 no. separate 6-person studies

TOTAL 150 no. students

C. TOTAL BOYS & GIRLS = 220 students.

2. NEW ACCOMMODATION

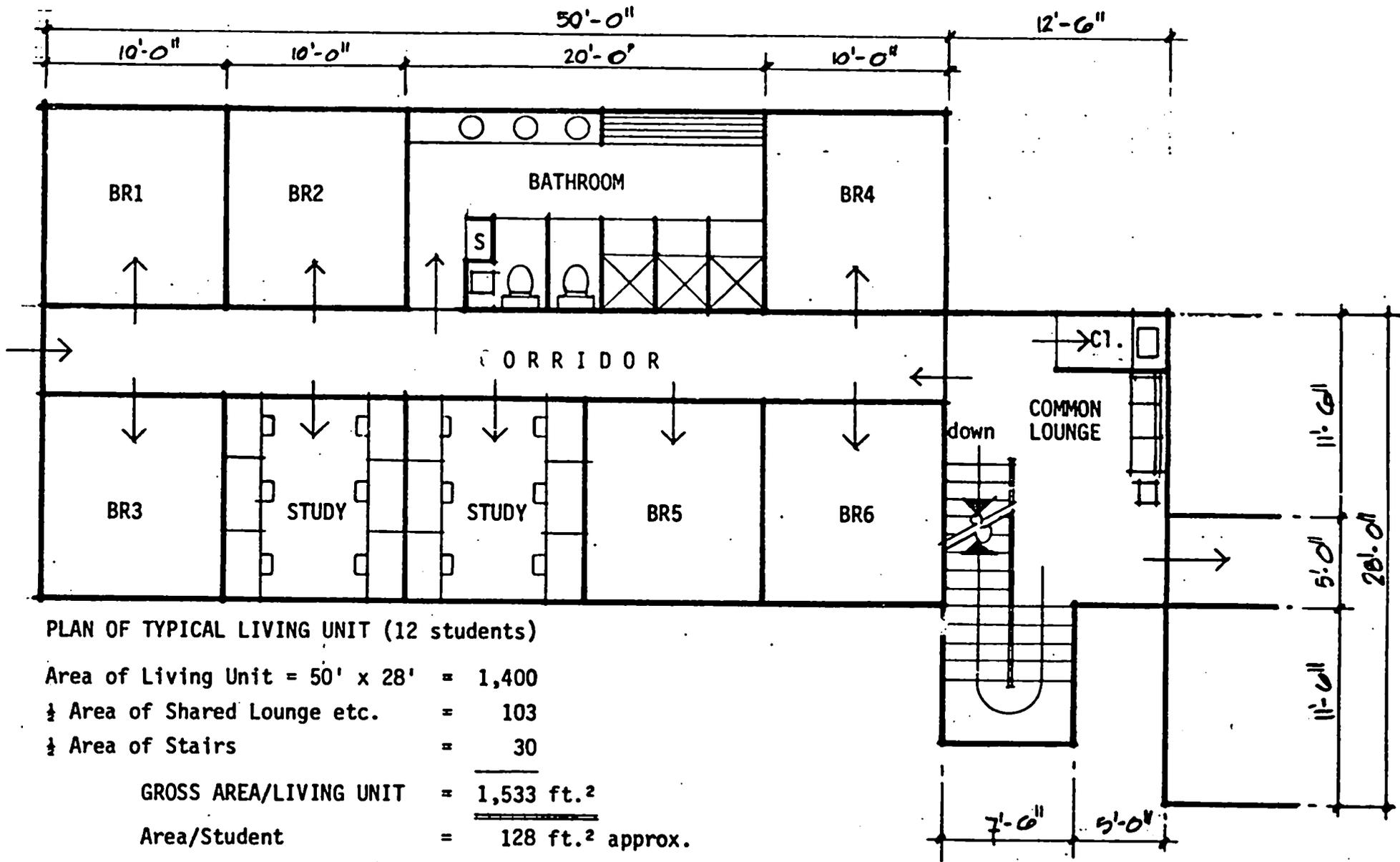
The total required accommodation is for 340 boys and 110 girls, totalling 450 students. If the accommodation provided by conversion of the existing dormitories is subtracted, then there is a new requirement for 190 boys and 40 girls, totalling 230 students.

Considering the relatively high capital cost, the doubtful potential economics and probable difficulties in operation of self-catering living units for girls in this situation, it was agreed that this concept be abandoned.

Instead, it was felt that new accommodation proposals should be based on living units of 12 students provided with shared bathroom and study facilities. The 12 students should be housed in double bedrooms with adequate clothing and personal effect storage and 2 studies, each with a capacity of 6 persons should be provided. Between each 2 living units there is a common lounge/circulation area, thereby providing better opportunities for organisation, segregation and control. An enhanced community spirit and better maintenance of facilities would also probably result. A typical living unit and details of the proposed individual spaces are shown on the accompanying drawings.

The units can be stacked in blocks up to 4 floors and the suggested locations and layouts of these blocks are also shown on the drawings. Three Blocks are shown, 1 of four levels containing 8 no. living units; and 2 of 3 levels each containing 6 no. living units each. The total complement is therefore 20 units at 12 students each, totalling 240 students which more than satisfies the requirement for 230 students. In any event, some single study bedrooms may be required for reasons stated earlier.

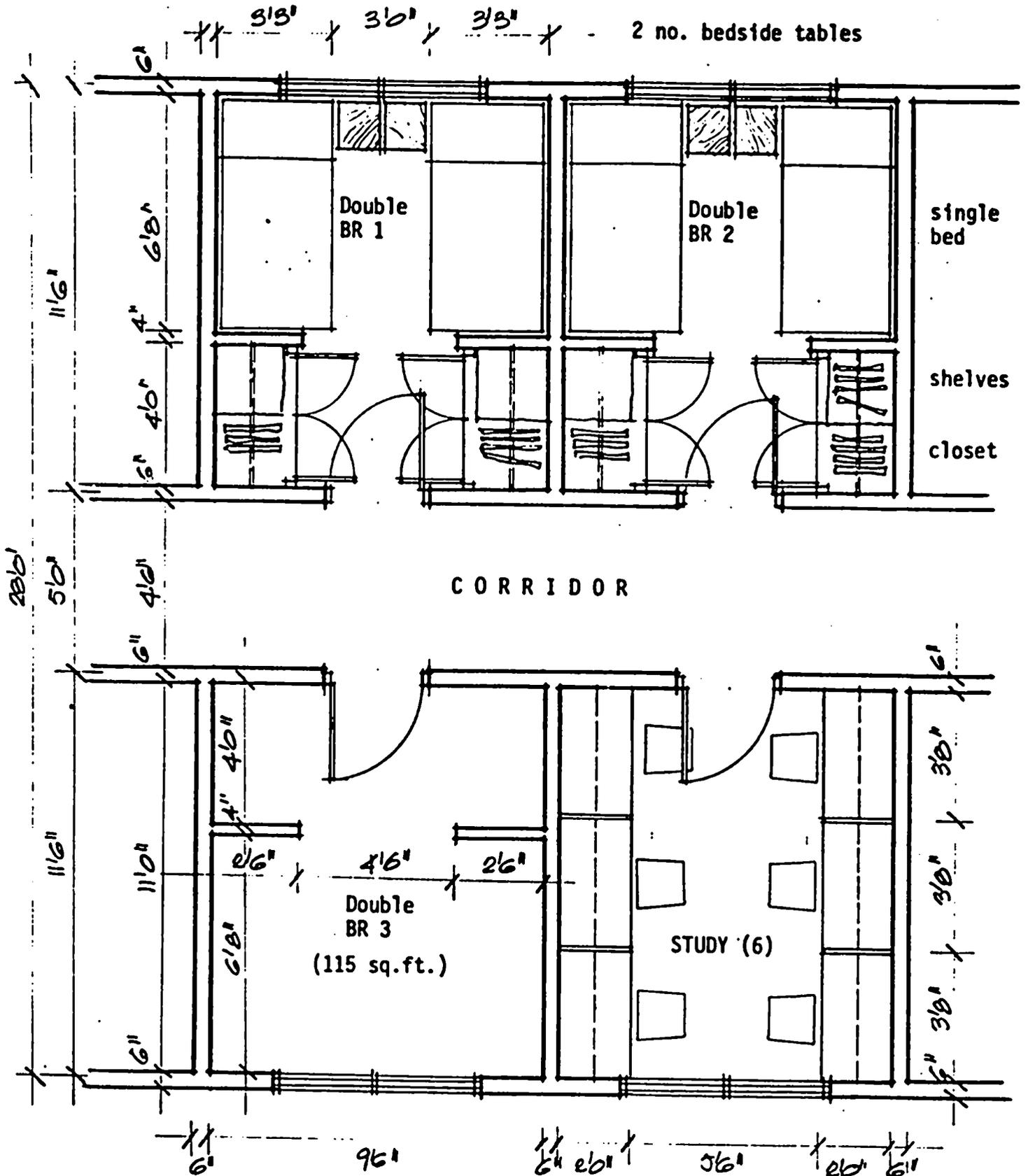
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PLAN OF TYPICAL LIVING UNIT (12 students)

Area of Living Unit = 50' x 28'	=	1,400
½ Area of Shared Lounge etc.	=	103
½ Area of Stairs	=	30
GROSS AREA/LIVING UNIT	=	<u>1,533 ft.²</u>
Area/Student	=	<u>128 ft.² approx.</u>

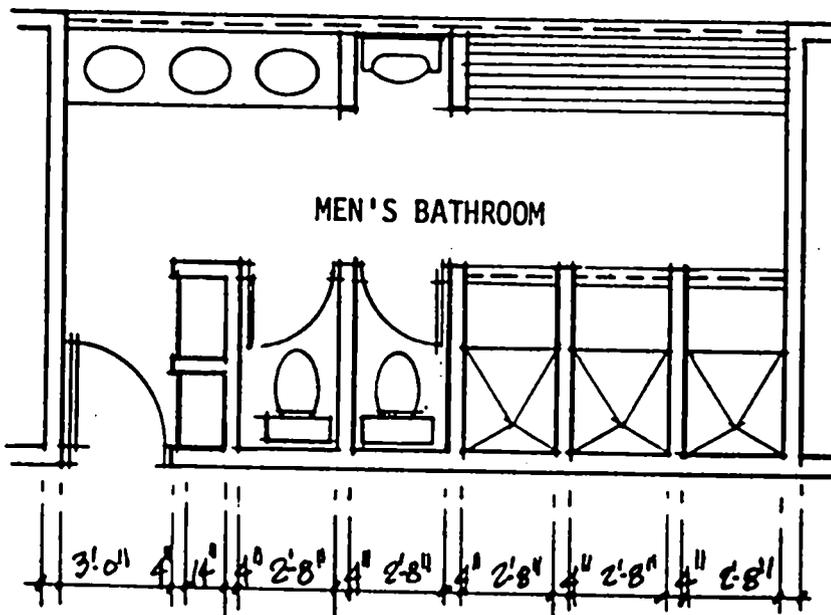
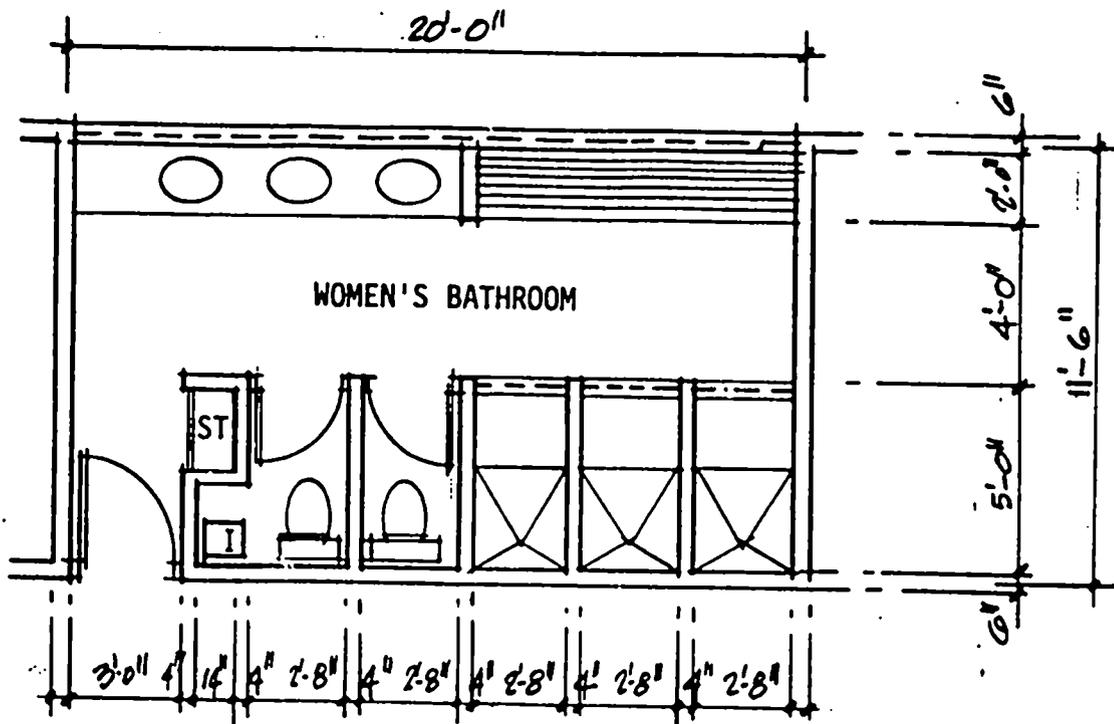
PROPOSED LIVING UNIT for 12 students
STUDENT RESIDENCES: NEW ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT



DOUBLE BEDROOMS (3 No.) with SEPARATE STUDY (6 persons)

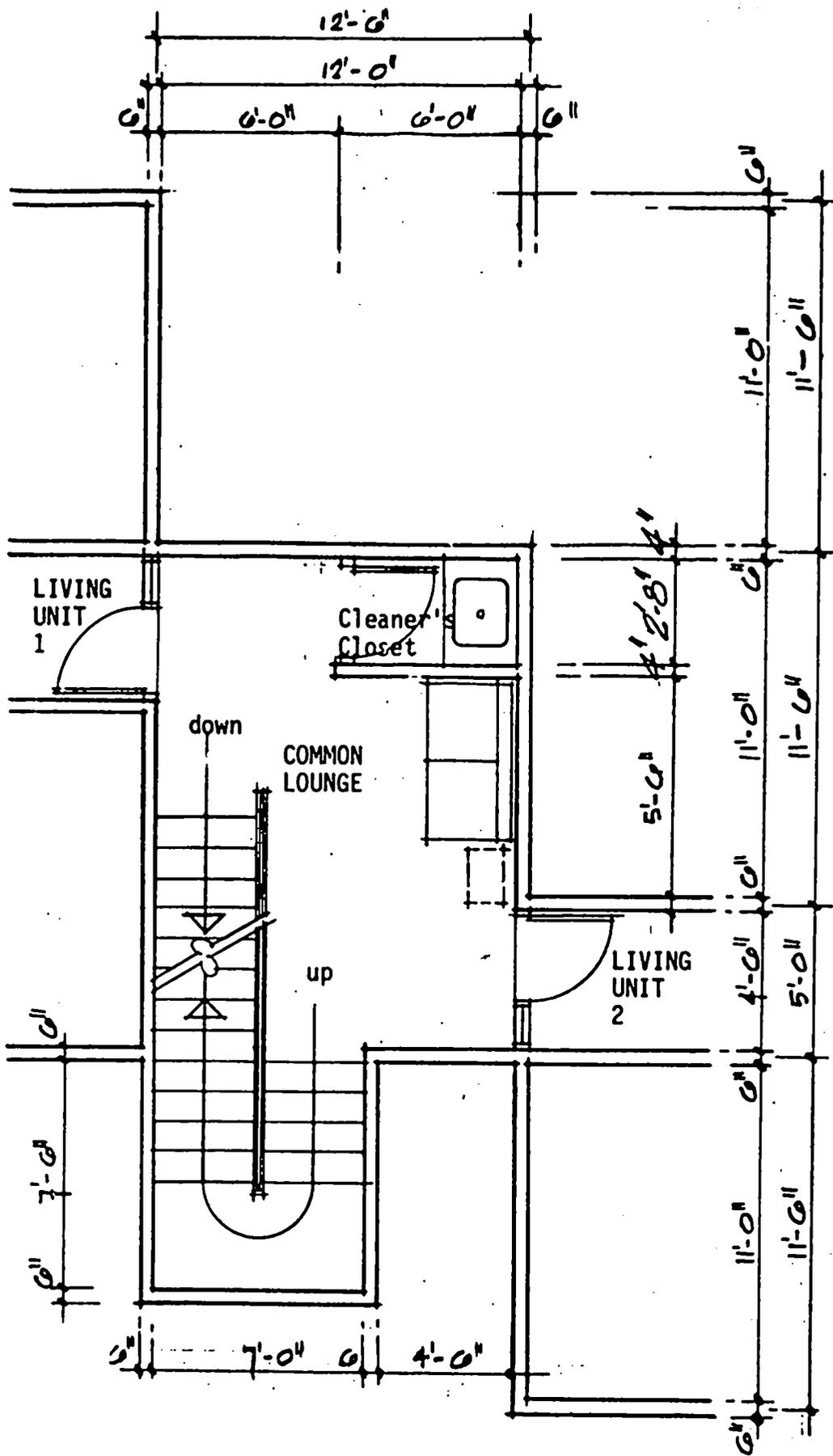
STUDENT RESIDENCES/NEW ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT -

Total Area = 560 ft.²
Area/Student = 93.3 ft.²



AREA = 230 ft.²

PROPOSED 12-STUDENT LIVING UNIT: BATHROOMS
 STUDENT RESIDENCES: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT



PROPOSED 12-STUDENT LIVING UNIT: COMMON STAIRS/LOUNGE
 STUDENT RESIDENCES: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT

3. SCHEDULE OF AREAS

		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
A.	TYPICAL LIVING UNIT (12 students)		
1.	6 no. double bedrooms	6 x 10' x 11.5'	690
2.	2 no. 6-person studies	2 x 10' x 11.5'	230
3.	1 no. bathroom	20' x 11.5'	230
4.	Corridor	5' x 50'	250
		TOTAL	<u>1,400 ft.²</u>

Area/Student = 116.67 ft.²

B. TYPICAL COMMON LOUNGE/CIRCULATION (24 students)

1.	Common Lounge/ Circulation Area (cleaner's closet etc.)	12.5' x 16.5'	206.25
3.	Stairs	8' x 7.5'	70
		TOTAL	<u>276.25 ft.²</u>

Area/Student = 11.51 ft.²

C. BLOCK 1 (4 levels) - 96 students

1.	Level 1 (2 living units + 1 common lounge/circulation area).	3,076.25
2.	Level 2 (as for Level 1)	3,076.25
3.	Level 3 "	3,076.25
4.	Level 4 "	3,076.37
		<u>12,305 ft.²</u>

D. BLOCK 2 (3 levels) - 72 students

1.	Level 1	3,076.25
2.	Level 2	3,076.25
3.	Level 3	3,076.25
		<u>9,228.75 ft.²</u>

	Approximate Areas (ft. ²)
E. BLOCK 3 (3 levels) - as for Block 2	<u>9,228.75 ft.²</u>
F. TOTAL ALL BLOCKS (240 students)	
1. BLOCK 1 (96)	12,305
2. BLOCK 2 (72)	9,228.75
3. BLOCK 3 (72)	<u>9,228.75</u>
TOTAL AREA =	<u>30,762.5 ft.²</u>

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

STUDENT LAUNDRIES

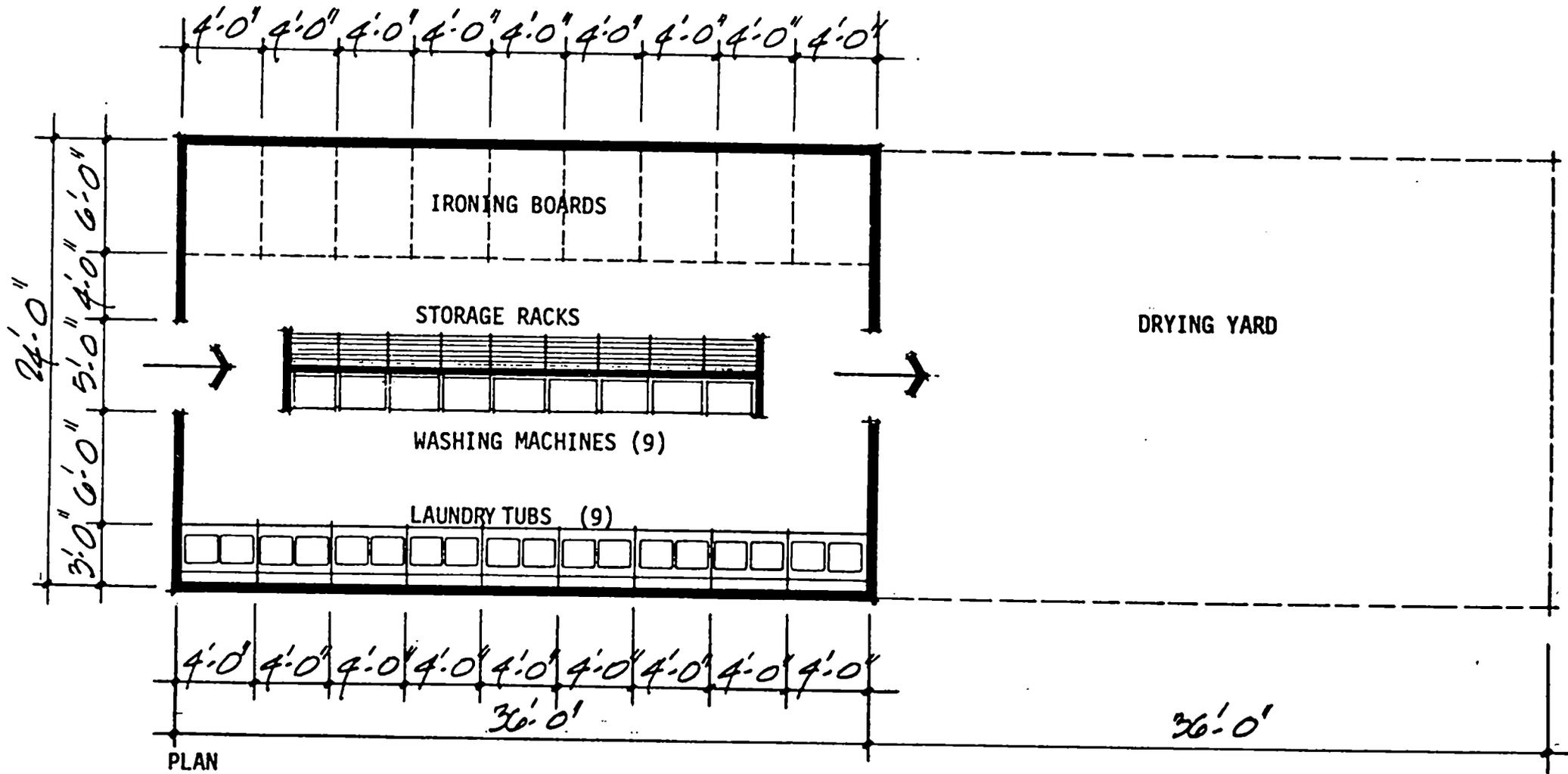
The present arrangement for laundries appears to be inefficient, uneconomic and unsatisfactory in that students do their own washing in common bathrooms where one washing machine per floor is provided. This results in a difficult situation when a machine is out of order and no spare parts are available or repairs are not easily made. In addition, no prescribed drying areas are provided and space for ironing is limited.

In the analysis of the student residences, some proposals were made, but these suffered from some of the drawbacks referred to above.

The COA Staff and the USAID Team agreed that the best solution was to provide a central laundry or laundries equipped with commercial coin or token operated machines and provided with adequate storage, ironing and drying areas.

The accompanying drawing shows a typical laundry unit with drying yard and the residential layout shows 2 such units placed centrally in relation to the existing and proposed student dormitories.

SCHEDULE OF AREAS	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. Washing Room (9 washing machines 9 double laundry tubs)	12' x 36'	432
2. Ironing Room (9 ironing spaces & 9 storage units)	12' x 36'	432
	TOTAL	<u>864 ft.²</u>
Drying Yard	24' x 36' = <u>864 ft.²</u>	



PLAN

AREAS

- BUILDING = 864 ft.²
- YARD = 864 ft.²

NEW ACCOMMODATION
CENTRAL LAUNDRY FACILITIES

USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
LIBRARY COMPLEX

- A. The existing building is a single floor structure located between the Girls Dormitories and the Classroom Blocks. In addition to its library functions, it was designed to provide facilities for an audio-visual area and a guidance consellor. The stack capacity is 5,000 volumes and it appears that some rooms are not being used for their intended functions (e.g. Audio-Visual used as a common room). There are some complaints regarding noise disturbance and it is felt that the present 'display' arrangement is over-generous and inappropriate.

The existing facilities are illustrated in diagrammatic form and below are set out the individual rooms with approximate dimensions and areas.

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. Librarian's Office	14' x 10.75'	150.5
2. Staff Room	14' x 10.75'	150.5
3. Staff Toilet	6' x 5'	30
4. Work Room	14' x 17'	238
5. Guidance Consellor	12.5' x 11'	137.5
6. Waiting for (5)	12.5' x 10.5'	131.25
7. Main Stack Area	32' x 58'	1,856
8. Reference Area	(32' x 32') - (14' x 14')	828
9. Gallery/Display	7' x 90'	630
10. Audio-Visual	26.5' x 21.5'	569.75
11. Projection/Store	9' x 15.5'	139.5
12. Dark Room/Cleaner	14' x 14'	196
13. Toilets	10' x 15.5'	155
14. Circulation	various	254.5
	TOTAL	<u>5,466.5</u>

B. NEW ACCOMMODATION

The additional requirements requested are -

1. Increase in stack capacity to 50,000 volumes with consequent increase in study carrels.
2. Curriculum Development Centre (3 rooms @ 400 ft.² each)
3. Learning Resource Centre with audio-visual room (24 student carrels), a control room and storage.

The existing building was analysed structurally and it was found that another floor could be added by the provision of additional external and internal supports and a structural topping to the existing roof in order to satisfy the projected floor and roof loadings.

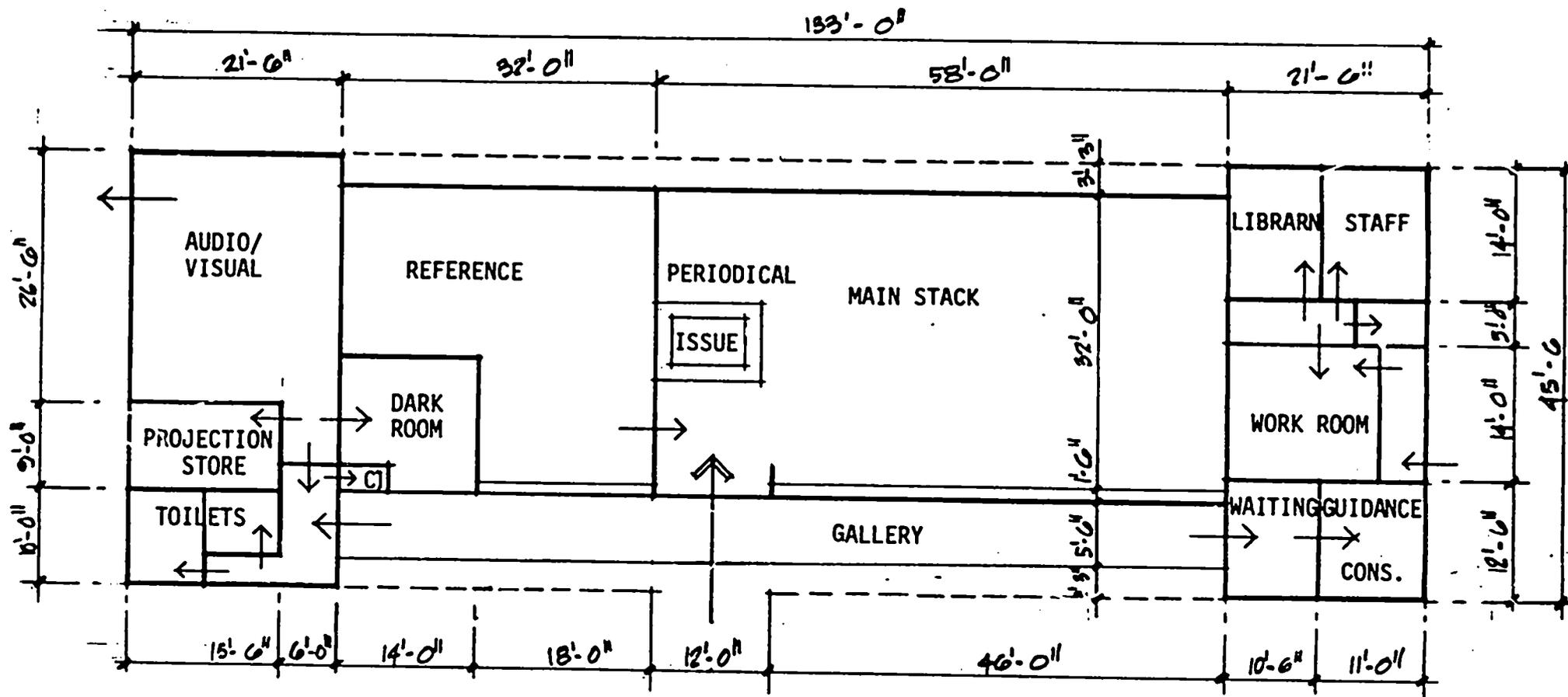
In order to fulfil the additional stacking requirement of 45,000 volumes, it was felt that this should be achieved by the re-organisation of the existing building so as to keep all the stacking at one level.

The diagrams that follow show one suggested way of achieving more stacking area by removal of all facilities not directly linked to the stack areas and the removal of the display area and gallery. The net result is stacking space for 36,500 volumes, study carrels for 40 students, and increased accommodation for library staff and workroom.

The proposed Level 2 provides accommodation for the Learning Resource Centre, the Curriculum Development Centre, the Guidance Counsellor & Students Toilets with access from an external stairway. It was agreed that Level 2 should be left for future development.

Another possibility explored was a 2-floor extension to the east of the existing building, but it was felt this would place additional constraints on an already limited site.

C. SCHEDULE OF AREAS - EXISTING LEVEL 1 CONVERTED		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1.	Librarian's Office	14' x 10.75	150.5
2.	Staff Room	14' x 10.75	150.5
3.	Staff Toilets	6' x 5'	30
4.	Work Room	14' x 17'	238
5.	Additional Staff/Work Room	12.5' x 21.5'	268.75
6.	Main Stack Area (30,000 volumes + 32 study carrels)	90' x 39'	3,510
7.	Reference Area (6,400 volumes + 8 study carrels)	35.5' x 21.5'	763.25
8.	Toilets	10' x 15.5'	155
9.	Circulation	various	200.5
		TOTALS	<u>5,466.5</u>



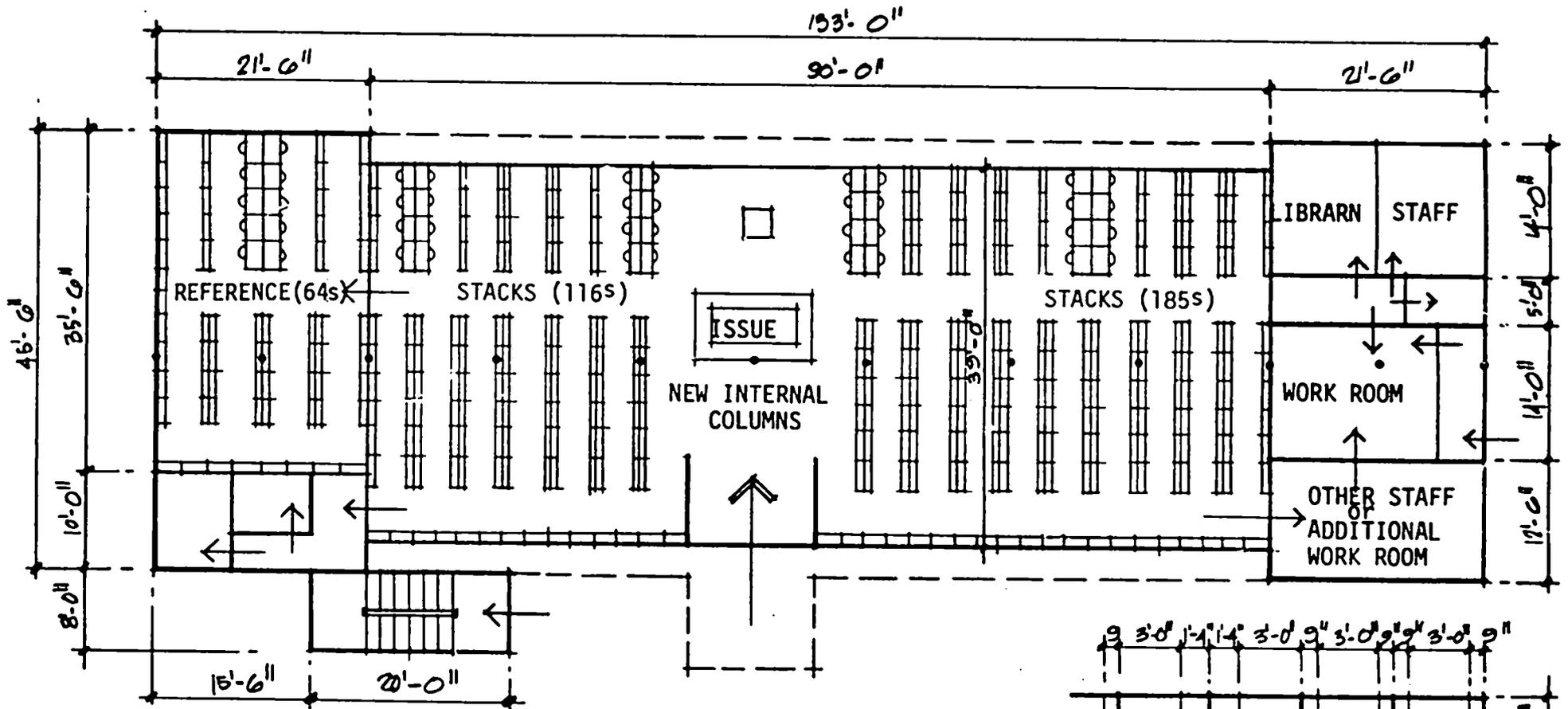
FLOOR PLAN (Diagram)

AREA = 6,000 ft.² approx.

EXISTING ACCOMMODATION (approximate dimensions)

LIBRARY COMPLEX

USAID/GOJ AGRICULTURAL PROJECT - COA - (passley Gardens)



PROPOSED FUTURE STAIRWAY to LEVEL 2

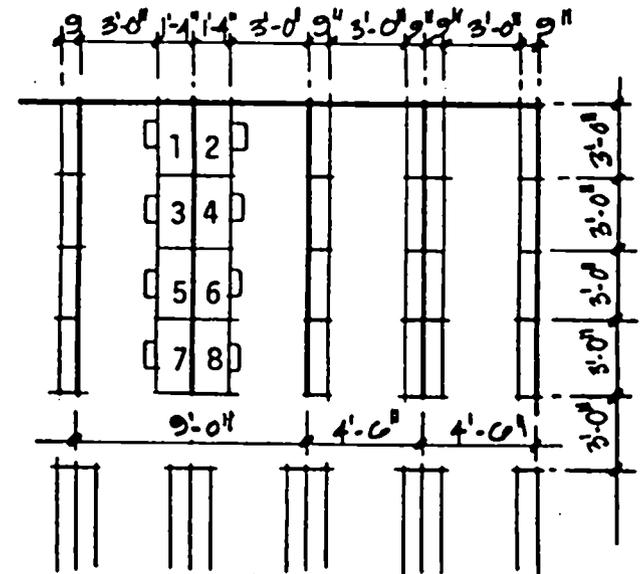
FLOOR PLAN (Diagram) - approx. dimensions

TOTAL (9" x 3' x 7'.6") = 64+ 116 + 185)S = 365s
 = 36,500 volumes

TOTAL STUDY CARRELS = 5 x 8 = 40 Students

NEW ACCOMMODATION: PROPOSED ALTERATION OF EXISTING LEVEL 1 LIBRARY COMPLEX

USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)



PROPOSED TYPICAL LAYOUT OF STACKS AND READING AREAS.

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
 CENTRAL CLASSROOM/LABORATORY COMPLEX

A. EXISTING ACCOMMODATION

The existing accommodation is illustrated diagrammatically on the following pages. It consists of two single floor blocks at differing levels, separated by corridors, stairs, waiting and landscaped areas.

	Approximate Dimensions (ft.)	Approximate Area (ft. ²)
1. SOUTHERN BLOCK		
1 no. Individual Classroom	24' x 24'	576
2 no. Individual Classrooms	2 x 24' x 26'	1,248
1 Pair of Classrooms (separated by folding screens)	2 x 24' x 26'	1,248
1 no. General Science Lab	24' x 37'	888
1 no. Chemistry Lab	24' x 37'	888
1 no. shared Preparation Room (subdivided)	24' x 16'	384
Covered Corridor	6' x 210'	1,260
		<u>6,492</u>
2. NORTHERN BLOCK		
1 no. Home Economics Dept. Sanitary Facilities etc.	24' x 120'	2,880
1 no. Art & Crafts suite including classroom separated by folding screens	24' x 24'	576
	24' x 52'	1,248
Covered Corridor	6' x 205'	1,230
		<u>5,934</u>
3. OPEN STAIRS/WAITING		<u>832</u>

4. TOTAL AREAS

1.	Southern Block	6,492		
2.	Northern Block	<u>5,934</u>	12,426	
3.	Open Stairs/Waiting		<u>832</u>	<u>13,258 sq.ft.</u>

The problems expressed about the accommodation fall into two categories

- a. Environmental Control - inadequate ventilation & natural lighting.
- b. Inadequate Space - small preparation room and not enough lab space for 30 students (6 short).

Ventilation and Natural Lighting can be increased by providing additional louvre windows for ventilation and additional glazed areas for natural light. However, protection from direct sunlight entry will have to be considered, particularly on the southern and western elevations.

Inadequate space provision in the Chemistry Lab could be resolved by demolition of the adjacent classroom wall and the conversion of a portion of that classroom into a preparation area, thereby devoting the existing preparation room entirely to the General Science lab. In order to expand the General Science lab, the adjacent classroom wall could also be demolished and some of that space utilized. However, the net result would be the loss of two classrooms and it is likely that the structural and other alteration costs would be excessive. It is suggested that these labs be re-designated to less space-demanding subjects in the overall development strategy rather than carry out what appears to be an uneconomic alteration exercise.

B. NEW ACCOMMODATION

The additional requirements agreed were as follows:

- 3 no. general purpose classrooms (25 - 30 students each)
- 1 no. lecture theatre (100 students)
- 4 no. specialized labs/preparation rooms (25 - 30 students each) for Physics, Chemistry, Botany/Zoology & Biochemistry/Microbiology
- 6 no. Lecturers' Offices for Science Faculty.

The areas reserved for classroom expansion on the master plan have been compromised by a recently constructed student pavilion. The only other expansion possibilities are to add another floor to the existing classroom blocks or to construct new buildings on open ground to the immediate north of the existing complex.

On analysis, it was found feasible to add a second floor to the existing complex, utilizing new external structural supports. After computation of the additional floor area required, it was clear that the potential capacity for upwards expansion was inadequate and that a new building would be necessary to fulfil the total requirements.

The proposals illustrated show

1. the additional second floor (in diagrammatic form) housing the general purpose classrooms, four laboratories/preparation rooms, sanitary facilities and two staircases;
and
2. a new building containing the one lecture theatre, six lecturers' rooms, staff toilets and students toilets at Level 1(G) with four laboratory/preparation rooms and 3 no. general purpose classrooms at Level 2.

C. SCHEDULE OF AREAS/UPWARD EXTENSION TO EXISTING

1.	NORTHERN BLOCK	Approximate Dimensions (ft.)	Approximate Area (ft. ²)
	1 no. General Purpose Classrooms	24' x 28'	672
	1 no. General Purpose Classrooms	24' x 24'	576
	Sanitary Facilities etc.	24' x 24'	576
	2 no. Laboratories	2 x 24' x 48'	2,304
	2 no. Preparation Rooms	2 x 24' x 12'	576
	Covered Corridor	6' x 205'	1,230
			<u>5,934</u>

	Approximate Dimensions (ft.)	Approximate Area (ft. ²)
2. SOUTHERN BLOCK		
4 no. General Purpose		
Classrooms	4 x 24' x 26'	2,496
1 no. Laboratory	24' x 41'	984
1 no. Laboratory	24' x 49'	1,176
2 no. Preparation Rooms	2 x 24' x 12'	576
Covered Corridor	6' x 210'	1,260
		<u>6,492</u>
3. 2 no. STAIRS TO EXISTING	2 x 2 x 8' x 20'	<u>640</u>
4. TOTAL AREAS		
1. Northern Block	5,934	
2. Southern Block	<u>6,492</u>	12,426
3. Stairs	<u>640</u>	<u>13,066 sq.ft.</u>

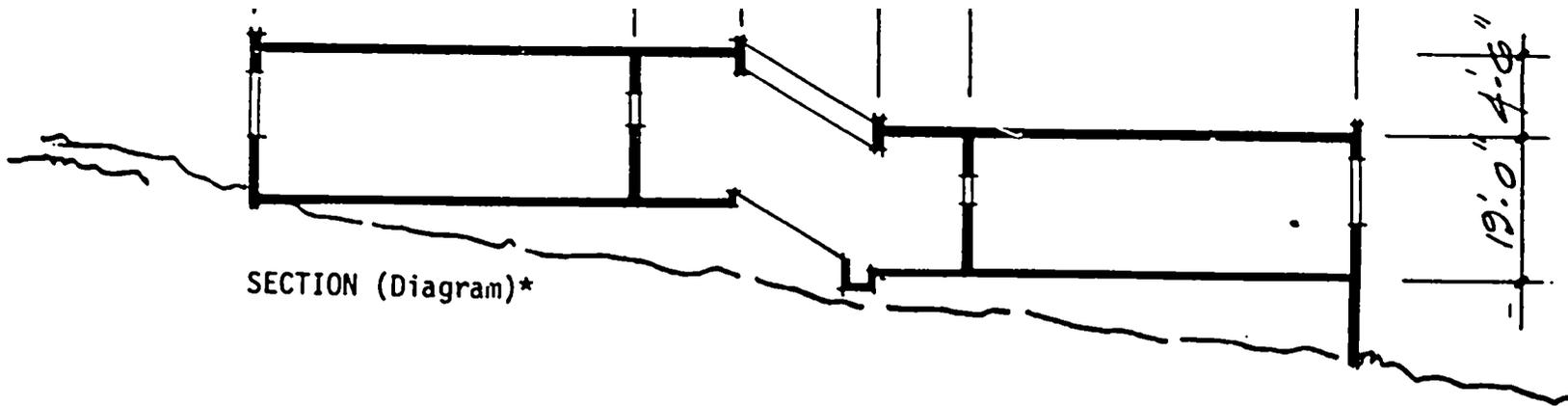
D. SCHEDULE OF AREAS/NEW BUILDING ALTERNATIVE

1. LEVEL 1		
1. Lecture Theatre	48' x 32'	1,536
2. Laboratory #1	48' x 24'	1,152
3. Prep Room #1	12' x 24'	288
4. Laboratory #2	48' x 24'	1,152
5. Prep Room #2	12' x 24'	288
6. Students Toilets	24' x 24'	576
7. Lecturer's Tooms & Toilets		
a. 6 no. Lecturers' rooms		
@ 8'x12'(96ft. ²) =		576ft. ²
b. Toilets		= 192ft. ²
c. Storage		= 64ft. ²
d. Circulation		
& Waiting	= 320ft. ²	1,152
8. Circulation/Stairs	varies	<u>672</u>
	TOTAL LEVEL 1	<u>5,816 ft.²</u>

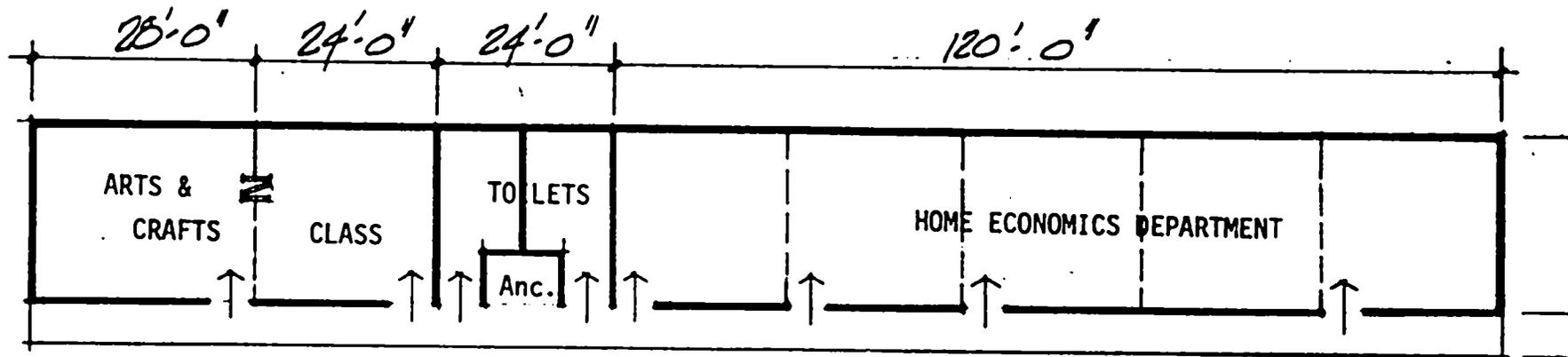
		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)	
2.	LEVEL 2			
	1.	Laboratory #3	48' x 24'	1,152
	2.	Prep Room #3	12' x 24'	288
	3.	Laboratory #4	48' x 24'	1,152
	4.	Prep Room #4	12' x 24'	288
	5.	3 no. General Purpose Classrooms	3 x 24' x 24'	1,728
	6.	Circulation/Stairs	varies	672
		TOTAL LEVEL 2		<u>4,280 ft.²</u>

3. TOTALS

LEVEL 1	5,816 ft. ²
LEVEL 2	<u>4,280 ft.²</u>
TOTAL	<u>10,096 ft.²</u>

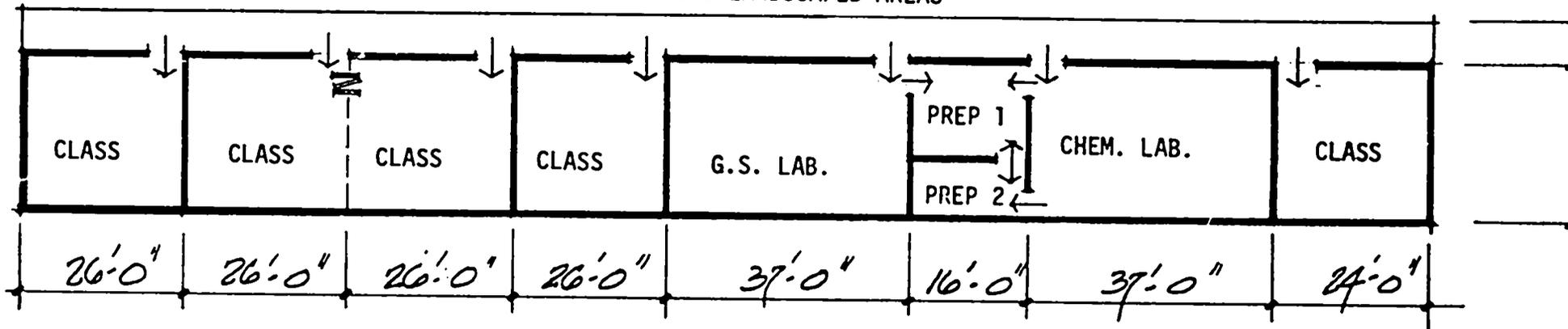


PLAN (Diagram)* - 12,500 ft.² approx.



CORRIDORS

WAITING & LANDSCAPED AREAS

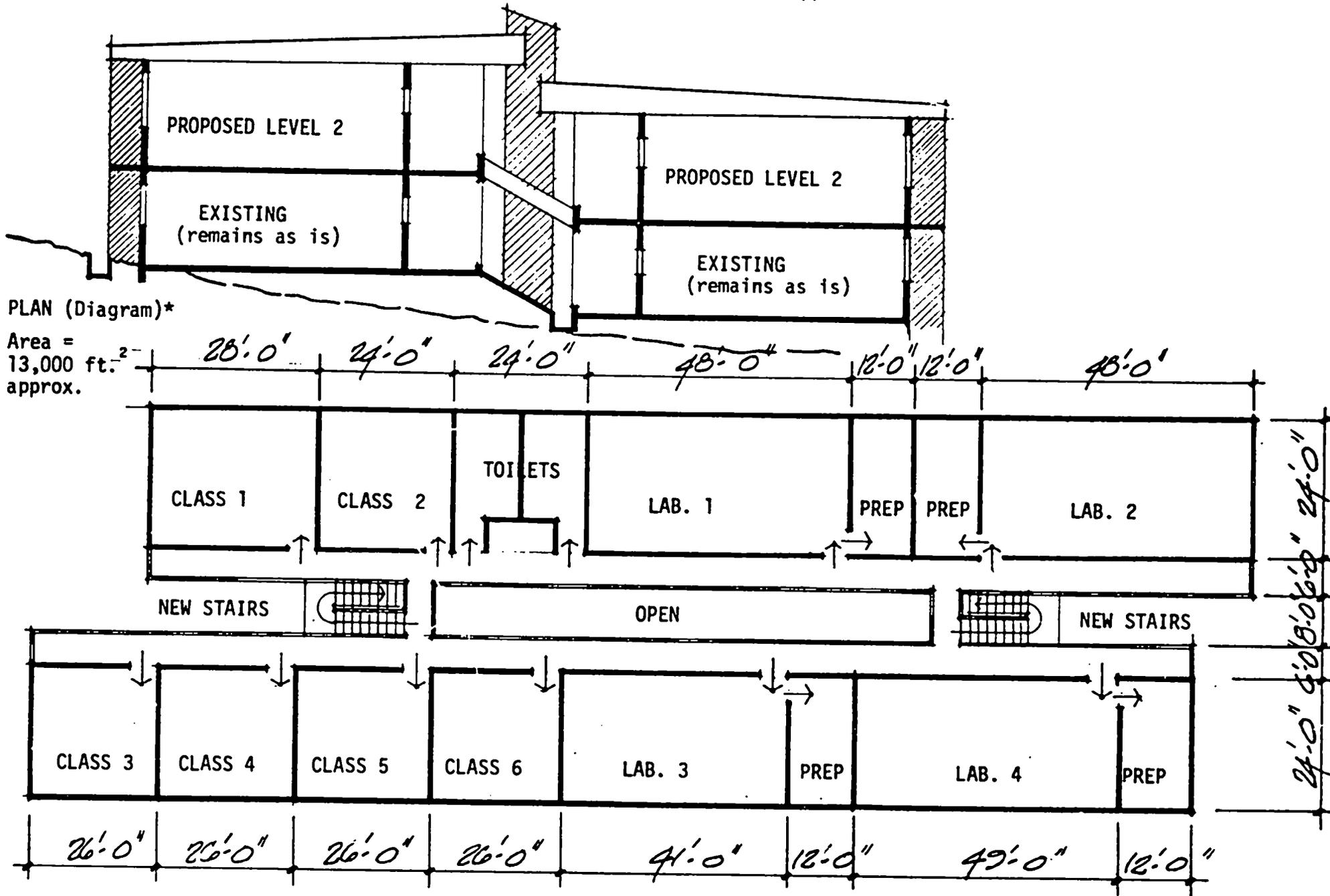


EXISTING ACCOMMODATION (approximate dimensions)
CLASSROOMS/LABORATORIES

USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)

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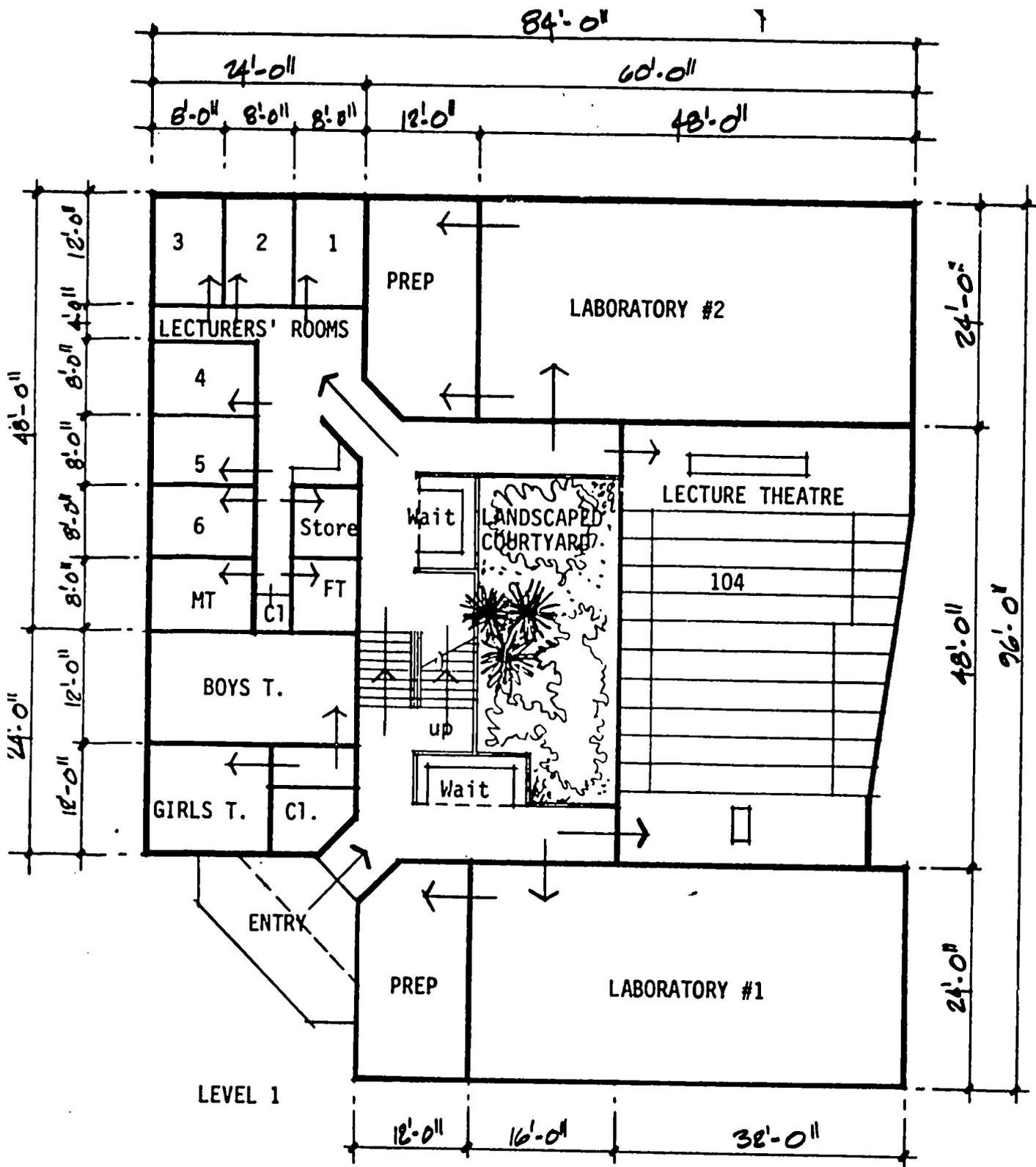
New external structural supports



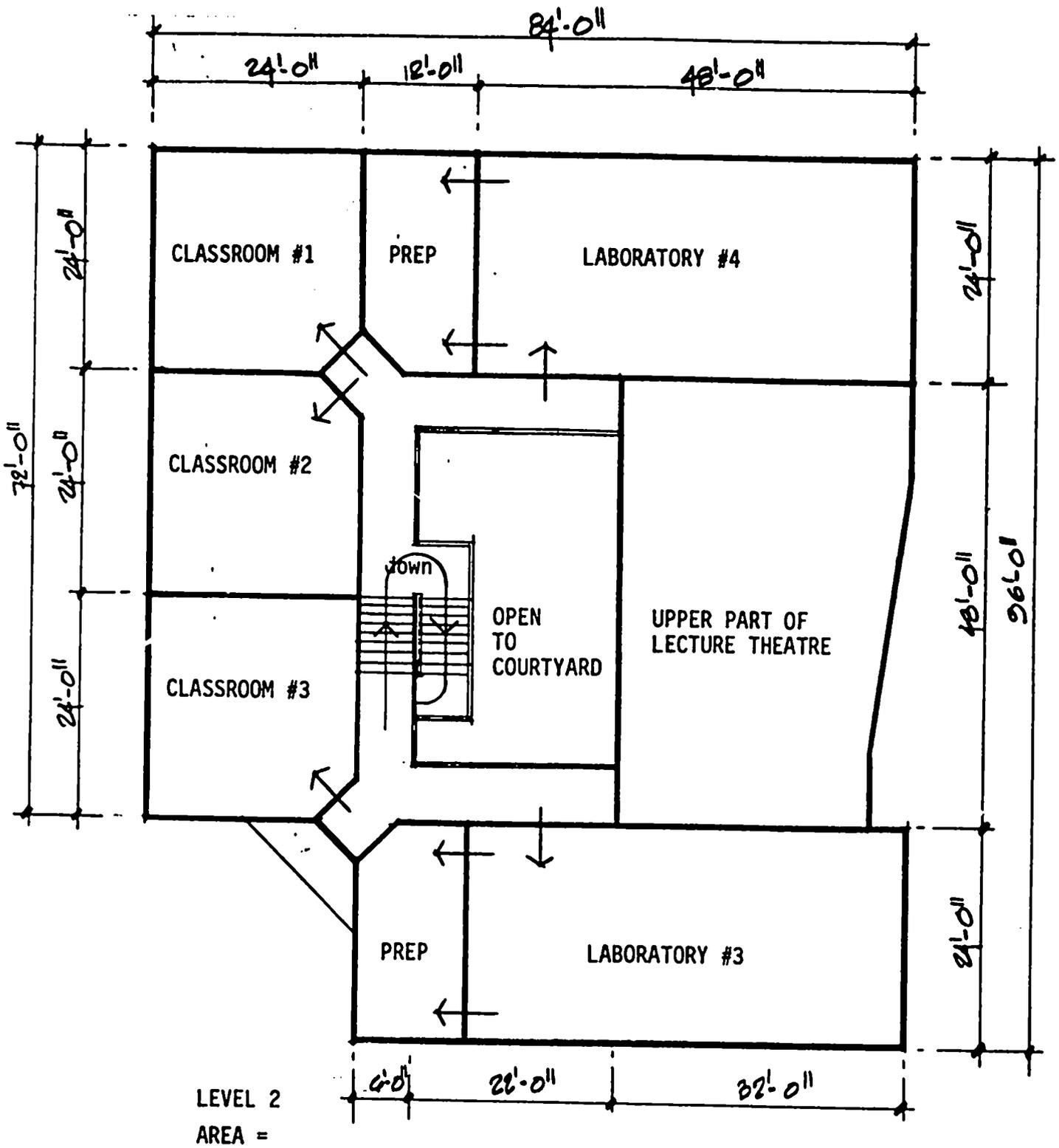
NEW ACCOMMODATION: (LEVEL 2 ADDITIONAL TO EXISTING)* approximate dimensions
CLASS ROOMS/LABORATORIES

USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)

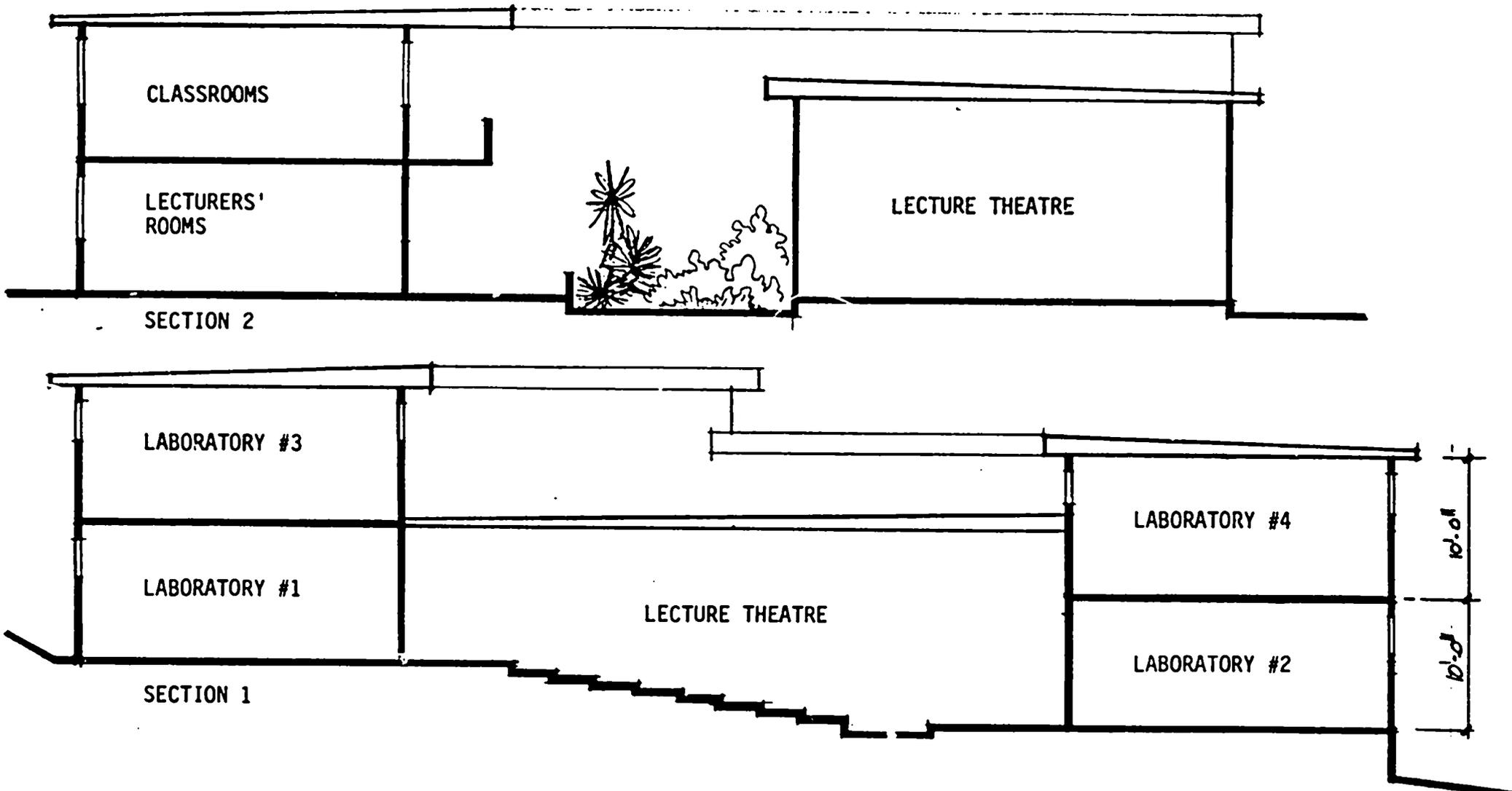
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CLASSROOM/LABORATORY/LECTURE BLOCK
 CENTRAL CAMPUS: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



CLASSROOM/LABORATORY/LECTURE BLOCK
 CENTRAL CAMPUS: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



CLASSROOM/LABORATORY/THEATRE BLOCK
 CENTRAL CAMPUS: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

X/1/1

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
 ADMINISTRATION COMPLEX

A. EXISTING ACCOMMODATION

The existing Administration Block is a single floor structure of approximately 120' x 40' and provides accommodation for:

	Approximate Dimensions (ft.)	Approximate Area (ft. ²)
1 no. Board Room	19.5 x 39.5	770.25
6 no. Offices Secretarial/Clerical	6' x 10 x 10.5 30 x 18.5	630 555
Storeroom		450
Sanitary Facilities	18.5 x 10.5	194.25
1 no. Deputy's Office Secretary	10 x 10.5 10.5 x 10.5	105 110.25
Head's Suite	10.5 x 19	199.5
Conference Room	13.5 x 18.5	249.75
General Office	29.5 x 10.5	309.75
Bursar	10 x 10.5	105
Secretarial/Clerical	18.5 x 26	481
Circulation		560.5
		<hr/> 4,720.25

The reported deficiencies are lack of privacy in the Board Room (perhaps excessive in size), substandard space in the Head's Office (Dean), & inadequate facilities to both Board Room & Head's Office. The entrance/reception area is not well defined.

B. NEW ACCOMMODATION

The expressed additional requirements are

- 18 no. staff offices (Humanities, Mathematics & Agricultural Economics)
- 1 no. Board Room (20 - 24 persons), private and suitably appointed
- 1 Dean's office suite, suitably appointed

- 1 Computer Room (airconditioned)
- Central Reception/Waiting Area
- Support facilities (secretarial/clerical, sanitary facilities).

Potential strategies for providing additional accommodation are

- a. UPWARD EXPANSION OF EXISTING with consequent alteration of the existing building.
- b. NEW BUILDING (2 floors) in an area designated to the east of the present building also in association with alteration of the existing building.

Analysis of the existing structure confirmed the feasibility of upwards expansion, although additional external supports and possibly some internal supports may be necessary, as well as strengthening of the roof slab.

The available area for upward expansion is in excess of the requirements for new accommodation. Nevertheless, if this approach is taken, the remaining space can be reserved for future expansion.

It was agreed that the upward expansion alternative should be used and that the total area be enclosed and roofed, preserving the adjacent land area for other future development.

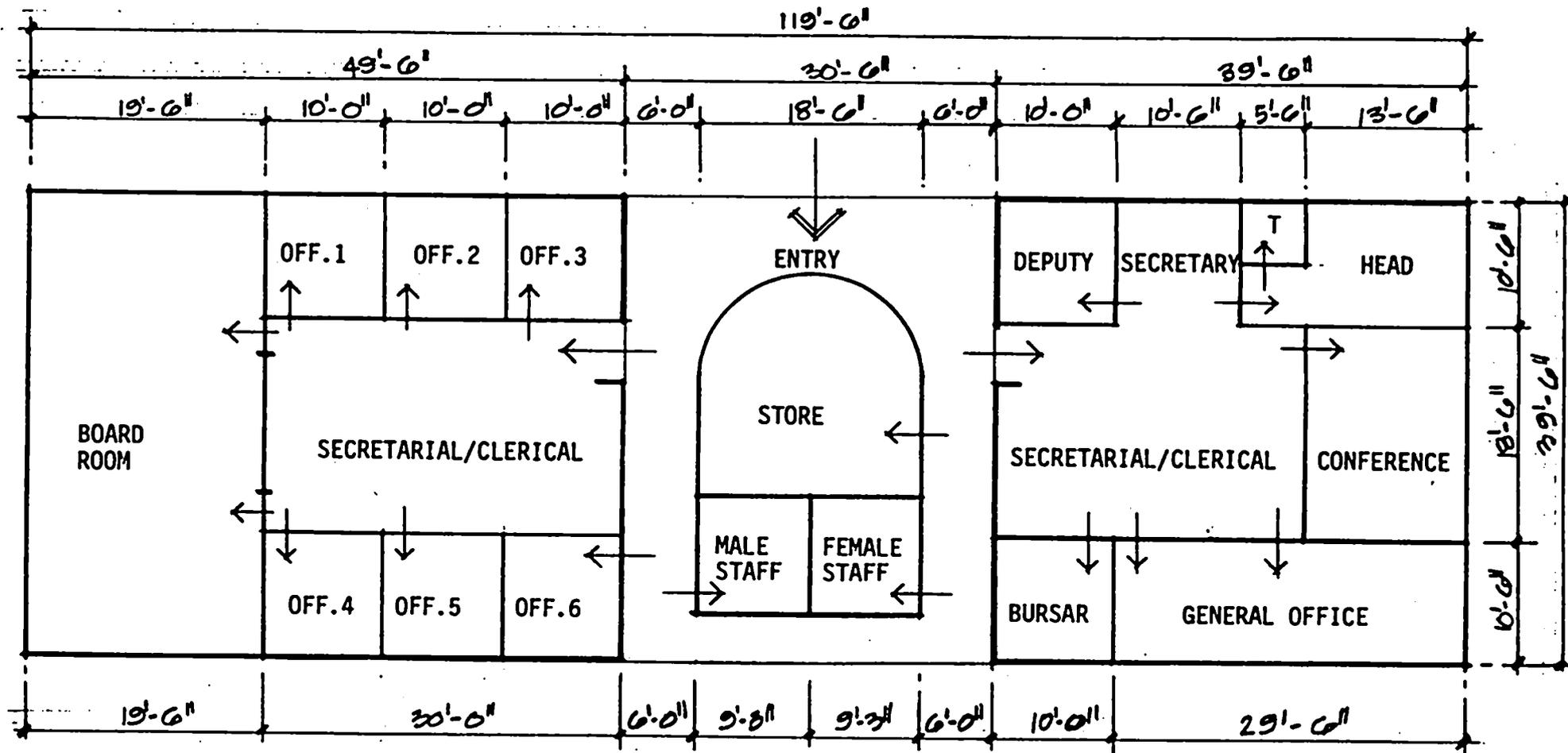
C SCHEDULE OF NEW BUILDING AREAS

1. LEVEL 1	Approximate Dimensions (ft.)	Approximate Area (ft. ²)
1. Reception Area	12' x 16'	192
2. Stairs	8' x 16'	128
		<hr style="width: 50px; margin: 0 auto;"/> 320 ft. ² <hr style="width: 50px; margin: 0 auto;"/>

2. LEVEL 2		Approximate Dimensions (ft)	Approximate Area (Ft. ²)
1.	Stairs	8' x 16'	128
2.	12 no. offices	12 x 8' x 12'	1,152
3.	Dean's Office	12' x 16'	192
4.	Dean's Toilet	4' x 8'	32
5.	Board Room	12' x 28'	336
6.	Board Room Toilet	4' x 8'	32
7.	Coffee Prep	8' x 8'	64
8.	Dean's Secretary	14' x 8'	112
9.	Waiting	6' x 8'	48
10.	Computer Room	12' x 16'	192
11.	Toilets	12' x 16'	192
12.	Secretary/Clerical	24' x 8'	192
13.	Circulation		656
		Sub Total	<u>3,328</u>
14.	Unallocated	40' x 39.5'	1,580
		TOTAL	<u><u>4,908 ft.²</u></u>

3. TOTAL AREAS

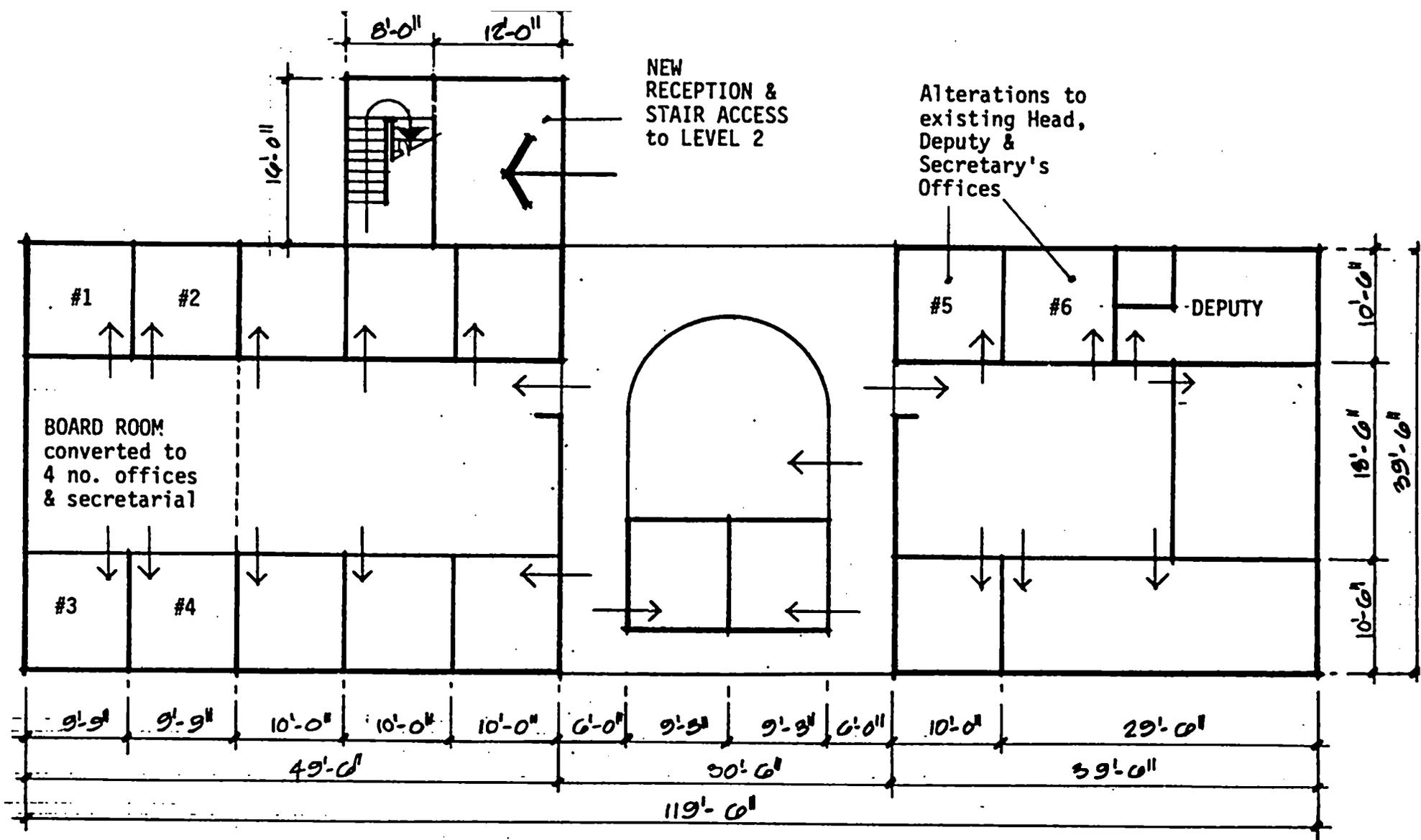
1.	LEVEL 1	320
2.	LEVEL 2	<u>4,908</u>
	TOTAL	<u><u>5,228 ft.²</u></u>



PLAN (LEVEL:1) - Area = 4,800 ft.²

EXISTING ACCOMMODATION
 ADMINISTRATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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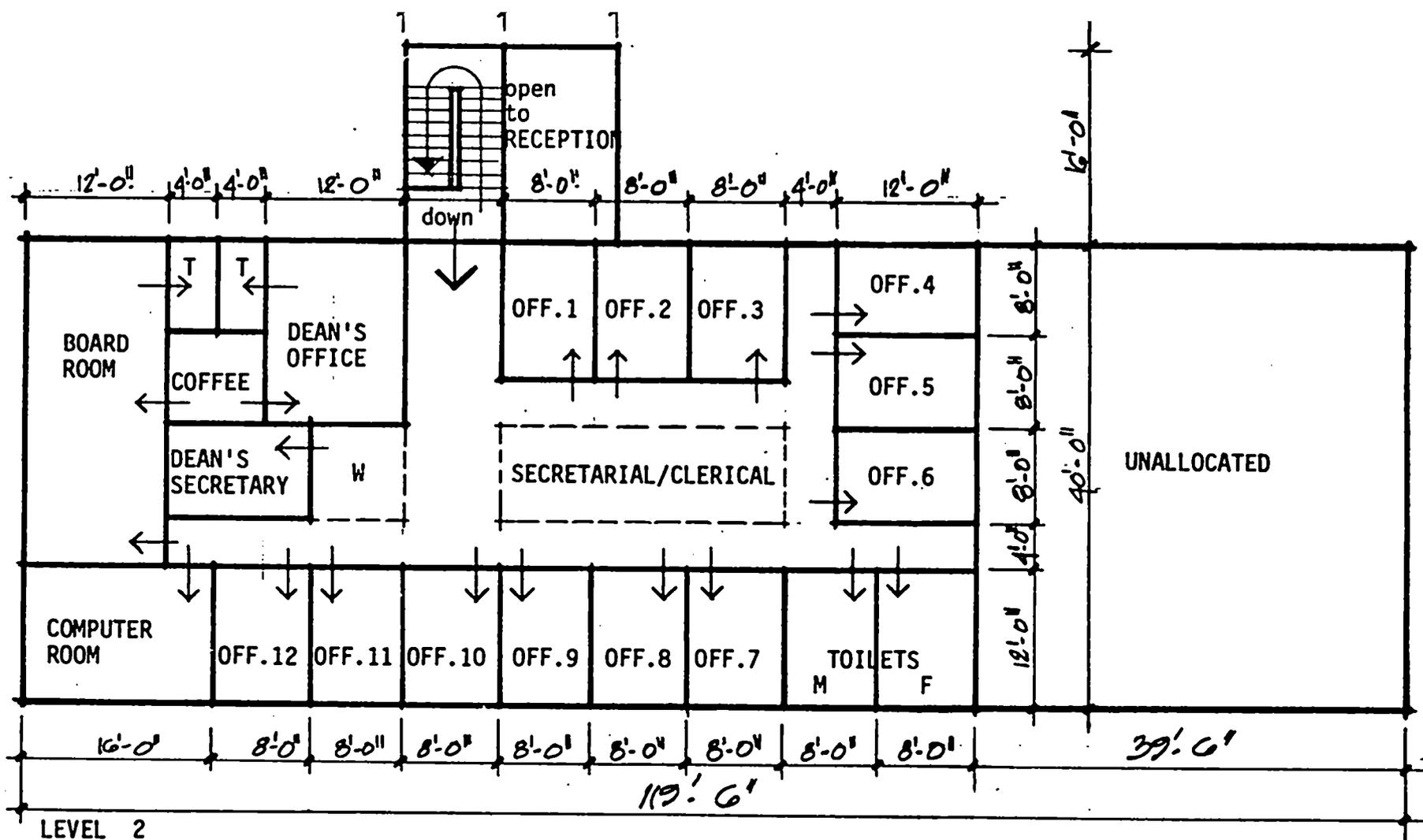
LEVEL 1: NEW BUILDING = 320 ft.²

EXISTING ACCOMMODATION - PROPOSED ALTERATIONS

ADMINISTRATION

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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LEVEL 2

AREA = 4,908 ft.²

NEW ACCOMMODATION: ALTERNATIVE 2 - LEVEL 2 ADDITION TO EXISTING BUILDING
 ADMINISTRATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
MULTI-PURPOSE FACILITY

A. EXISTING ACCOMMODATION

A single floor building containing a multi-purpose hall for 600 students, kitchen/cafeteria facilities, sanitary facilities, and storage areas.

One of the storage areas (originally scheduled for a laundry) is being used for general campus storage.

There are complaints that the servery has insufficient length, and that there is inadequate preparation area and kitchen equipment. The complaints regarding inadequate preparation are due to some extent to inefficient use of space.

B. NEW ACCOMMODATION

It was generally agreed that the hall was large enough for the projected additional intake of students, but that the food preparation and serving areas would need to be extended, re-organised and fully equipped in order to operate efficiently.

The accompanying drawings illustrate the existing layout of these areas and a suggested method of achieving the improvement objectives within the framework of the existing structure.

The suggested improvements include -

1. Creation of a completely new dishwashing area in part of the hall (approximately 18' x 8').
2. Expansion of the serving counter by 18' approximately.
3. Conversion of the campus general store to food storage only.
4. Location of the Cold Room in the position designed.
5. Conversion of the Kitchen General Store to an expanded preparation area.

It is felt that these improvements in addition to the acquisition of new kitchen equipment will result in an efficient and economic operation.

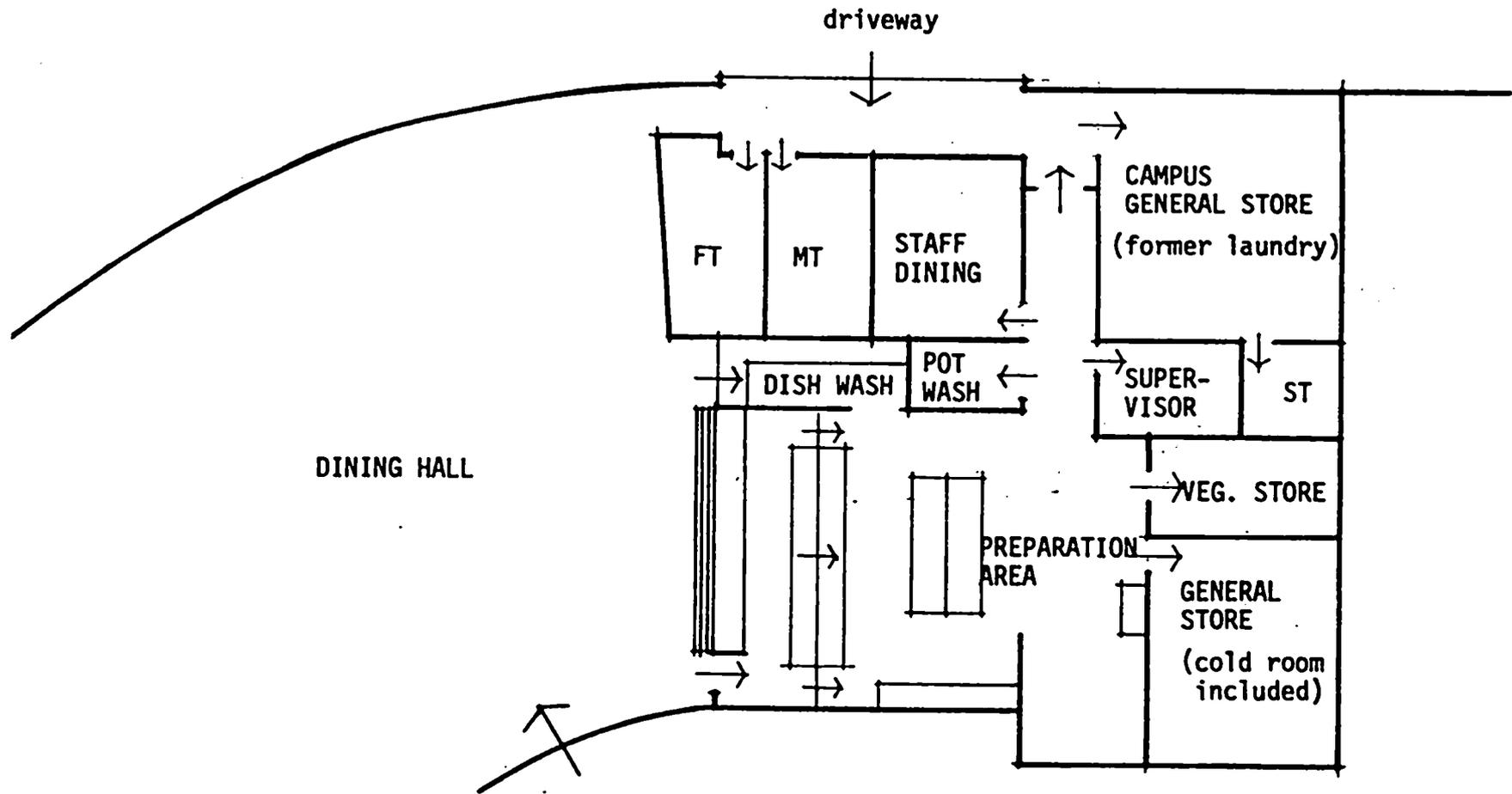
General storage for the campus will have to be provided elsewhere.

C. WELFARE FACILITIES

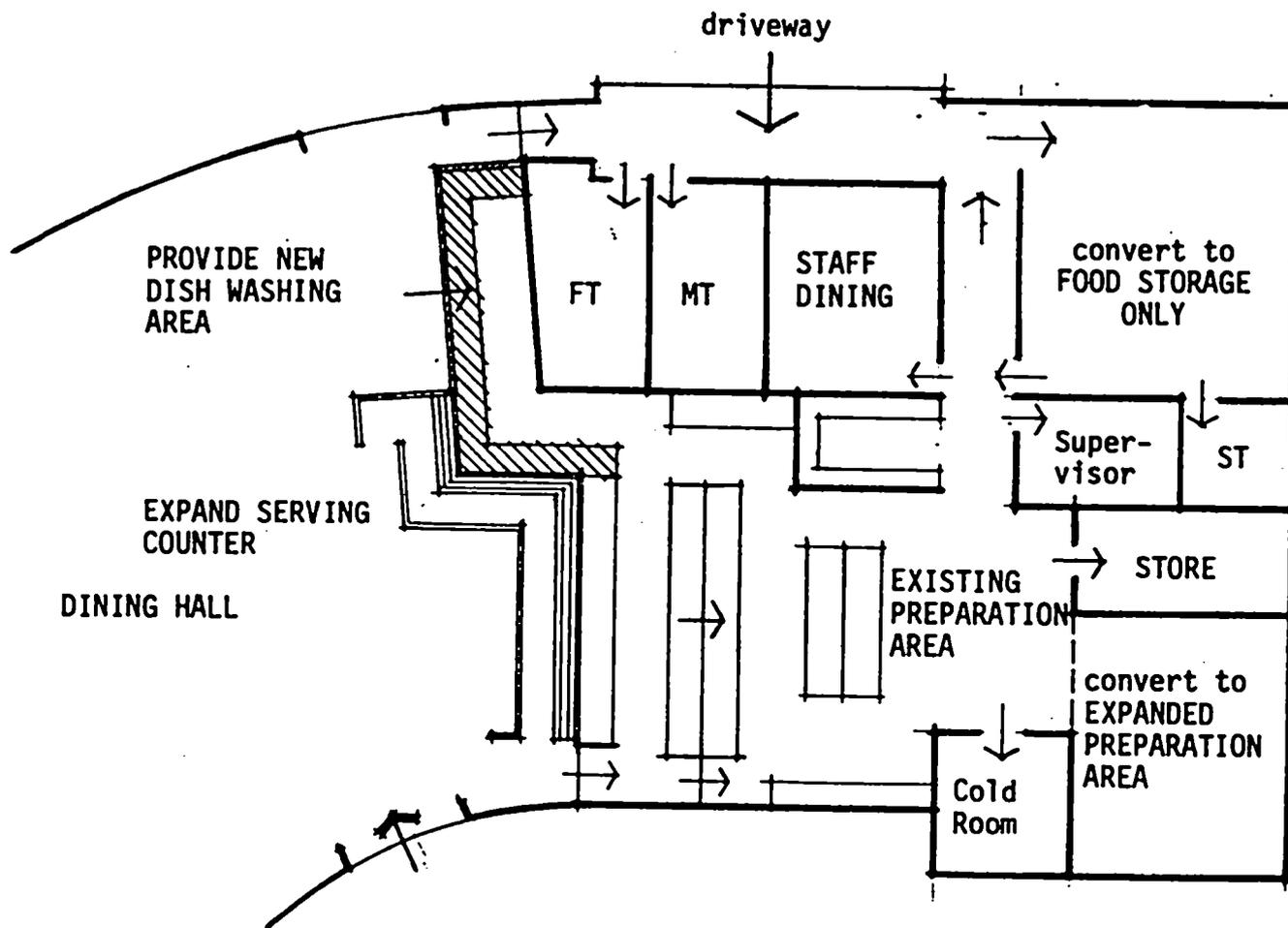
There is a shortage of welfare facilities for male ancillary staff on the Central Campus area.

It is proposed to provide this facility by a small extension on a paved area by the existing stand-by generator room.

SCHEDULE OF AREAS	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. Locker Room	10' x 18'	180
2. Showers, w.sc., etc.	10' x 18'	180
3. Lounge Area	10' x 20'	200
	TOTAL	<u>560 ft.²</u>

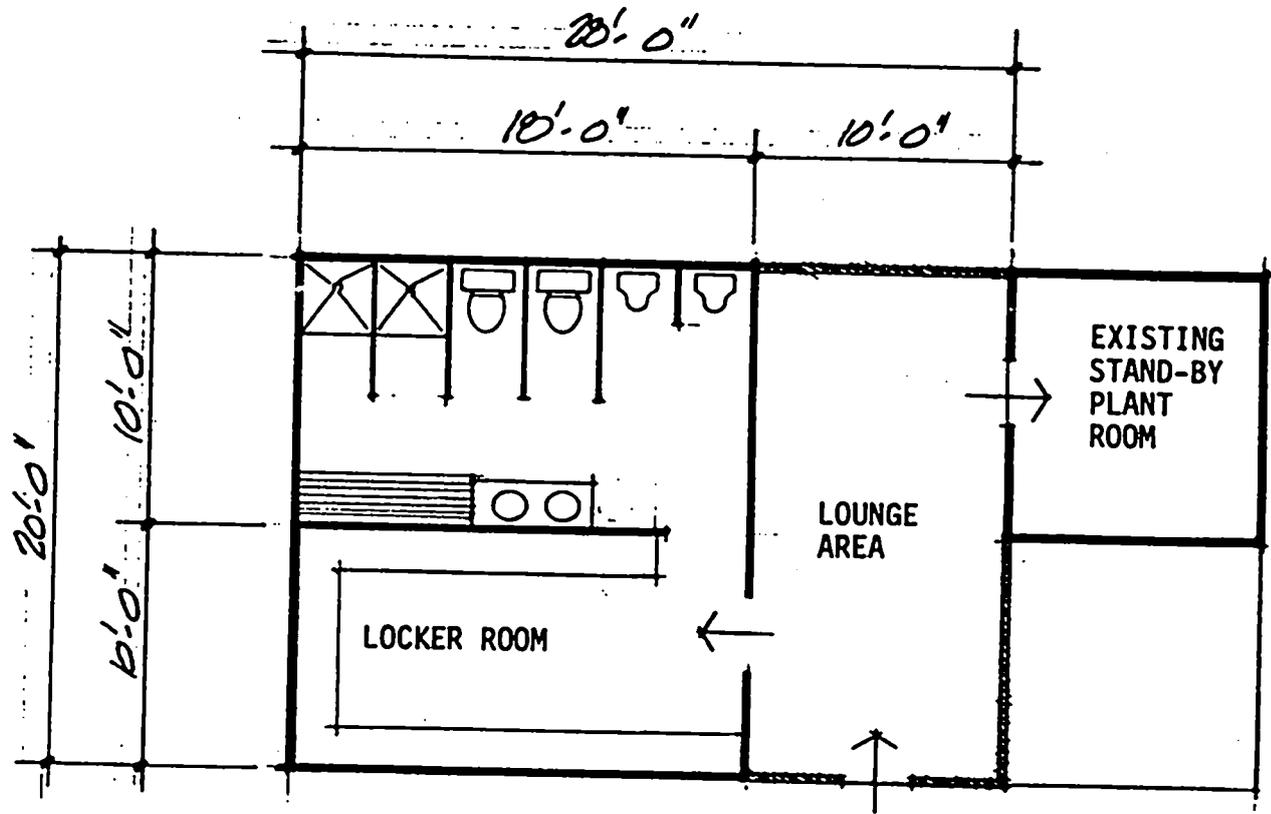


EXISTING KITCHENS
 MULTI-PURPOSE BUILDING
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



PROPOSED ALTERATIONS TO KITCHEN
 MULTI-PURPOSE BUILDING
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

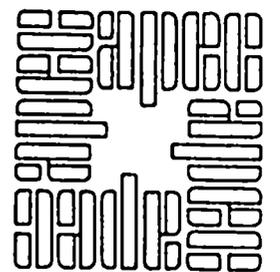
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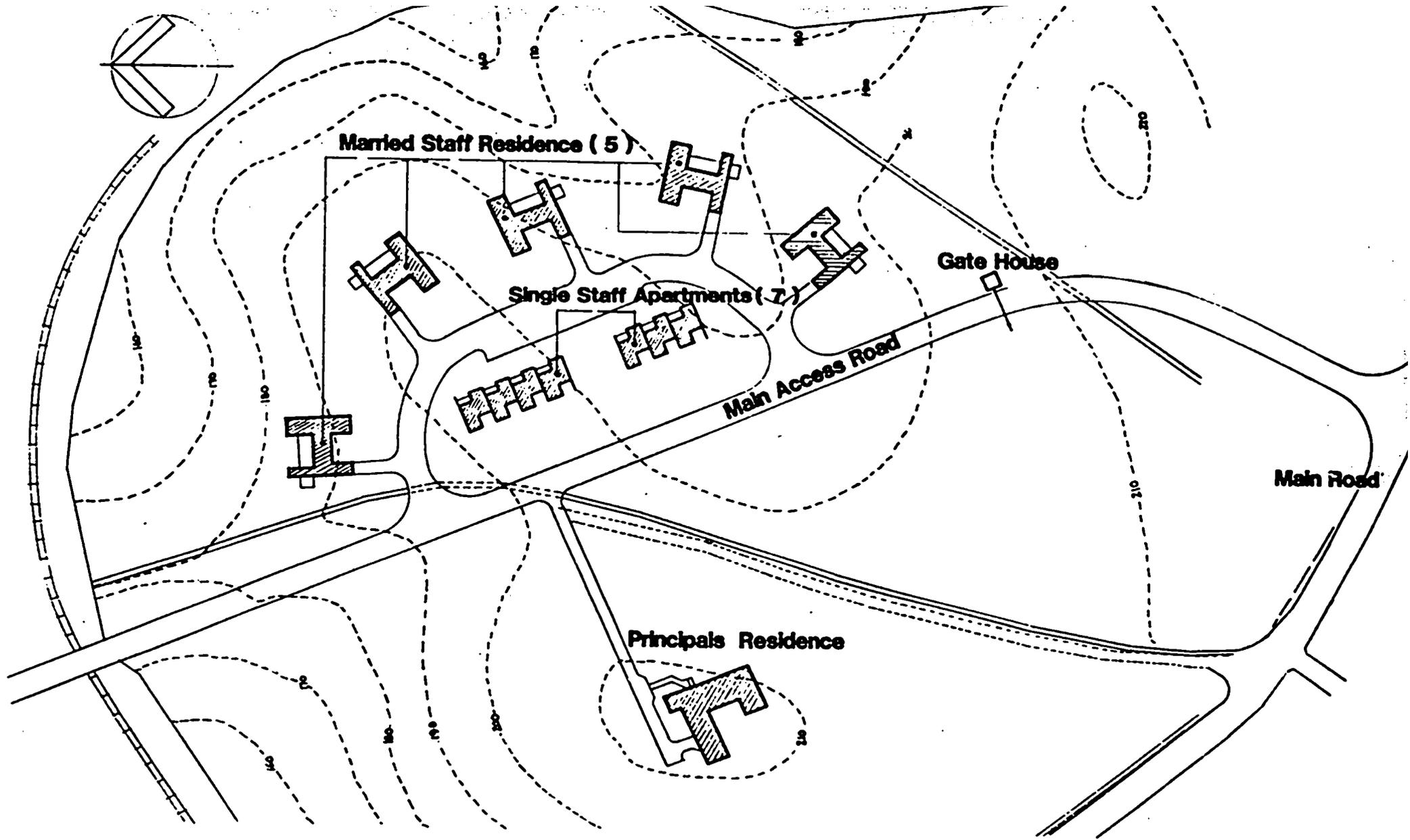


AREA = 560 ft.² approx.

PROPOSED WELFARE FACILITY EXTENSION (DIAGRAMMATIC)
 STAND-BY SHED: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

3. STAFF RESIDENCES





EXISTING RESIDENTIAL COMPLEX

**USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)**

APEC

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

STAFF RESIDENCES

A. EXISTING ACCOMMODATION

- 1 no. 3Br Principal's Residence (2,300 ft² gross)
- 5 no. 3BR Married Staff Residences (1,650 ft.² each)
- 1 Block containing 4 no. 1BR apartment (350 ft.² each)
- 1 Block containing 3 no. 1BR apartments (350 ft.² each)

From the accompanying site plan, it can be seen that the residential complex is located near to the main entrance to the campus on the northern side of the main road. The Principal's Residence occupies a large open well maintained green area on the west of the main access road, whilst the other residences are in a complex on the east of the access road.

The major complaints voiced about these residences were that the 1Br apartments were too cramped and inflexible in use whilst the 3BR residences were perhaps overgenerous in the amount of land allocated to each.

B. NEW ACCOMMODATION

The additional accommodation requirements requested consequent on the expansion of the student and staff complement were

- 15 no. 3BR Cottages or Garden Houses for Married Staff.
- 15 no. 2BR Apartments for Single Staff (each bedroom to have a separate access).

The new proposals are shown on the attached drawings and these illustrate 3 types of 3BR Garden House for married staff.

TYPE 'A' - a two floor structure intended for a flat site with one of the bedrooms at ground level arranged to allow its flexible use as a study or family room. Helper's facilities are included should these be required.

TOTAL AREA = 1,880 ft.²

TYPE 'B' - a three floor structure intended for a sloping site with one bedroom arranged at the lowest level for the same reasons as in type 'A'.

TOTAL AREA = 2,065 ft.²

TYPE 'C' - a two floor structure intended for a flat site but without the flexibility of one bedroom as in Types 'A' and 'B'. The layout is more economical, but the overall width is more than the other examples.

TOTAL AREA = 1,772 ft.²

The single staff accommodation proposed is a 2BR Apartment arranged so that the two bedrooms with individual bathrooms have a completely separate access without passing through the shared living/dining/kitchen/verandah areas.

The concept allows for the building to be in separate blocks of 2 or 3 floors, and each floor has a common laundry/storage area.

TOTAL AREA PER FLOOR = 1,050 ft.²

Two potential sites were suggested - one on an elevated area adjacent to the present complex and the other on relatively flat ground near to the beach house overlooking the sea. It is clear that the site adjacent to the existing complex was inadequate in size, was too near to the main road (and outside of the campus security) and would result in unnecessary cost penalties because of the nature of the terrain.

The site selected was therefore the flat area near the beach house and the accompanying sketches show the proposed layout of the complex. Full advantage is taken of the excellent views and prevailing winds by the northerly orientation of the majority of the buildings. The arrangement also allows for phased construction should the whole complex not be required at one time.

In the proposal illustrated, Garden House Type 'C' is used and the 2BR apartments are arranged in 5 no. 3-floor blocks dispersed around the site.

In the review of the draft final report, it was decided that only 10 no. 3BR Garden Houses and 10 no. Single Staff Apartments should be included in this project. It was further suggested and agreed that some of the single staff accommodation could be economically provided by conversion of the existing Great House.

C. GREAT HOUSE CONVERSION

The existing walls of the single floor Great House are structurally sound, but a new roof, door, windows and electrical installation would be necessary to make it habitable. There is enough area to provide 5 no. bedrooms with individual bathrooms and other necessary living accommodation.

Minimal internal alterations to the very thick walls would be required and the commanding position the Great House occupies on the property would make it a fitting location for Staff Residences. In addition, some rooms could be used as guest residences if necessary.

The attached drawing shows the proposed alterations.

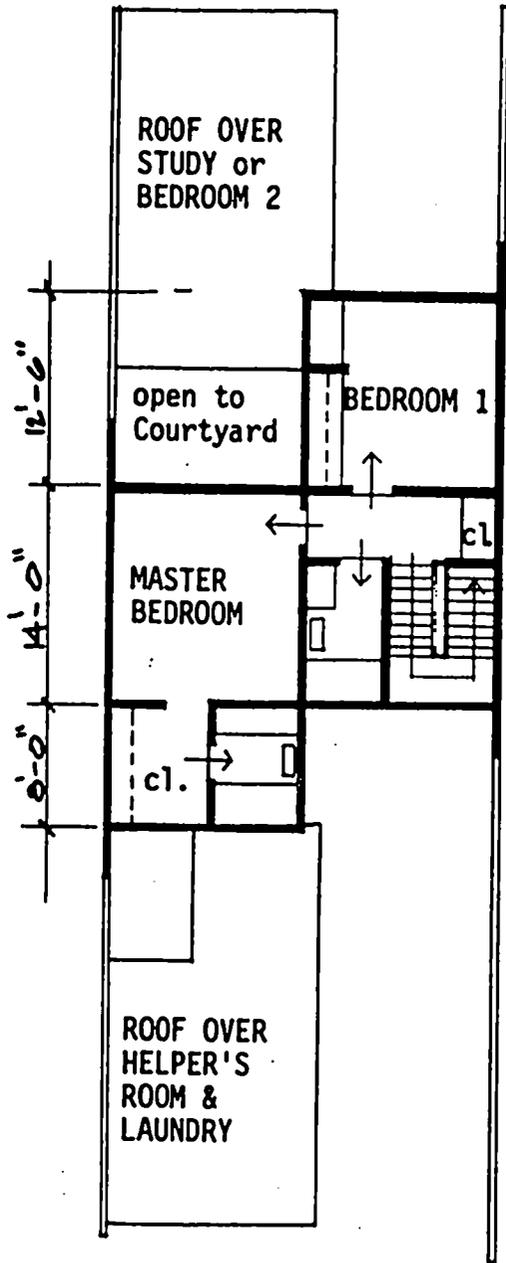
D. SCHEDULE OF AREAS (NEW COMPLEX)

1.	10 no. 3BR GARDEN HOUSES TYPE 'C'	
	@ 1,772 ft. ² =	<u>17,720 ft.²</u>
2.	2 no. 2BR/3-FLOOR APARTMENT BLOCKS	
	@ 3,150 (1,050 x 3) ft. ² =	<u>6,300 ft.²</u>
3.	2 no. 2BR/2-FLOOR APARTMENT BLOCK	
	@ 2,100 (1,050 x 2) ft. ² =	<u>2,100 ft.²</u>
	TOTAL BUILDING AREA =	<u>26,120 ft.²</u>

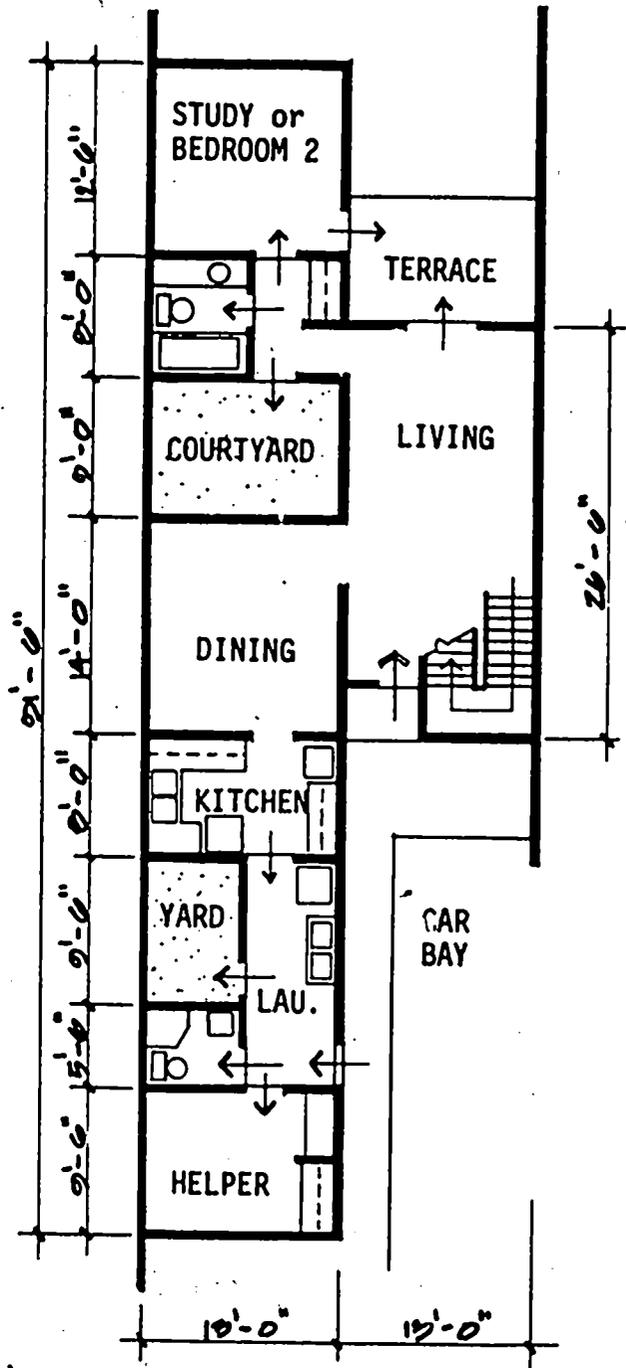
E. SCHEDULE OF AREAS (GREAT HOUSE CONVERSION)

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. 3 no. Bedrooms/Bathrooms	3 x 12' x 17.5'	630
2. 2 no. Bedrooms/Bathrooms	2 x 13.5' x 17.5'	472.5
3. Quiet Lounge	10' x 17.5'	175
4. Living/Dining/Kitchen	24' x 17.5'	420
5. Verandah	11' x 52'	572
6. Corridor	7' x 56'	392
7. Wall Thicknesses	varies	822.5
	TOTAL	<u>3,484 ft.²</u>

LEVEL 2 (630 ft.²)



LEVEL 1 (1,250 ft.²)

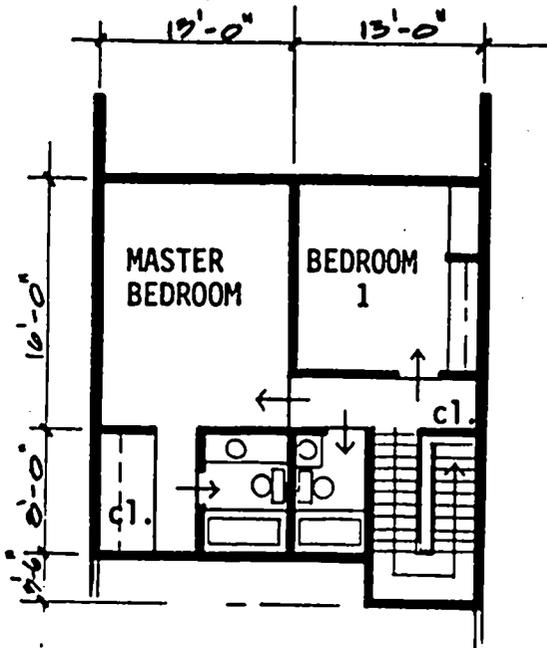


Area = 1,880 ft.² (including terraces)

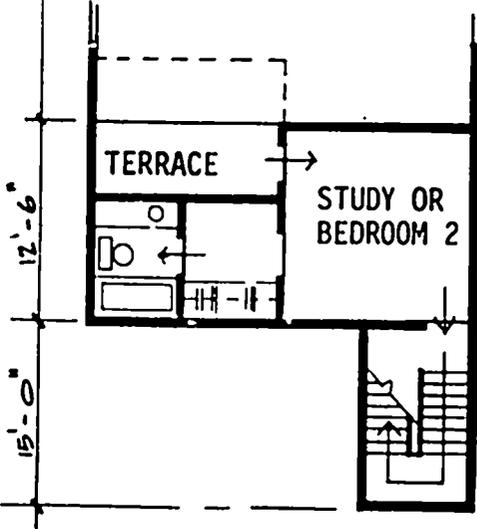
GARDEN HOUSE 'A'

STAFF RESIDENCES: NEW ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

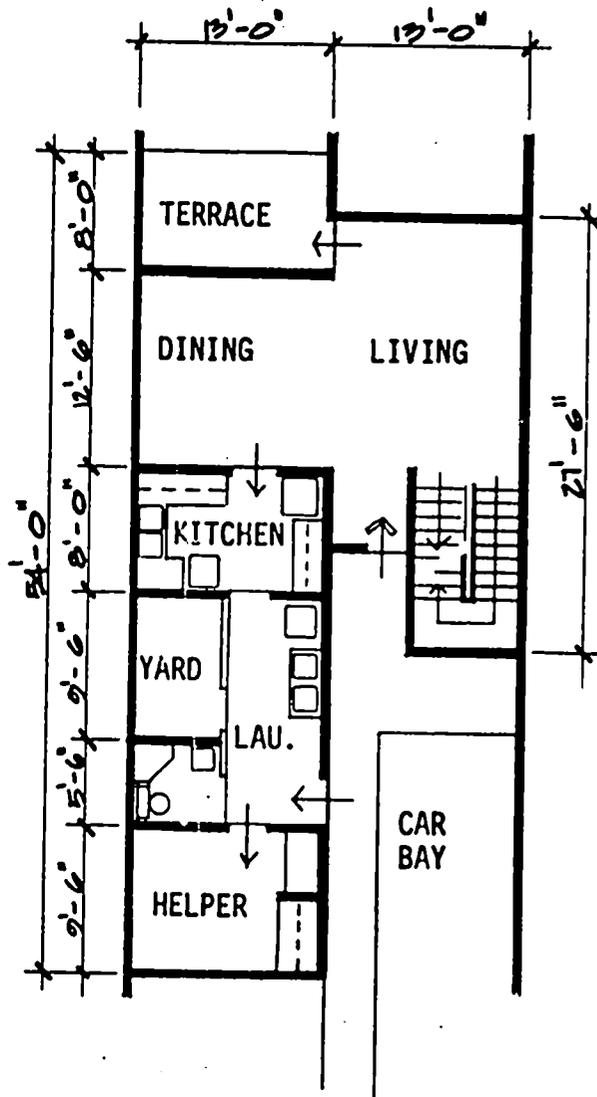
LEVEL 3 (650 ft.²)



LEVEL 1 (440 ft.²)



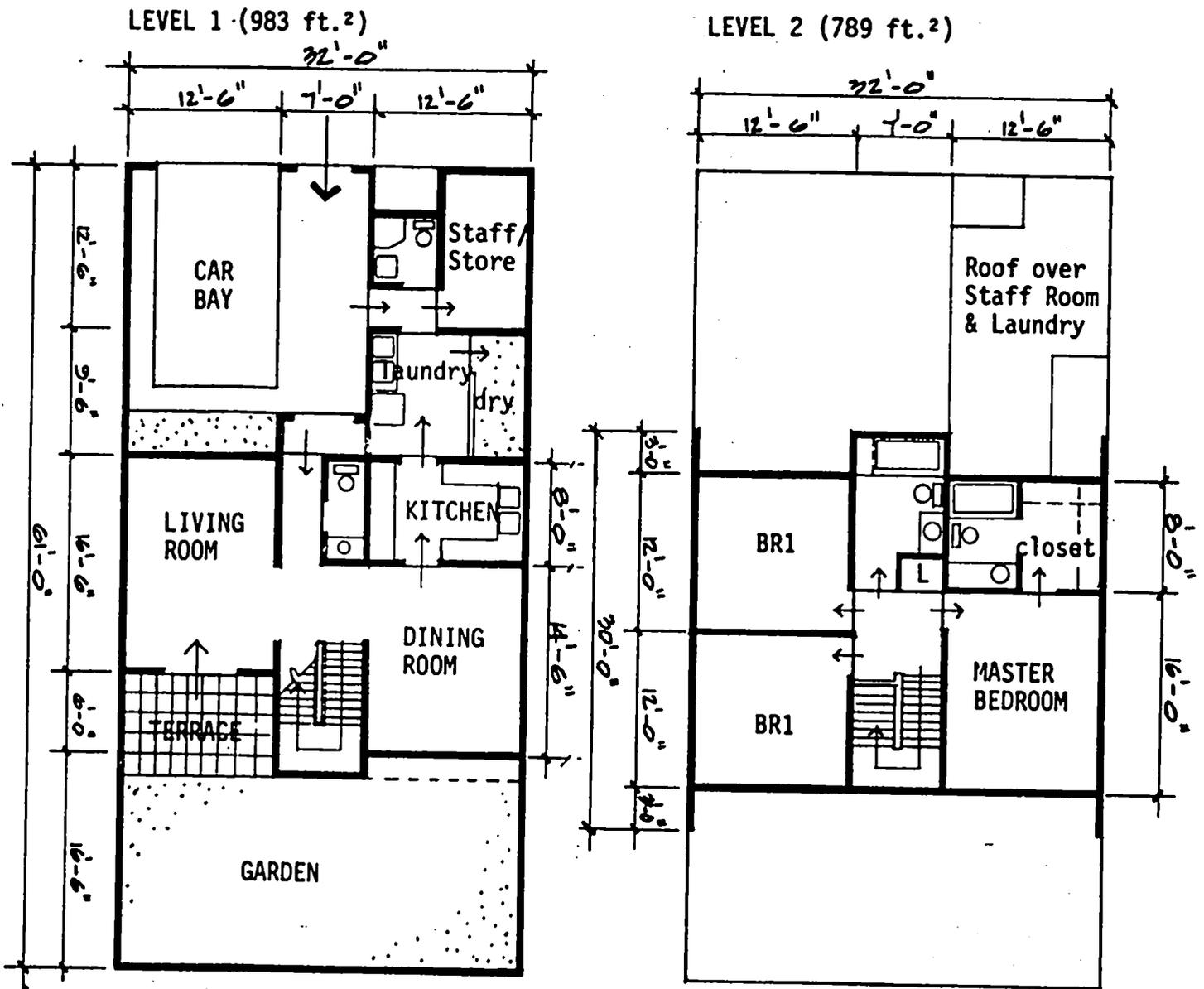
LEVEL 2 (975 ft.²)



Area = 2,065 ft.² (including terraces)

GARDEN HOUSE 'B'

STAFF RESIDENCES: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

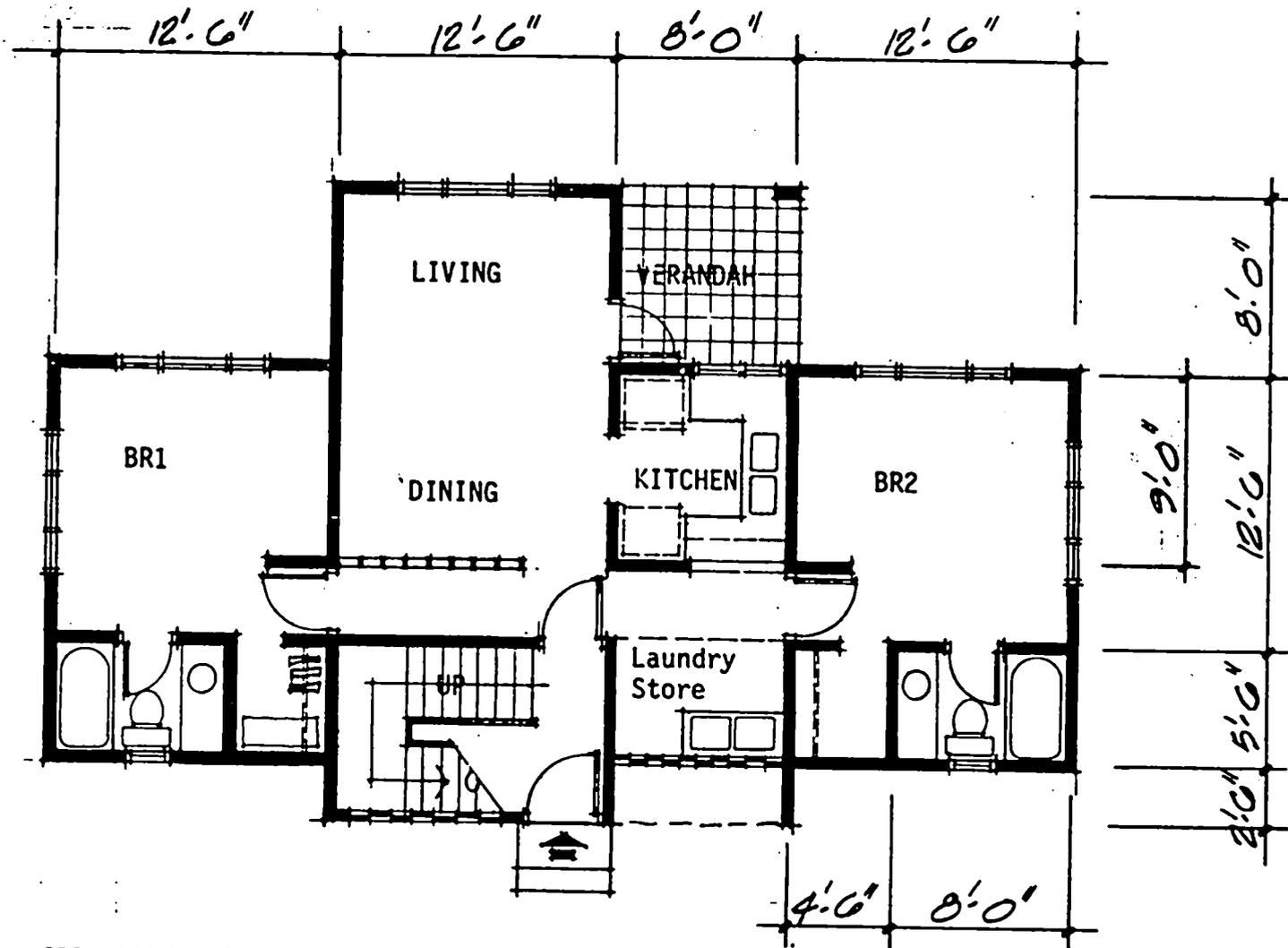


AREA = 1,772 ft.²

GARDEN HOUSE #'C'

STAFF RESIDENCES

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

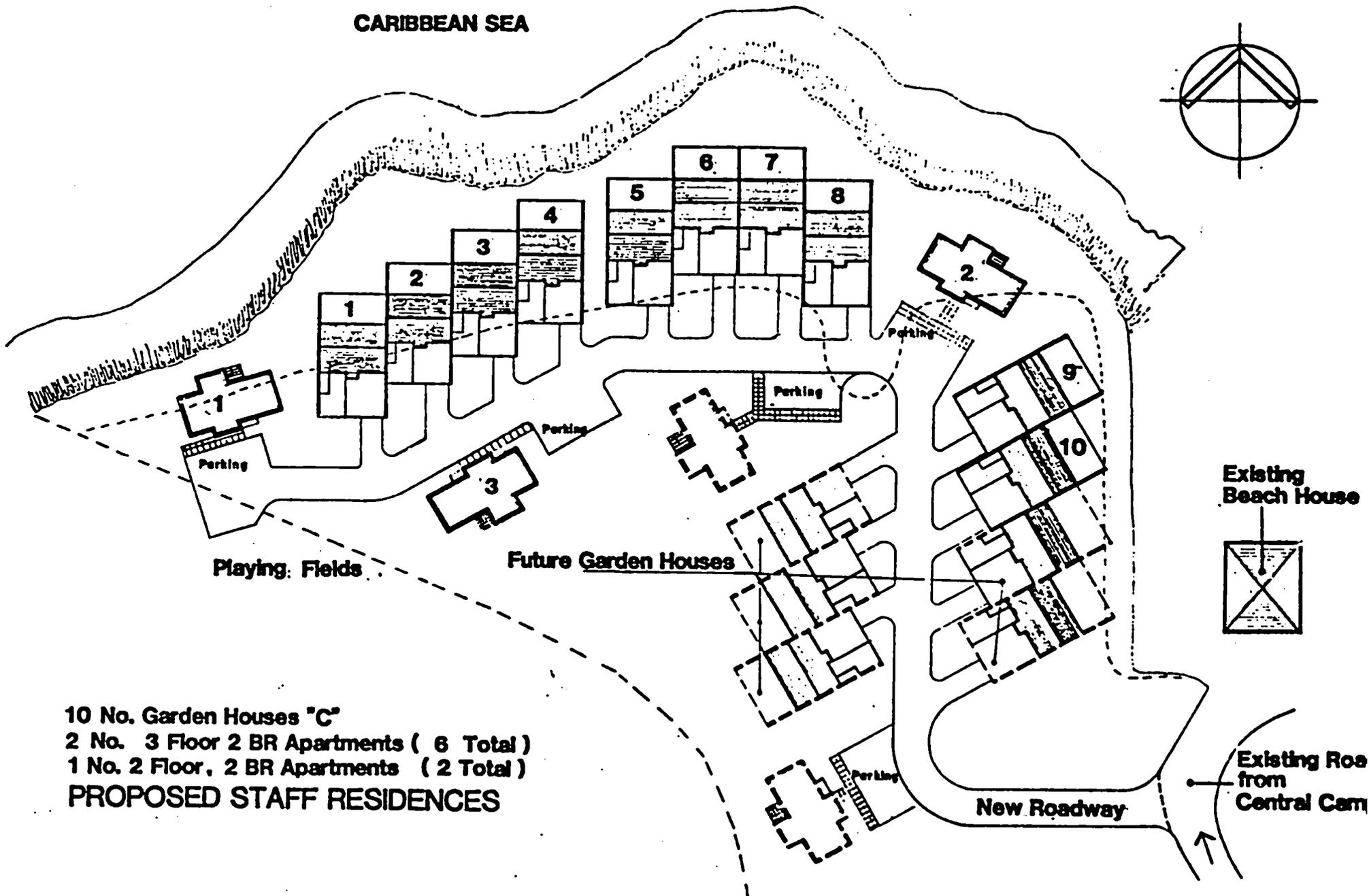
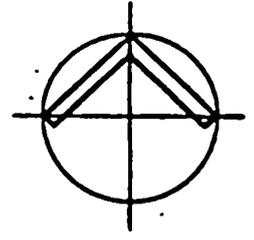


2BR UNITS - 2 or 3 floors

Area = 1,050 ft.² approximate

NEW STAFF RESIDENCES: 2BR UNITS
 USAID/GOJ AGRICULTURAL PROJECT

CARIBBEAN SEA

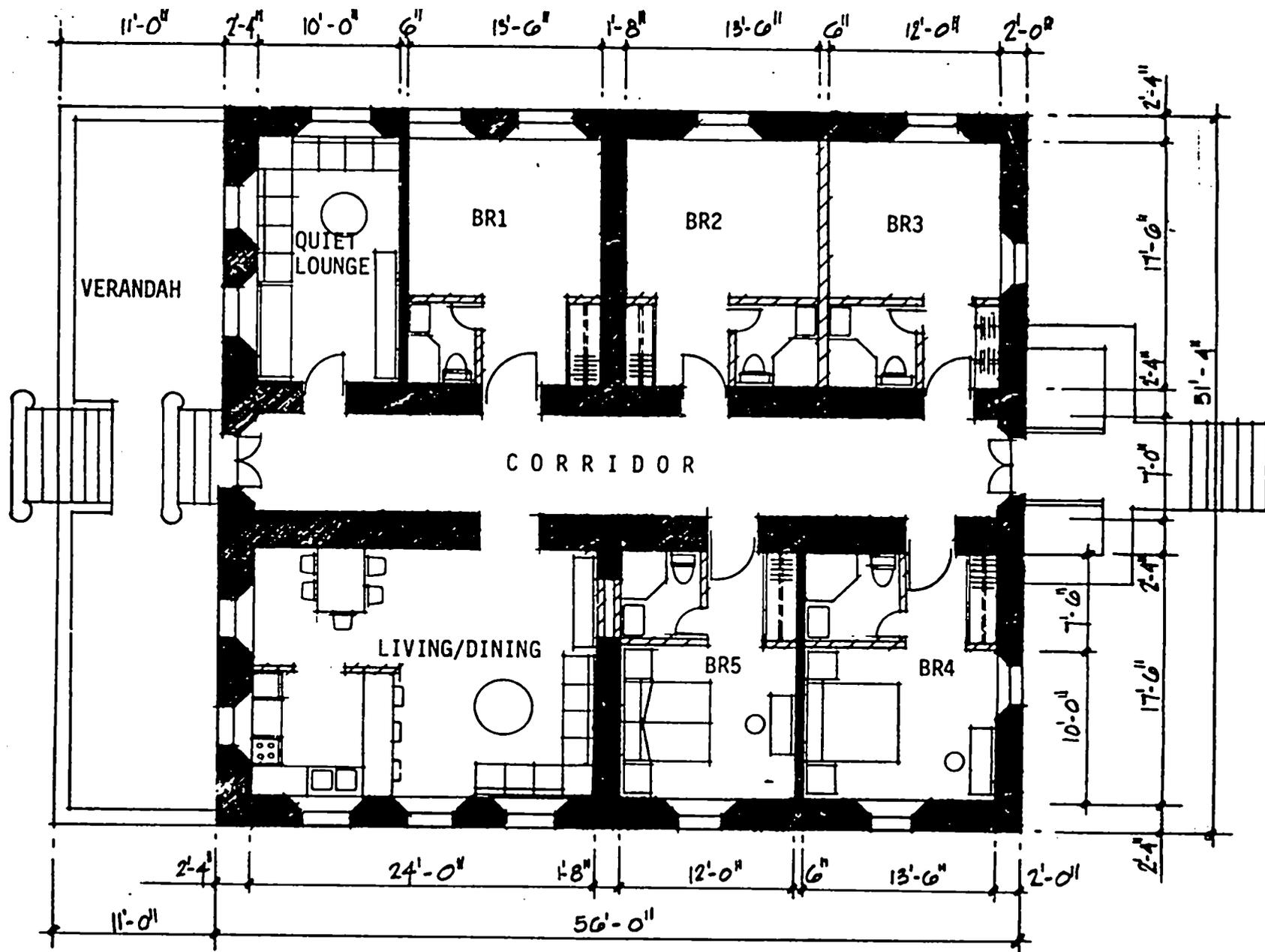


10 No. Garden Houses "C"
 2 No. 3 Floor 2 BR Apartments (6 Total)
 1 No. 2 Floor, 2 BR Apartments (2 Total)
PROPOSED STAFF RESIDENCES

ML

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- COA (PASSLEY GARDENS)

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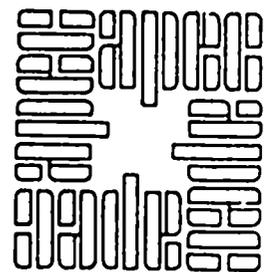


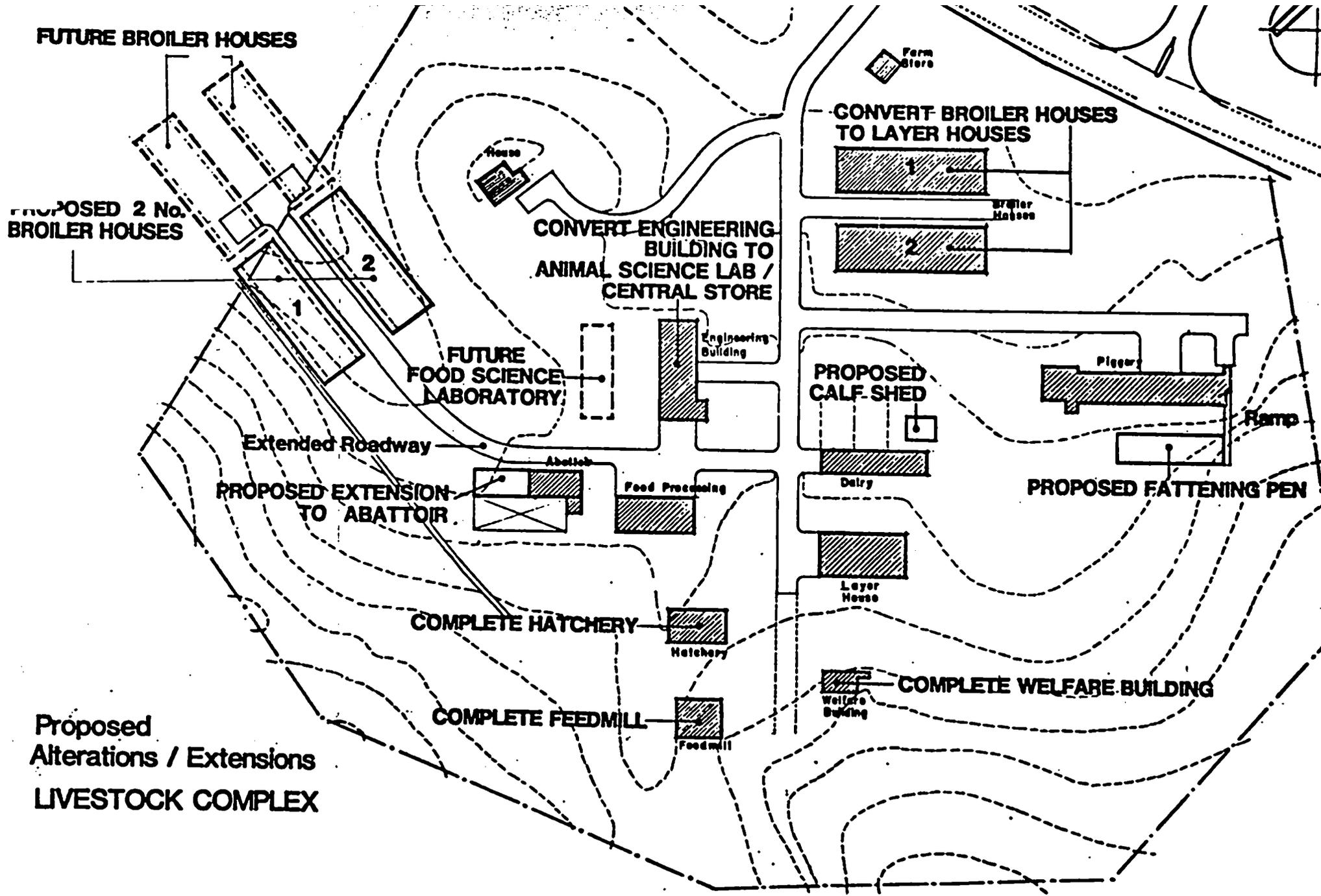
PLAN (3,500 ft.² approx.)

CONVERSION OF GREAT HOUSE TO GUEST FACILITY
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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4. PLANT PROPAGATION COMPLEX





Proposed
Alterations / Extensions
LIVESTOCK COMPLEX

USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)

APEC

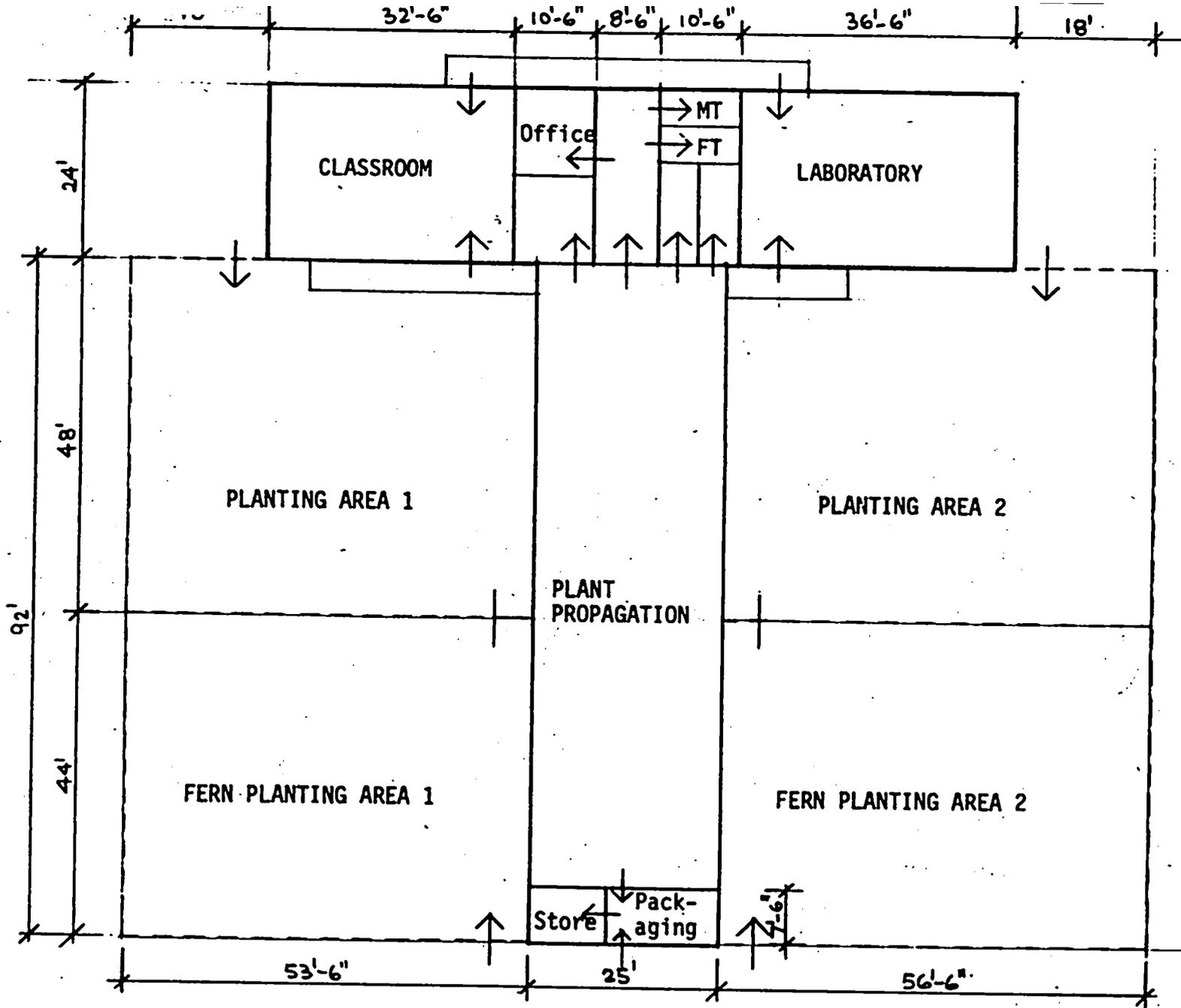
1995

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
 PLANT PROPAGATION COMPLEX

A. EXISTING FACILITIES

This facility is located on a site near to the Great House and consists of a building complex with adjacent plant propagation areas. These are illustrated and the complex houses the following:

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. BUILDING AREAS		
1 no. Classroom	32.5' x 24'	780
1 Lecturer's Office	10.5' x 12'	126
1 Storeroom	10.5' x 12'	126
Toilet Facilities	10.5' x 10.5'	110.25
1 Fertilizer Store	5.25' x 13.5'	70.875
1 Cool Room	5.25' x 13.5'	70.875
1 Laboratory	36.5' x 24'	876
Plant Propagation Area	25' x 84.5	2,112.5
1 Store	7.5' x 10.5	78.75
1 Packaging Room	7.5' x 14.5	108.75
Circulation	8.5' x 24'	204
	TOTAL BUILDING AREA	<u>4,664 sq.ft.</u>
2. PLANTING AREAS		
No. 1	48' x 53.5'	2,568
No. 2	48' x 56.5'	2,712
No. 3	44' x 53.5'	2,354
No. 4	44' x 56.5'	2,486
	TOTAL PLANTING AREA	<u>10,120 sq.ft.</u>



EXISTING ACCOMMODATION: 4,700 ft.² gross
 PLANT PROPAGATION COMPLEX
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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B. NEW ACCOMMODATION

The additional requirements requested by the College were

- 1 Laboratory (25 - 30 students) - say 900 sq.ft.
- 1 Green House - say 4,500 sq.ft.
- 1 Finishing House - say 5,000 sq.ft.
- 6 - 7 Lecturers' Offices - 120 sq.ft. each
- Storeroom
- Shade House(s) - say .5 - 1 acre

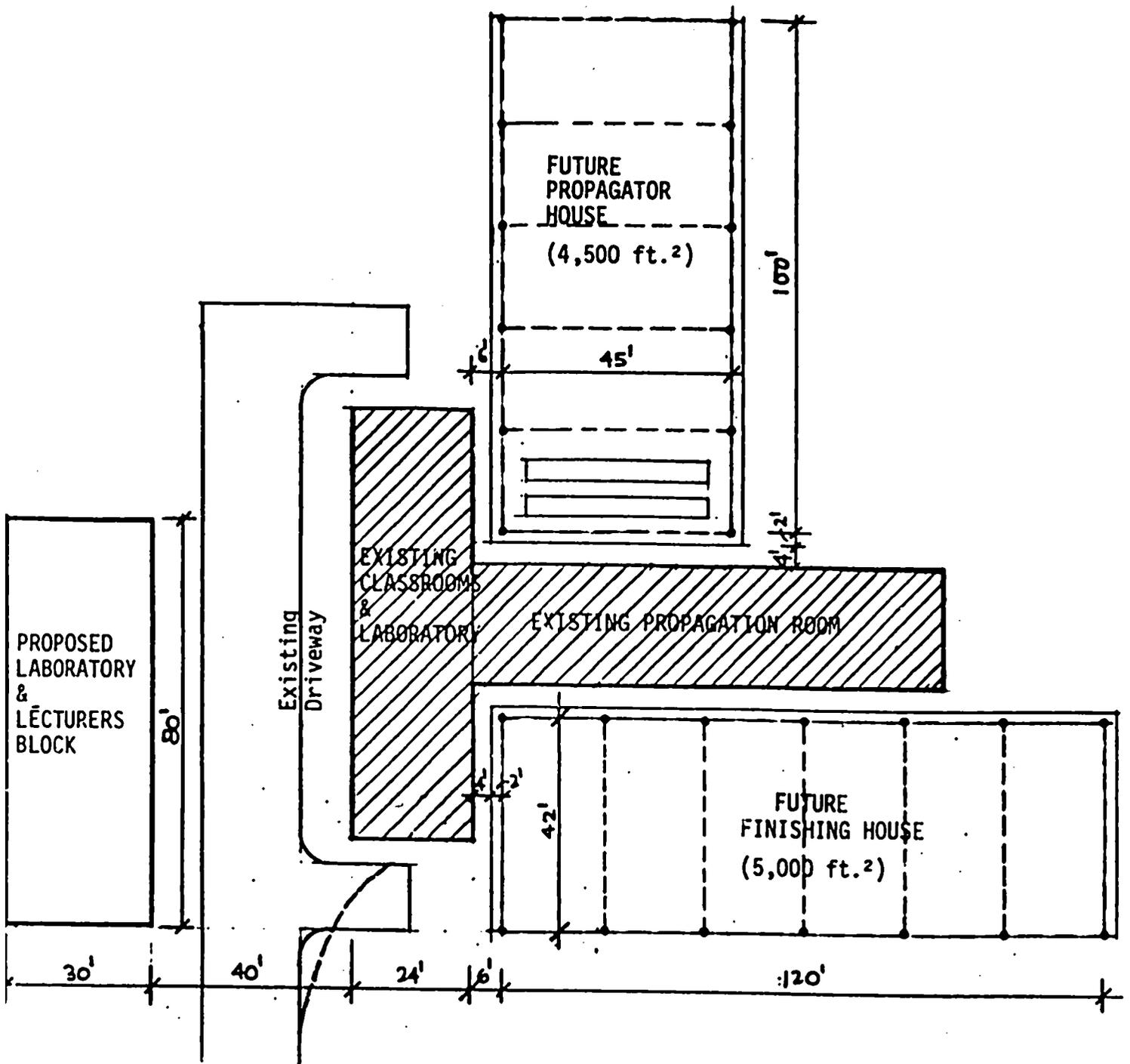
The areas immediately adjacent to the existing complex are just sufficient to accommodate the proposed additional requirements with the exception of the shade house(s). Nevertheless, some amount of site works will be necessary to the north-west of the complex in order to create a large enough area of level land (perhaps at a higher elevation) for the Finishing and Green Houses in particular.

The new accommodation proposals illustrated show two new buildings -

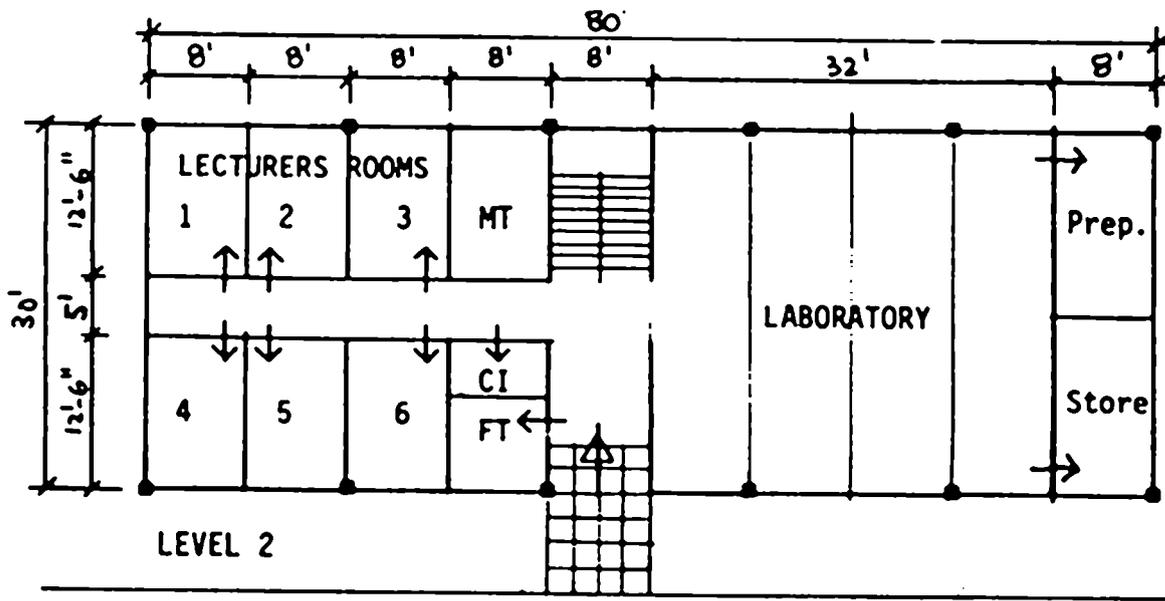
1. LABORATORY/LECTURER'S BLOCK - located to the SW of the complex. The drawings show the existing access driveway separating the new from the existing.
2. PROPAGATOR HOUSE - located to the NE of the complex on level land to be created by the site works indicated above.
3. FINISHING HOUSE - locate to the SE of the existing complex.

No visual representation has been made of the shade house(s), but it is assumed that land in the near vicinity can be found to provide for these, perhaps by terracing.

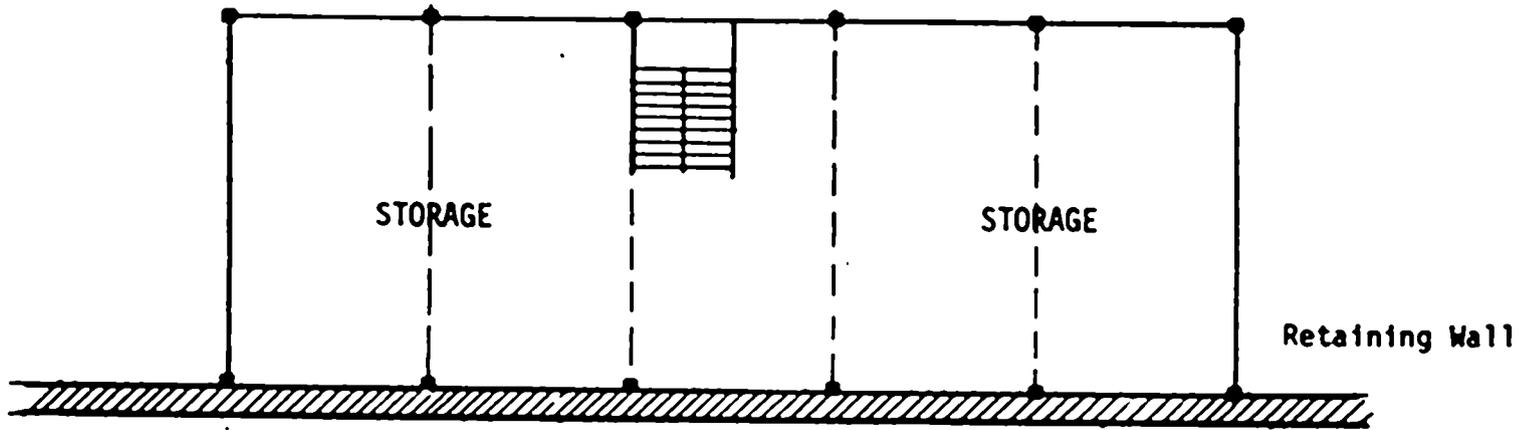
It was agreed that only the laboratory/lecturers' block and some terracing should be provided in this project.



PROPOSED EXTENSIONS
 PLANT PROPAGATION AREA
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



ROADWAY



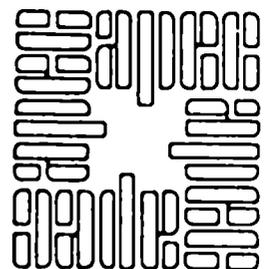
LABORATORY/LECTURER ROOM BLOCK
 PLANT PROPAGATION AREA: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

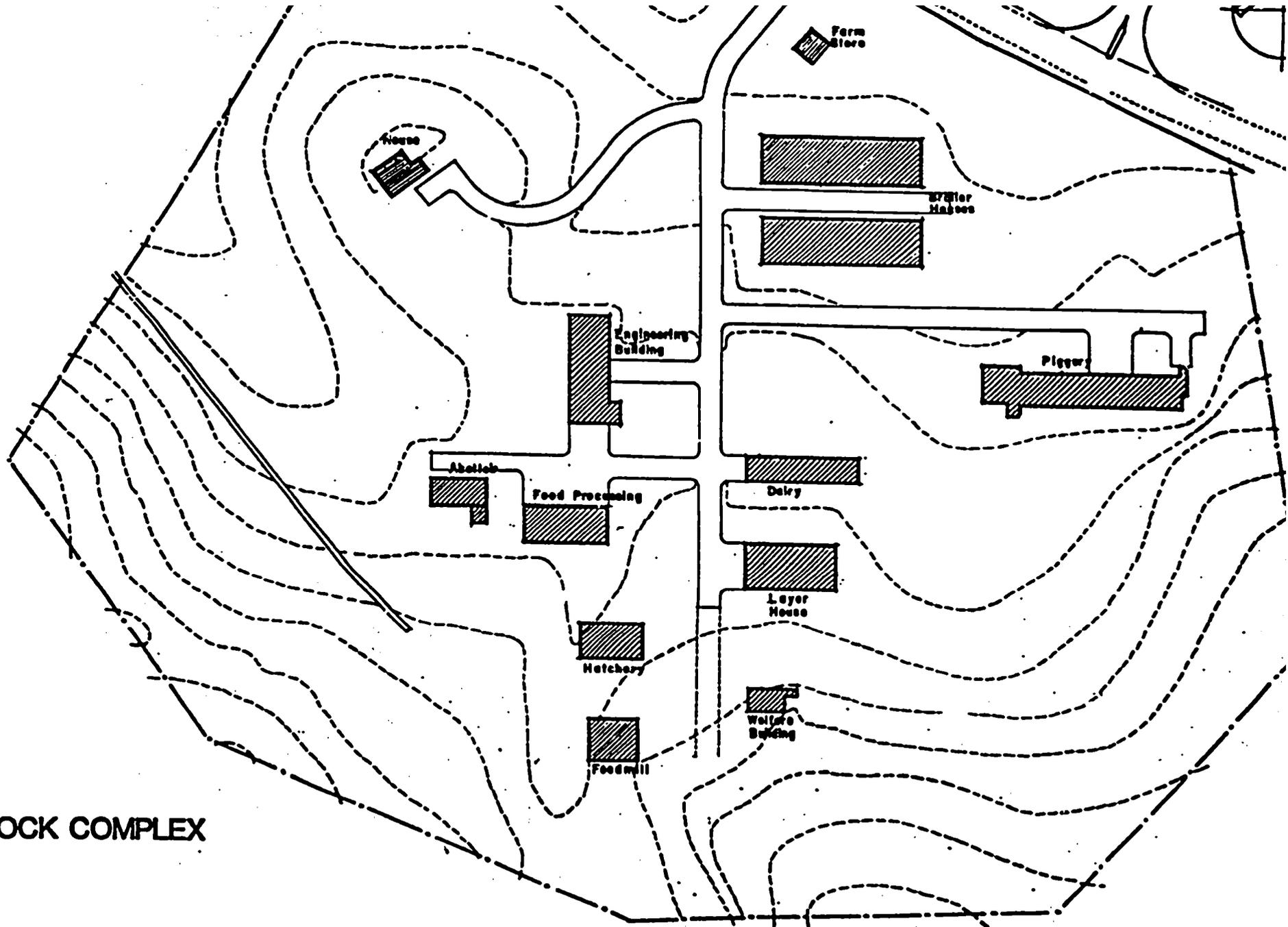
1387

C. SCHEDULE OF AREAS

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. LABORATORY/LECTURER'S BLOCK		
.1 Laboratory	30' x 32'	960
.2 Preparation Room	8' x 15'	120
.3 Store Room	8' x 15'	120
.4 6 no. Lecturer's Rooms	6 x 8' x 12.5'	600
.5 Toilets/Cleaner's Closet	2 x 8' x 12.5'	200
.6 Circulation	varies	400
.7 Undercroft Storage	30' x 80'	2,400
	TOTAL	<u>4,800 ft.²</u>

5. LIVESTOCK COMPLEX





LIVESTOCK COMPLEX

USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)

APEC

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
LIVESTOCK COMPLEX/POULTRY

A. EXISTING ACCOMMODATION

The poultry facilities are located in the Livestock Complex on the southern portion of the property and consist of 3 open shed structures with associated storage areas.

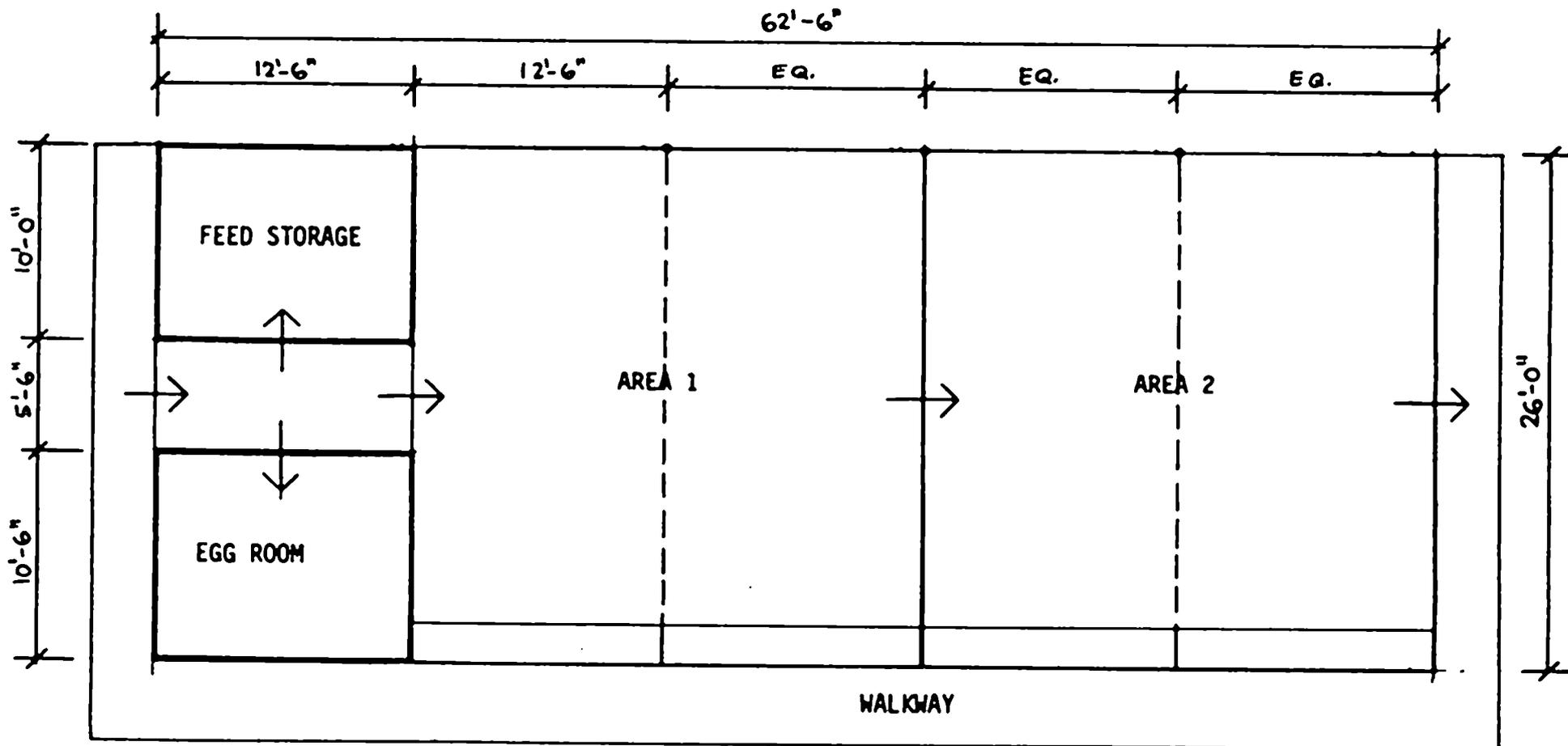
	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. 1 no. Laying House (with feed store & egg room) for 500 birds.	26' x 62.5	1,625
2. 2 no. Broiler Houses (1 with feed store) for 4,000 birds.	2 x 26' x 112.5'	5,850
	TOTAL	<u>7,475</u>

The proximity of the Broiler Houses to the Laying House creates a potential disease hazard.

B. NEW ACCOMMODATION

The additional requirements requested are for 10,000 Broilers and 2,000 layers and it is suggested that to avoid the disease hazard referred to above, a new Broiler House Complex should be created in another part of the property (possibly near to the headman's house on the western side of the road). The existing Broiler Houses could then be converted to Layer Houses to provide the additional requirements.

The new Broiler Houses should be in 2 or 4 units, each having 2 compartments holding 1,250 to 2,500 birds each. It was agreed that only 2 new Broiler Houses of approximately 3,000 ft.² each should be included in this project along with the conversion of the Layer House.

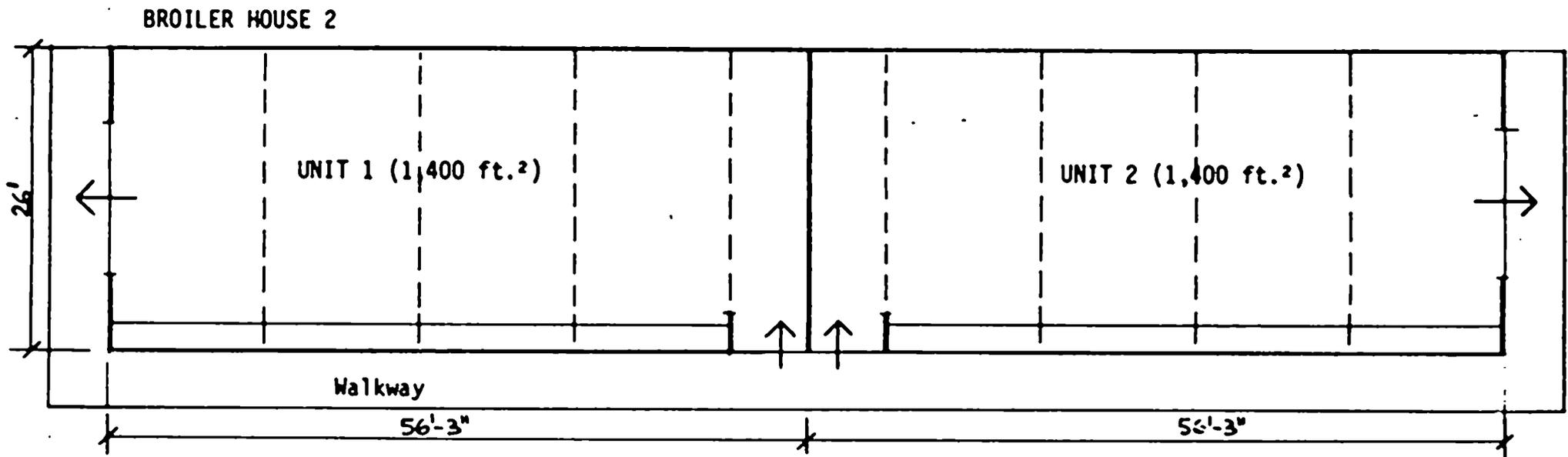
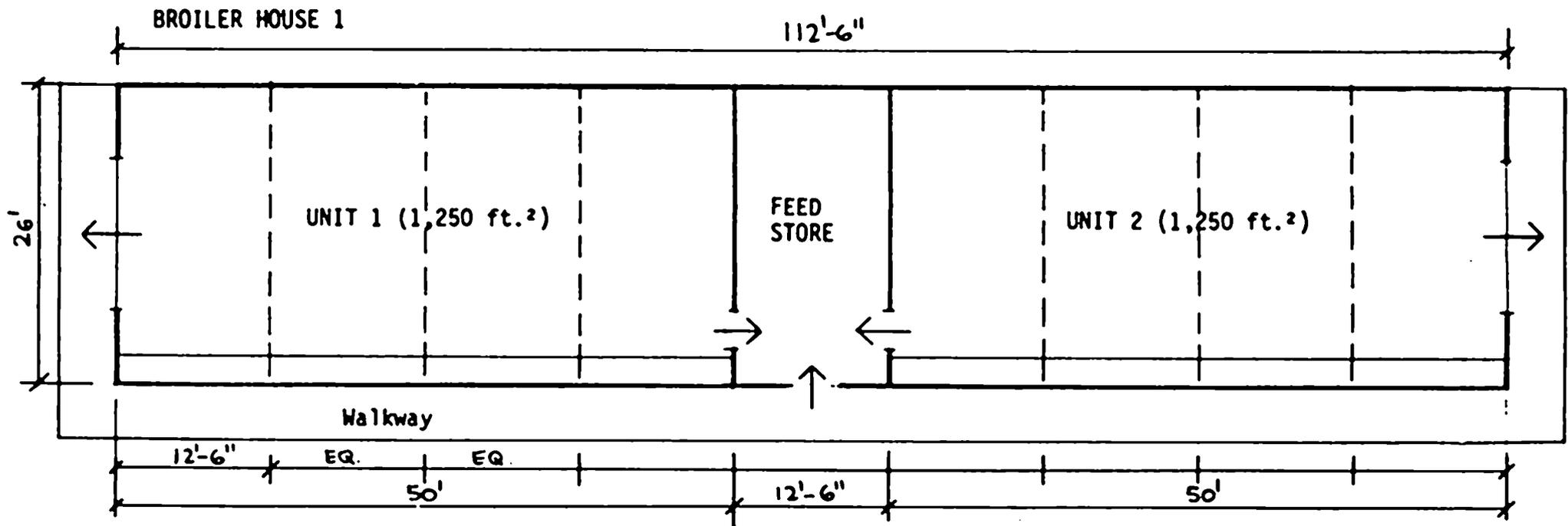


PLAN (1,625 ft.²)

LAYING HOUSE

LIVESTOCK COMPLEX/EXISTING ACCOMMODATION

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)



LIVESTOCK COMPLEX/EXISTING ACCOMMODATION: BROILER HOUSES
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

1/14/1

The accompanying drawings illustrate

1. The existing Layer House
2. The existing Broiler Houses
3. Proposed conversion of the Broiler Houses to Layer Houses
4. Proposed new Broiler Houses (to be located elsewhere on the property).

C. SCHEDULES OF AREAS

1. CONVERSION OF BROILER HOUSES TO LAYING HOUSES

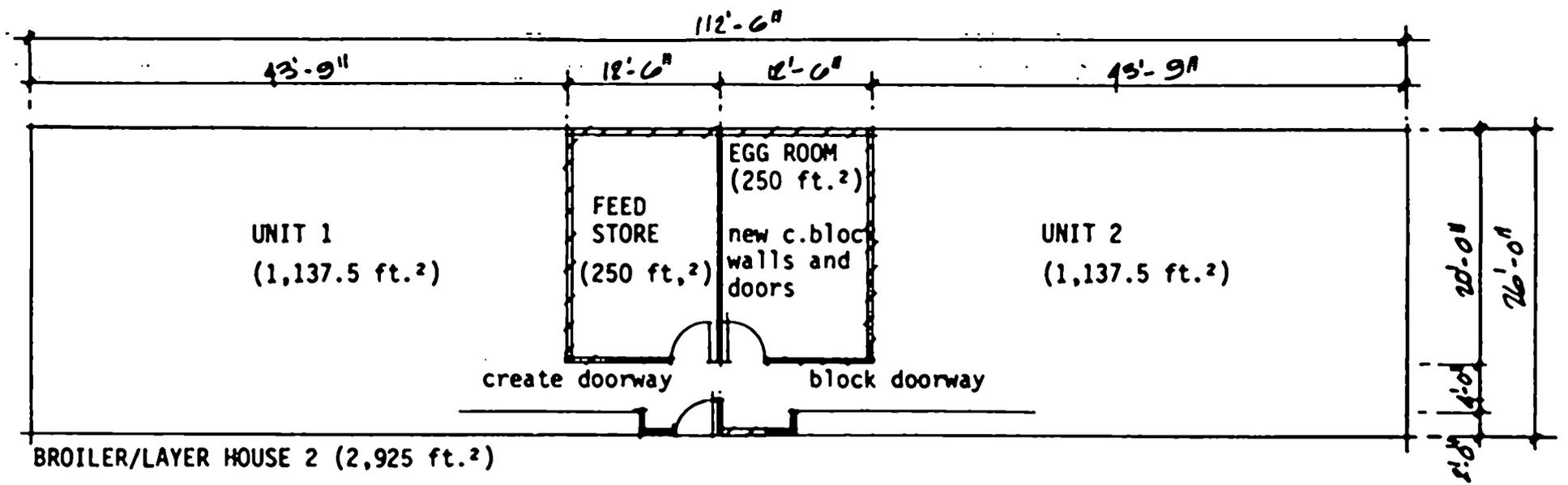
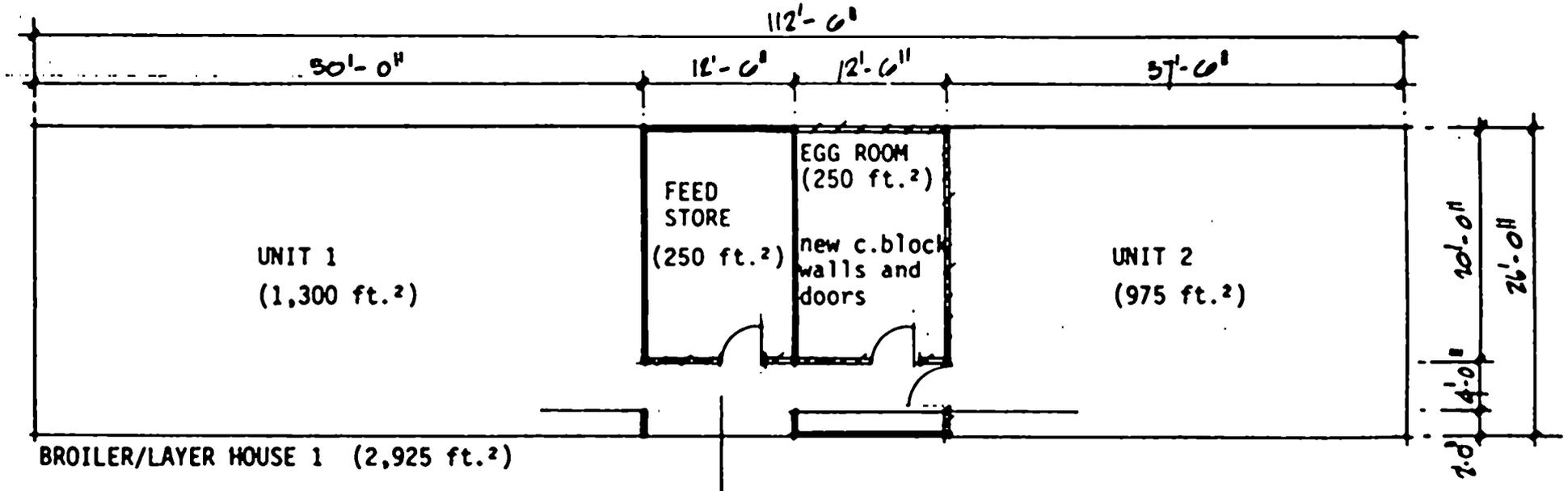
	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
.1 BROILER HOUSE/LAYING HOUSE 1		
- Unit 1	26' x 50'	1,300
- Unit 2	26' x 37.5'	975
- Food Store	20' x 12.5'	250
- Egg Room	20' x 12.5'	250
- Circulation	6' x 25'	150
	TOTAL	<u>2,925</u>
.2 BROILER HOUSE/LAYING HOUSE 2		
- Unit 1	26' x 43.75'	1,137.5
- Unit 2	26' x 43.75'	1,137.5
- Food Store	20' x 12.5'	250
- Egg Room	20' x 12.5'	250
- Circulation	6' x 25'	150
	TOTAL	<u>2,925</u>
.3 TOTAL CONVERTED LAYING HOUSES		
- House 1	2,925	
- House 2	<u>2,925</u>	
TOTAL		<u>5,850 ft.²</u>

		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
2.	NEW BROILER HOUSES (2 no.)		
	.1 Unit 1	26' x 50'	1,300
	.2 Unit 2	26' x 50'	1,300
	.3 Feed Store	20' x 12.5'	250
	.4 Circulation	6' x 12.5'	75
		TOTAL	<u>2,925</u>

.5 2 no. NEW BROILER HOUSES

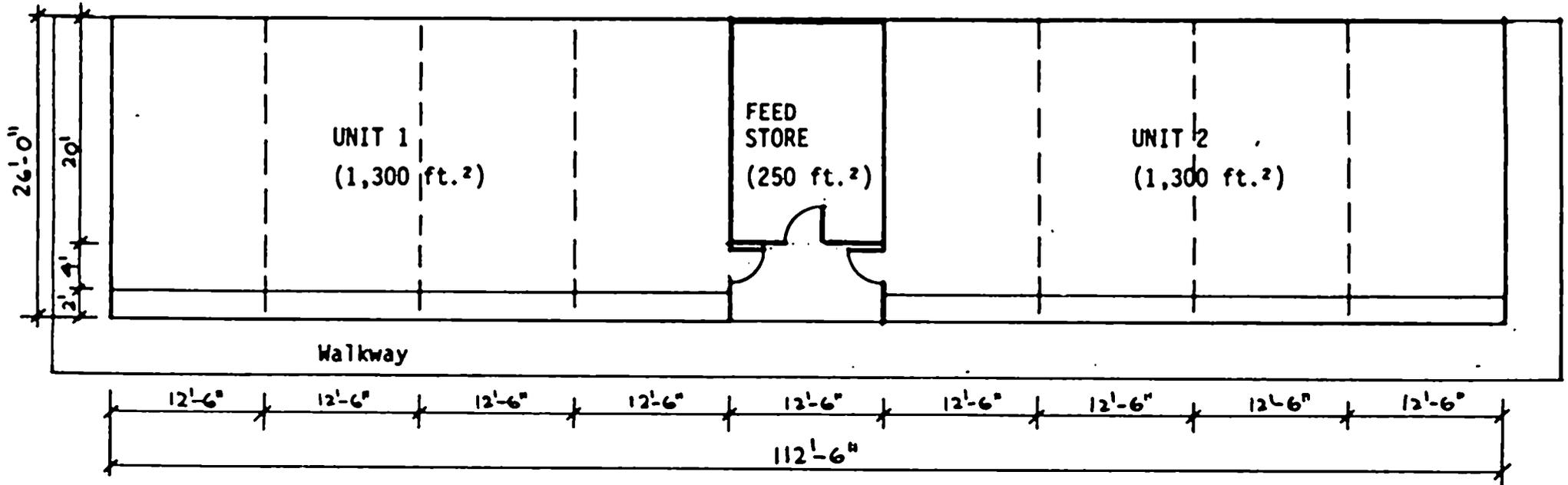
TOTAL AREA = 2 x 2,925

= 5,850 ft.²



CONVERSION TO LAYING UNITS
LIVESTOCK COMPLEX/BROILER HOUSES
USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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PLAN OF TYPICAL BROILER UNIT (2,925 ft.² gross)

BROILER UNITS (2 no.)

LIVESTOCK COMPLEX/NEW ACCOMMODATION

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

8.5.1

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
LIVESTOCK COMPLEX/DAIRY BUILDING

A. EXISTING ACCOMMODATION

The Dairy Building is located between the existing Layer House and Broiler Houses and consists of an open shed providing facilities for 17 milking animals and 4 calves. Other accommodation in the building includes an office, milk room, store, feed bin area and sanitary facilities.

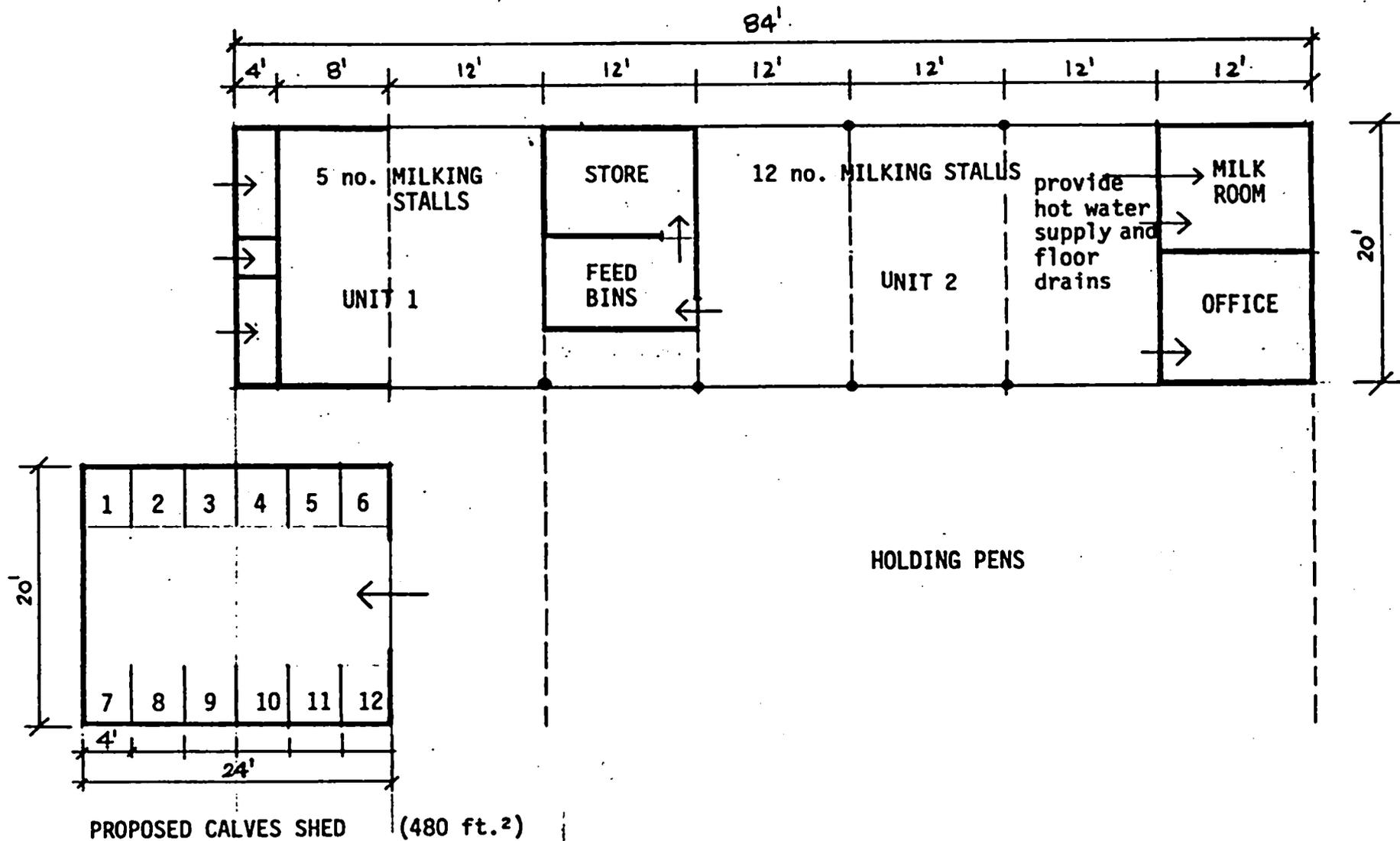
	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
Unit 1	20' x 20'	400
Unit 2	36' x 20'	720
Milk Room	12' x 10'	120
Office	12' x 10'	120
Store	12' x 8'	96
Feed Bin Area	12' x 8'	96
Sanitary Facilities	4' x 20'	80
Circulation	4' x 12'	48
	TOTAL	<u>1,680</u>

B. NEW ACCOMMODATION

Suggested additional requirements are -

1. Calves Shed of approximately 500 ft.² for 12 - 20 calves.
2. Hot Water supply for washing down milk room.

The accompanying drawing shows the existing building and the suggested location of the proposed calves shed in relation to the existing. The calves shed is (20' x 24') 480 sq.ft. in size, and it is proposed that the milk room be fed by a solar water heater mounted on the roof and that floor drains be installed for washing down purposes.



PROPOSED EXTENSION TO DAIRY BUILDING FOR CALVES
 LIVESTOCK COMPLEX/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
LIVESTOCK COMPLEX - PIGGERY

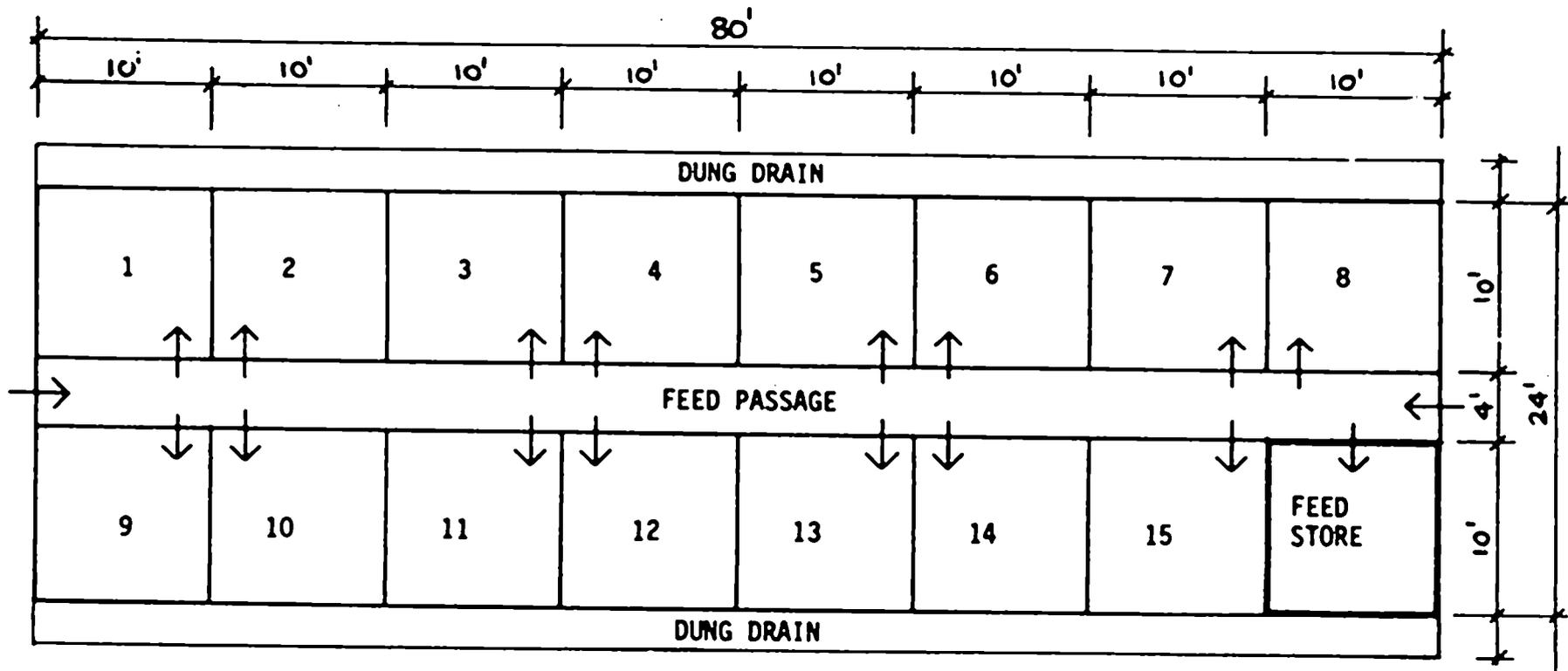
A. EXISTING ACCOMMODATION

The existing Piggery is located to the east of the Dairy Building and provides facilities for farrowing, breeding and fattening 75 pigs. The building consists of an open shed of approximately 3,800 ft.² subdivided into the various specialized areas.

B. NEW ACCOMMODATION

Additional requirements are for a new fattening pen for 200 pigs to be located within the vicinity of the present piggery. The accompanying drawings show the plan of the proposed Fattening Pen as well as its proposed location.

The Fattening Pen proposed is 24' x 80' (1,920 ft.²), subdivided into two rows of 10' x 10' compartments separated by a central feed passage and with dung drains on the perimeter. A total of 15 compartments are provided and a Feed Store (10' x 10') is located at one end of the pen.



FATTENING PEN: 200 pigs (1,920 ft.²)

PROPOSED EXTENSION TO PIGGERY FOR FATTENERS
 LIVESTOCK COMPLEX/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)
LIVESTOCK COMPLEX/ANIMAL SCIENCE LABORATORY/CENTRAL STORE

A. EXISTING ACCOMMODATION

No facilities for an animal science laboratory or for central storage presently exist. It is proposed that the existing Farm Workshop be relocated with other related facilities in the Farm Complex portion of the property on the northern side of the main road.

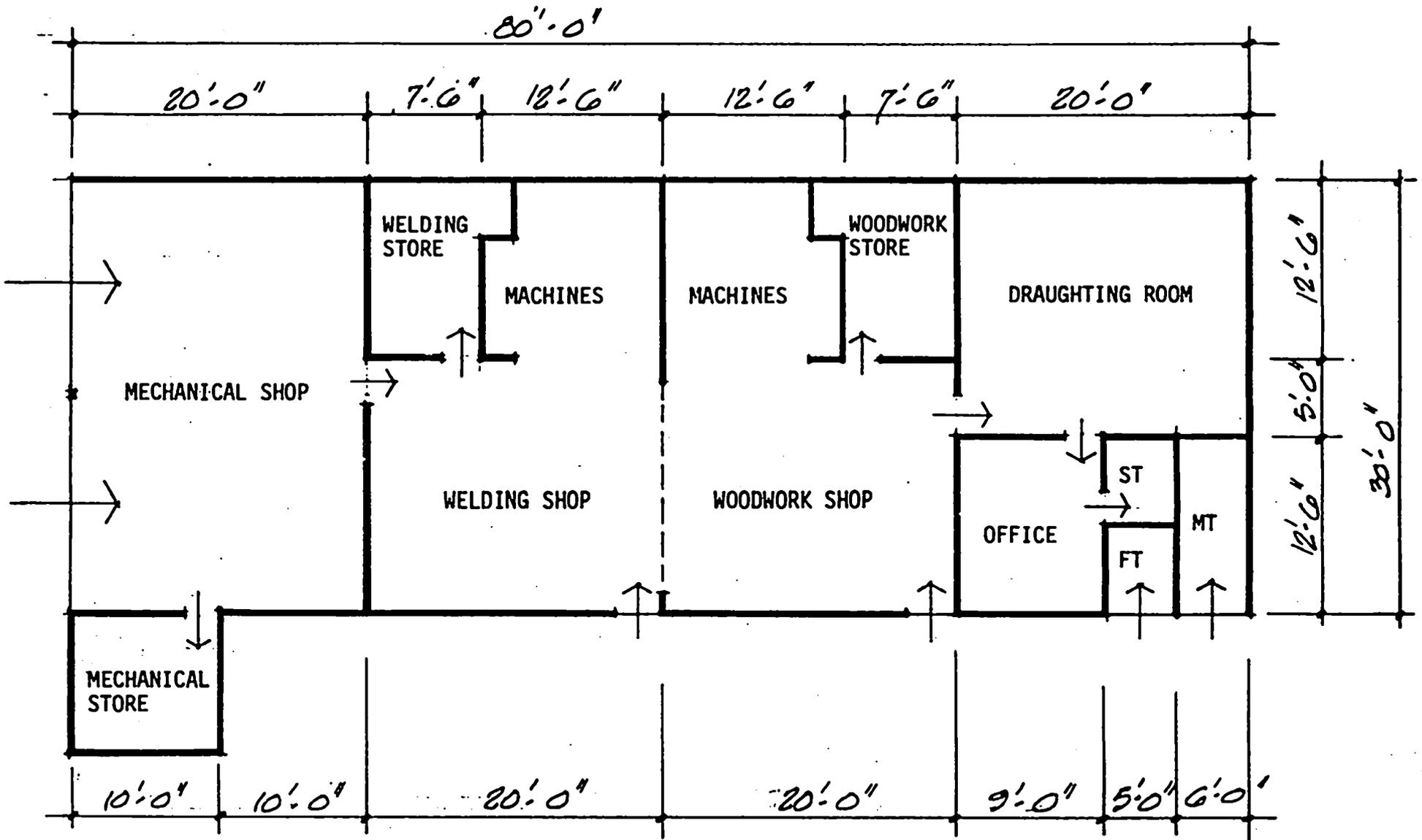
As a consequence, the Farm Workshop will be available for conversion to other purposes. The plan of the existing workshop is illustrated and this consists of a building of 30' x 80' (2,500 sq.ft. gross) subdivided into areas for mechanical, welding & woodworking shops with appropriate storage areas; a draughting room, an office and sanitary facilities for staff and students.

B. CONVERSION OF FARM WORKSHOP TO ANIMAL SCIENCE LABORATORY
& CENTRAL LIVESTOCK STORAGE

The new requirements requested are -

1. ANIMAL SCIENCE LABORATORY for 25 - 30 students, storage and preparation areas, demonstration areas, work stations (4 students per station), 3 no. offices for lecturers, and appropriate sanitary facilities.
2. CENTRAL LIVESTOCK STORAGE for feed, equipment and tools, centrally located and secure.

The existing farm workshop is ideal in many ways for conversion to these functions in that it is centrally located and its layout lends itself easily to the types and sizes of space required.



PLAN (2,500 sq.ft. gross)

FARM WORKSHOP

LIVESTOCK COMPLEX/EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

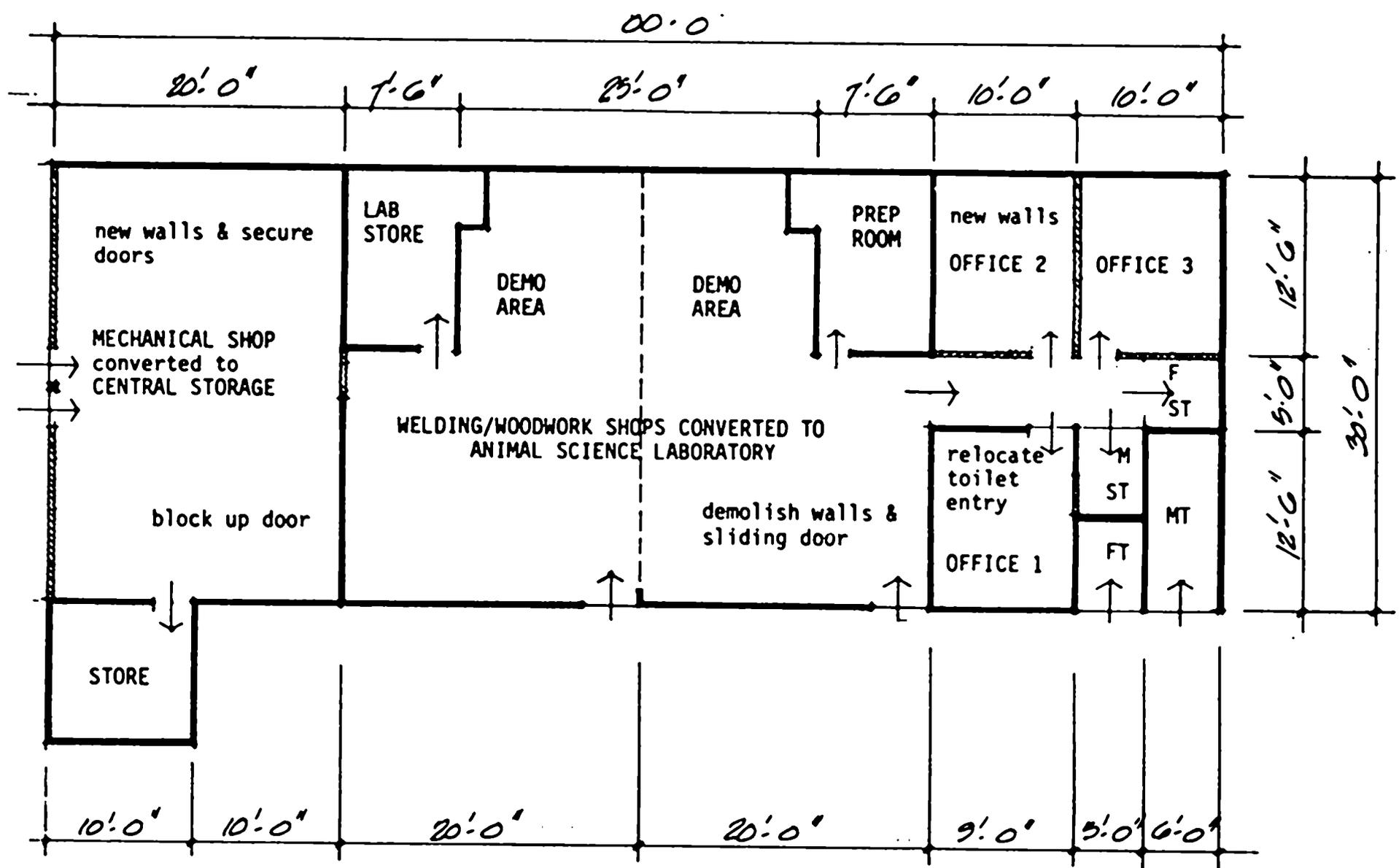
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The accompanying drawing illustrates the proposals for conversion, summarized as follows:

- convert mechanical shop/store to central storage
- convert welding/woodwork shops to Animal Science Laboratory
- convert machine areas to demonstration areas
- convert welding/woodwork stores to lab store and preparation rooms
- convert draughting room to 2 no. offices and a female staff toilet facility
- relocate door to male staff toilet facility.

C. SCHEDULE OF AREAS (New Designations)

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. Central Storage	(30' x 20') + (10' x 10')	700
2. Animal Science Laboratory	40' x 17.5'	700
3. Demonstration Areas	25' x 12.5'	312.5
4. Laboratory Store	7.5' x 12.5'	93.75
5. Preparation Room	7.5' x 12.5'	93.75
6. Office 1	9' x 12.5'	112.5
7. Offices 2 & 3	2 x 10' x 12.5'	250
8. Staff Toilets	2 x 5' x 6'	60
9. Student Toilets	(5' x 6.5') + (6' x 12.5')	107.5
10. Circulation	14' x 5'	70
	TOTAL	2,500 ft. ²



PLAN (2,500 sq.ft.)

PROPOSED CONVERSION OF FARM WORKSHOP TO (1) ANIMAL SCIENCE LABORATORY (2) CENTRAL STORAGE
 LIVESTOCK COMPLEX/EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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USAID/GOJ AGRICULTURAL PROJECT - COA - (Passley Gardens)
LIVESTOCK COMPLEX/ABBATOIR/FOOD PROCESSING PLANT

A. EXISTING ACCOMMODATION

The present buildings consist of

1. SLAUGHTER HOUSE of approximately 750 ft.²
2. FOOD PROCESSING BUILDING of approximately 2400 ft.²

The Slaughter House contains facilities for slaughtering and cutting with an incomplete refrigeration room.

The Food Processing Building is partially equipped and includes a Boiler Room and is not yet operational.

Both these buildings are located to the West of the access road in the Livestock Complex.

B. NEW ACCOMMODATION

The additional requirements agreed are:

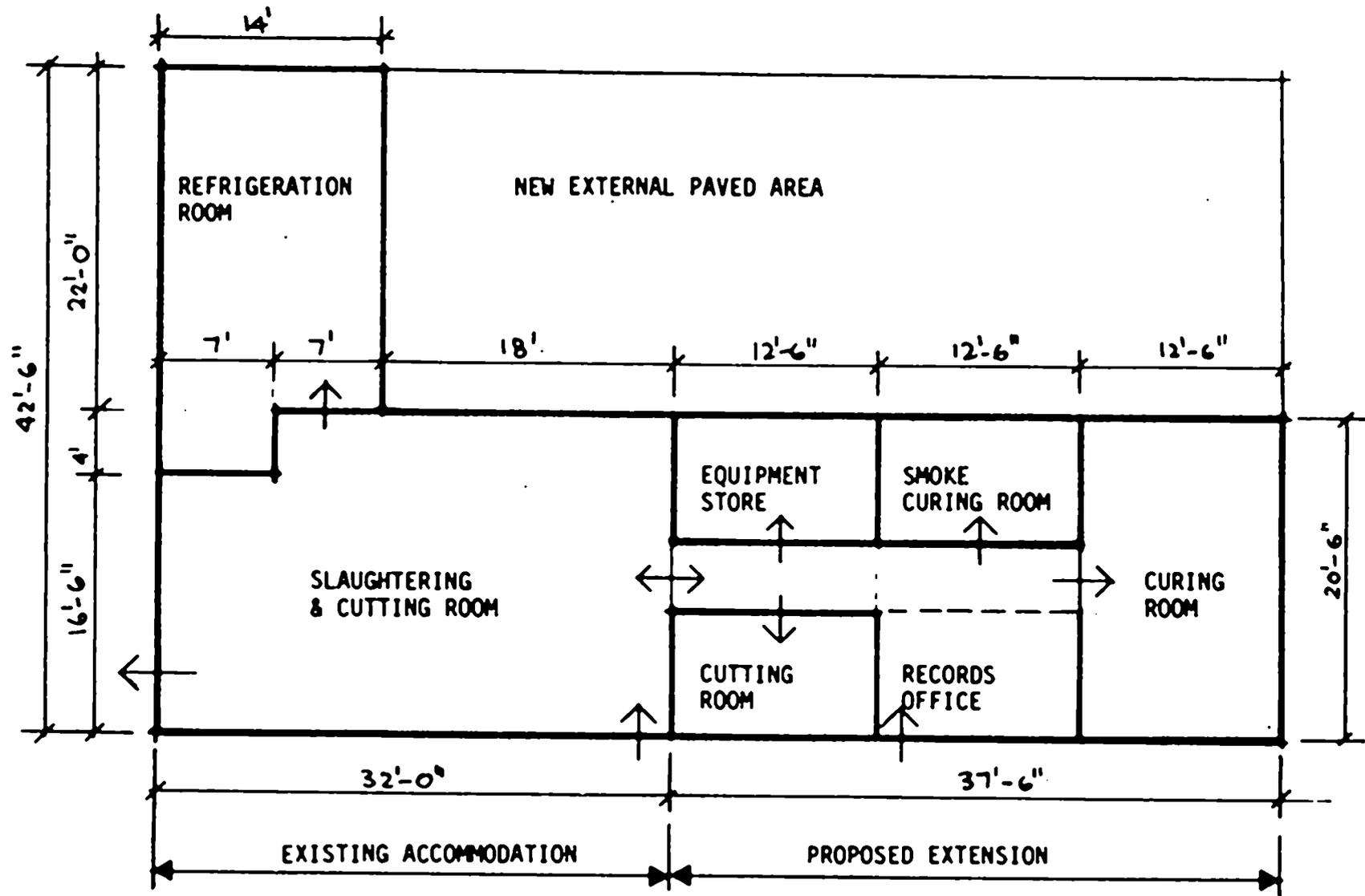
1. EXTENSION TO THE SLAUGHTER HOUSE providing
 - a. a cutting room of say 100 ft.² (40°F temp)
 - b. a curing room of say 250 ft.² (35 - 45° F temp)
 - c. a smoke curing room of say 100 ft.² (fed by piped smoke)
 - d. equipment store of say 100 ft.²
 - e. records office to say 100 ft.²
 - f. external paved area of say 1,200 ft.²

REFRIGERATION ROOM - Complete and Upgrade Extension.

The expansion of the Slaughter House can be accommodated by its extension to the West and these proposals are shown on the accompanying drawings.

C. SCHEDULE OF AREAS (SLAUGHTER HOUSE EXTENSION)

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. Curing Room	12.5' x 20.5'	256.25
2. Smoke Curing Room	12.5' x 8'	100
3. Equipment Store	12.5' x 8'	100
4. Cutting Room	12.5' x 8'	100
5. Records Office	12.5' x 8'	100
6. Circulation	25' x 4.5'	112.5
	TOTAL	<u>768.75 ft.²</u>



PROPOSED EXTENSION TO SLAUGHTER HOUSE
 LIVESTOCK COMPLEX
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)
LIVESTOCK COMPLEX

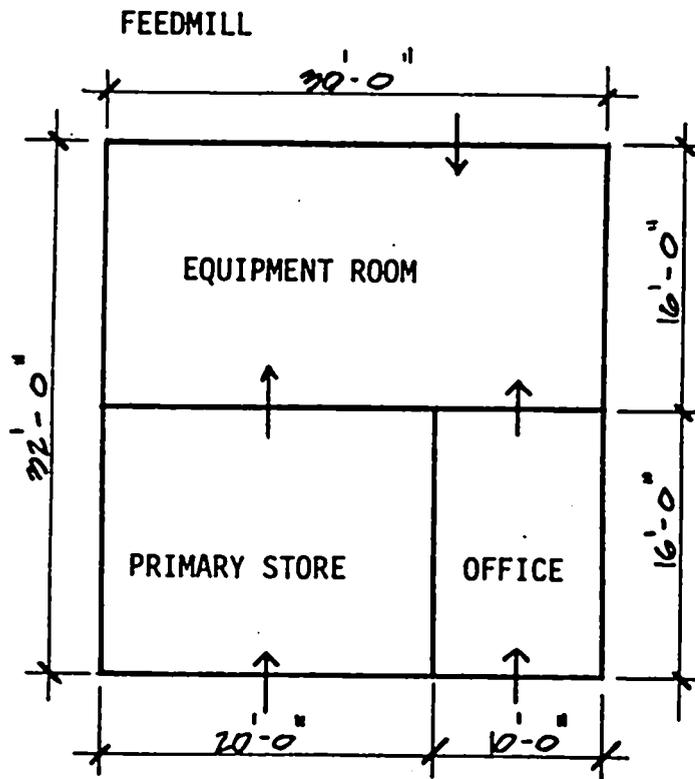
FEEDMILL/HATCHERY/WELFARE FACILITIES

These facilities exist in the form of incomplete buildings at the southermost portion of the livestock complex and it is proposed that they be completed as originally designed.

The drawing attached summarizes the remaining works on each building.

SCHEDULES OF AREAS

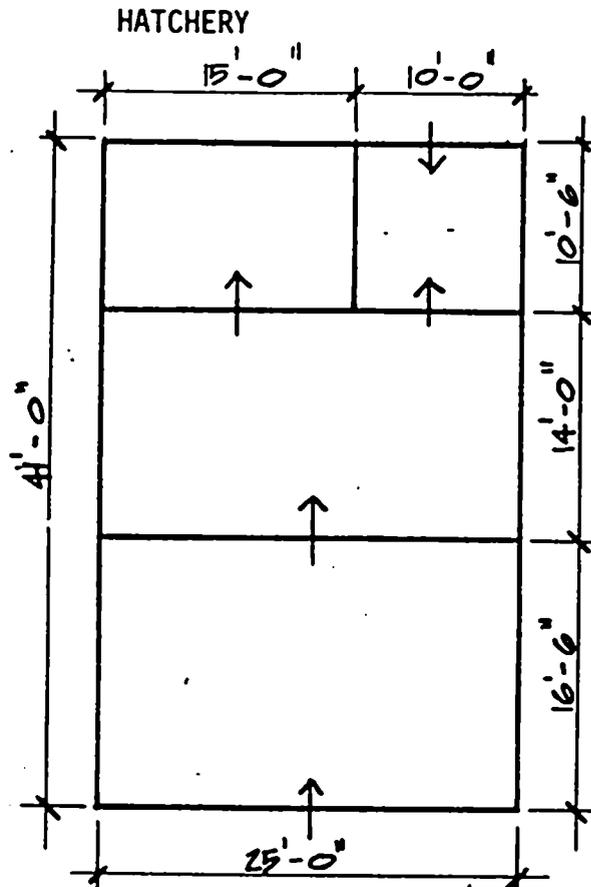
	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. FEEDMILL		
1. Equipment Room	16' x 30'	480
2. Primary Store	16' x 20'	320
3. Office	16' x 10'	160
	TOTAL	<u>960 ft.²</u>
2. HATCHERY	25' x 41'	<u>1,025 ft.²</u>
3. WELFARE FACILITIES		
1. Locker Room	17' x 17'	289
2. Toilets	17' x 11'	187
3. Washing Area	6' x 4'	24
	TOTAL	<u>500 ft.²</u>



AREA = 960 ft.²

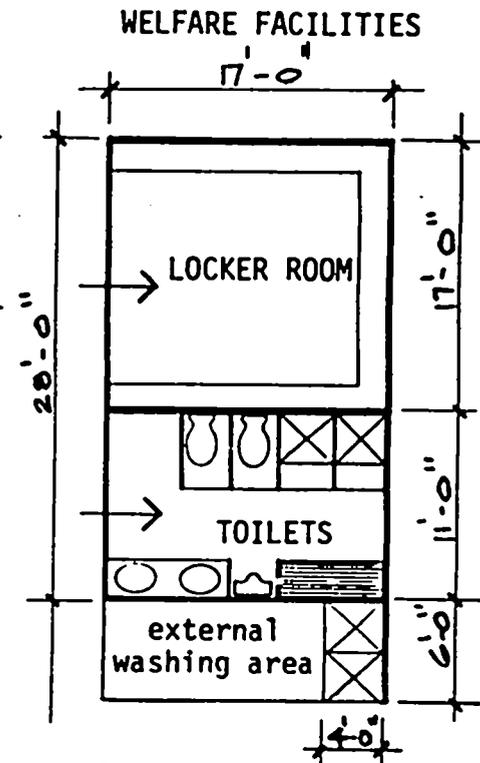
To be completed:

- upper walls of equipment room
- all floors
- roof over equipment room
- all services & finishes
- equipment to be installed



AREA = 1,025 ft.²

- wall finishes to be completed



AREA = 500 ft.²

To be completed:

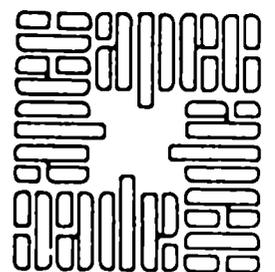
- upper walls, floors, roof
- finishes & services
- fixtures

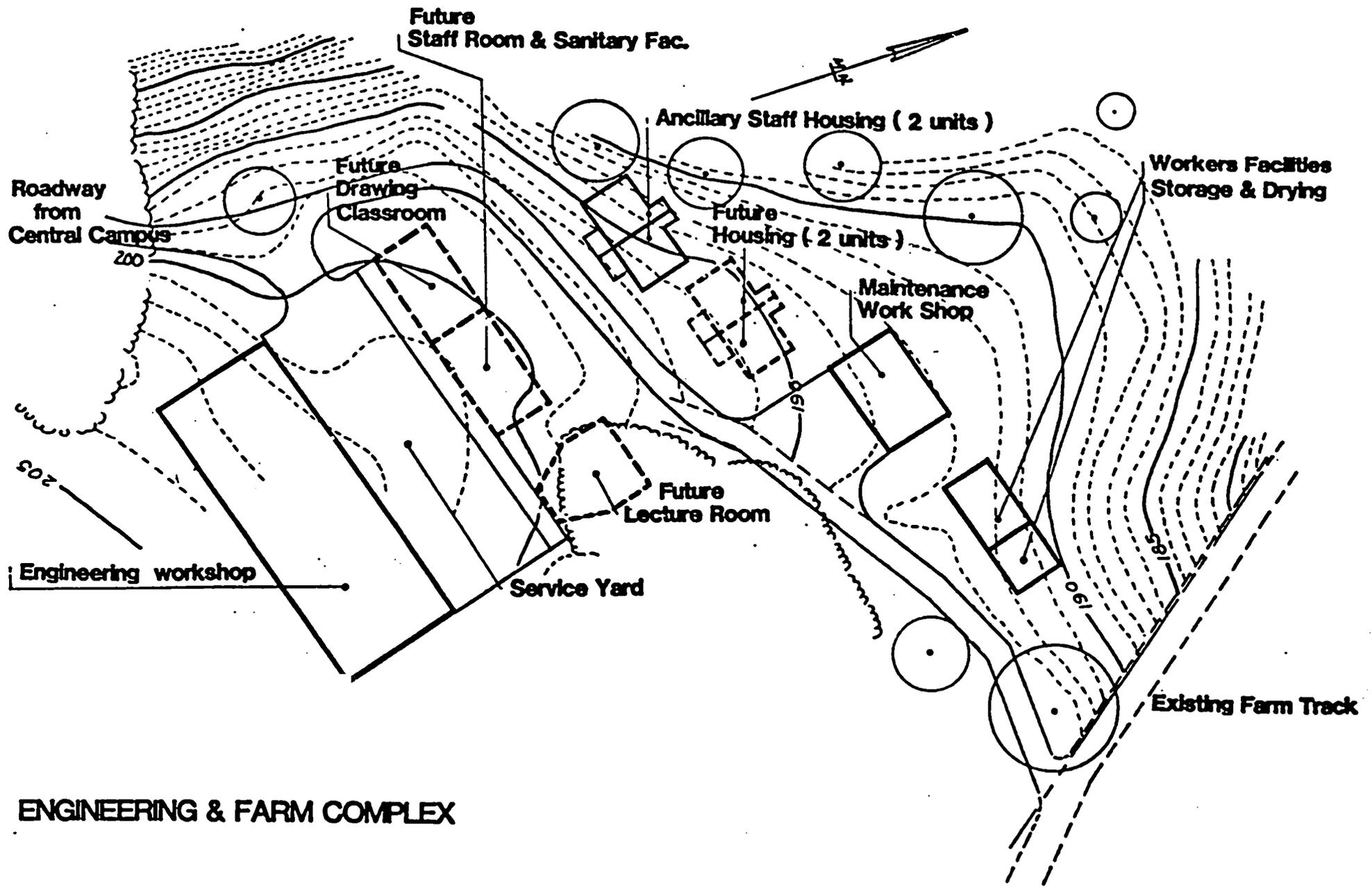
FEEDMILL/HATCHERY/WELFARE FACILITIES

LIVESTOCK COMPLEX

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

6. ENGINEERING / FARM COMPLEX





ENGINEERING & FARM COMPLEX

**USAID / GOJ AGRICULTURAL PROJECT
- COA (PASSLEY GARDENS)**

APEC

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ENGINEERING/FARM COMPLEX

A. EXISTING ACCOMMODATION

The present engineering facility is located in the Livestock Complex on the southern area of the property. It consists of one building which houses workshops for mechanical, welding, woodwork and metalwork subjects, a classroom, 1 lecturer's office, various storerooms and sanitary facilities.

There are no buildings in the area of the property where cultivation is being carried out. This area lies to the East of the central campus and is served by a tortuous access road in poor condition.

B. NEW ACCOMMODATION

Elsewhere in this report, it is proposed that because of the expansion requirements for the engineering facility and the shortage of building land in the Livestock Complex, the Engineering Complex be entirely relocated to the area of the property under cultivation.

The requirements for the engineering complex are -

1. WORKSHOPS with appropriate storage for
 - a. Woodwork
 - b. Metalwork
 - c. Hydraulics
 - d. Mechanical & Engine Testing
 - e. Electrical & Processing Equipment
2. 6 no. LECTURERS' ROOMS
3. 1 no. DRAUGHTING ROOM/CLASSROOM (30 Students)
4. LECTURE THEATRE FOR 100 STUDENTS
5. WELFARE FACILITIES FOR STAFF AND STUDENTS

The requirements for the Farm Complex are -

1. 4 no. HOUSES for the Farm Manager and other key ancillary staff of the College.
2. CHANGING ROOMS for Farm Workers
3. SECURE STORAGE for Tools and Supplies
4. COVERED STORAGE for Produce
5. DRYING PLATFORM
6. MAINTENANCE/REPAIR FACILITY for Farm Vehicles
7. ACCESS ROAD from the Central Campus area.

The area under cultivation was examined and a suitable site for the location of both engineering and farm complexes was agreed. This site was surveyed, as was a possible route to it for an access road from the central campus. These surveys are attached.

The review of the draft final report resulted in the following decisions:

ENGINEERING COMPLEX

1. Provide a multi-purpose workshop building only (area approx. 9,500 ft.²) with sufficient flexibility to enable it to be subdivided into the various teaching and other accommodation required.
2. Allow for future expansion of the complex.

FARM COMPLEX

1. Provide 2 no. houses only for Ancillary Staff, allowing for the future construction of the remaining 2 houses.
2. Provide all other facilities requested.

The accompanying drawings illustrate the proposals for the accommodation needs of both complexes.

The Engineering Complex is separated from the Farm Complex by the proposed access road and all buildings are arranged to take full advantage of the favourable northern orientation.

The Engineering Complex consists of a large structure (60' x 156') housing all the facilities required and is separated from the future expansion area by a 60' wide service yard.

C. SCHEDULE OF AREAS

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)	
1. ENGINEERING COMPLEX			
1. WORKSHOP BUILDING			
a.	General Purpose Classroom	30' x 48'	1,440
b.	Staff Rooms/Student Welfare	30' x 48'	1,440
c.	4 no. Workshops	4 x 30' x 48'	5,760
d.	Other	12' x 60'	720
	TOTAL		<u>9,360 ft.²</u>
2. FARM COMPLEX			
1.	2 no. ANCILLARY STAFF HOUSES	2 x 25' x 25'	<u>1,250 ft.²</u>
2.	MAINTENANCE/REPAIR WORKSHOP		
a.	4 no. Bays	4 x 12' x 20'	960
b.	Access	4' x 48'	192
c.	Spare Parts Store	8' x 12'	96
d.	Lubricant Store	8' x 12'	96
e.	Workshop	8' x 12'	96
f.	Record Office	8' x 12'	96
	TOTAL		<u>1,536 ft.²</u>

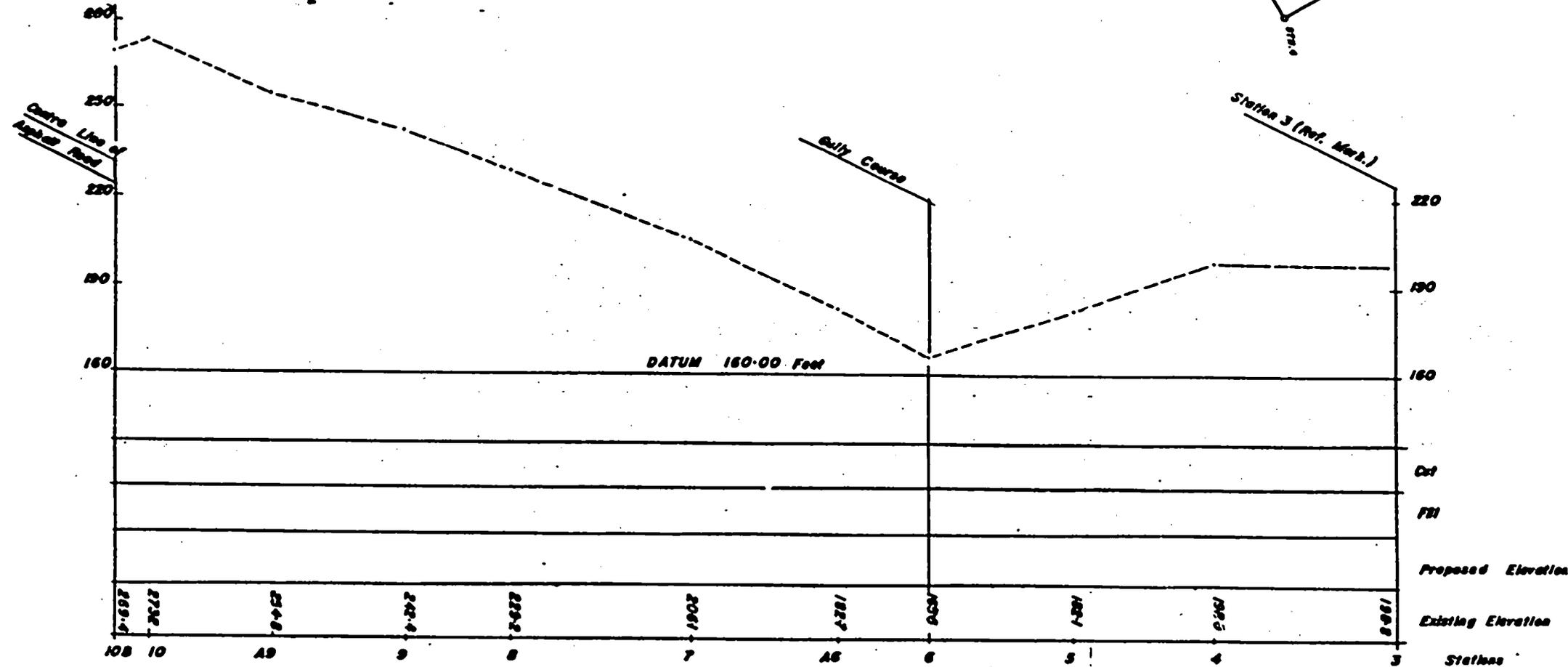
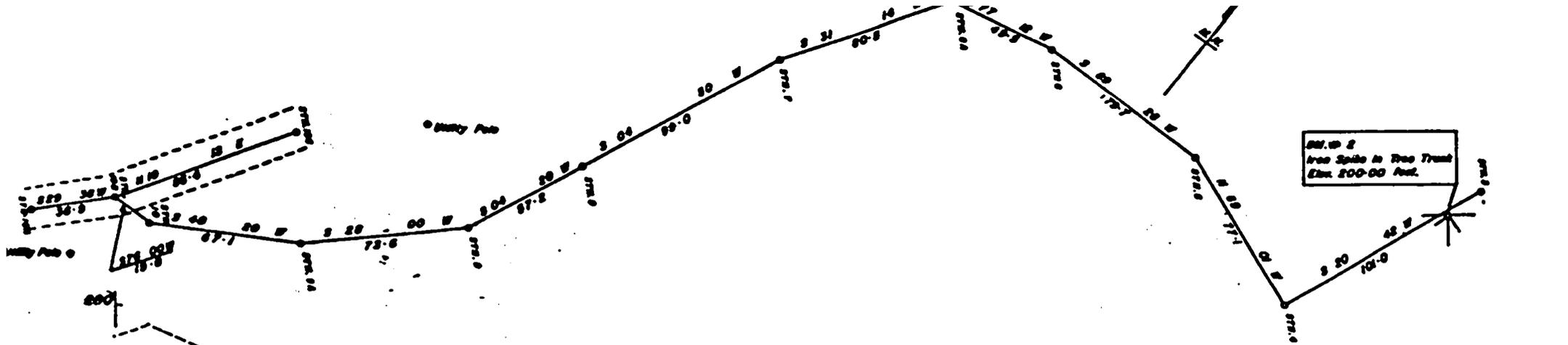
10/10

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
3. WORKERS FACILITIES/STORAGE		
a. Workers Welfare	12' x 24'	288
b. Tools/Supplies Storage	12' x 12'	432
c. Produce Storage	3 x 12' x 12'	432
	TOTAL	<u>864 ft.²</u>

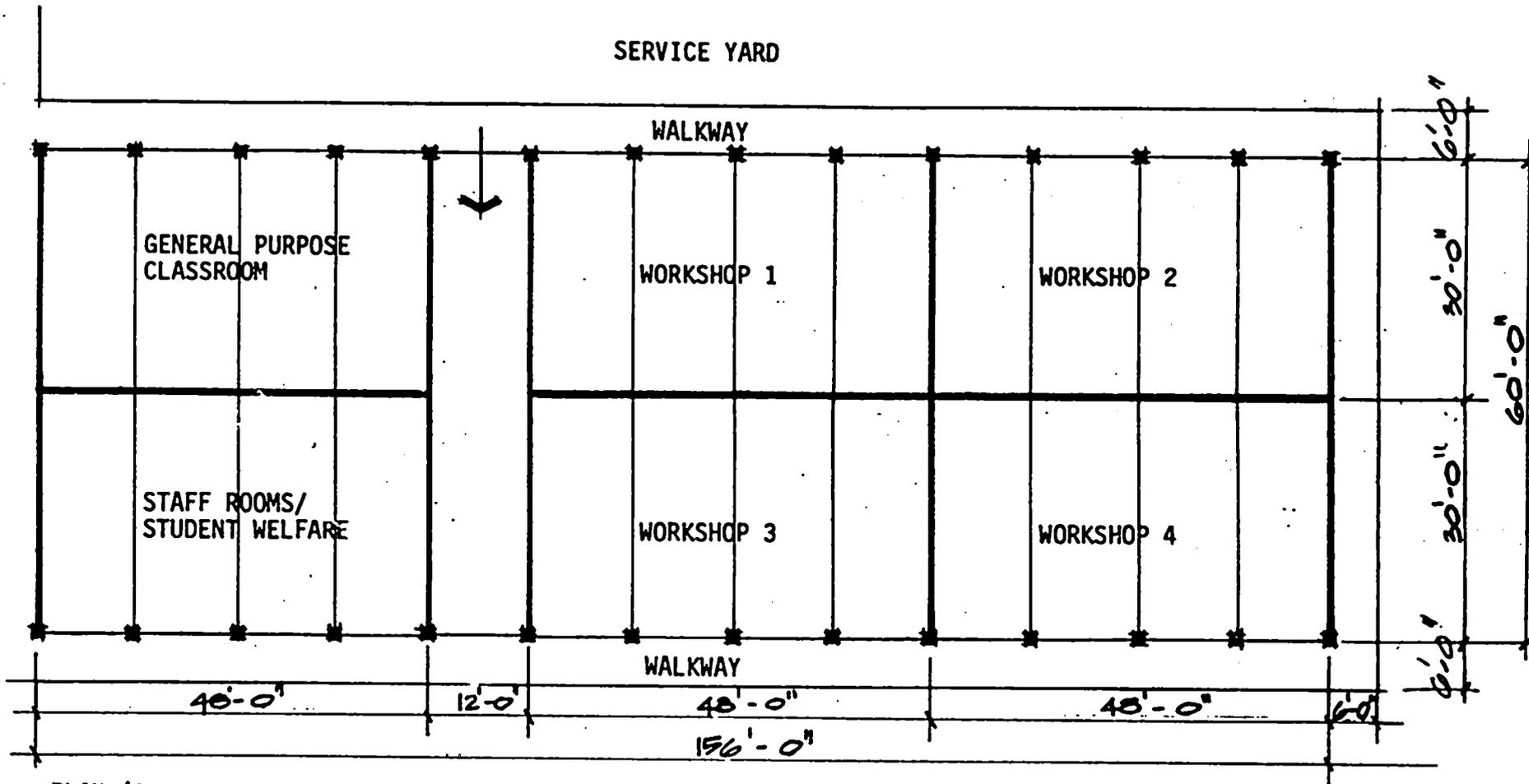
TOTAL FARM COMPLEX 3,650 ft.²

3. TOTAL ENGINEERING/FARM COMPLEX

1. ENGINEERING COMPLEX	9,360
2. FARM COMPLEX	<u>3,650</u>
TOTAL	<u>13,010 ft.²</u>



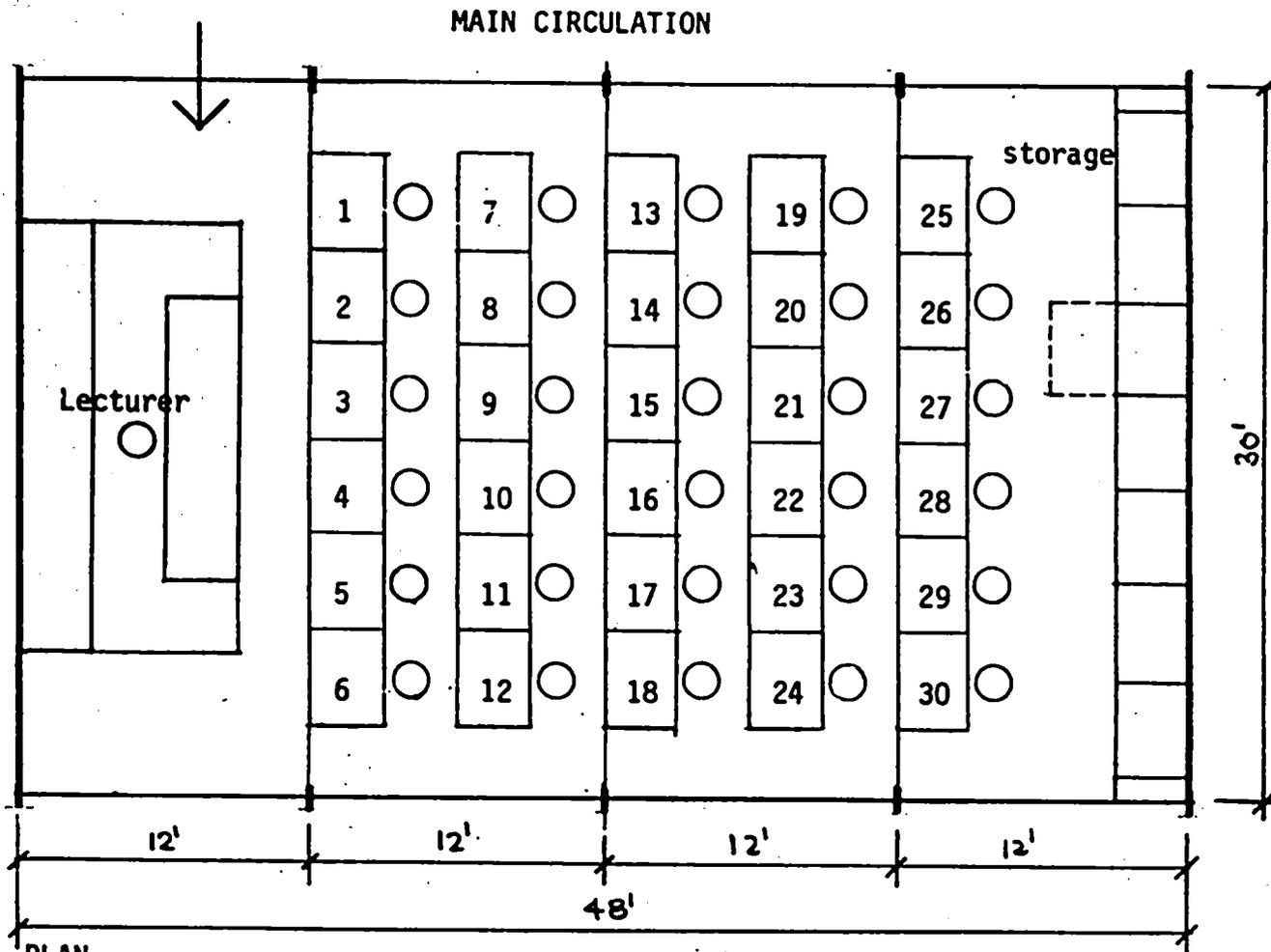
SITE SURVEY OF PROPOSED LINK ROADWAY BETWEEN CENTRAL CAMPUS AND PROPOSED ENGINEERING FARM COMPLEX



PLAN (AREA = 9,360 ft.²)

WORKSHOP BUILDING
 ENGINEERING COMPLEX
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

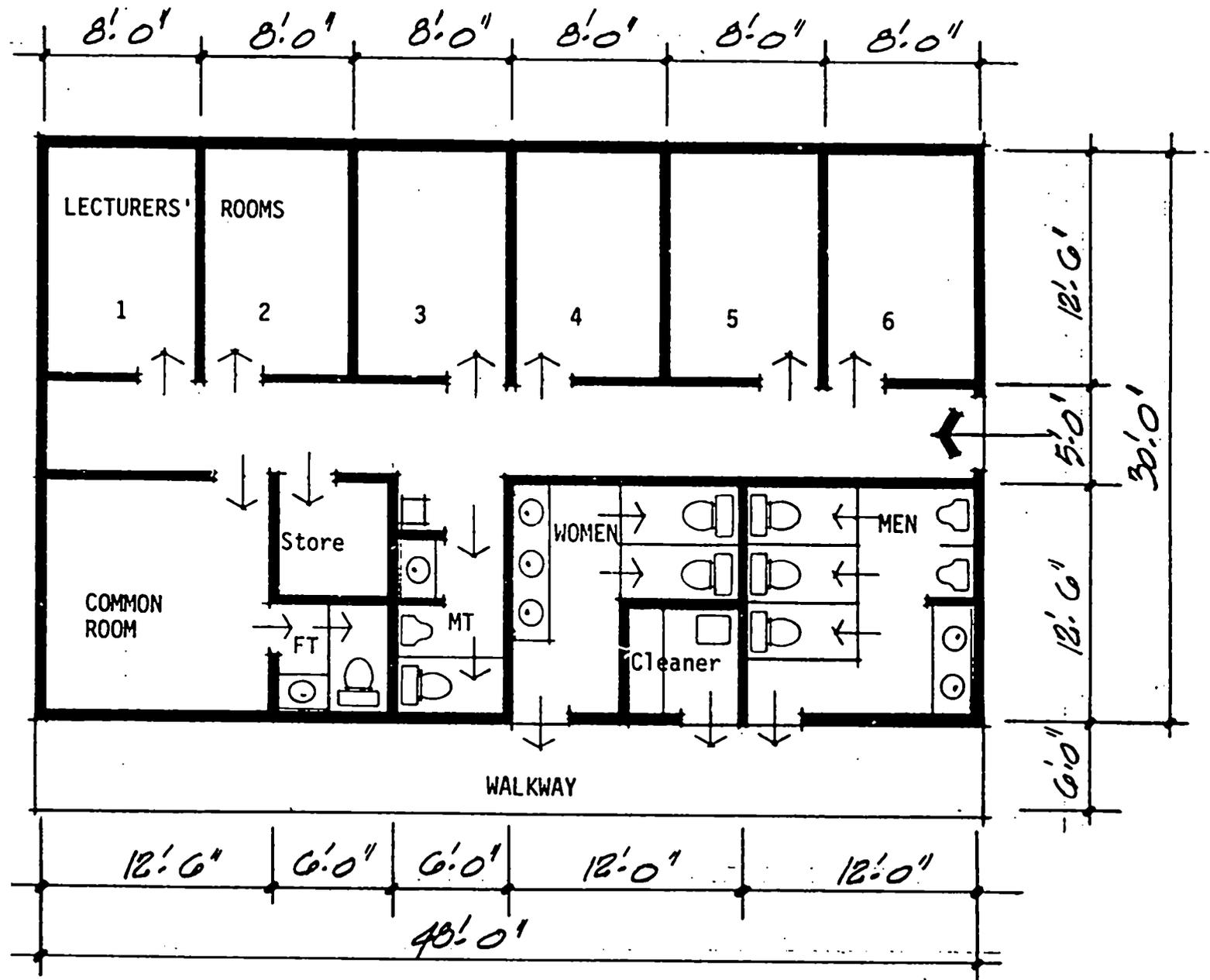
11/1



Area = 1,440 ft.²

ENGINEERING COMPLEX: DRAUGHTING ROOM/CLASSROOM
 FARM COMPLEX/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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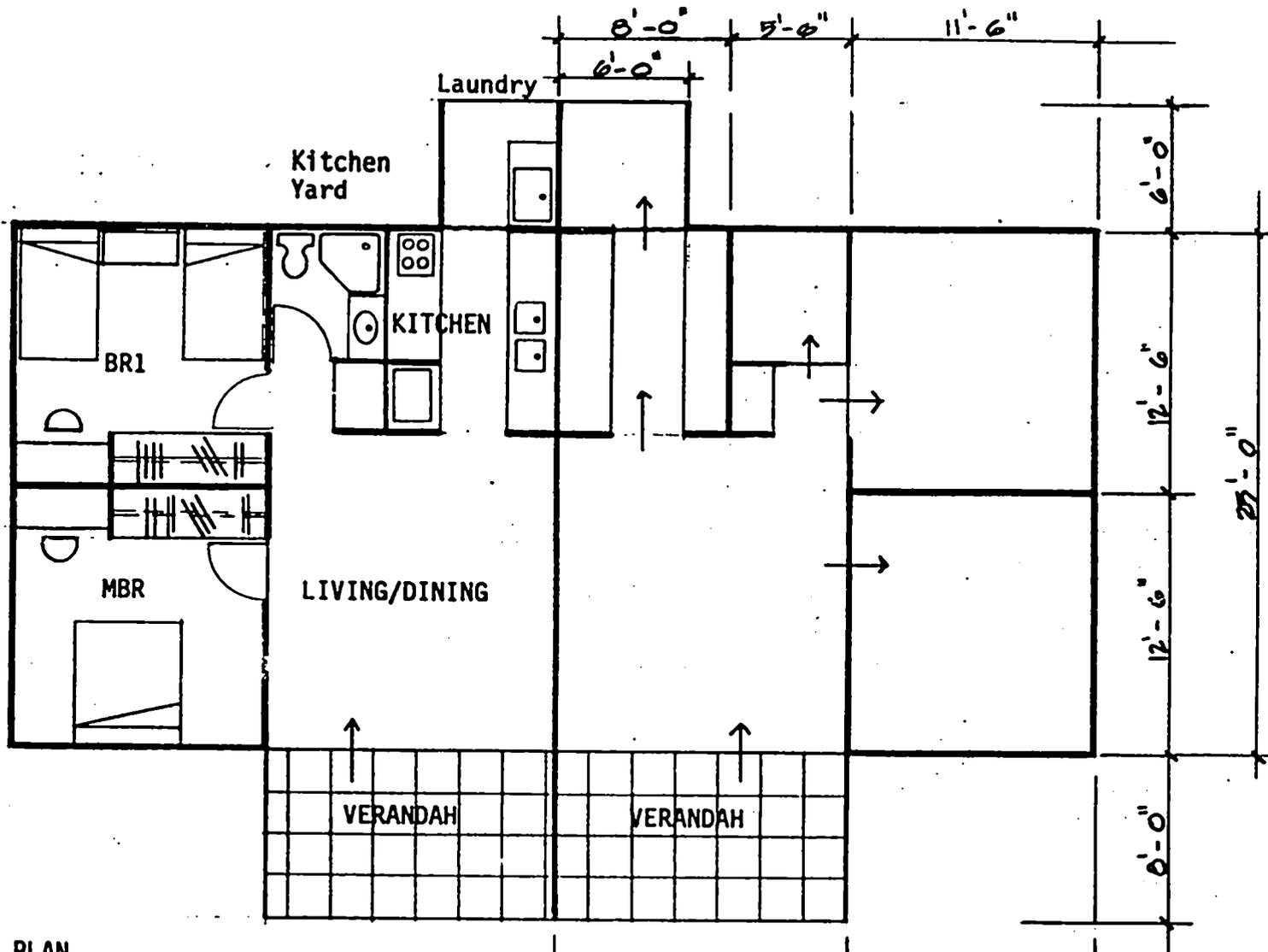


STAFF ROOMS/STUDENT WELFARE (Area - 1,440 ft.²)

ENGINEERING COMPLEX

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167



PLAN

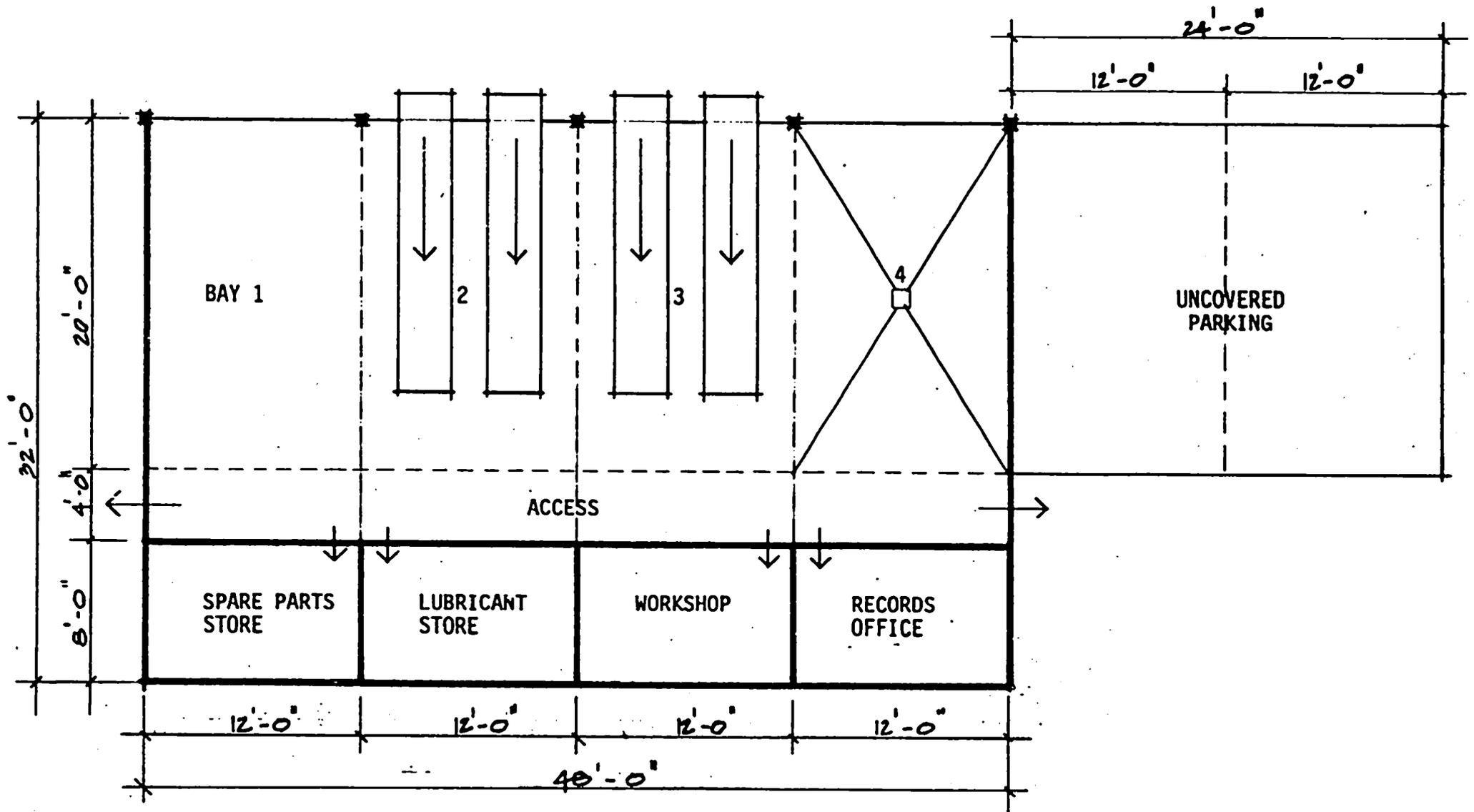
Area per unit (excluding verandah + laundry)
= 625 sq.ft.

TYPICAL DUPLEX UNIT

ANCILLARY STAFF HOUSING

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

1675



PLAN

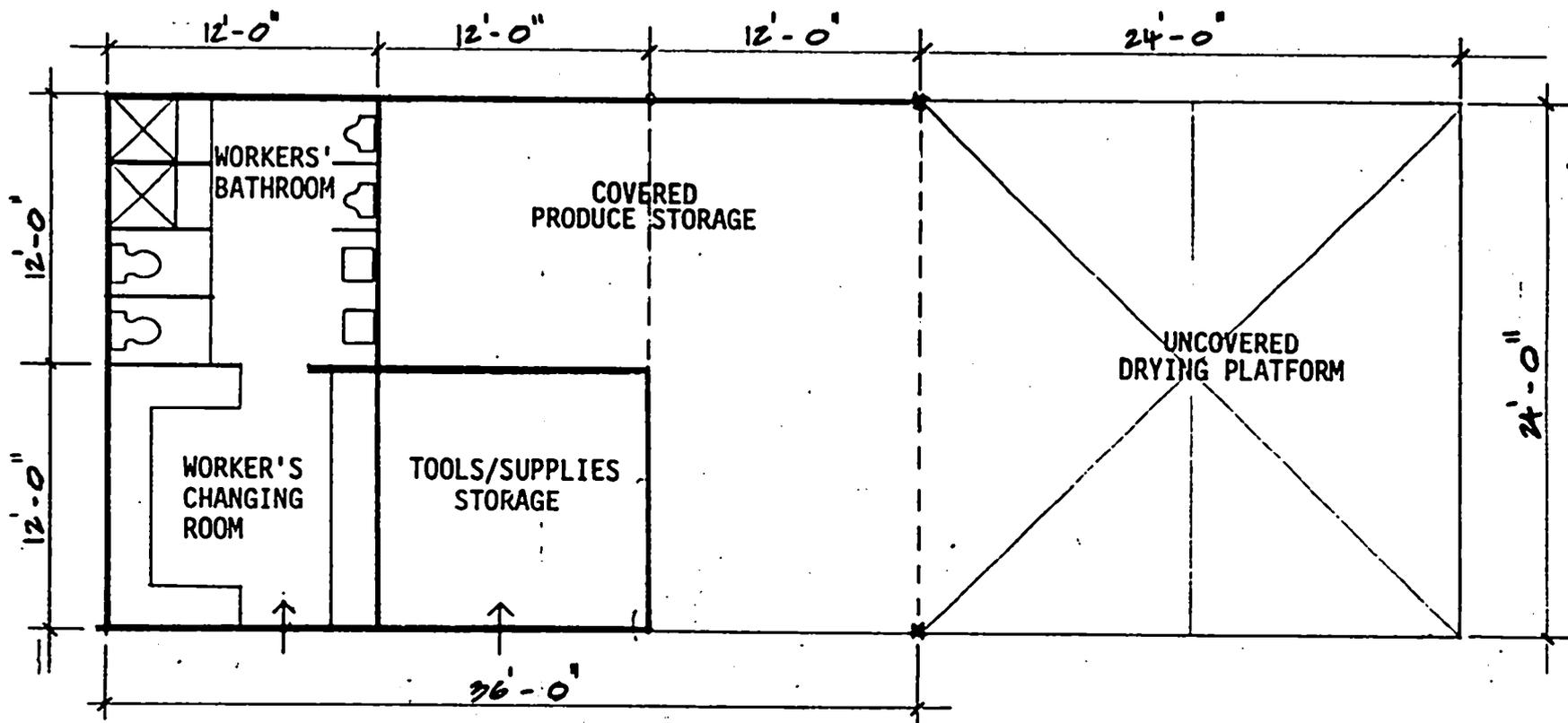
Area = 1,600 ft.² approx.

MAINTENANCE/REPAIR WORKSHOP

FARM COMPLEX/NEW ACCOMMODATION

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

1601



PLAN

AREA = 900 ft.² approx.

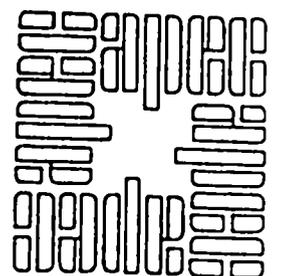
WORKERS' FACILITIES, STORAGE & DRYING AREAS

FARM COMPLEX/NEW ACCOMMODATION

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

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7. ENGINEERING



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STRUCTURAL

1.0 STRUCTURAL SYSTEMS FOR EXISTING BUILDINGS

All the buildings at the Academic Complex, with the exception of the Students Dormitories, are single storey, and the structural systems are as follows:

- a. Administration Buildings & Student Dormitory Blocks : Load bearing blockwork on strip footings, flat roof (precast concrete units with structural screed)
- b. Classrooms & Lavatories : Load bearing blockwork on strip footings, flat roof (precast concrete units with structural screed)
- c. Library, Cafeteria : Steel columns on pad footings, steel beams and flat roof (precast concrete units with structural screed)
- d. Farm Buildings : Generally steel frame with corrugated sheeting, pitched roof.

2.0 EXISTING GROUND CONDITIONS

In 1978, twenty exploratory boreholes were sunk in areas which are now occupied by the existing buildings. All holes went to a depth of twenty feet below existing ground, and the findings were remarkably consistent - up to one foot eight inches of topsoil over a variable layer of stony marl (4 ft. to 13 ft. thick) below which was the same material but with more boulders. No ground water was found in any of the holes, and underground seams and fissures were found below ten feet depth.

The recommended ground bearing pressure for design purposes was 5,000 lb/sq.ft.

3.0 GROUND CONDITIONS UNDER NEW BUILDINGS

Given the consistency of the results of the earlier soils investigations, and our inspection of the site which revealed outcropping limestone at various places around the existing campus, we are satisfied that similar ground conditions will be found anywhere in the immediate locality and probably over the whole site. Since the buildings which may be erected away from the main campus will be light structures for agricultural purposes, there will be no need for any special foundations or other non-standard structural requirements for buildings to be erected under the expansion programme.

4.0 STRUCTURAL CHARACTERISTICS OF EXISTING BUILDINGS

From discussion with the engineers responsible for the structural design of the original buildings we understand that no provision was made for vertical expansion and that the roofs were designed to take standard flat roof loading (which is normally 30 lb/sq.ft. in Jamaica). For the majority of the academic buildings the contractor undertook to fabricate the precast concrete slabs required, and the drawings do not in all cases show the reinforcement provided. Unfortunately neither the contractor nor the consulting engineers are able to locate the design calculations or drawings upon which fabrication of the precast units was based.

The potential for each of the academic buildings for which vertical expansion is proposed by the addition of a second floor is discussed as follows:

1. Classrooms and Laboratories

The roof units to these blocks are of prestressed concrete manufactured by Stresscon Limited who advised that the design roof live loading was 50 lb/sq.ft. This is less than the 60 lb/ft.² recommended for classrooms, but is equivalent to the load of 150 persons of average 200 lb weight spread uniformly over one teaching area.

Since the classes are normally of between twenty and thirty students we consider that an upper storey could safely be constructed as classrooms but not as laboratories. (A structural screed would have to be added.)

The load bearing blockwork and foundations have been checked and are adequate to take the additional load.

2. Administration Block

The existing roof would be adequate to take light office loading (30 lb/ft.²) but no heavy equipment or paper storage should be permitted. If it is required to increase the permissible loading on the roof slabs this may be done by propping the existing precast units and laying an additional two inch thick concrete screed, properly bonded to the existing slab to resist horizontal shear. The walls and foundations would not need to be strengthened.

5.0 STRUCTURAL RECOMMENDATIONS FOR NEW BUILDINGS
AND BUILDINGS TO BE EXTENDED

1. STUDENT ACCOMMODATION

Existing Buildings

The proposed revised planning and modification to existing buildings will have no effect on their structural integrity and no special precautions are required during construction.

New Buildings

It is proposed that the new structure for dormitory accommodation should consist of in situ reinforced concrete floor and roof slabs, on load bearing concrete blockwalls with stiffeners carried to reinforced concrete strip foundations at a minimum depth of 2 ft. 6 inches below existing ground surface. Slabs over long spans or large openings will be supported by downstand reinforced concrete beams.

LIBRARY COMPLEX

Existing Building

The modifications proposed for the library consist of internal replanning and relocation of partitions etc., which will have no effect on the structural integrity of the building.

3. ADMINISTRATION COMPLEX

Existing Building

The existing foundations and concrete blockwalls are more than adequate to carry the increased loading applied by a second floor, but the roof slab will require to be strengthened to accommodate a 60 lb/sq.ft. live load. This may be accomplished by

- a. removing all asphalt waterproofing materials and scarifying upper surface of concrete,

- b. securely propping slabs longer than 10 feet at centre span to relieve dead weight loading,
- c. applying epoxy bonding agent to top of slab, and
- d. casting a 2 inch thickness of fine 3/8 inch aggregate) concrete with 3,000 lb/in² 28 day cube strength to increase overall thickness of slab to 8 inches. The long span beams over the central openings will be similarly strengthened by the addition of a concrete upstand.

Building Extension

The perimeter walls of the upper floor will be of 6 inch thick reinforced concrete blocks with stiffeners corresponding to lower level. Starter bars for walls and stiffeners will be epoxy grouted six inches into existing perimeter beam, and three full width cross walls will be provided over the walls on grid lines B, C, and between A & B.

To ensure maximum flexibility for the additional space, it is proposed that the new roof should be of light weight thermally insulated roof panels with asphalt waterproofing, on open web steel joists spanning the full width of the building (38 feet). These may be supported on the perimeter walls with an overhang of up to 10 feet, if required.

4. CLASSROOM/LABORATORY COMPLEX

Existing Building

The single storey classroom/laboratory blocks have roofs consisting of prestressed concrete slabs spanning transversely between the longitudinal external blockwalls with a six foot cantilever to one end. We are advised by the manufacturer that the slabs have been designed to carry a live load of fifty pounds per square foot, which we consider to be adequate for the roof to become the floor of a second storey extension, provided that the spaces are used for classrooms or laboratories and no heavy equipment or storage is allowed.

In any event, we recommend that load testing should be carried out to determine the safe load carrying capacity of the simply supported span, (and the cantilever), before a final decision is made. If the slab is found to be inadequate, it may be strengthened by the addition of a concrete screed, as previously described, but the existing walls and foundations are more than adequate to accept a second storey.

Building Extension

The upper floor walls will be of six inch thick reinforced concrete block with stiffeners and belt beams, positioned where possible over the walls below and with starter bars dowelled into the existing roof slab. The new roof construction may duplicate what existed previously, or a lightweight structure consisting of thermally insulating roof panels on bar joists on long span steel trusses with independent columns may provide better temperature control with higher ceilings and substantial roof overhangs.

5. MULTI-PURPOSE FACILITY

Existing Building

The proposed replanning and modifications to this building will not affect its structural integrity and there is no requirement for extension; there are therefore no structural implications to be considered.

6. LIVESTOCK COMPLEX and PLANT-PROPAGATION COMPLEX

All the modified or new farm buildings to be provided are of single storey height with minimal aesthetic requirements and the principal objective is to achieve efficient function at minimum cost, subject to structural integrity under hurricane or earthquake conditions.

Ground conditions are good and foundation loadings are light, so no peculiar structural problems are anticipated, and the specifications for the farm buildings to be erected are summarised as follows:

- (1) Chicken Broiler Houses. 4 no. Open shed structures 112 ft. x 6 in. x 26 ft. Corrugated aluminium sheeting on steel purlins on steel portal frames, on square concrete footings.
- (2) Animal Science Laboratory - Central Store Conversion of existing building - no structural implications.
- (3) Abattoir Extension of existing building - Corrugated aluminium sheeting on steel purlins on 6" concrete block walls on strip concrete footings.
- (4) Food Processing Plant Completion of existing building - no structural implications.
- (5) Refrigeration Room. Completion of existing building - no structural implications.
- (6) Dairy Building Closed industrial type building 20 ft. x 24 ft. Aluminium sheeting on steel purlins on light steel trusses on 6" concrete blockwalls on strip concrete footings.
- (7) Piggery Open shed structure 80 ft. x 24 ft. Aluminium sheeting on steel purlins on steel portal frames on square concrete foundations.
- (8) Plant Propagation Complex - Laboratory/ Lecturers Block Industrial type building, roof of aluminium sheeting on steel purlins on light steel trusses on 6" concrete blockwalls (with continuous louvres) on reinforced concrete frame undercroft.

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

SEWAGE DISPOSAL

1.0 GROUND ABSORPTION POTENTIAL

The soils investigations carried out in March 1978 indicated a thin layer of topsoil (clayey-loam) over "decomposed limestone boulders with matrix of calcareous silty sand and gravel (stony marl)" which becomes "more bouldery" with increasing depth. Conditions were similar in each of the 22 borings made, no ground water was encountered, and the soils report notes that the drilling wash water was frequently completely lost at the lower depths, indicating the presence of seams and fissures. No percolation tests were carried out, but the soils consultants predicted a percolation rate of one inch per minute and recommended the use of septic tanks and absorption pits for the disposal of sewage effluent.

2.0 EXISTING SEWAGE DISPOSAL

The soils consultants' recommendations and the engineers' drawings indicate that sewage disposal is by means of septic tanks and absorption pits, but we were advised by campus personnel that leaching beds or tile fields had in fact been provided. We believe that the latter opinion may be in error, but short of excavating to uncover the work constructed we had no way of establishing which type of system existed. The fact remains that the sewage disposal system has functioned satisfactorily since it was built and we received no reports of blockages or flooding.

3.0 PROPOSED SEWAGE DISPOSAL

From a practical and economical point of view we recommend that additional septic tanks and absorption pits should be provided to accommodate the increased sewage flow. Septic tanks should be of the double chamber type with baffles sized to retain the maximum flow of sewage for a minimum period of 24 hours and absorption pits will be circular, with random rubble open jointed walls, reinforced concrete belt courses and cover slab, constructed to a minimum depth of twelve feet below ground level.

4.0 ENVIRONMENTAL CONSIDERATIONS

In the absence of any existing system for the complete treatment of sewage effluent we consider that septic tanks and absorption pits offer the most effective and economical method of sewage disposal, with negligible adverse impact on the existing environment. The site is close to the sea, and apart from the Rio Grande and Clear River, which could not be affected, there are no usable surface or underground water courses which might become contaminated.

Having said this, we note that it might happen in the future that water is pumped from underground to augment the College water supply or for irrigation. In the latter case, the presence of bacterially infected water will be of no consequence, but if it is to be used for drinking purposes a health hazard might arise. We believe that pumping locations may be positioned sufficiently far from the nearest absorption pit that the problem would be eliminated, but in view of the presence of seams and fissures which could allow untreated sewage to travel long distances underground, we recommend that precautions should be taken to protect the safety of the drinking water supply. In view of the function of the College of Agriculture we would like to see the sewage effluent used for irrigation purposes, but we understand that funds to provide the necessary infrastructure are not available at this time.

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ROAD CONSTRUCTION

1.0 GROUND CONDITIONS

In most areas observed excellent conditions exist for the construction of service roads, since the underlying marl is close to the surface and there is a substantial amount of outcropping rock. In the area designated for the Engineering/Farm Complex however, there is evidence of a clayey overburden which will have to be removed before a suitable road can be constructed, and access to this complex from the College Campus is planned along the side of a steeply sloping escarpment which will involve a substantial amount of cut and fill, retaining walls and culvert drainage.

2.0 SPECIFICATIONS FOR ROAD CONSTRUCTION

1. Where marl exists with shallow topsoil

Remove topsoil, scarify and grade top surface of marl, provide additional marl if required and consolidate to form sub-base twenty feet wide.

Lay and consolidate six inch thick layer of crushed graded hard limestone, 2 inch maximum size, graded to falls and currents, 18 feet wide.

Lay one inch thick asphaltic surfacing, consisting of tack coat, two layers of 3/8 inch maximum size hard broken riverstone gravel bound with penetration grade hot asphalt, and a finishing surface of 1/8" maximum size grit to form a carriageway 16 feet wide.

2. Where clay overburden exceeding two feet thick exists

Excavate top soil and clay to minimum depth of one ft. six inches below existing surface over width of twenty feet and consolidate subgrade.

Lay and consolidate selected marl in two layers six inches thick over full width of excavation graded to falls to form sub-base.

Lay and consolidate crushed limestone and complete road surfacing as previously described.

Note: External grading and culverts under road will be provided to ensure adequate drainage of the road bed and prevent inundation.

3. Where road is constructed on cut and fill

Fill from excavation on imported selected fill is to be used to make up levels as required in consolidated 9 inch layers, (eliminating boulders over six inches in diameter, clay, roots, and organic material) up to a level twelve inches below the cut surface.

The final foot of make-up is to be of selected marl laid in two consolidated six inch layers as previously described to give a sub-base (including the cut surface) twenty feet wide.

The road is to be completed with a six inch layer of crushed graded limestone and 1 inch asphaltic surfacing, as for other road construction.

Culverts, where required, will be of concrete pipe, suitably sized, with reinforced concrete head walls and aprons. Retaining walls will be of fully bonded random cutstone with belt and capping beams and weep holes (standard in Jamaica).

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

WATER RESOURCES

NOTE: Following submission and review of the draft report it was decided that no funds were available for river or surface water storage, irrigation, or watershed conservation. The following analysis (with the exception of the section on water supply) is therefore included in the Final Report for information only.

1. EXISTING CONDITIONS

The existing water supply to the College of Agriculture comes from the Parish Council water mains, and a reserve supply is maintained in two 15,000 gallon tanks situated near the old Great House, and one of 21,000 gallons, south of the road, to supply the farm buildings.

We are advised that the water supply from the Parish Council main (6 inches diameter) is adequate for human and animal needs except when it fails altogether, (e.g. when a cruise ship calls at Port Antonio).

There are no existing irrigation infrastructure facilities at Passley Gardens.

2. REQUIREMENTS OF TERMS OF REFERENCE

- a. Determine adequacy and potential of existing water supply.
- b. Determine the water resource potential of the Watershed contributing to on campus water courses.
- c. Determine the potential for impoundment and storage of these flows, taking into account other claims for such water.
- d. Determine the feasibility of diversion to storage or direct usage of excess flows at the existing diversion point (of Clear River).
- e. Carry out preliminary designs of feasible and needed water resource developments at the COA campus.

3. REQUIREMENTS OF PROJECT IDENTIFICATION DOCUMENT

- a. Acquisition of 150 acres of land in Rio Grande Valley for instruction in irrigated farm practices.
- b. Analysis of capital and maintenance costs.

4. WATER SUPPLY REQUIREMENTS IDENTIFIED BY COLLEGE

- a. Increase reserve storage of water to 150,000 gallons.
- b. Secure permanent supply of water from Clear River.
- c. Rainwater run-off to be conserved in reservoirs for irrigation purposes.
- d. Provide irrigation water for between 50 and maximum 100 acres, most of which will be pasture land, and for which the equivalent of one half inch of rain per week will be adequate.

5. DISCUSSION

On the assumption that it is not part of the intention of the expansion plan for the College of Agriculture to generate water supplies for external use, the governing criterion for the development of water resources will be the maximum requirement which will be needed to satisfy the expanded facilities.

This will be composed of supplies satisfying the following requirements.

- a. For human use - water which has been treated and can be shown to be free from contaminants and harmful bacteria.
- b. For animal use - clean water which may be untreated, but which is not contaminated and will not affect the health of animals.
- c. For irrigation purposes - untreated water which may be unfit for consumption, but which does not contain sediment or other substances likely to harm or block pumps, nozzles and the like.

The estimated daily requirements of each type of supply are calculated as follows:

a. <u>Human</u>	Number of students	600
	Number of faculty	23
	Number of support staff (say)	77
	Maximum Total	<u>700</u>

A high average per capita usage for this type of community, to include for drinking, bathing, laundry and cooking requirements would be 80 imperial gallons (100 U.S.Gallons) per day.

The daily requirement would therefore be 56,000 gallons.

b. Animal

The animal population is clearly variable, and maximum numbers were not established at our briefing session with the College faculty.

Estimated numbers, however, are as follows:

a.	Chickens	i)	Broilers	10,000
		ii)	Layers	2,000
b.	Cattle	i)	Milking cows	20
		ii)	Calves	12
		iii)	Beef herd	105 (1½/acre on 70 acres)
		iv)	Goats	150

Water requirements are for drinking, food preparation and wash downs, and are calculated as follows.

Drinking - Chickens	375 gallons
- Cattle	400 gallons
Food Preparation	100 gallons
Wash down	1,000 gallons
	<hr/>
	1,875 - say 2,000 gallons/day.

c. Irrigation

Water requirements for irrigation purposes obviously vary with the type of crops to be grown, and the amount of natural rainfall. Rainfall effectiveness, in turn, is affected by frequency, intensity, absorptive characteristics of the soil and evaporation.

It has been established that the minimum water requirement for pasture land is the equivalent of one half inch of rain per week reaching the root system, while for the healthy development of most vegetables an average of one inch per week is necessary. This value, of course, is exceeded for water intensive crops such as sugar cane or alfalfa.

The parish of Portland has the highest annual rainfall in Jamaica, and in the Port Antonio area the 91 year average (1870 - 1960) is 131 inches per year while the corresponding figure for Passley Gardens is 126.51.

This is equivalent to an average of 2.43 inches of rain per week which is clearly more than adequate for the agricultural requirements of the COA, but unfortunately rainfall distribution throughout the year is uneven and the monthly average frequently falls below ten inches. It is a rare month when no rain falls at all, and the worst drought we can find in the records available occurred in 1968 when no rain is recorded as falling in Port Antonio for the months of February, March and April. During the same period, however, substantial rainfalls were recorded at weather stations in other parts of Portland, and the total for the year was above average.

If then, it is proposed to irrigate one hundred acres of agricultural land, of which 75 acres is pasture and 25 acres, (say), is under crops, and it is proposed to store enough water to provide minimum water requirements for a three month drought period, then the reservoir capacity will be 18½ million gallons (say 500 ft. x 500 ft. x 12 ft. deep).

The expenditure which would be involved does not seem justified to guard against such an infrequent occurrence, but would be necessary, (if this solution were chosen), to maintain continuous field operations at the College of Agriculture.

Bearing in mind that the Rio Grande and the Clear River (to west and east of the site respectively) are recorded as having year-round flow,

it would seem more appropriate to draw water from either or both of these sources to satisfy irrigation requirements, and provide storage capacity for (say) four days supply.

Hence water requirements for irrigation for the 100 acres previously mentioned would be 205,000 gallons per day, with reservoir capacity of 850,000 gallons (say 120 ft. x 120 ft. x 10 ft. deep).

6. DESIGN PARAMETERS

WATER SUPPLY

Since the mains water supply is considered to be reliable, except for intermittent periods when it is discontinued for intervals of up to twenty four hours, we propose that a reservoir should be constructed on high ground south of the main road to hold a minimum of three days supply and deliver it to the campus at adequate pressure.

The quantities of water required for livestock are small in comparison with those needed for domestic purposes, and it is therefore proposed that these should be supplied from the same reservoir.

The total reservoir volume required would therefore be $3 \times (56,000 + 2,000) = 174,000$ gallons.

A circular reservoir is proposed, 80 ft. diameter, with water depth 6 ft., in which the floor is of concrete, perimeter wall is of concrete block, with waterproof lining & roof of aluminium sheeting. (Capacity 188,496 gall.)

A simple chlorinating system would be provided so that the water supply could be treated if required, and we recommend that exploration for underground water supply should be instituted so that an alternative water supply will be available in the event of emergency. On the assumption that an underground source exists, we have included for the provision of a well to 200 ft. depth to produce up to 100,000 gallons per day.

A suitable location for the new reservoir would be immediately to the south of the existing tank serving the farm school. This area is fairly level,

ground bearing conditions appear to be good and the elevation is not too high to be served by the Parish Council mains pressure.

- IRRIGATION

The requirements for irrigation purposes are somewhat conflicting as between the P.I.D., the Terms of Reference and the requirements of the College.

We have assumed that the 150 acres to be acquired by the College of Agriculture in the Rio Grande Valley (as described in the P.I.D.) or in some other location will be used eventually for instruction in irrigation techniques for flat lands and will deal with

- a. irrigation by canals (say 50 acres)
- b. irrigation by pump and overhead sprinklers (say 50 acres)
and
- c. irrigation by drip feed methods (say 20 acres).

The balance of thirty acres will be used for roads, storage buildings and other non-crop areas.

Since the area to be acquired is not yet defined, it is not possible to make specific proposals for the irrigation infrastructure but the following facilities would have to be allowed for:

1. Intake chamber and pumping station at Rio Grande (with pumps).
2. Reservoir (say 750,000 gallons).
3. Piping from Rio Grande to Reservoir.
4. Piping from Reservoir to fields.
5. Main and tributary canals.
6. Header chamber for canal system.

It is assumed that sprinklers, demountable hoses, drip feed systems etc. will be supplied as plant and equipment.

The lands to the east of the College campus are partially under cultivation but we understand that the final pattern of development has not yet been decided. On the assumption that this area will be used mainly as grazing land, and for fruit and coconut trees, with some annual crops, irrigation requirements will be less stringent and can be satisfied with mobile rotary sprinklers operating from high pressure pumps drawing water from a reservoir.

The most convenient location for this reservoir would appear to be a localised depression at elevation 100 feet a.s.l. towards the eastern end of the site, which has a potential maximum capacity in excess of 15 million gallons. The area is fertile, however, and has recently been cleared, apparently for planting, which means that a decision will have to be made as to whether this location is the one most suitable for a reservoir. From investigations made following our preliminary review, we find that the Parish Council impoundment on the Clear River is at approximately 130 feet above sea level, which means that a second take-off constructed just below this point could flow by gravity to the reservoir site.

From here it will of course have to be pumped to points of use, but we have assumed that this will be done using mobile farm equipment.

To minimise infrastructure costs we have allowed for the construction of a lined reservoir of one million gallon capacity with flow from the river controlled by a float activated valve at the discharge end of the 6 inch diameter supply pipe. This will ensure that the draw off from the river source is equivalent to the quantity used.

There are other parties drawing water from the Clear River, but they are also using the Parish Council impoundment, and a separate catchment at lower level will ensure that their supplies are unaffected. We were unable to discover whether there are other impoundments below this level, but the possibility seems unlikely.

The infrastructure works for this section of the irrigation infrastructure would therefore be:

1. Intake chamber with screens, by-pass, and lock-off valve at Clear River.

2. Construction of reservoir in natural depression.
3. Piping from Clear River to reservoir.
4. Discharge valve and flow control

We propose that investigations should also be carried out to determine whether there are underground water resources at the eastern end of the site and a sum will be included in the estimates to construct a 200 ft. deep well to provide an alternative source of supply, which could be connected directly to mobile overhead sprinkler systems.

For full irrigation coverage a similar well could be sunk to serve the area west of the college campus.

7. RIVER SUPPLY REQUIREMENTS

The Rio Grande is known to have constant year round flow even through the discharge reduces drastically during dry periods. We are told by Mr. Desmond James, who works for the Parish Council and is responsible for the water impoundment at Clear River, that the river has never run dry in the thirty years of his experience. On the assumption that 220,000 gallons per day will be the maximum required from each river the minimum rate of flow will need to be not less than 2.54 gallons/second or 0.4 cusecs. This will be provided by a body of water two feet wide, four inches deep, flowing at an average speed of one half-mile per hour, which is negligible flow for the rivers in question.

8. WATER RESOURCE POTENTIAL OF THE WATERSHED

The total land area occupied by the College of Agriculture is said to be 600 acres, although our estimate of the area shown on the map provided to us is closer to 400 acres. The contours are such that virtually all

the water falling on that portion of the site situated south of the road will tend to flow towards the northern (road) boundary while all the water falling on the remainder of the site will tend to flow towards the sea. Otherwise, there is no indication that surface water from the College site will flow on to adjoining properties although the COA could be the beneficiary of water flowing across or under the road from land owned by others to the south of the main road.

The gross recoverable water from rainfall on the site would be the total quantity falling, less evaporation, less vegetation demand, less transpiration; and consists of surface water and underground water supplies.

Using the lower figure for land area, the total volume of water produced on the COA site by one inch of rain is 9.1 million gallons. The portion of this which soaks into the ground and remains there is, of course, only recoverable if an aquifer exists where it can accumulate and from which it may be pumped.

The amount of surface water available for collection, on the other hand, is extremely variable for each one inch of rainfall, the quantity depending upon

- a. the absorptive characteristics of the ground
- b. the moisture content of the ground
- c. the gradient of the ground surface
- d. the intensity and duration of rainfall
- e. the amount of ground cover (vegetation)
- f. the temperature and humidity.

Although, as previously noted, the ground slopes generally towards the north and the sea (from a maximum of 700 feet to cliffs 25 feet high) there is a coastal strip where the gradients are relatively shallow - one in twenty or less - which one might expect to become inundated with water from higher ground during periods of heavy rainfall.

We were advised by local residents, however, that such flooding does not take place and that even after periods of very heavy rain, ground surface

water disappears very quickly. Our inspection of the site did not reveal any obvious areas of heavy scouring such as would occur when large volumes of water move rapidly along existing watercourses.

From this evidence, supported by soil description and absence of ground water in the records of soil borings which were made in 1978 we are of the opinion that normal rainfall produces only nominal collectable run-off, and that the cost of creating mini dams and sealing the ground to prevent absorption would be economically unsound, compared with the cost of supplies from wells or rivers.

9. WATERSHED CONSERVATION

Watershed Conservation would need to be practiced at the Passley Gardens site for four reasons.

- a. Preservation of water supplies.
- b. Prevention of scouring and removal of topsoil.
- c. Prevention of flooding in low lying areas.
- d. As instruction for students.

In the absence of any significant and general evidence that scouring or flooding is taking place, and if it is agreed that the collection of surface water is not a practical proposition in an area of such absorbent ground, then the science of watershed conservation becomes an academic exercise for the benefit of students. For example, reforestation techniques could be practised on the steeply sloping ground south of the livestock buildings, and terracing in the area surrounding the Teachers Training College but we do not see the need for capital expenditure on any infrastructure works to support these activities. It goes without saying, however, that the planning of any new work should take into account the likely environmental impact, and seek to avoid any detrimental effect on the surrounding areas.

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ESTIMATES OF COST: HYDRAULIC ENGINEERING

Since it is not intended to proceed with any infrastructure work in connection with river impoundment or irrigation, estimated costs for modifications to water supply only are given, as follows:

1. WATER SUPPLY TO COLLEGE CAMPUS AND FARM BUILDINGS

1.	189,000 Gallon Storage Tank	170,000
2.	Chlorinating Equipment	12,000
3.	Additional 4" ϕ Galv. iron pipe	48,000
4.	Remove existing tanks and realign system	6,000
5.	Pump and collection chamber to boost water supply from Parish Council main	15,000
		<u>15,000</u>
		<u>\$251,000</u>

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ELECTRICAL & MECHANICAL CONSIDERATIONS

The present system is fed by the Jamaica Public Service Company Limited overhead with the high tension wires terminating at the Administrative Area with pole mounted transformers to provide a 3 phase, 4-wire, 240/120 volt, 50 hertz supply.

The buildings are fed via open-wire on racks then under ground to the various unit buildings.

Expansion of the system can be achieved by either of two methods:

1. Extending the high voltage system and using transformers as necessary.
2. Increasing the transformer capacity and extending the low voltage lines.

Stand-by Generator facilities are provided for the Cold Room and should be relocated along with it.

Additional stand-by power should be provided for the additional refrigeration, the Administration Block and the Engineering Workshop.

The particular requirements of each building are outlined below:

A. CENTRAL COMPLEX

1. STUDENT RESIDENCES

The electrical supply to the new blocks should follow the existing format of underground feeds from open-wire rack-mounted low voltage supplies.

The lighting levels for studying should be a minimum of 30 foot candles in the desk top plane.

2. LIBRARY BUILDING

A new incoming supply will be carried to a mains panelboard which will backfeed the existing panel. The requirements for the reading areas are a minimum of 30 foot candles at table height. The lighting modifications will be extensive.

3. CLASSROOM COMPLEX

A. EXTENSION TO EXISTING BUILDING ALTERNATIVE

Some maintenance of the facilities is required. The existing panelboard will be back-fed by a cable from a new main panel in the new second level extension.

LEVEL 2 EXTENSION

This will be supplied by a new incomer through a new distribution panelboard. Special requirements for the laboratories are:

- i. Propane gas distribution and fittings.
- ii. Lighting level of 50 foot candles at counter height.
- iii. Fume exhaust chamber.

B. NEW BUILDING ALTERNATIVE

New mains power will be required, feeding a main panelboard on Level 1 and sub-feeding a distribution panel on Level 2. The special requirements are

- i. Propane gas distribution and fittings for the laboratories.
- ii. 50 Foot candle lighting at laboratory counter top height.
- iii. 30 Foot candle lighting in classrooms at desk height.
- iv. Fume cupboards for the laboratories.

- v. Dimmer-controlled lighting and spot flood lights for the Lecture Theatre.
- vi. Audio-visual facilities for Lecture Theatre.
- vii. Fire extinguishers, alarms and exit lights for Lecture Theatre.

4. ADMINISTRATION BUILDING

A. EXISTING SERVICE

This is inadequate to meet the needs of the extended facility. Appropriate cable will be run to a new main panel which will backfeed the existing panel.

B. ALTERATION TO EXISTING LEVEL 1

Most of the work in this section will be in the Board Room conversion. The other work will be rewiring and replacing outlets and lighting fixtures.

C. LEVEL 2 EXTENSION

The requirements for the Computer Room are

- i. "Spike" protected and isolated power supply for the Computer.
- ii. Humidity controlled airconditioning.
- iii. Lighting level of 50 foot candles at desk height.

The other sections of the building are standard -

- 5 foot candles in Waiting Areas
- 10 foot candles in Offices & Board Room
- 30 foot candles at desk tops.

5. MULTI-PURPOSE FACILITY

A. EXISTING FACILITY MODIFICATIONS

The power capacity of the existing services is adequate to feed the alterations and extension.

The Cold Room will have to be recommissioned, relocated and the Generator maintained.

B. STAFF RESIDENCES

These are located in a new area and will require a pole mounted distribution line from which each unit would be fed. This would most safely be done by low voltage along the common driveway, feeding overhead to potheads on each building.

C. PLANT PROPAGATION COMPLEX

A new main power supply will be required for the Laboratory/Lecturers Block. Special requirements are

1. Propane gas supply and fittings.
2. Fume cupboard.
3. Lighting level - 50 foot candles at counter level.

D. LIVESTOCK COMPLEX

1. POULTRY HOUSES

A. EXISTING BUILDING - minimal electrical work.

B. NEW BROILER HOUSES - 5 foot candle lighting and new power supply required.

2. PIGGERY

Mains power supply and 5 foot candle lighting level required.

3. DAIRY

A hot water supply is required, and heating may most efficiently be done by means of a solar heater system with an electrical booster and circulating pump to ensure adequate water flows at the correct temperature. An alternative source of hot water is the calorifier in the Food Processing Building. This system also requires a circulating pump to ensure adequate flow rates.

4. ENGINEERING BUILDING CONVERSION TO ANIMAL SCIENCE LABORATORY/CENTRAL STORE

This conversion will require some rewiring and fixture replacement and relocation. The Preparation Room will require propane gas distribution and fittings as well as an exhaust fan.

5. ABATTOIR

Special Requirements:

- A. Completing and Commissioning the Refrigeration Room.
- B. Mains Power Supply for Refrigeration Equipment.
- C. Smoke Distribution Piping.
- D. Refrigeration Equipment for the Cutting & Curing Rooms.

6. COMPLETION OF FEEDMILL/HATCHERY & WELFARE BUILDINGS

Mains Power Supply required.

E. ENGINEERING/FARM COMPLEX

1. ENGINEERING WORKSHOP

A new power supply will be required for this building. Special requirements are

- A. Power Isolators for Machinery.
- B. Exhaust System.

- C. 100 Foot Candle Lighting Level at Bench Height.
- D. Compressed-Air Supply.

2. FARM COMPLEX

A. ANCILLARY STAFF HOUSING

Main power supplies to be taken from new pole line.

B. MAINTENANCE/REPAIR WORKSHOP

Requirements as for Engineering Workshop.

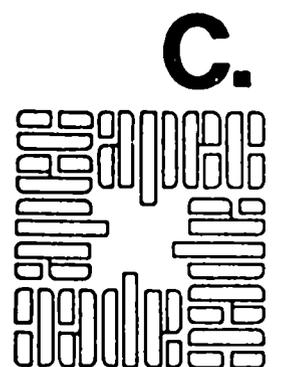
C. FARM STORE

Mains power supply and 5 foot candle lighting levels.

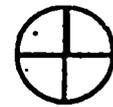
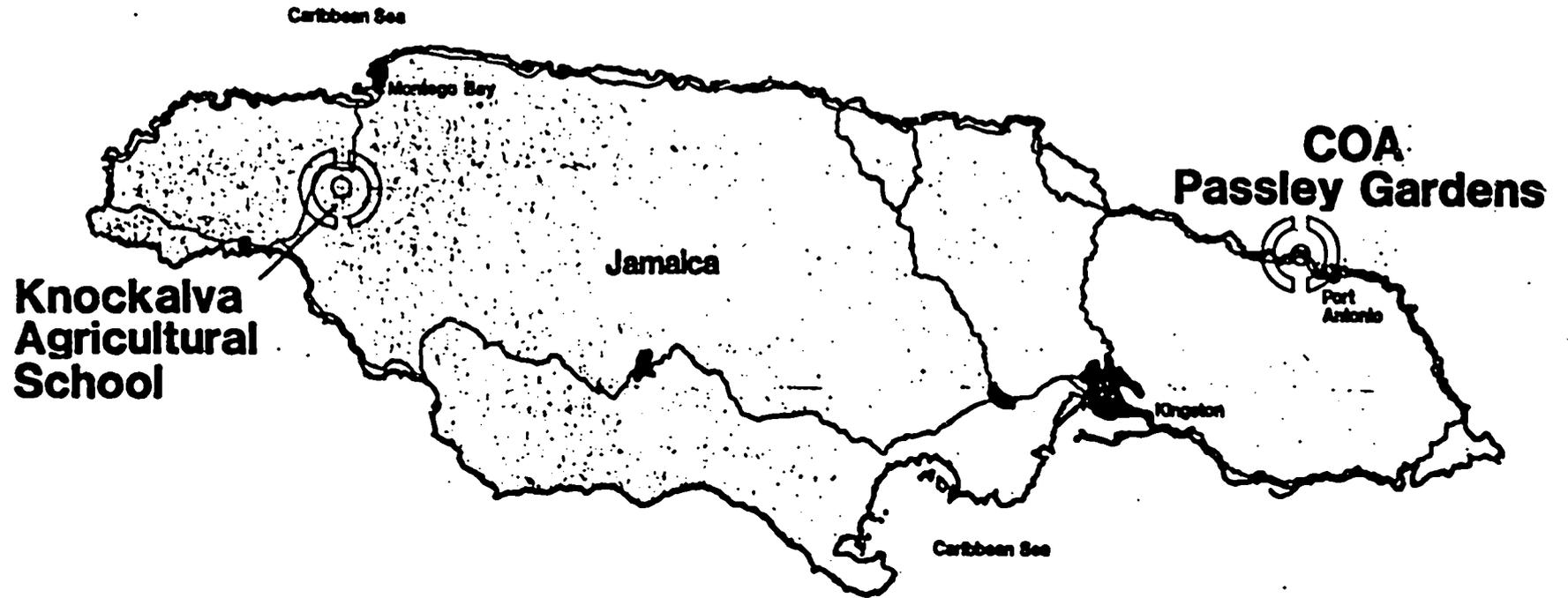
3. OTHER SERVICES

A new pole line distribution will be required to run from the Central Campus at high voltage and then at low voltage via transformers for distribution in the Complex.

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Location

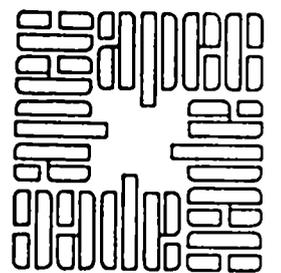


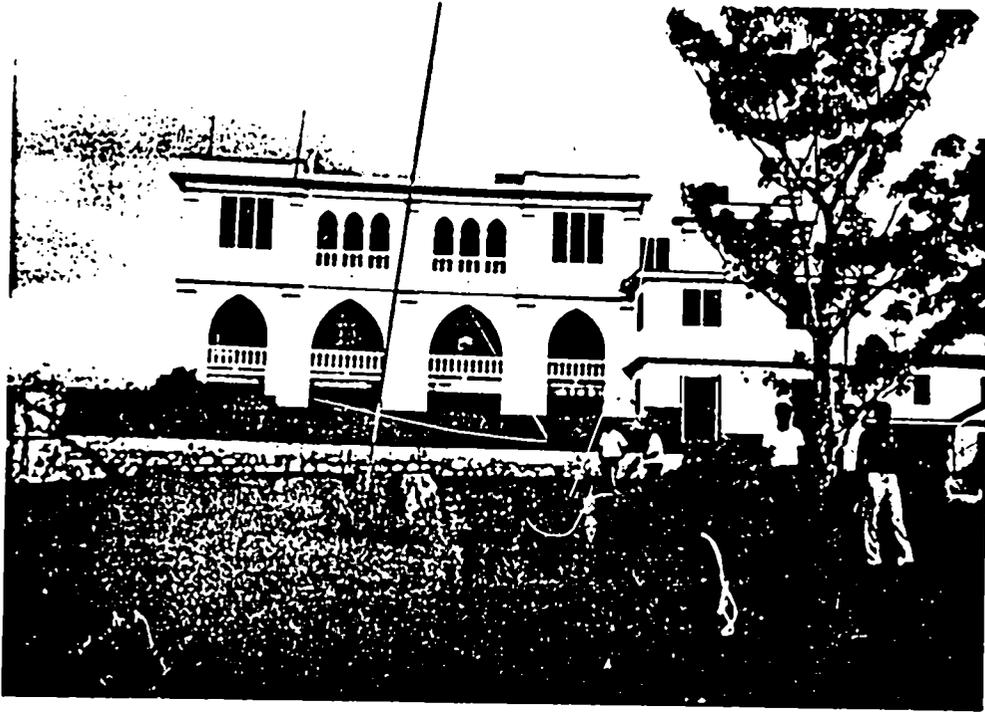
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1. GENERAL PLANNING



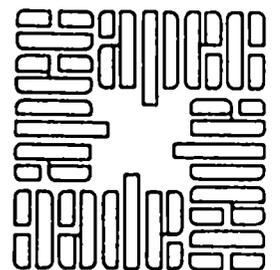


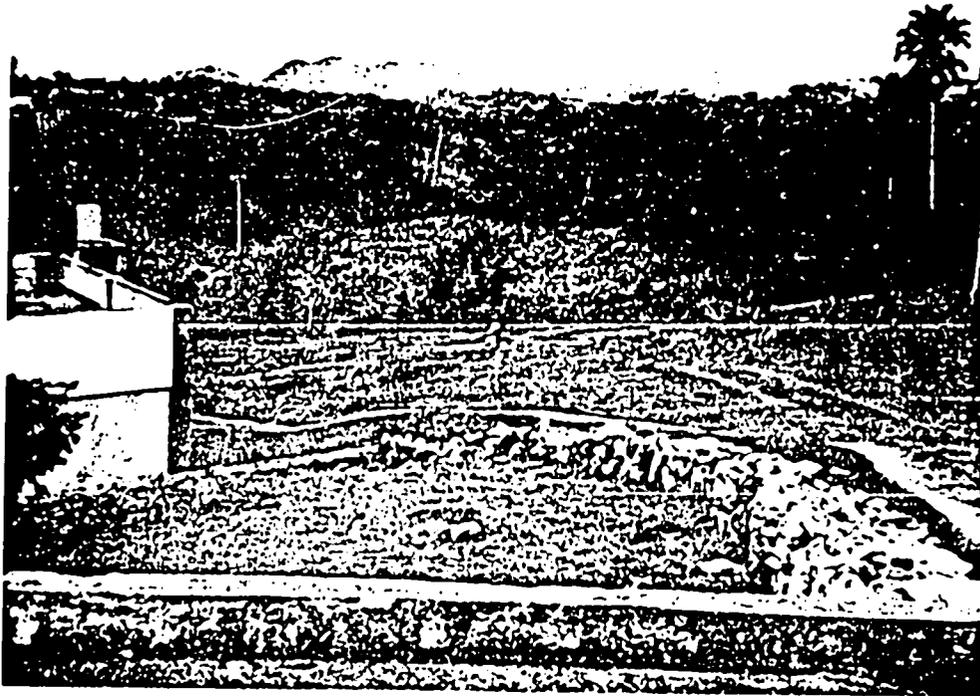
MAIN HOUSE FROM WEST



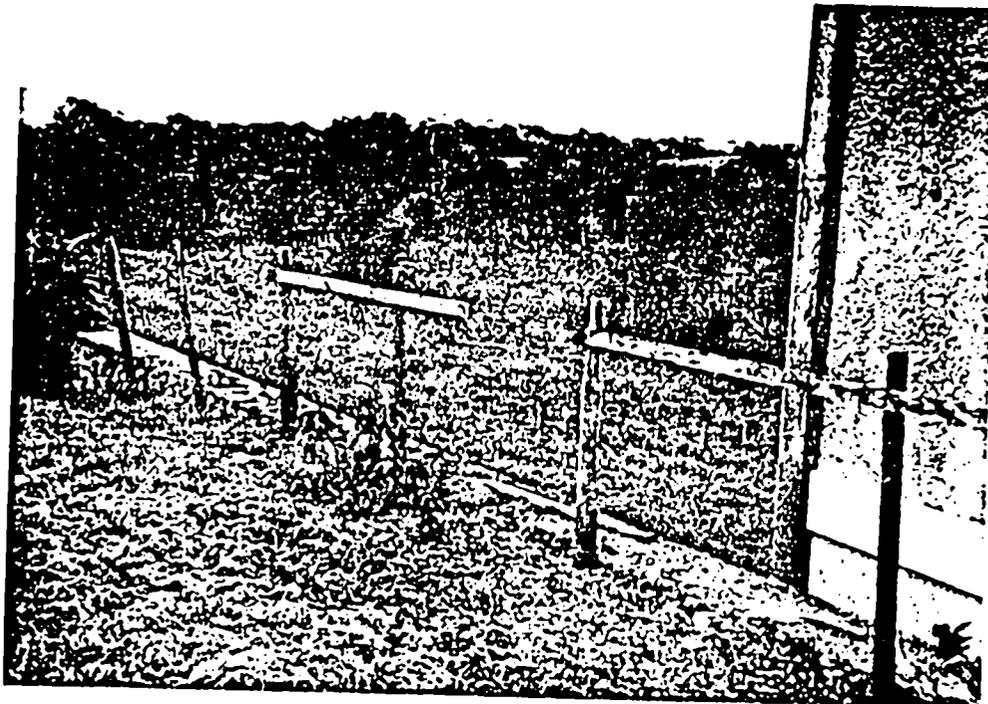
PROPOSED SITE FOR MULTI-PURPOSE FACILITY

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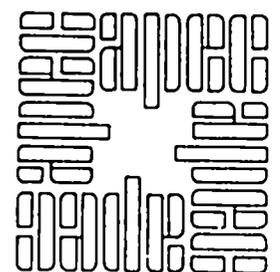


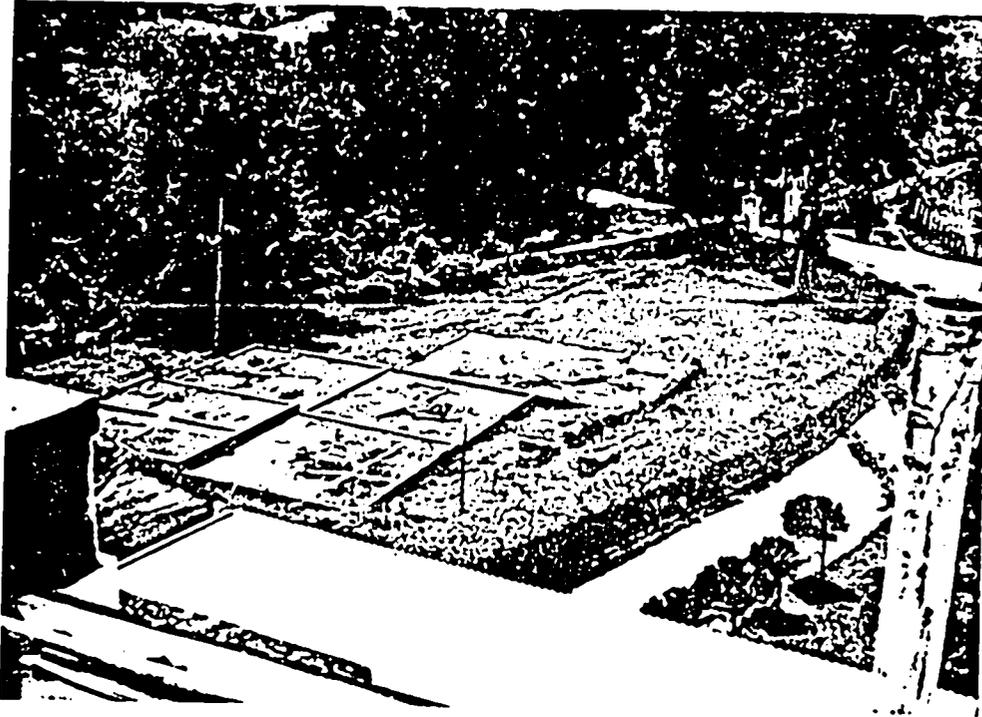
PROPOSED SITE FOR NEW GIRLS DORMITORIES



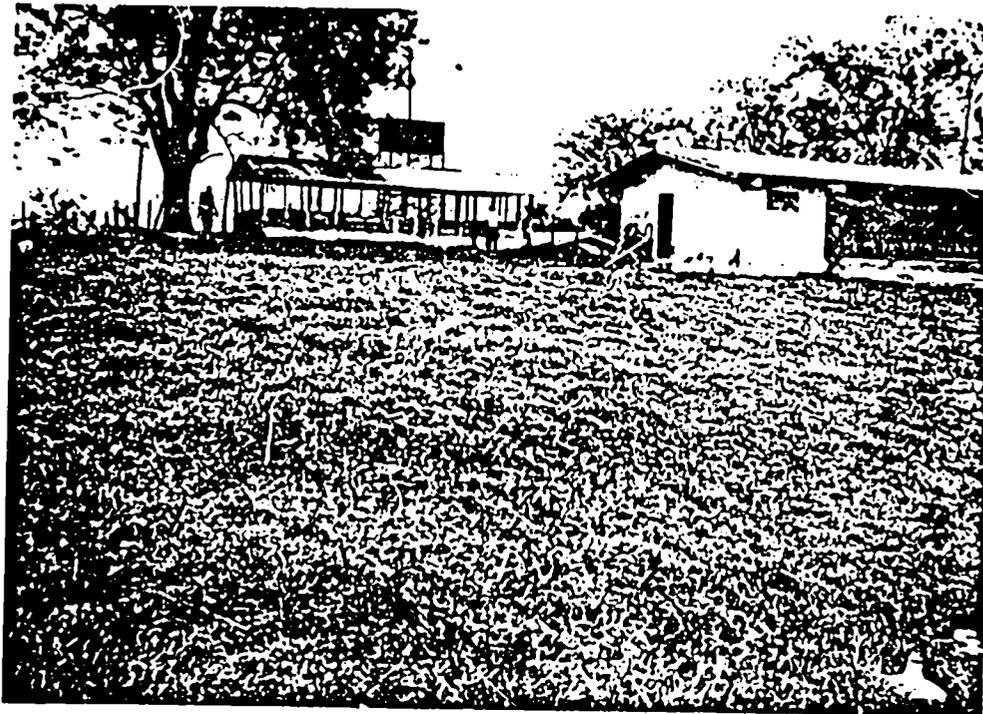
PROPOSED SITE FOR NEW BOYS DORMITORIES

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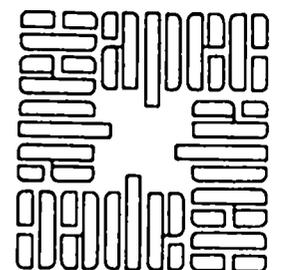


PROPOSED SITE FOR NEW CLASSROOM BLOCK



PROPOSED SITE FOR NEW STAFF APARTMENTS

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GENERAL PLANNING

1.0 EXISTING FACILITIES

The Knockalva Agricultural School is located near Ramble, in the north-western Parish of Hanover, on the main highway between Montego Bay & Savanna-la-mar.

The site is bounded on the north by a Teachers Training College, on the south by a secondary highway, on the north-west by the main highway and elsewhere by other properties.

The topography is typical of this upland area, characterised by undulating land with alternating hillocks and sink holes.

The Central Campus is sited near to the main highway, with the main entry from the secondary highway. The Central Campus is dominated by the original 3-floor main house of the property, which presently provides accommodation for Administration, Library, Student/Staff Dining Areas, Food Preparation and Storage. Immediately south of the main building are outbuildings of 1 - 3 floors housing Laboratory/Classrooms, Laundry Facilities, Welfare Facilities and Students Sanitary Facilities. Other outbuildings in this area are in a state of disrepair.

To the north-east of the main house are the student residences consisting of 5 no. 2-floor and 1 no. single floor blocks, whilst to the north are some Poultry Houses, workshops and a building under construction for an Alternate Energy project. Playing Fields are to the north of these buildings.

A Piggery and other Poultry Houses are located to the north-west of the workshop complex, whilst 4 no. 2BR single apartments are located to the west of the complex. Adjacent to the staff apartments is a residence for married staff with direct access from the secondary highway.

To the south of the staff apartments, are a group of workshops/classrooms currently being remodelled.

Approximately 1 mile to the east of the Central Complex is situated a newly constructed Dairy Complex with direct access from the secondary highway and with access from the Central Complex by a property track. The Dairy Complex consists of a Dairy Building housing a milking shed, a classroom, storerooms and other facilities; a large paved area with holding pens and a Headman's House.

2.0 ADDITIONAL REQUIREMENTS

It is proposed that the School be expanded from the present residential student enrolment of 154 to a total of 300 with complementary expansion of other areas.

The additional requirements requested in the preliminary briefing were substantially in excess of budget provisions and the review of the preliminary report resulted in priority needs which are summarized below:

1. CENTRAL CAMPUS - expansion of Student Residences & the Classroom/Laboratory Complex; a new Multi-Purpose Facility, 4 new single-staff 2BR Apartments and one 3BR Residence for married staff.
2. FARM AREA - new Poultry Houses, Piggery and an Abattoir.

3.0 DEVELOPMENT STRATEGY

At the outset, it was generally agreed that the location of the existing Piggery & Poultry Houses so near to the Main House and Residential Accommodation was unsatisfactory on environmental grounds.

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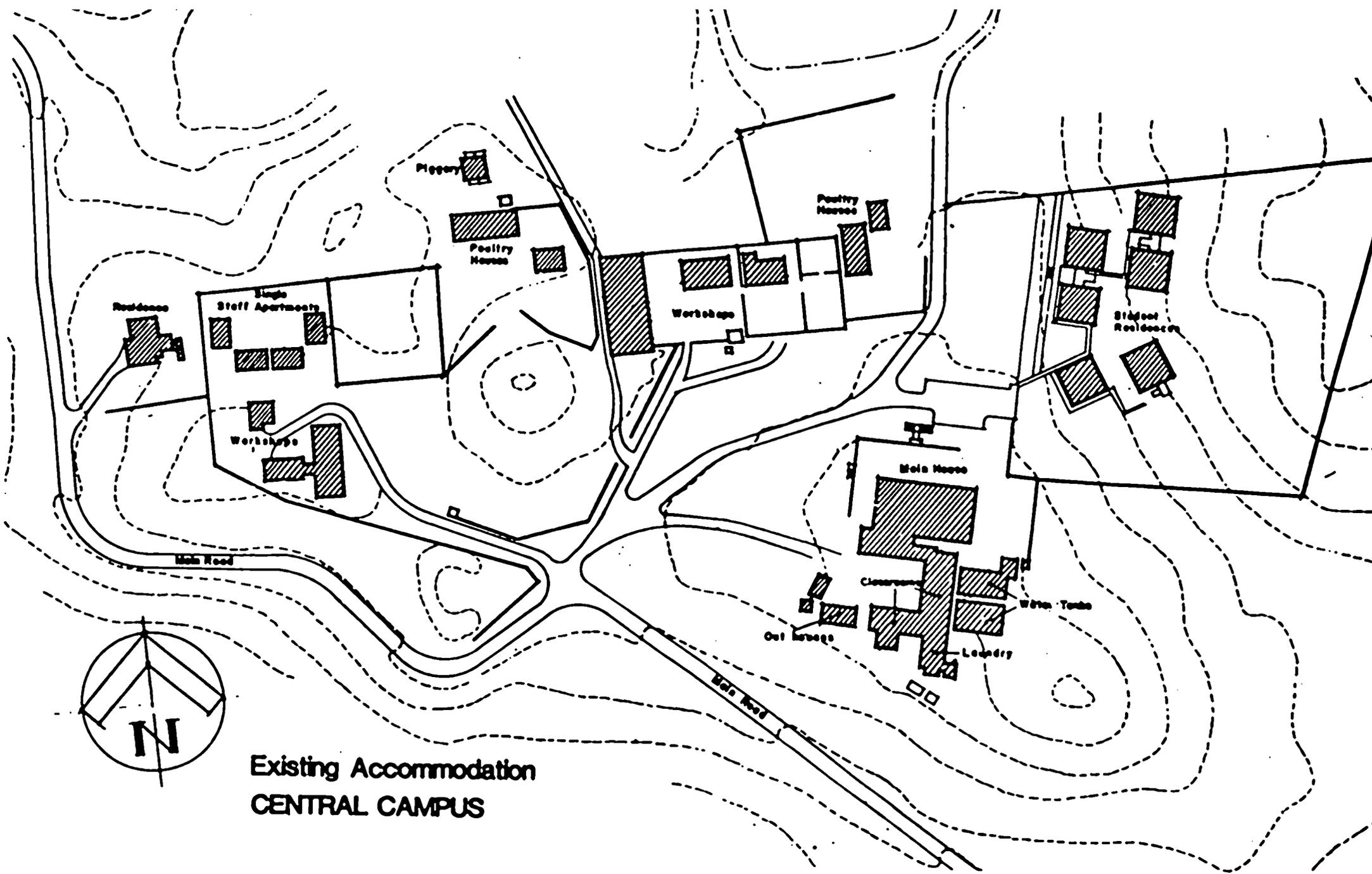
A decision was taken to relocate all these facilities to the site of the existing Dairy Complex which would then become a general Farm Complex. A secondary benefit of the relocation was the creation of much needed building areas in the vicinity of the Main House for the expansion of facilities there.

1. CENTRAL CAMPUS

There are areas adjacent to the existing student residences designated for expansion and those were found to be adequate for the contemplated additional accommodation. The areas proposed for new dormitories lie to the immediate north and south of the existing dormitories and the planning conforms to the slopes as well as to the existing pattern of development.

The Multi-Purpose Facility is a key element in the proposed expansion of the School and its eventual siting resulted from careful consideration of its many proposed uses as much as from the constraints of limited areas available for a building of this size and function. The proposed site is an area south of the playing fields, immediately west of the student residences and some distance north of the Main House. The area between the Main House and the Multi-Purpose Facility has been proposed as a future paved recreation area with Changing Rooms. These arrangements will require demolition of existing poultry houses and the relocation of the existing property track leading from the Car Park immediately north of the Main House.

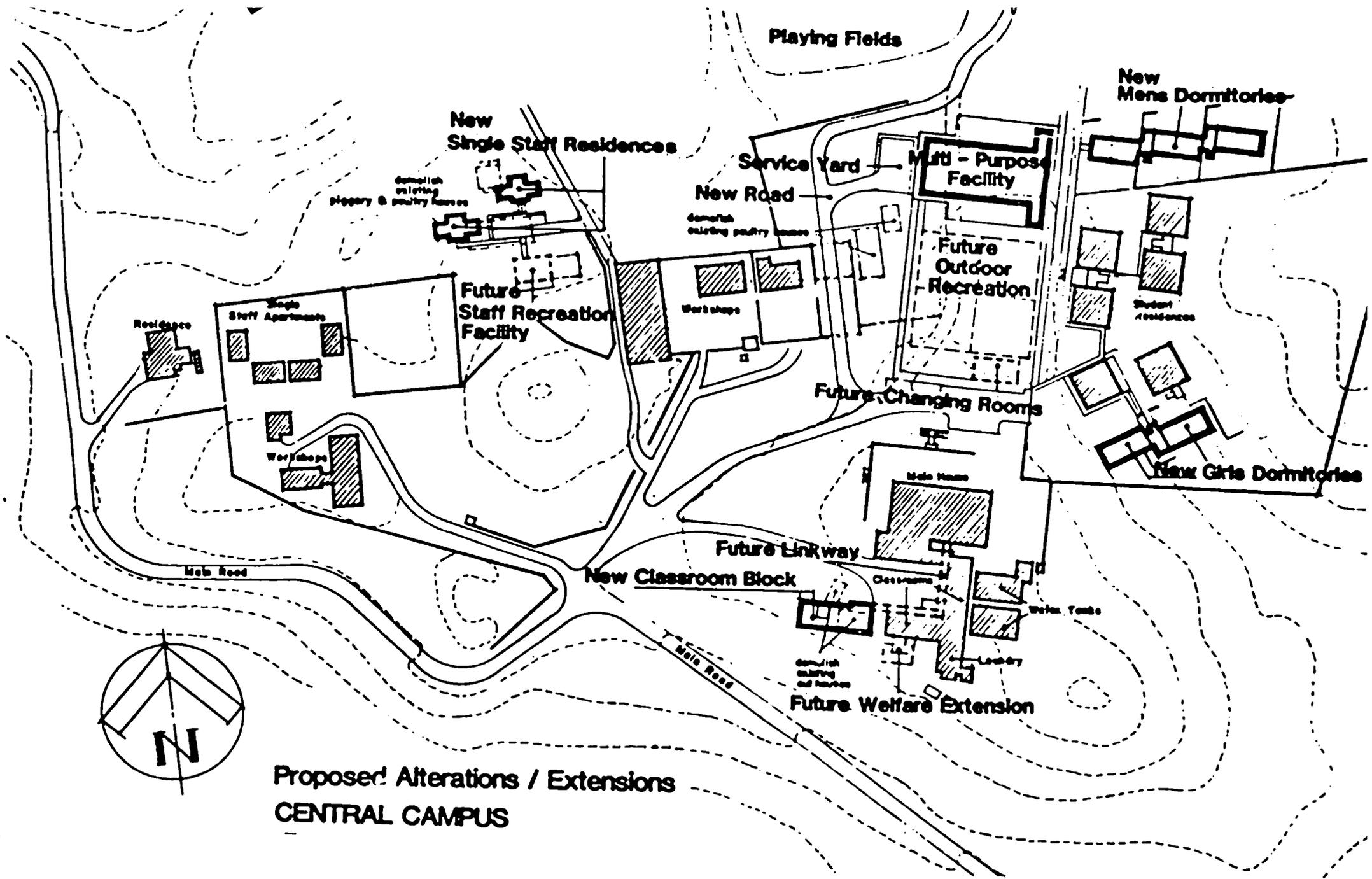
A new 2-floor Classroom Block is conveniently located to the immediate west of the existing Classroom/Laboratory Building resulting in a closely integrated Teaching Complex. The addition of a future two level linkway between the new Classroom Block, the existing Classrooms and the Main Building will give further emphasis to the integration. Provision for a future welfare facility to replace the existing outworn facility is made to the south of the existing Classroom Building.



Existing Accommodation
CENTRAL CAMPUS

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Proposed Alterations / Extensions
CENTRAL CAMPUS

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 KAS (KNOCKALVA AGRICULTURAL SCHOOL)**

APEC

It is anticipated that with provision of new Classrooms and the Multi-Purpose Facility and the consequent removal of food preparation, dining and teaching activities from the Main House, adequate areas will be released to provide a full library and other Administration related functions.

The site selected for the new 2BR Apartments for single staff is one that will become available when the Piggery & Poultry Houses are relocated. This site is easily accessed from a property road and lies to the north-east of the present Apartment Complex. Provision has been made for a future Staff Recreation Facility in this area.

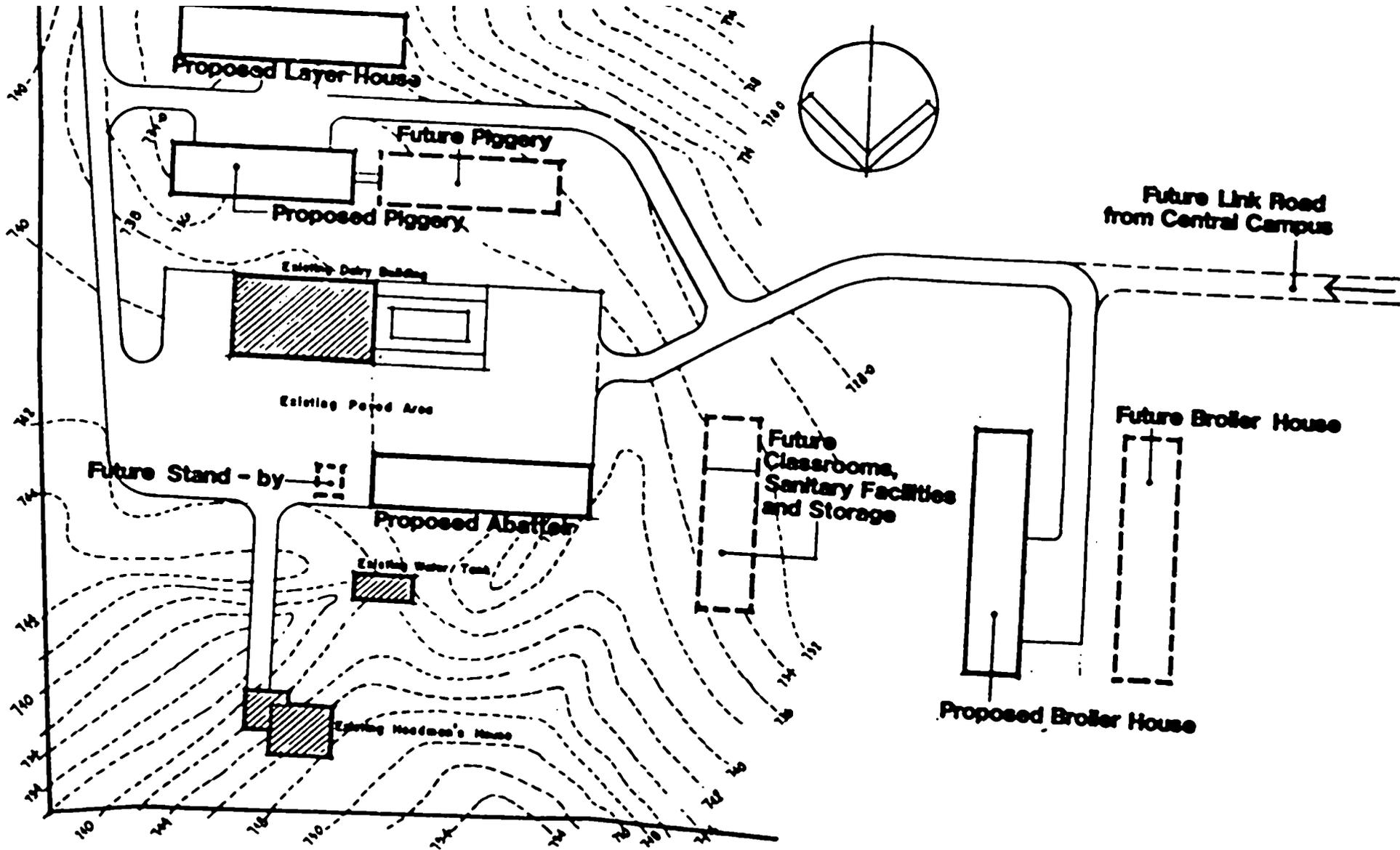
2. FARM COMPLEX

There are suitable sites immediately adjacent to the existing Dairy Complex for the proposed and future requirements.

Owing to its central function, the proposed Abattoir has been located on the northern side of the existing paved area of the Dairy. The proposed Broiler House is sited on gently sloping land to the west of the Dairy and provision is made for a parallel future Broiler House. The land between the Broiler House and the Dairy has been designated for future Classrooms, Sanitary Facilities and Storage.

For cross-infection reasons, the Layer House has been sited downwind of the Broiler House to the south of the Dairy and the proposed Piggery is located between the Layer House and the Dairy Building. An area west of the Piggery has been reserved for future expansion.

A roadway linking the new facilities with the existing Dairy Complex and its access roadway is proposed and this roadway also links with the existing property track from the Central Campus.



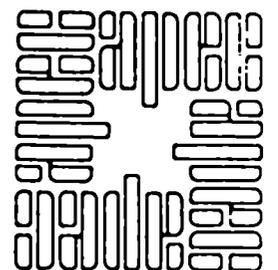
Proposed Extensions
FARM COMPLEX

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APEC

8.26.

2. CENTRAL CAMPUS



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STUDENT RESIDENCES

A. EXISTING ACCOMMODATION

The student residential complex is located on an area of sloping ground to the north-east of the main building. The complex is made up of 6 no. blocks:

BLOCK 1 - BOYS

Level 1 -	21 students
Level 2 -	21 students
Total	<u>42 students</u>

BLOCK 2 - FARMERS

Level 1 -	12 farmers + 1 Recreation Room
Level 2 -	17 farmers
Total	<u>29 farmers</u>

BLOCK 3 - GIRLS

Level 1 -	14 students + 1 Studio Apartment
Level 2 -	21 students
Total	<u>35 students</u>

BLOCKS 4 - BOYS

Level 1 -	21 students
Level 2 -	21 students
Total	<u>42 students</u>

BLOCK 5 - SICK BAY

Level 1 -	Sick Bay (4) + 1 Studio Apartment
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BLOCK - BOYS

Level 1 - 14 students + 1 Studio Apartment

Level 2 - 21 students

Total 35 students

TOTAL (ALL BLOCKS) - 119 boys + 35 girls + 29 farmers + 3 studio apartments + 1 sick bay (4).

All the blocks are 2 floors with a gross area of 3,528 ft.² each, with the exception of Block 5 - SICK BAY, which is one floor only and has a gross area of 1,367 ft.². Stair/linkways are provided between Blocks 1 & 4, between Blocks 2 & 3, and beside Block 6, each stair/linkway totalling 300 ft.² gross.

BLOCK 5 - SICK BAY is designed to take another floor and has an open area at ground level of approximately 441 ft.² which can also be utilized for expansion.

The typical floor plans for each block are illustrated on the accompanying drawings as is the layout of the whole residential complex. It can be seen that a typical student floor consists of 3 sleeping units of 7 students each, bathrooms and a study for 10 students.

The main criticisms voiced about the accommodation are

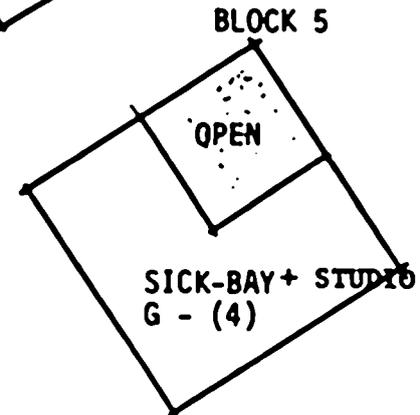
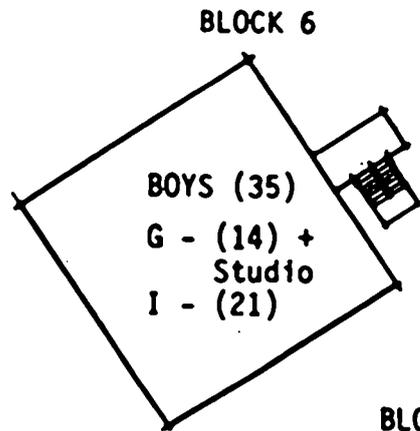
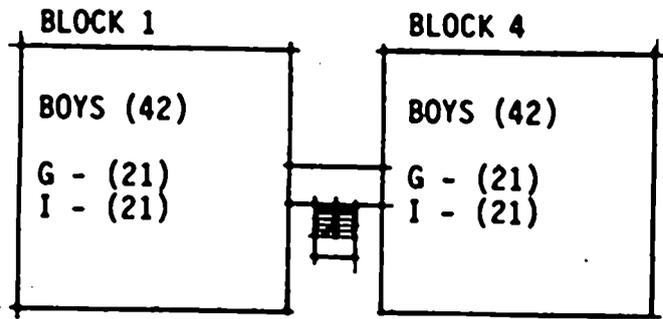
- crowded sleeping areas
- lack of adequate study and lounge areas for the numbers of students
- cramped studio apartments.

B. NEW ACCOMMODATION

It is proposed that the student intake of the school be increased to 300 students, of which 60 should be girls.

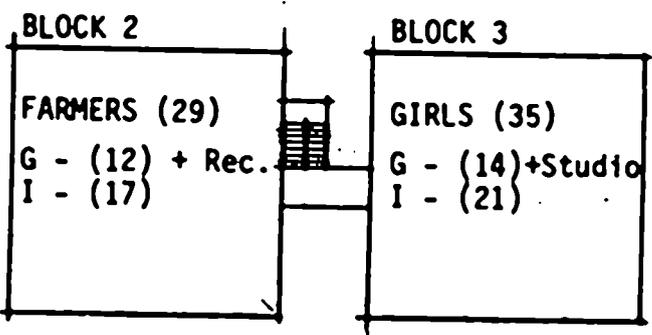
The additional requirements are -

- provision of additional study areas for students
- increased sick-bay accommodation to match the increased enrolment
- additional dormitory accommodation for approximately 150 students.



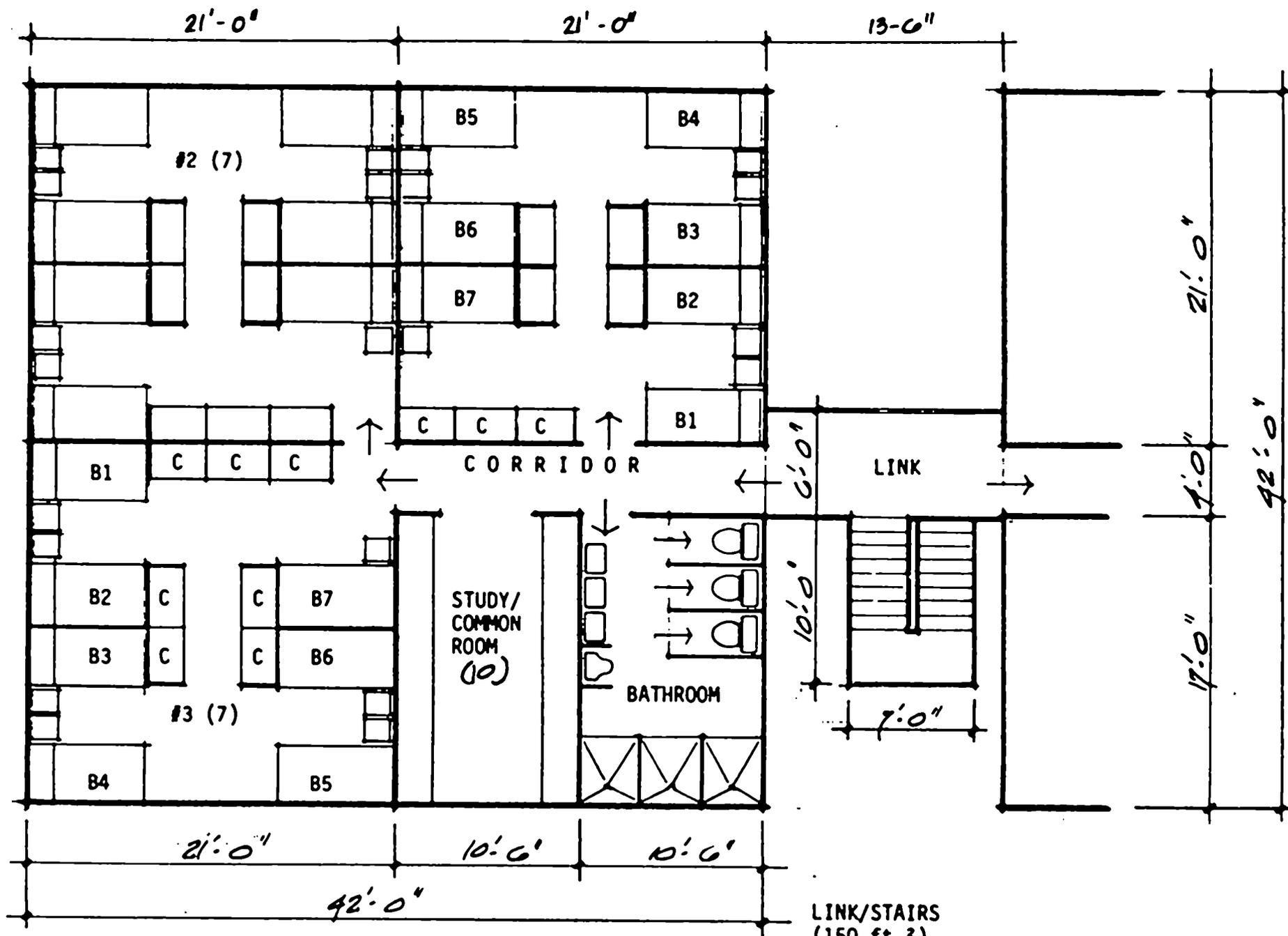
TOTAL COMPLEMENT

BOYS	119)	= 154
GIRLS	35)	
FARMERS	29	
STUDIO	3	
SICK-BAY	4	



LAYOUT OF DORMITORY BLOCKS
 STUDENT RESIDENCES: EXISTING ACCOMMODATION
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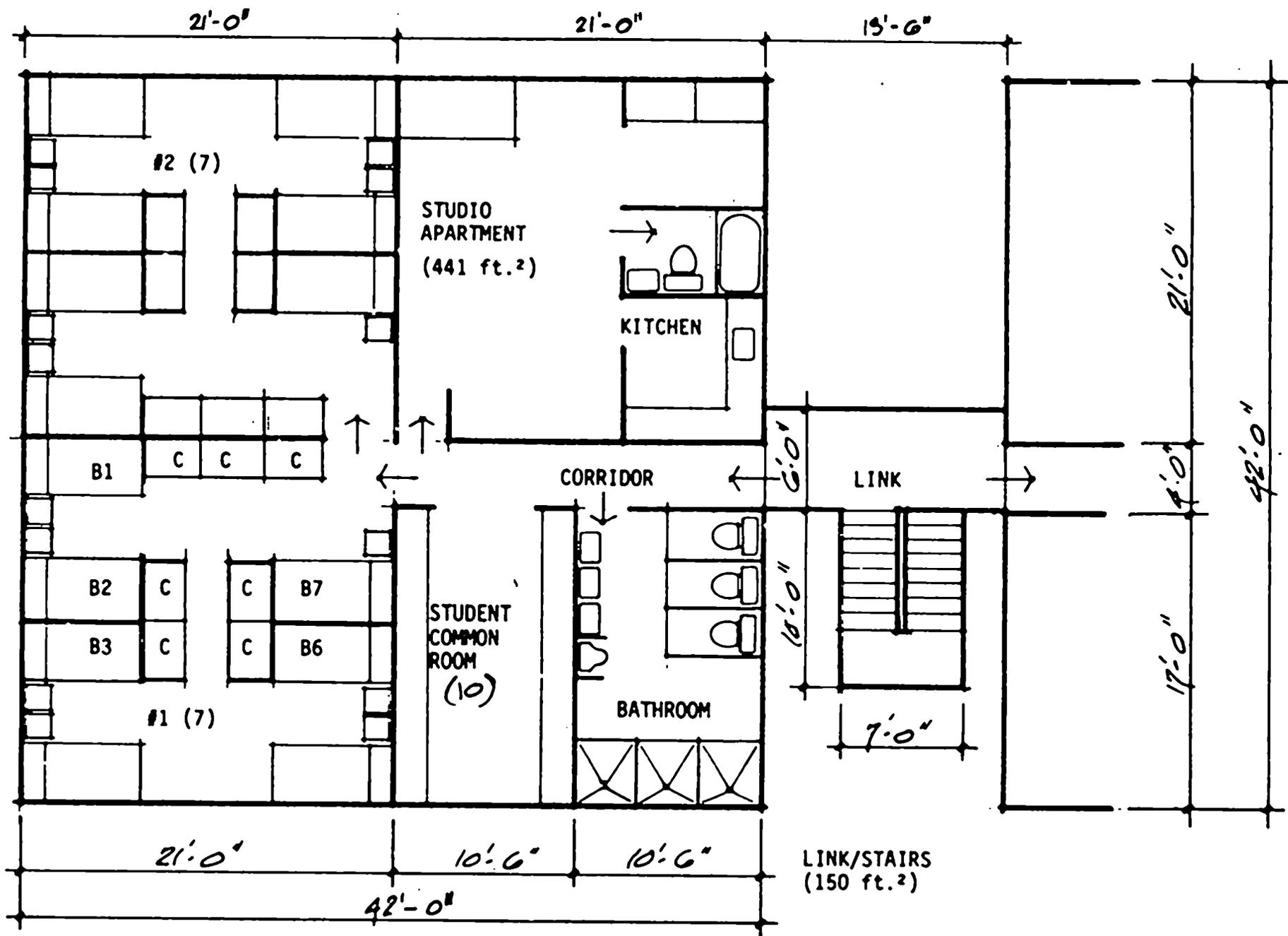


Area = 1,764 ft.²

TYPICAL SLEEPING/STUDY UNIT (21 students)

STUDENT RESIDENCES: EXISTING ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

2/16

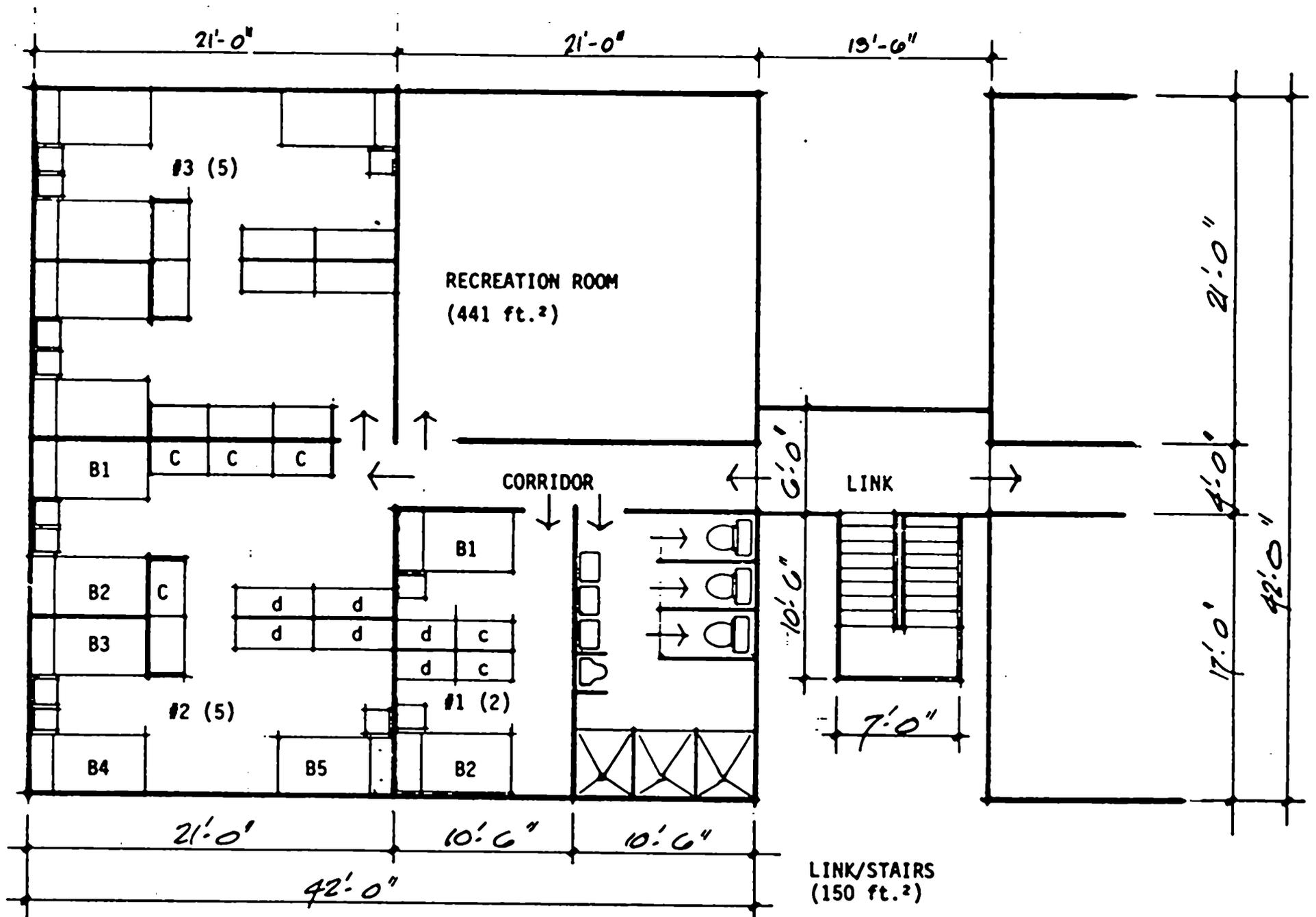


AREA = 1,323 + 441 = 1,764 ft.²

SLEEPING UNIT (14 students) + STUDIO APARTMENT - BLOCKS 3 & 6

STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

1/17

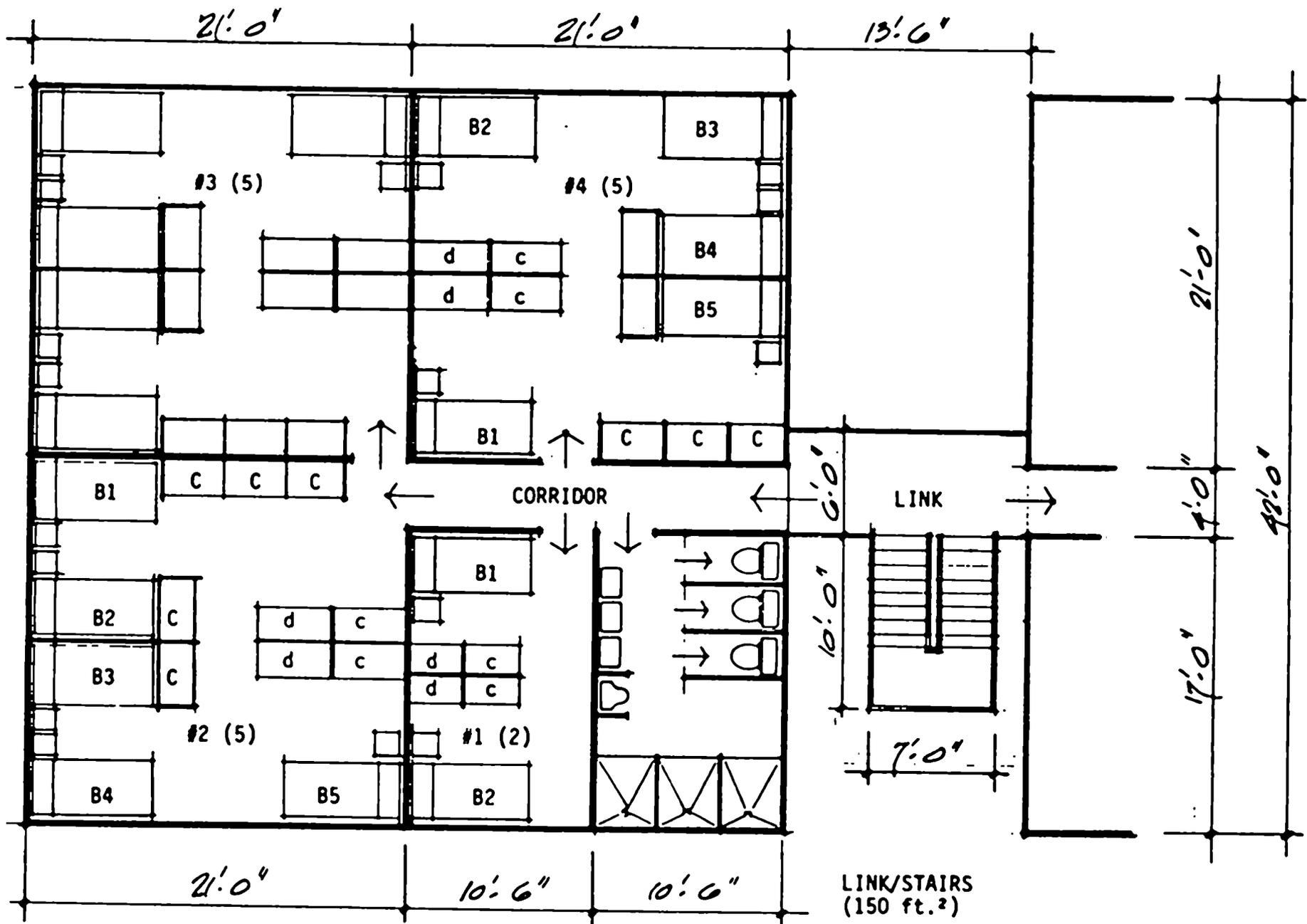


Area = 1,764 ft.²

FARMERS SLEEPING UNIT (12 farmers) + RECREATION ROOM - BLOCK 2/LEVEL 1

STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

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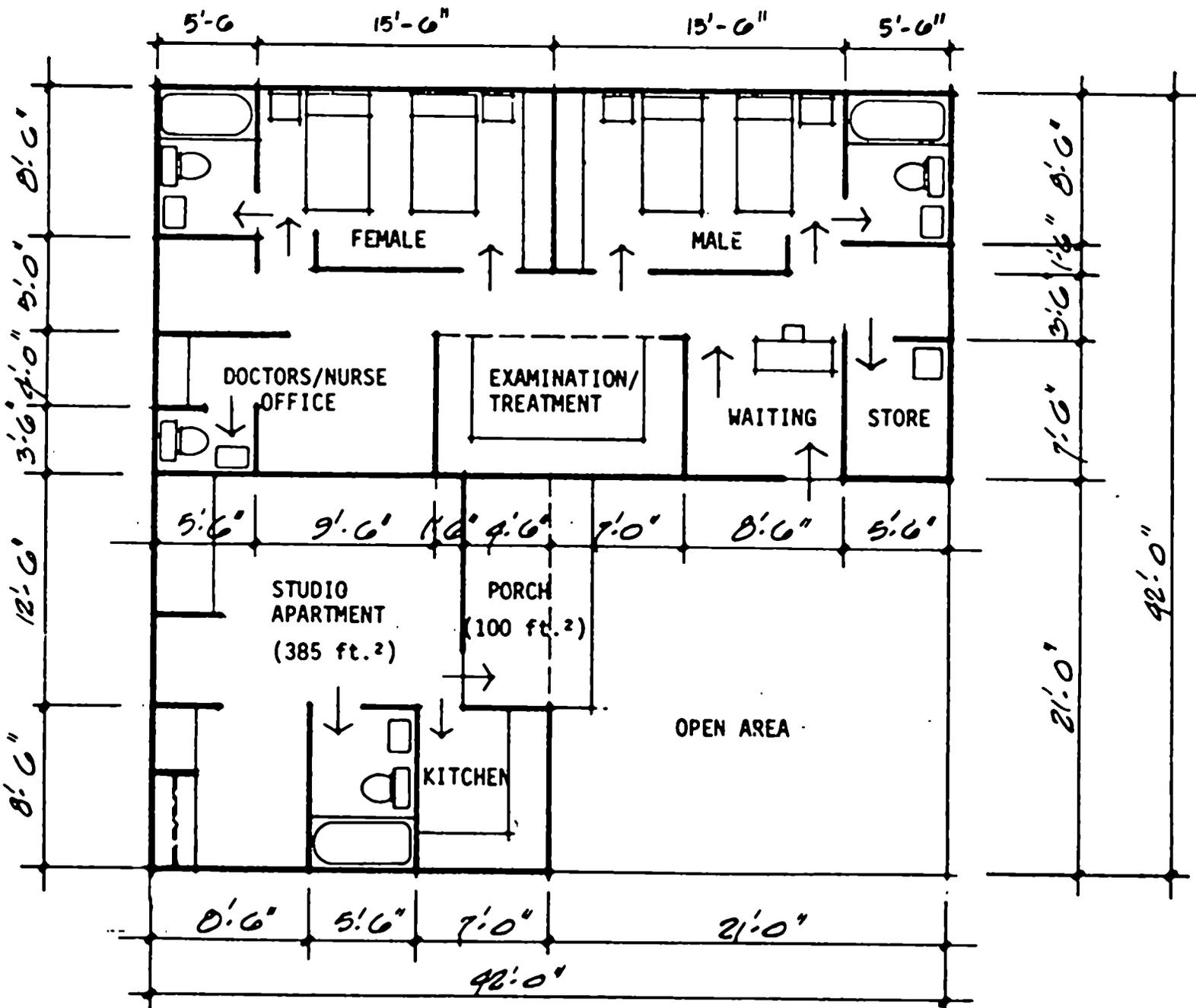


Area = 1,764 ft.²

FARMERS SLEEPING UNIT (17 farmers) - BLOCK 2/LEVEL 1

STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

5/11/77



Area = 882 ft.² + 485 ft.² = 1,367 ft.²

SICK-BAY + STUDIO APARTMENT - BLOCK 5
 STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

1/16

It was suggested that new dormitory accommodation should be designed on the basis of double bedrooms to avoid the cramped situation which exists at present, and that adequate study areas be provided. The individual annual enrolment for boys (i.e. 3 groups of 80 boys) should be kept together as far as possible and the total enrolment for girls should be in one complex.

It was stressed that the accommodation for girls should be totally segregated from that for the boys because of current problems being experienced.

It was proposed that the additional requirements be met by -

1. CONVERSION OF EXISTING ACCOMMODATION

BLOCK 1 - Convert 1 no. Sleeping Unit on Level 1 to a study area for 24 students

- Convert Study Area at Level 1 to a double study bedroom

Resultant complement - 35 boys in sleeping units

- 2 boys in a double study/bedroom

- 34 study areas.

BLOCK 2 - Leave as existing.

BLOCK 3 - Convert to a boys dormitory

- Convert Studio apartment at Level 1 to a study area for 24 students

- Convert Study Area at Level 1 to a double study bedroom

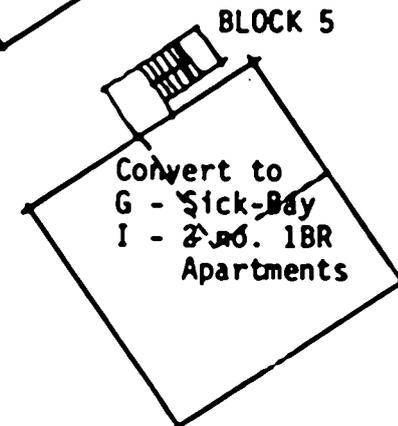
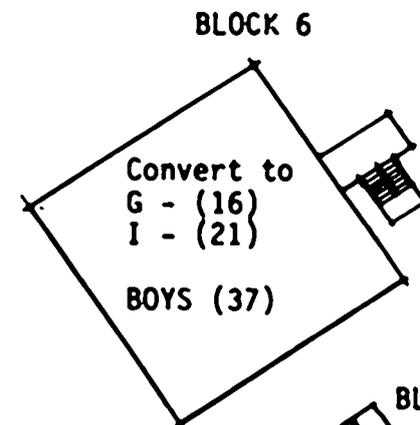
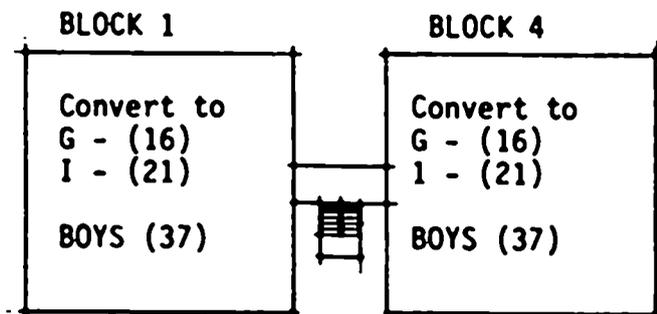
Resultant complement - as in Block 1.

BLOCK 4 - Convert as for Block 1.

BLOCK 5 - Convert Studio and open area at Level 1 to additional sick-bay accommodation

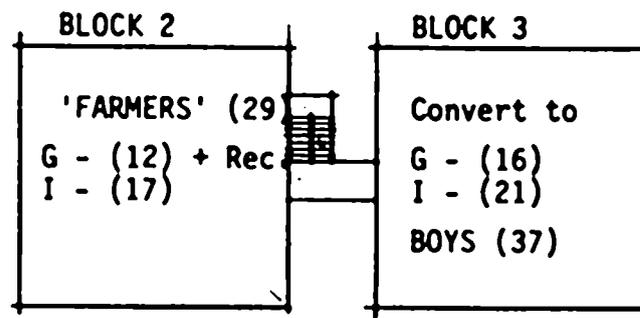
- Provide Additional floor to contain 2 no. 1BR Apartments for Nurse and Boy's Warden.

BLOCK 6 - Convert as for Block 3.



TOTAL COMPLEMENT

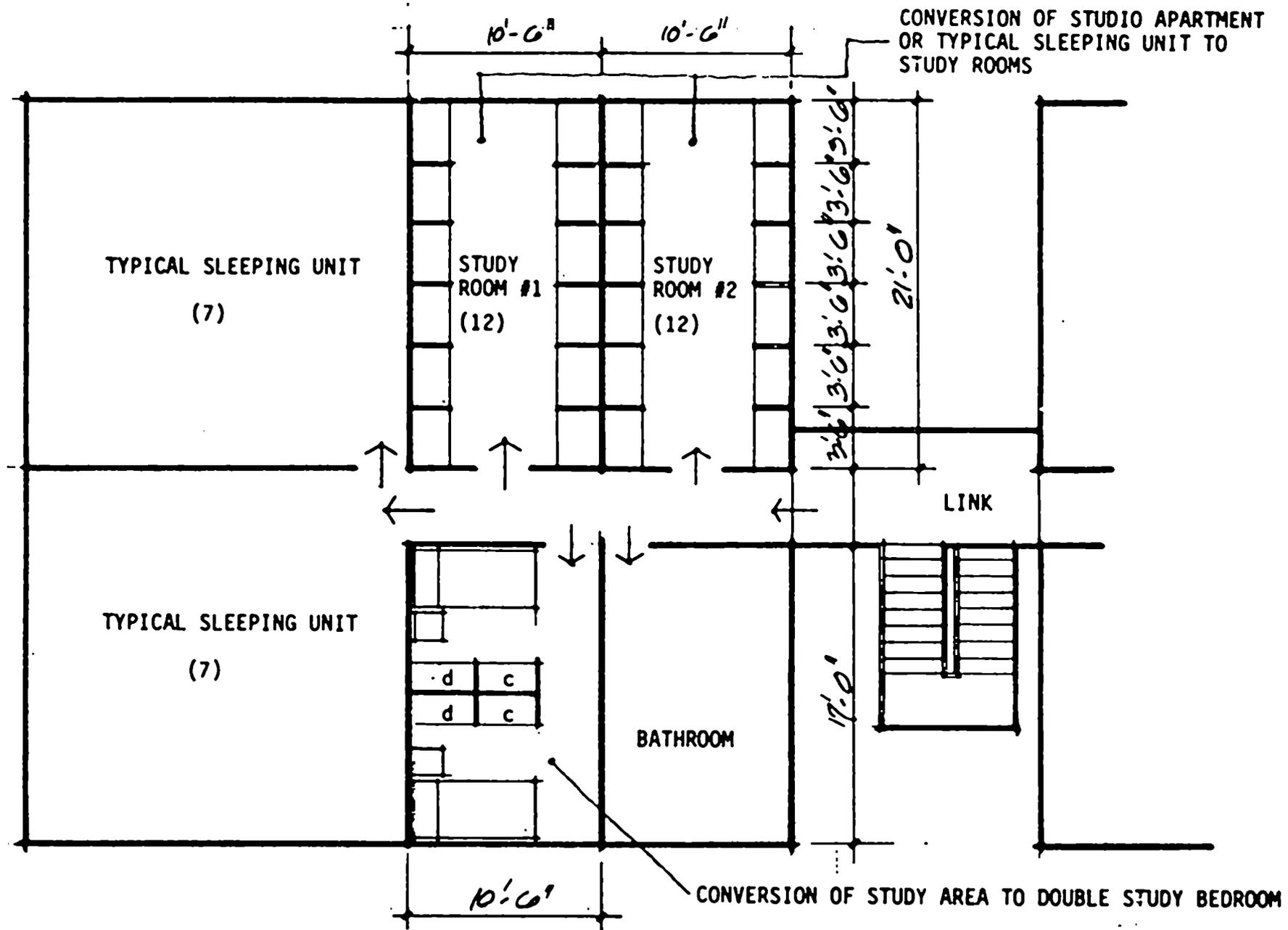
BOYS	148
FARMERS	29
SICK-BAY	7
1BR APTS.	2



PROPOSED ALTERATIONS & EXTENSIONS

STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

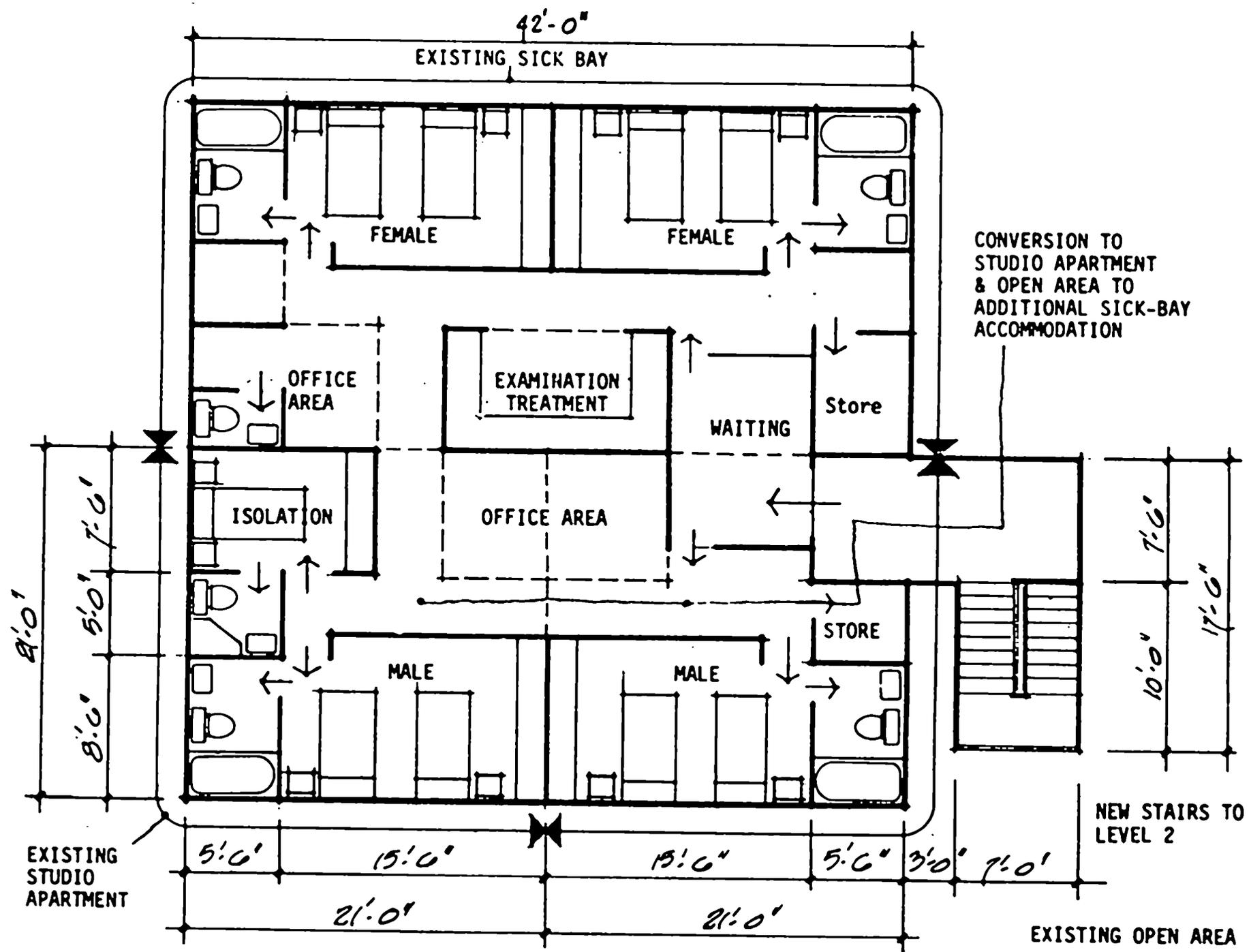
5/6



PROPOSED CONVERSION OF GROUND FLOORS (Blocks 1, 3, 4 & 6)

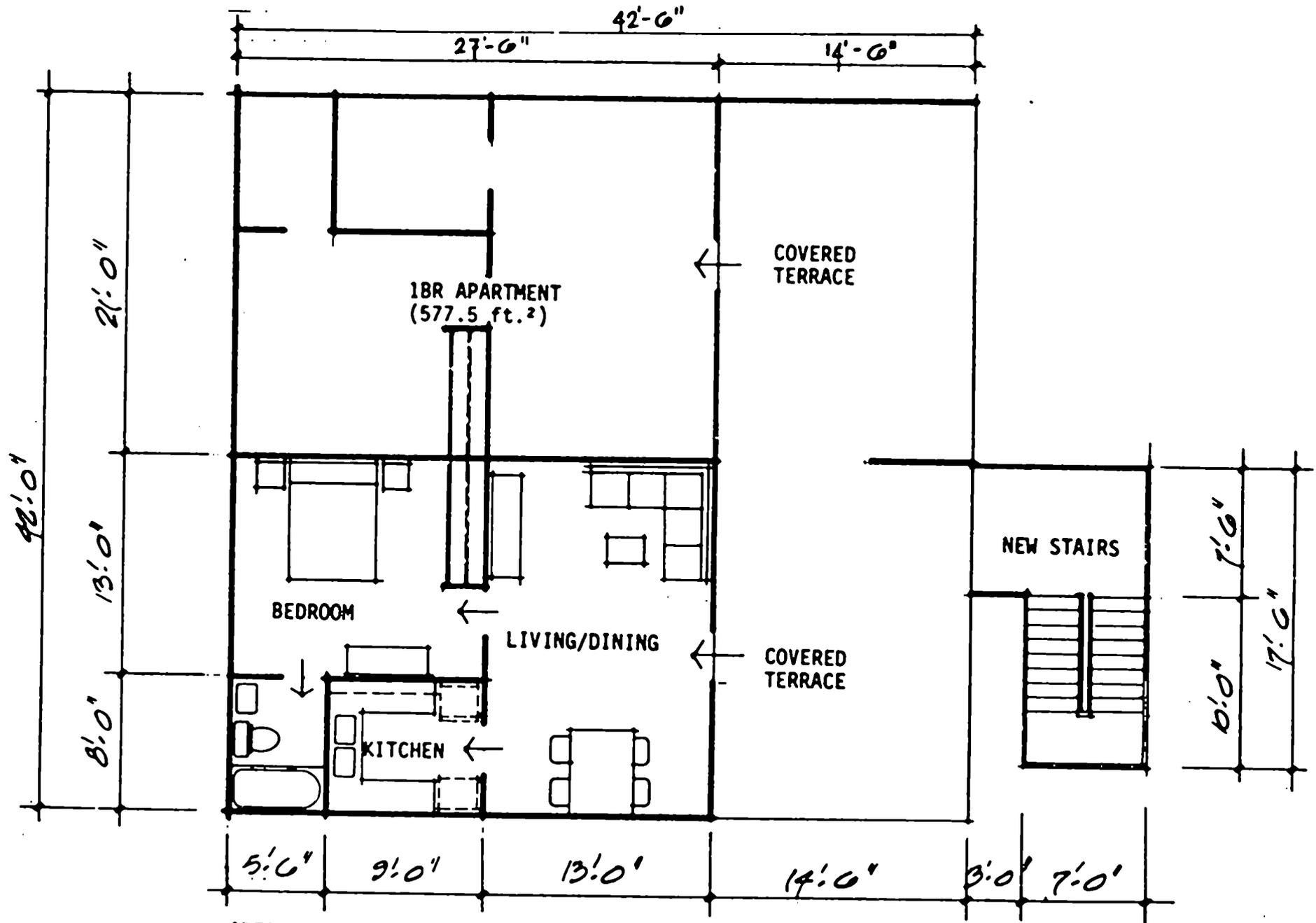
STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

7/6/7



SICK-BAY: PROPOSED ALTERATIONS/EXTENSIONS TO LEVEL 1
 STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

177



AREA = 1,900 ft.² approx. (including stairs)

SICK-BAY (BLOCK): ADDITION OF LEVEL 2 to provide 2 no. 1BR STAFF APARTMENTS
 STUDENT RESIDENCES: EXISTING ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

1,176

The total resulting complement was therefore -

- 140 boys in 7-person sleeping units
- 8 boys in double study bedrooms
- 136 study areas
- Sick-Bay for 8 students
- 2 no. 1BR Apartments.

The proposed alterations and addition are shown on the accompanying drawings.

2. NEW BUILDINGS

The net additional requirement resulting from conversion of the existing accommodation would be -

- Sleeping and Study areas for 60 girls
- Sleeping and Study areas for 92 boys
- 1BR Apartment for Girl's Warden.

However, after review of the draft final report, it was agreed that -

1. no alterations should be made to the existing accommodation & they should be allocated to boys only
2. the new accommodation should provide facilities for
 - 48 girls (with Warden's Apartment)
 - 72 boys.

The results of this are accommodation for 226 (154 + 72) boys and 48 girls, totalling 274 students.

The new sleeping accommodation is arranged in living units of 12 persons each in double bedrooms with associated study areas and bathrooms. The proposed buildings are two floors generally and are arranged to conform to the contours of the land.

The accompanying drawings show the proposals for a separate girls dormitory of 3 levels for 48 girls and a separate boys dormitory of 4 levels for 72 boys, both utilizing the 12 person living unit arrangement.

Between each pair of 12 person units is a common lounge/stairway/circulation area which also contains a cleaner's closet.

At level 1 of the Girls Dormitory is located a 1BR Apartment for the Girl's Warden.

The suggested location for the new Girls Dormitory is an area south of the present Dormitories and the location for the new Boys Dormitory is to the north of the existing complex. These locations are shown on the drawings.

1. SCHEDULE OF AREAS (NEW CONSTRUCTION)

1. GIRLS DORMITORIES

Level 1

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
.1	1 no. 1BR Apartment	20' x 28' 560
.2	Common lounge/Circulation	various 276.25
.3	6 no. double BRS	6 x 10' x 11.5' 690
.4	2 no. study rooms	2 x 10' x 11.5' 230
.5	1 no. bathroom	20' x 11.5' 230
.6	Corridor	5' x 50' 250
Total Level 1		<u>2,236.25 ft.²</u>

Level 2

.1	Living Unit 2	28' x 50' 1,400
.2	Living Unit 3	28' x 50' 1,400
.3	Common lounge/Circulation	varies 276.25
Total Level 2		<u>3,076.25 ft.²</u>

Level 3

.1	Living Unit 5	28' x 50' 1,400
.2	Common/Lounge/Circulation	varies 276.25
Total Level 3		<u>1,676.25 ft.²</u>

TOTAL GIRLS DORMITORIES

.1	Level 1	2,236.25
.2	Level 2	3,076.25
.3	Level 3	1,676.25
GROSS AREA		<u><u>6,988.75 ft.²</u></u>

205

2. BOYS DORMITORIES

Level 1

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)	
.1	6 no. double bedrooms	6 x 10' x 11.5'	690
.2	2 no. study rooms	2 x 10' x 11.5'	230
.3	1 no. bathroom	20' x 11.5'	230
.4	Corridor	5' x 50'	250
.5	Common lounge/circulation	varies	276.25
	Total Level 1		<u>1,676.25 ft.²</u>

Level 2

.1	Living Unit 2	28' x 50'	1,400
.2	Living Unit 3	28' x 50'	1,400
.3	2 no. Common Lounge/ Circulation Areas	varies	552.50
	Total Level 2		<u>3,352.5 ft.²</u>

Level 3

.1	Living Unit 4	28' x 50'	1,400
.2	Living Unit 5	28' x 50'	1,400
.3	2 No. Common Lounge/ Circulation	varies	552.5
.4	Fire Stairs	8' x 16.5'	132
	Total Level 3		<u>3,484.5 ft.²</u>

Level 4

.1	Living Unit 6	28' x 50'	1,400
.2	Common Lounge/ Circulation	varies	276.25
.3	Fire Stairs	8' x 16.5'	132
	Total Level 4		<u>1,808.25 ft.²</u>

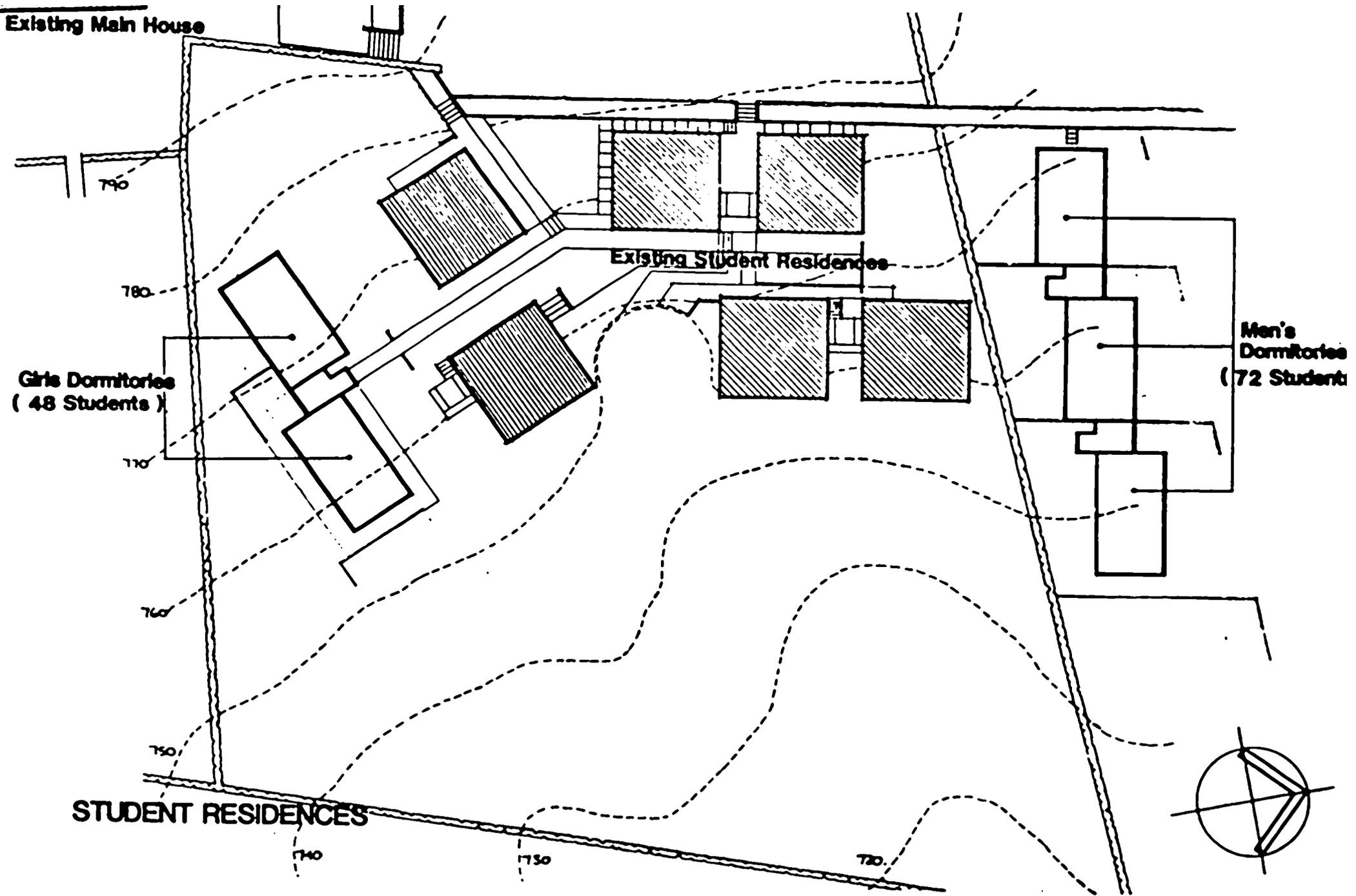
TOTAL BOYS DORMITORIES

.1	Level 1	1,676.25
.2	Level 2	3,352.50
.3	Level 3	3,484.50
.4	Level 4	<u>1,808.25</u>
	GROSS AREA	<u>10,321.5 ft.²</u>

3. TOTAL NEW DORMITORIES

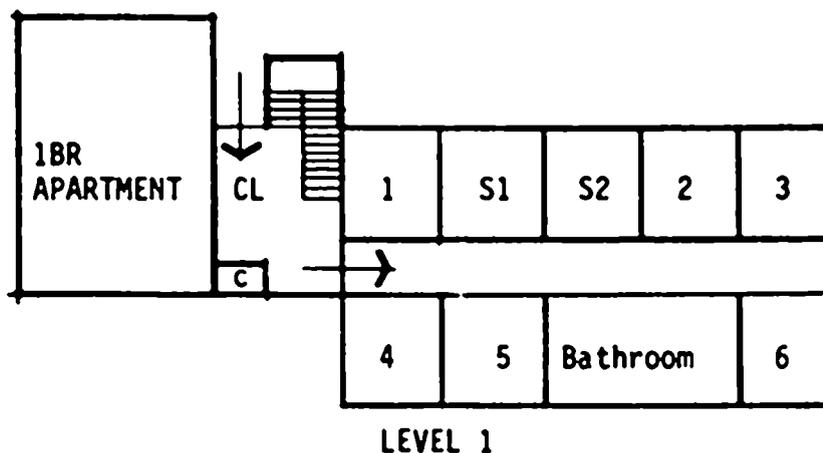
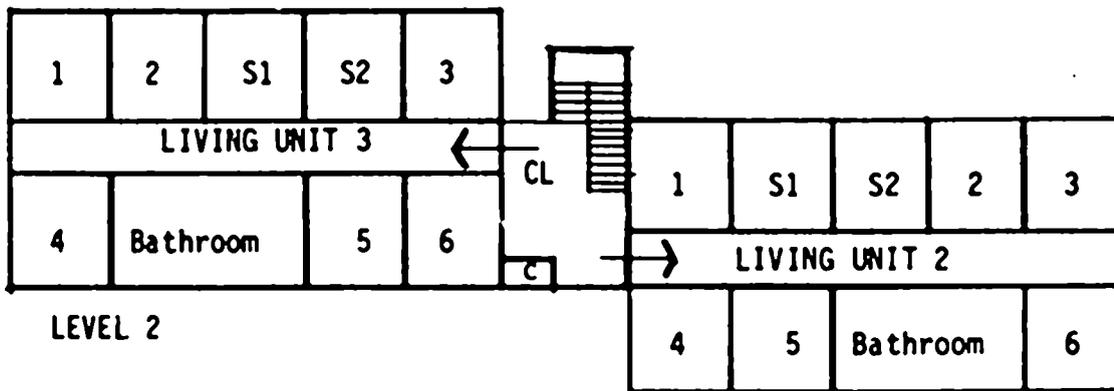
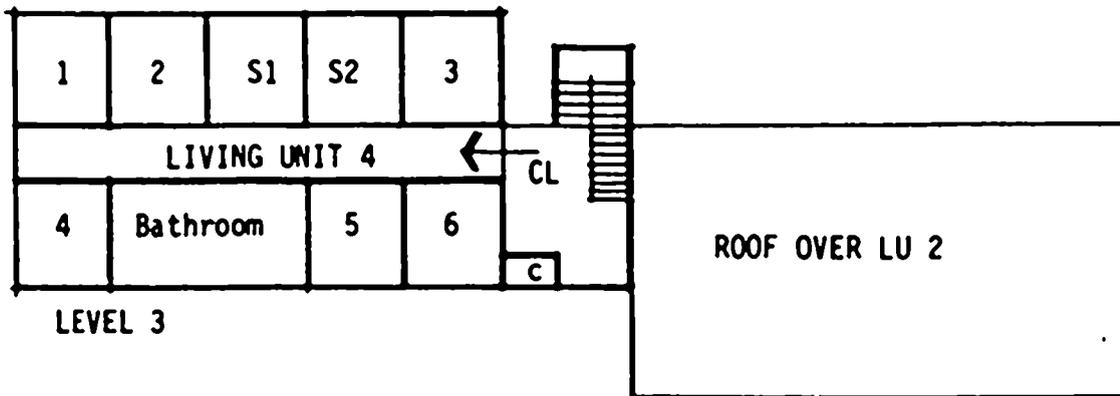
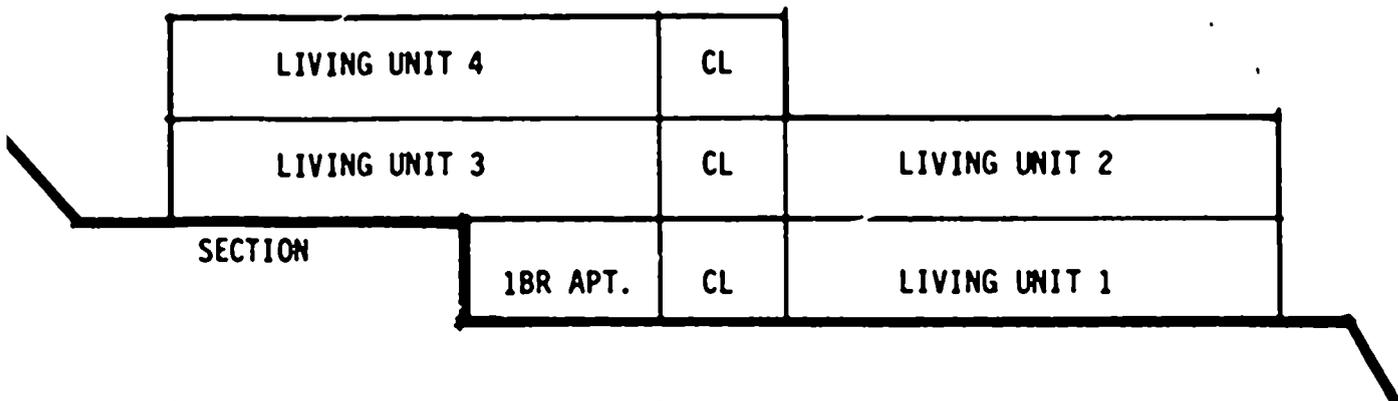
.1	GIRLS	6,988.75
.2	BOYS	<u>10,321.50</u>
	TOTAL	<u>17,310.25 ft.²</u>

Existing Main House

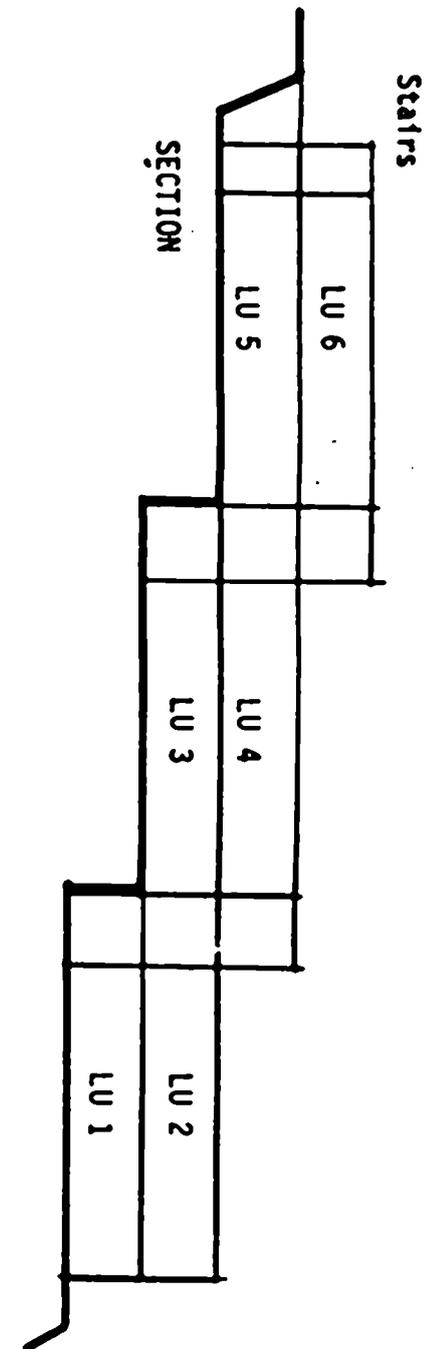
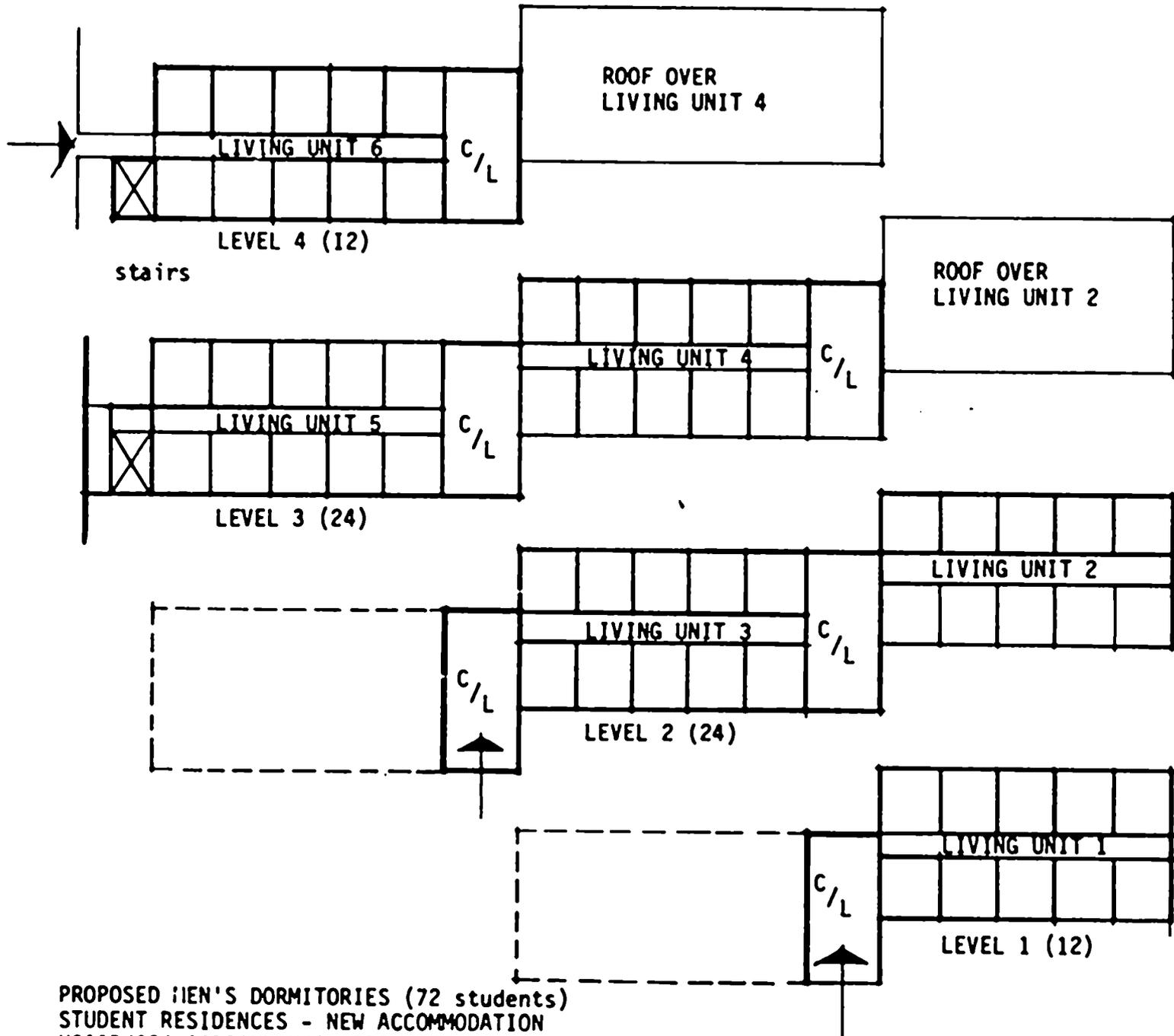


**USAID / GOJ AGRICULTURAL PROJECT
 KAS (KNOCKALVA AGRICULTURAL SCHOOL)**

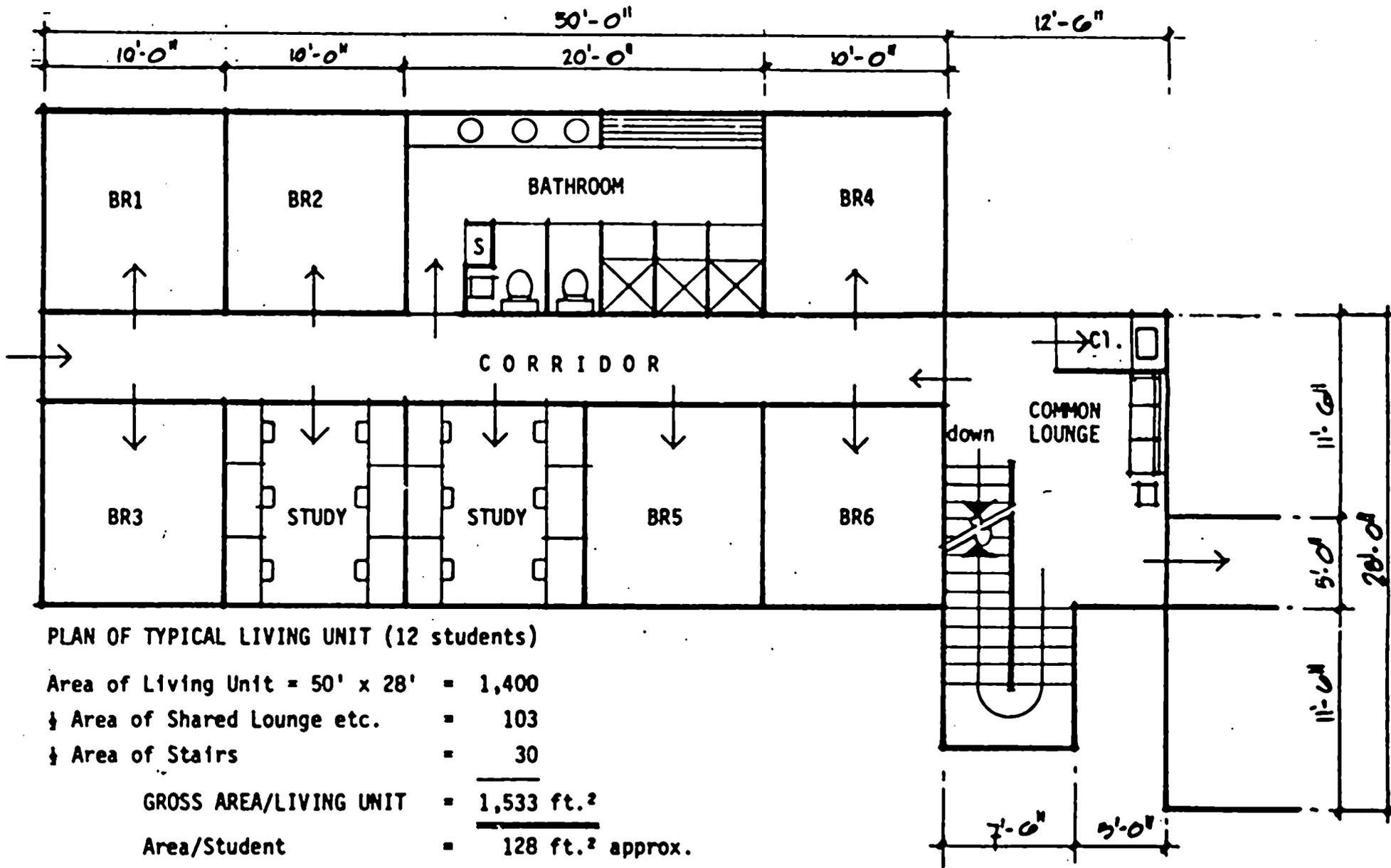
APEC



PROPOSED GIRLS DORMITORIES (48 students)
 STUDENT RESIDENCES - NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

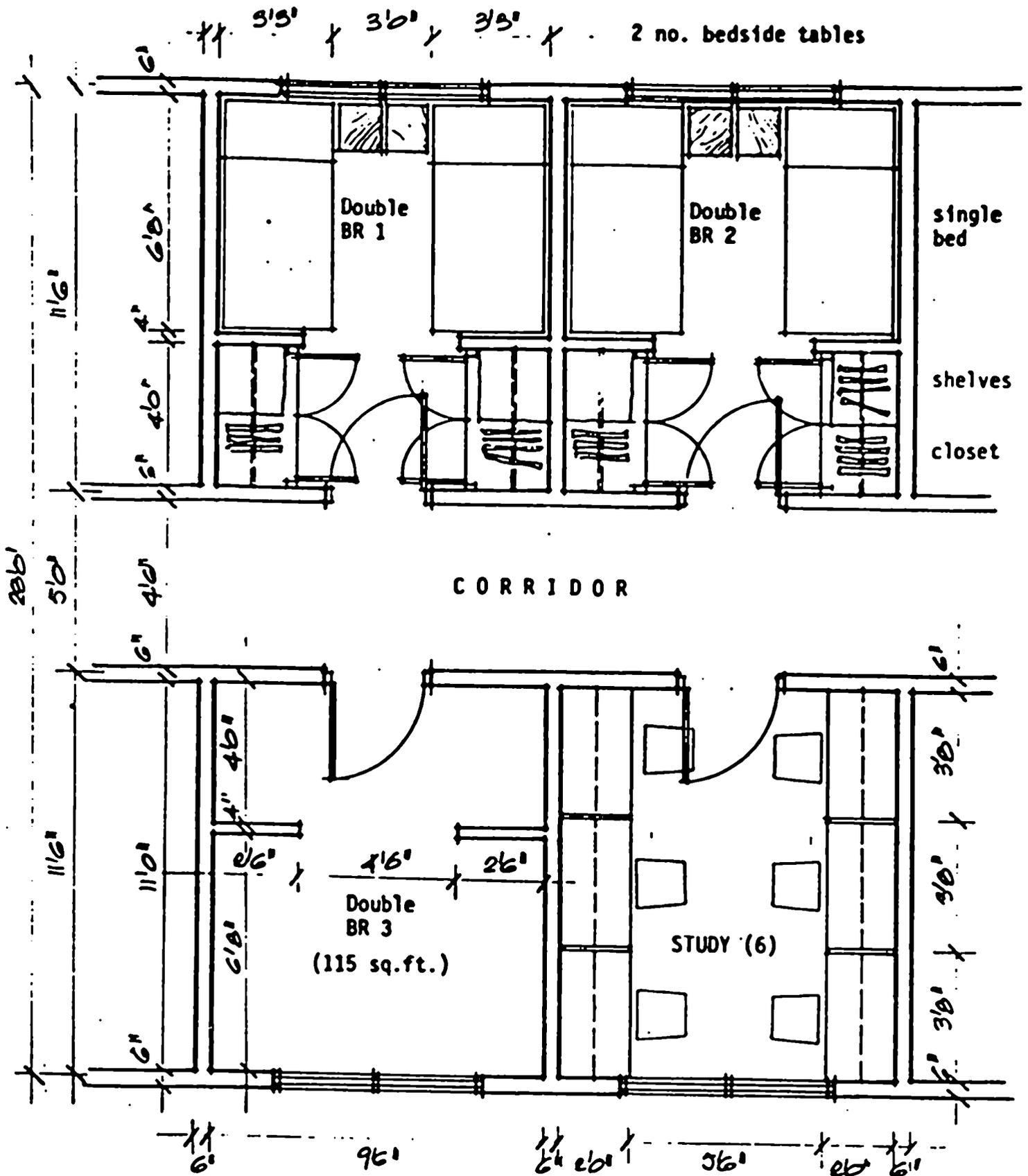


PROPOSED MEN'S DORMITORIES (72 students)
 STUDENT RESIDENCES - NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)



PROPOSED LIVING UNIT for 12 students
 STUDENT RESIDENCES: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT

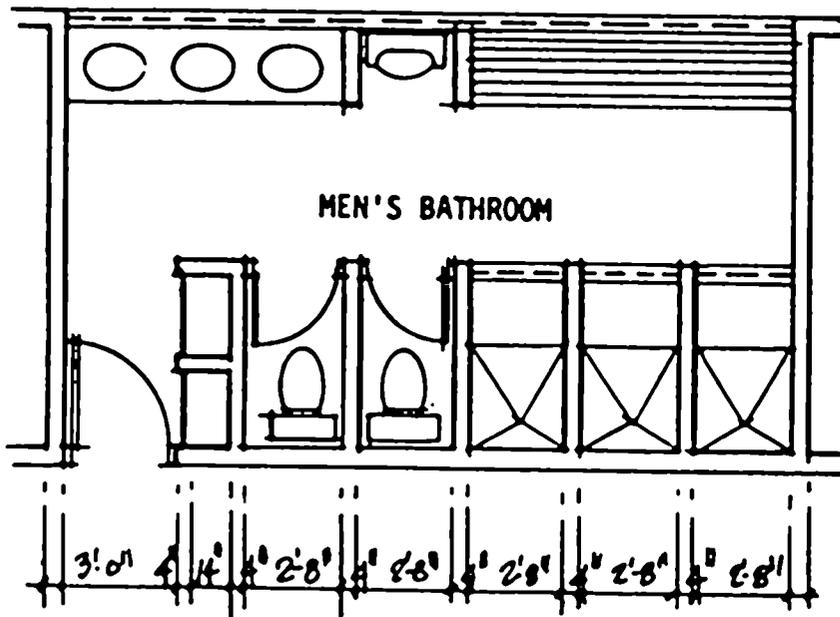
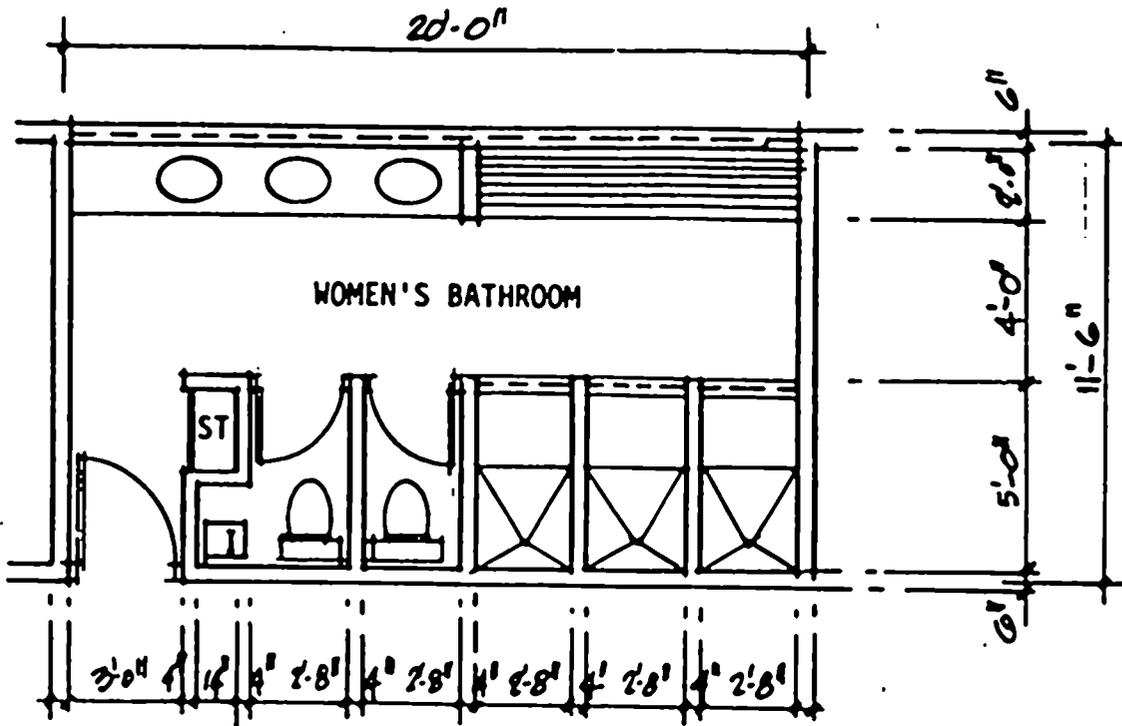
2/6



DOUBLE BEDROOMS (3 No.) with SEPARATE STUDY (6 persons)

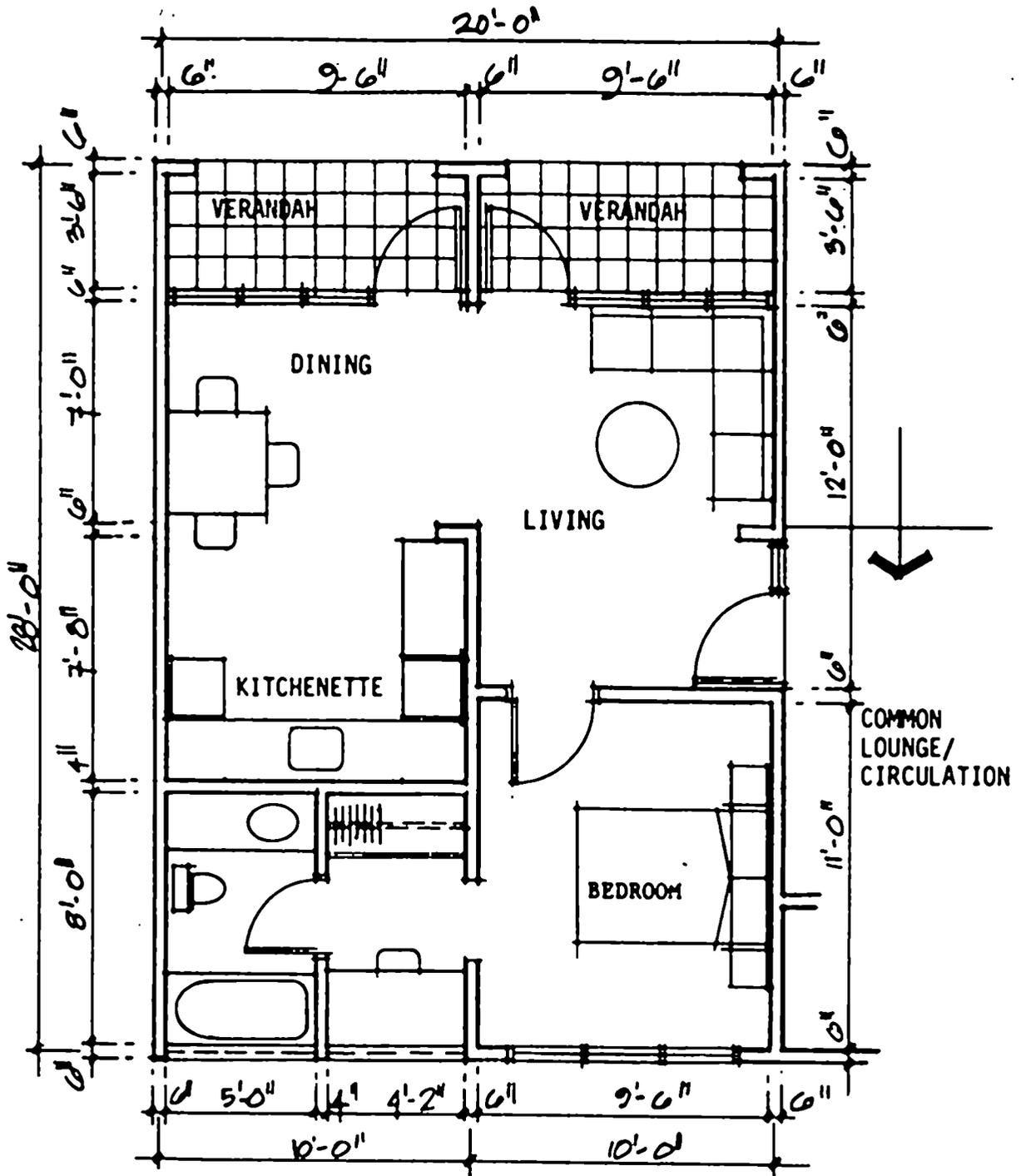
STUDENT RESIDENCES/NEW ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT -

Total Area = 560 ft.²
Area/Student = 93.3 ft.²



AREA = 230 ft.²

PROPOSED 12-STUDENT LIVING UNIT: BATHROOMS
 STUDENT RESIDENCES: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT



AREA = 480 ft²

GIRLS DORMITORIES : WARDEN'S 1BR APARTMENT
 STUDENT RESIDENCES/NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)
MULTI-PURPOSE FACILITY

A. EXISTING ACCOMMODATION

There is no auditorium, dining hall or defined student centre facility on the complex. The present arrangements for dining are haphazard, with students dining on the verandah of the main building, cooking being carried out in various parts of the main building, with food being stored in dispersed locations on the complex.

Indoor recreational facilities for students and staff do not exist, nor is there any accommodation for students to meet parents and visitors.

Given the proposed conversion of the main house to more appropriate functions, it is clear that new accommodation will have to be provided.

B. NEW ACCOMMODATION

There was a clearly expressed need for a completely new multi-purpose facility which should provide accommodation for the following functions:

- student dining, lounge, & indoor recreation areas
- food preparation and storage areas
- students council room, parent/visitor lounge & commissary
- various functions (performances, prize-givings etc.) requiring stage facilities
- appropriate storage and sanitary facilities
- stand-by generator facilities for essential loads.

It was agreed that the best way to cater for this variety of functions was to provide a multi-purpose auditorium with adjacent terraces that could be used for overflow purposes. A moveable stage/platforms would fulfil the performance functions. Other more specialized accommodation (food prep, commissary etc.) could be provided in rooms off the main auditorium.

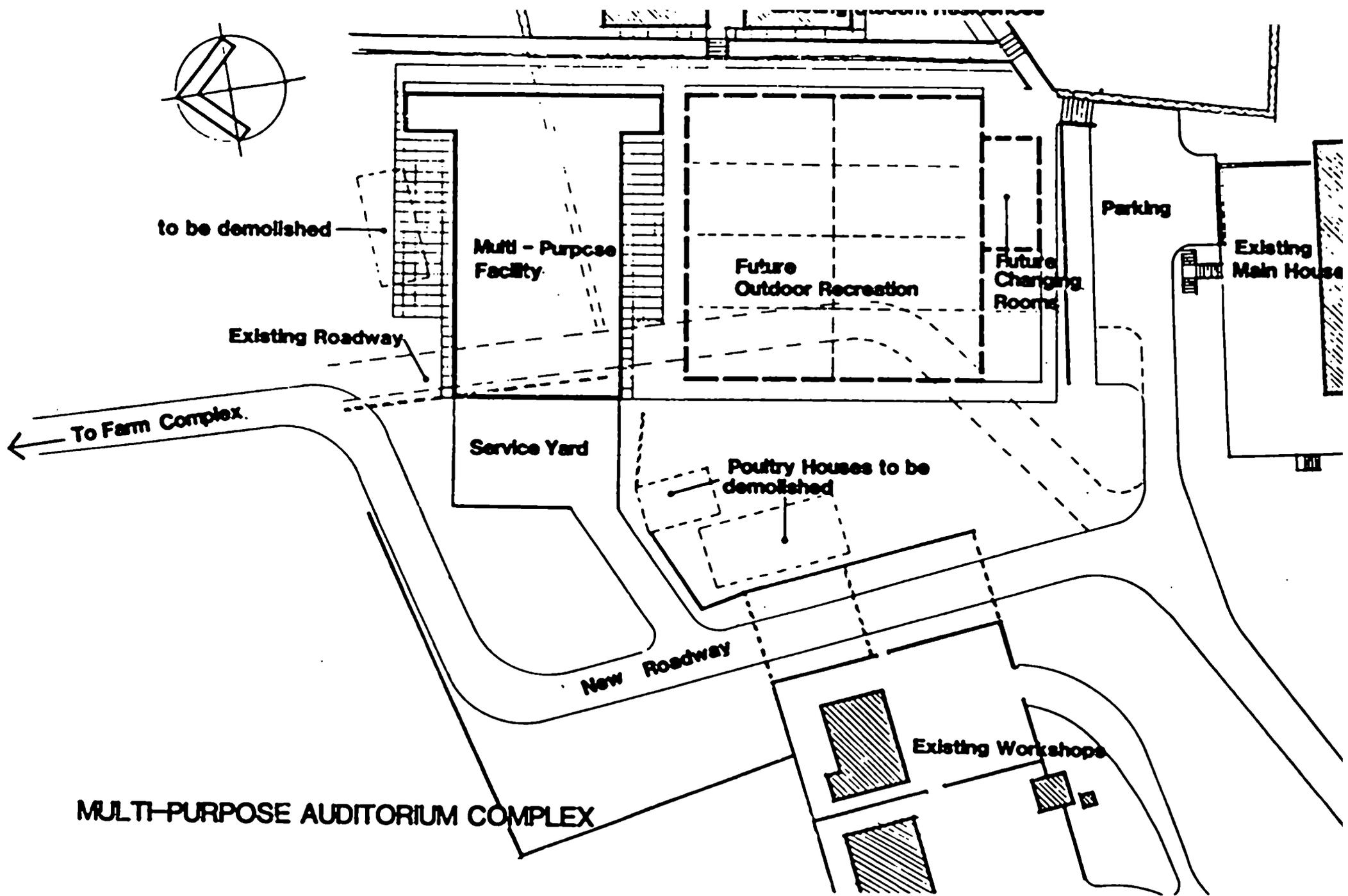
The accompanying sketch shows the proposed layout of the facility, with some suggested uses for the auditorium.

Elsewhere in this report, the problem of environmental nuisances from the existing location of the poultry and piggery houses has been discussed and it is proposed that they should be re-located in a more suitable area of the property. The only position large enough for the proposed multi-purpose facility is an area between the main house and the playing fields where the proximity to the main house, vehicular access, the student residences and the proposed outdoor recreation courts would be advantageous.

This arrangement will necessitate the removal of the existing poultry houses and the re-location of the access road to the existing dairy complex.

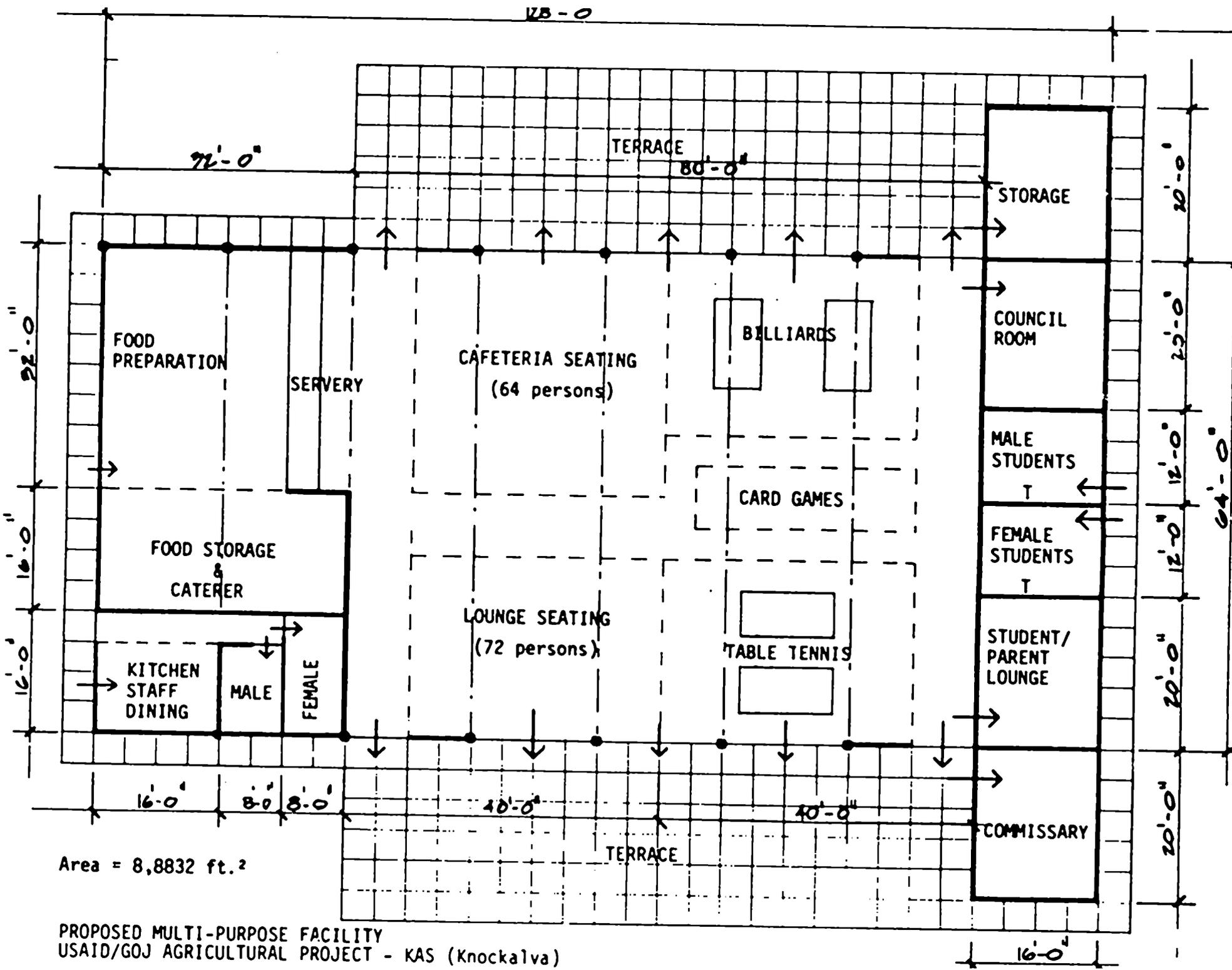
C. SCHEDULE OF AREAS

	Approximate dimensions (ft.)	Approximate Areas (ft. ²)
1. Multi-purpose Auditorium	64' x 80'	5,120
2. Food Preparation/Servery	32' x 32'	1,024
3. Food Storage/Caterer	16' x 32'	512
4. Kitchen Staff Welfare	16' x 32'	512
5. Commissary	16' x 20'	320
6. Student/Parent Lounge	16' x 20'	320
7. Council Room	16' x 20'	320
8. Students Toilets	16' x 24'	384
9. Storage	16' x 20'	320
	TOTAL	<u>8,832 ft.²</u>
10. Terraces = 2 x 80' x 20' = <u>3,200 ft.²</u>		



**USAID / GOJ AGRICULTURAL PROJECT
KAS (KNOCKALVA AGRICULTURAL SCHOOL)**

APEC



Area = 8,882 ft.²

PROPOSED MULTI-PURPOSE FACILITY
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

CLASSROOM/LABORATORY COMPLEX

A. EXISTING ACCOMMODATION

Classroom and Laboratory teaching are presently carried out in three elongated rooms housed in a 3-floor building attached to the main house. This building also accommodates preparation rooms adjacent to the classrooms, central laundry, sanitary facilities and storage areas.

The shape, size and configuration of these rooms make it difficult for efficient teaching of all the subjects being taught at present and they will obviously be inadequate to meet the expanded requirements. Additional teaching is carried out on the verandahs of the Main Building.

B. NEW ACCOMMODATION

The total requirements requested for classrooms and laboratories are

- 6 no. general purpose classrooms for 25 students each
- 3 no. laboratories for Physics, Chemistry and Biology with associated preparation and storage rooms.

It is proposed that the existing 3 teaching areas be converted into the three specialized laboratories required and that a new 6-classroom block (possibly 2 floors) be constructed to the SW of the main building in an area presently occupied by some paved terraces and an outworn building.

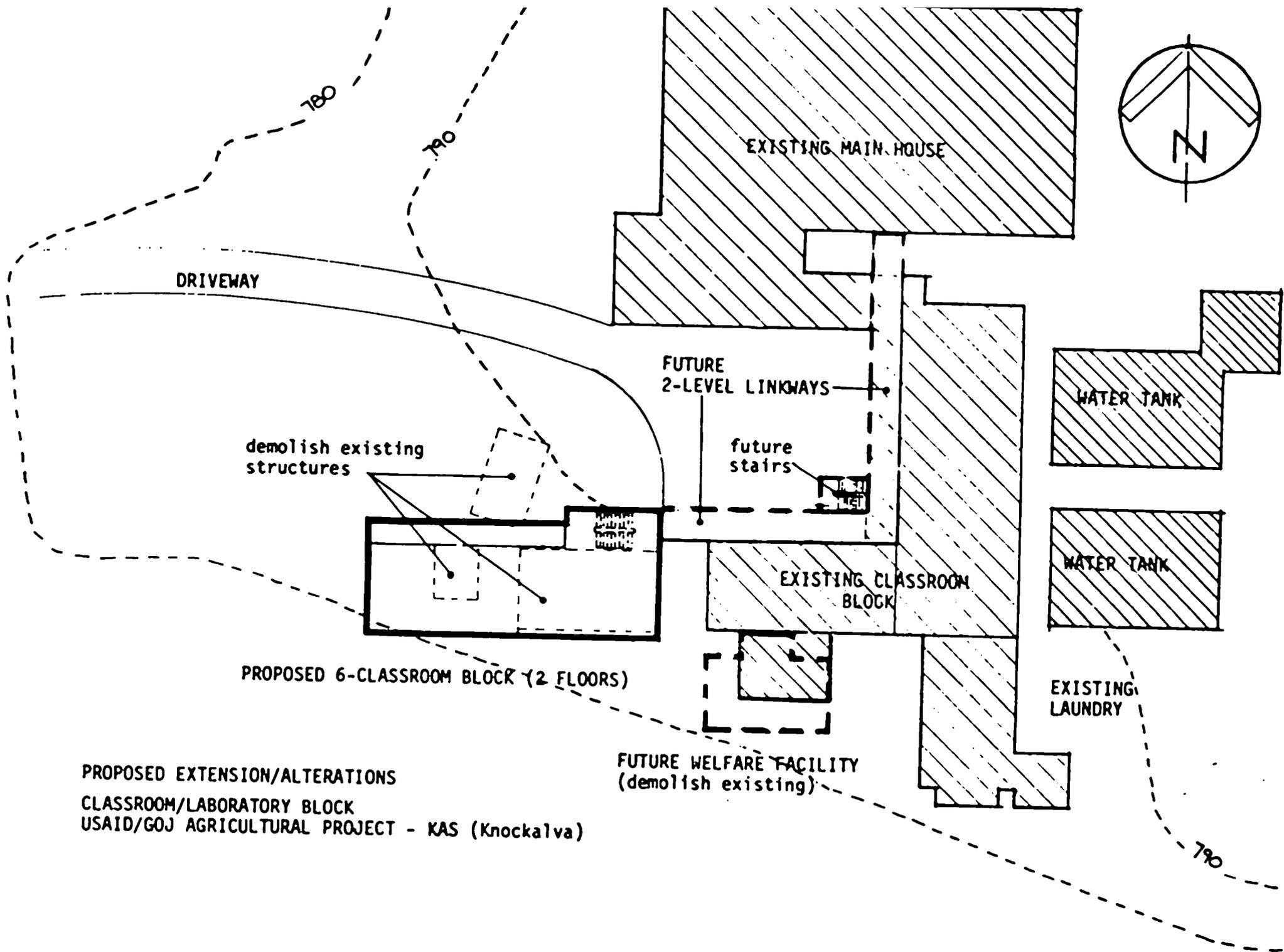
A two level Walkway linking the Main Building (Levels 1 & 2) with the existing Classroom Block and to the new Classroom Blocks is to be provided. This arrangement will result in a closely integrated teaching complex, accessible to the main building in all weather conditions.

The accompanying drawings illustrate the conversion of the existing teaching areas to specialized laboratories, proposals for a new classroom block, and the future linkway and stairs.

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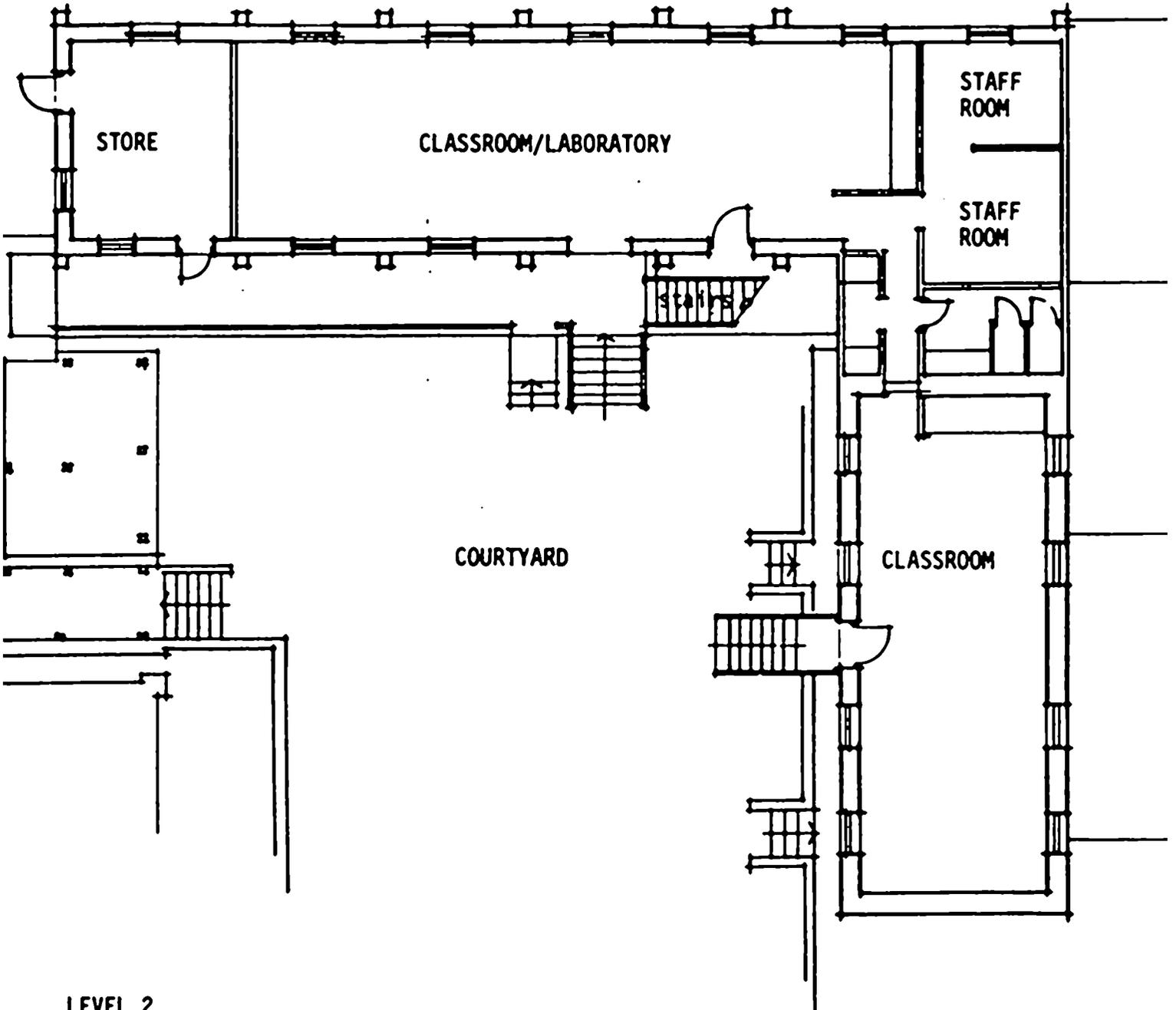
C. SCHEDULE OF AREAS

	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. CLASSROOM BLOCK		
.1 6 no. general purpose classrooms	6 x 24' x 25'	3,600
.2 Circulation & Stairs	various	1,100
	TOTAL	<u>4,700 ft.²</u>



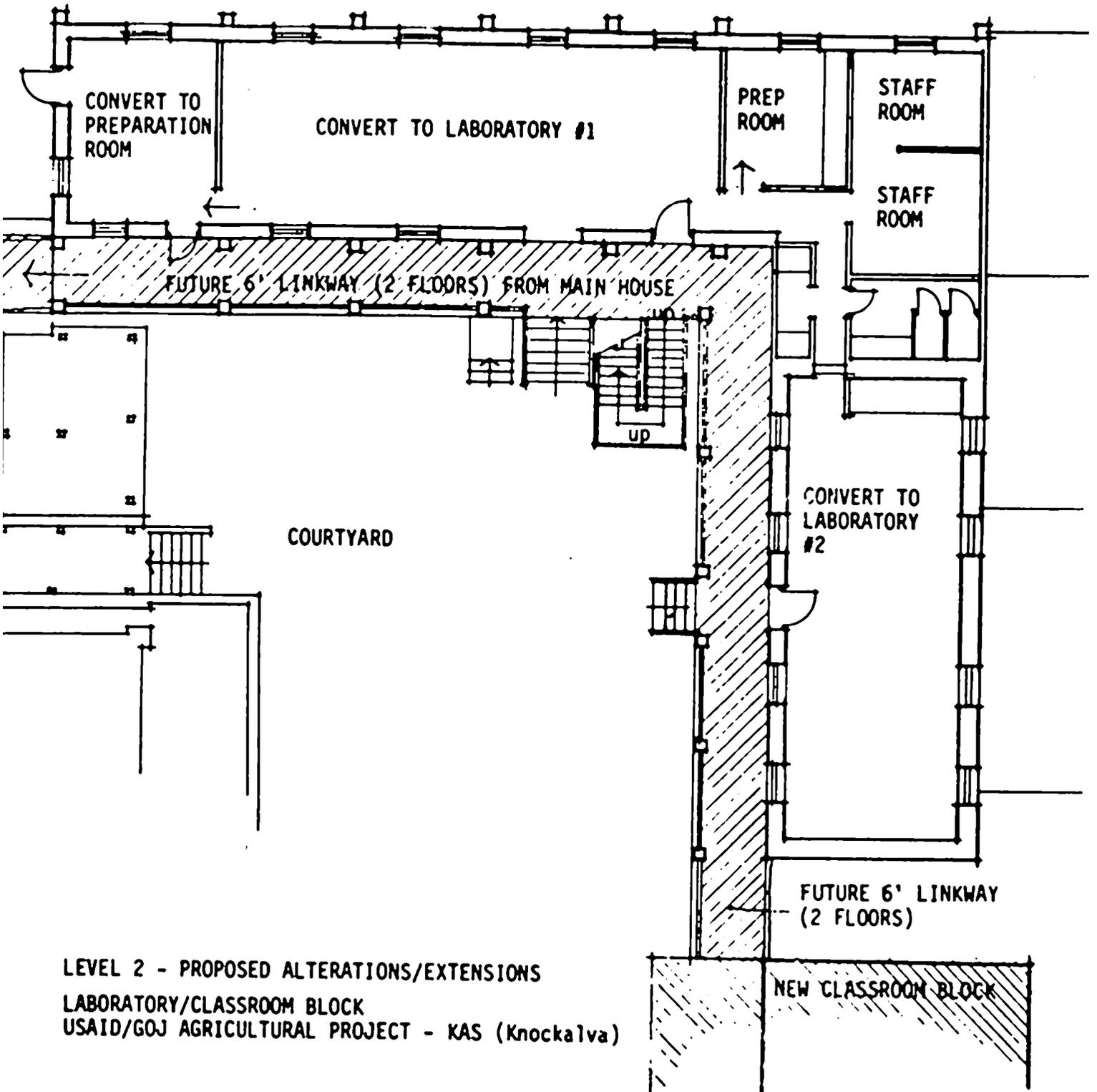
PROPOSED EXTENSION/ALTERATIONS
 CLASSROOM/LABORATORY BLOCK
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

2/1/72



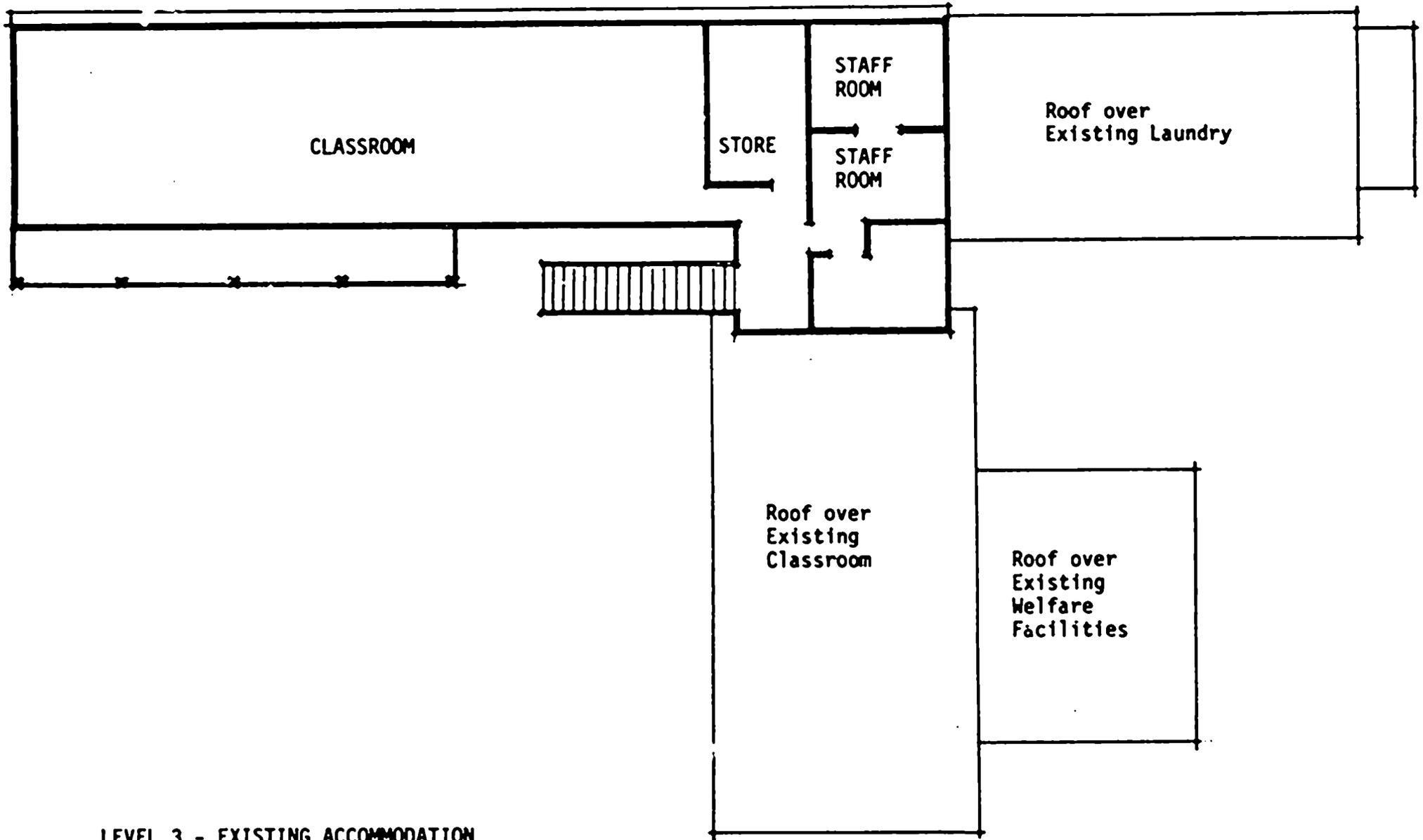
LEVEL 2

LABORATORY/CLASSROOM BLOCK: EXISTING ACCOMMODATION
USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)



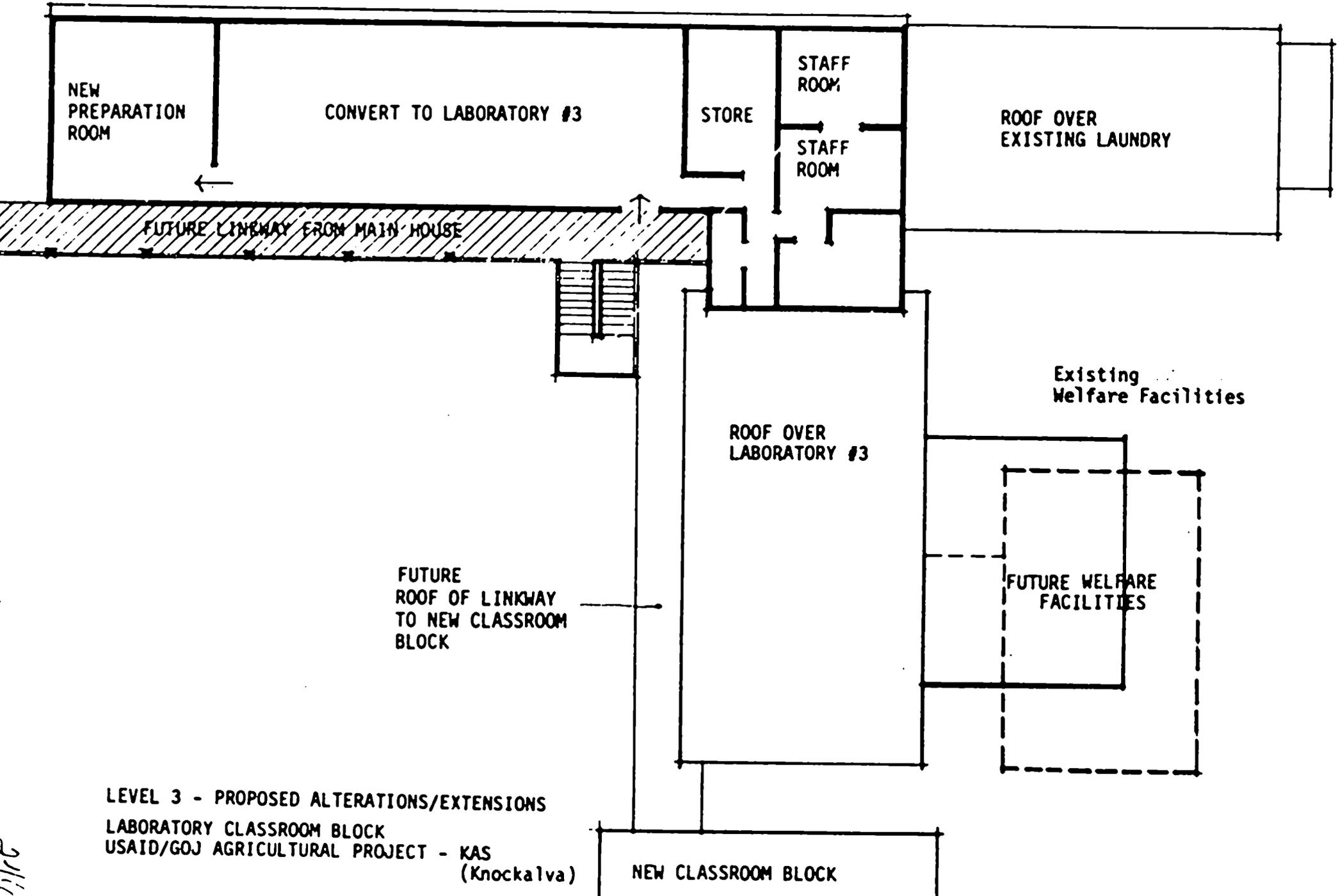
LEVEL 2 - PROPOSED ALTERATIONS/EXTENSIONS
 LABORATORY/CLASSROOM BLOCK
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

11/24/1



LEVEL 3 - EXISTING ACCOMMODATION
LABORATORY/CLASSROOM BLOCK
USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

2/15



NEW
PREPARATION
ROOM

CONVERT TO LABORATORY #3

STORE

STAFF
ROOM

STAFF
ROOM

ROOF OVER
EXISTING LAUNDRY

FUTURE LINKWAY FROM MAIN HOUSE

Existing
Welfare Facilities

ROOF OVER
LABORATORY #3

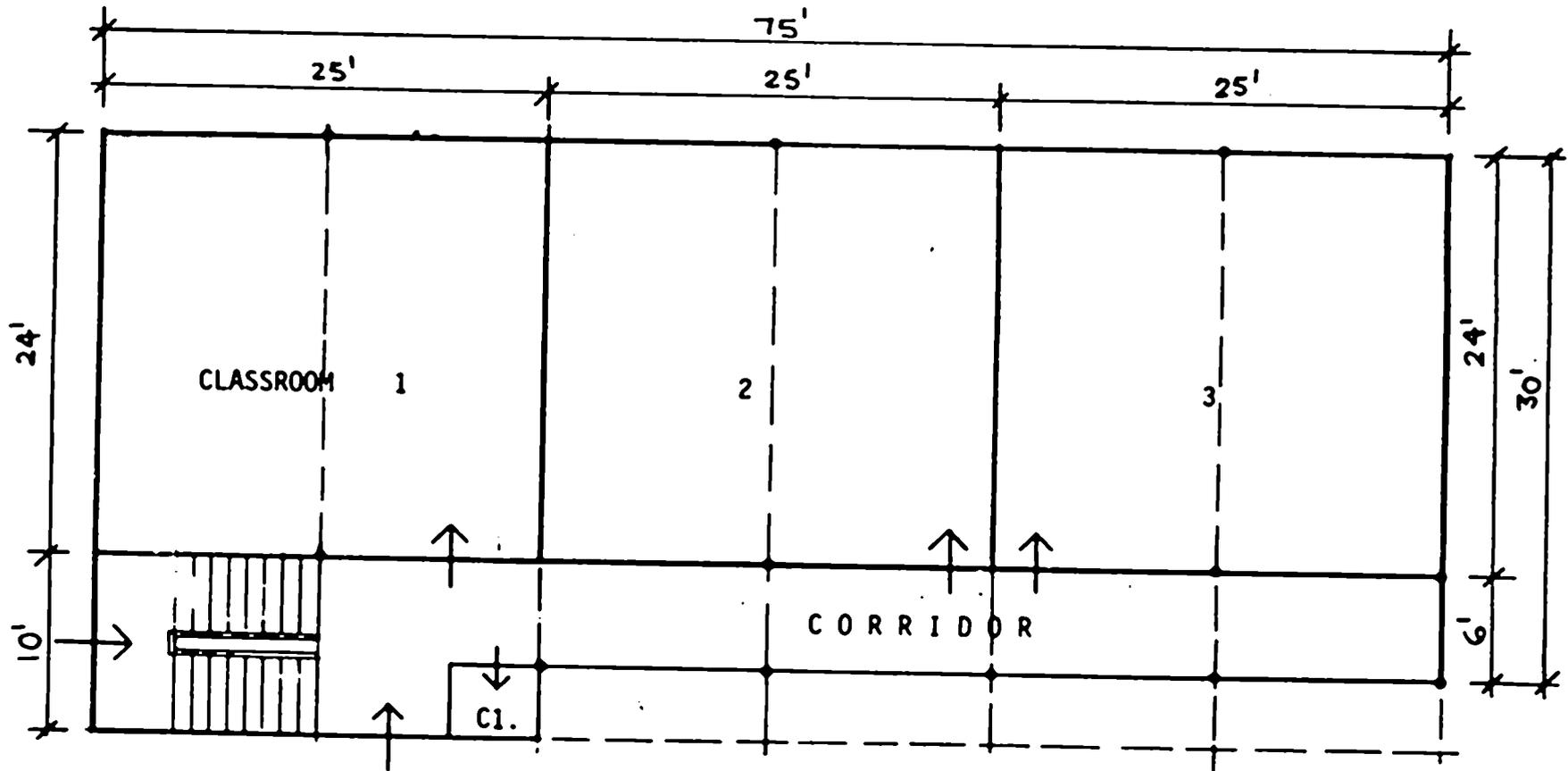
FUTURE
ROOF OF LINKWAY
TO NEW CLASSROOM
BLOCK

FUTURE WELFARE
FACILITIES

LEVEL 3 - PROPOSED ALTERATIONS/EXTENSIONS
LABORATORY CLASSROOM BLOCK
USAID/GOJ AGRICULTURAL PROJECT - KAS
(Knockalva)

NEW CLASSROOM BLOCK

1/1/6



PLAN - LEVEL 1 & LEVEL 2

TOTAL AREAS

Level 1 = 2,350

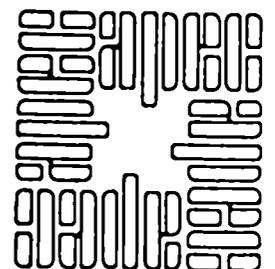
Level 2 = 2,350

TOTAL 4,700 ft.²

CLASSROOMS: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

1/1/76

3. STAFF RESIDENCES



USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

STAFF RESIDENCES

A. EXISTING ACCOMMODATION

Existing staff accommodation consists of 2 no. separate 3BR houses for married staff (1 located near the main entrance with access from the main road and the other in an area further east along the main road) and 4 no. single floor 2BR cottages for single staff in a complex at the western end of the property (near to the main entrance and the first staff house).

The environmental nuisances previously referred to seriously affect the cottages and the removal of the Piggery & Poultry Houses would remove the nuisances as well as provide much needed land for additional residences and other buildings.

There are complaints regarding the restricted size of the cottages and leaking from concrete water tanks which form part of their roofs.

Environmental nuisances in the form of dust from a nearby quarry are also reported in the residence at the south-eastern end of the property.

B. NEW ACCOMMODATION

The new accommodation requested is

- 1 Principal's Residence with 3 bedrooms and a study with adjacent reception area
- 2 no. 3-BR married staff residences well separated by distance
- 4 no. 2-BR single staff flatlets, each bedroom to have a separate access.

It is proposed that the 3-BR residences for married staff and the Principal be located in an elevated area between the central campus and the Dairy Complex. Access would be from the proposed roadway linking the two areas.

The proposed 2BR flatlets could be located on lands immediately to the east of the existing cottage complex. In view of the fact that several graves exist on this land and that land will be made available by the relocation of the Piggery and Poultry Houses, it is proposed that the 2BR flatlets be located on the former Piggery/Poultry House site. Vehicular access would be simplified and adequate provision for future expansion could be made.

The proposals for the Principal's residence, the 3BR married staff residences and the 2BR apartments are shown on the accompanying drawings. The Apartments are to be in separate blocks, 2 floors in height, and their proposed location is also shown.

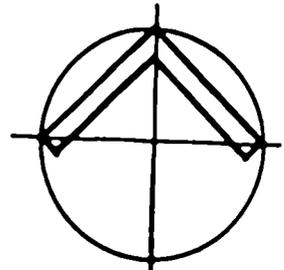
The locations for the new Principal's Residence and the 3BR Residences will be determined when the location of the link roadway is finalised. After review, it was decided to omit one 3BR Residence and the Principal's Residence.

C. SCHEDULE OF AREAS	Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
1. 4 No. 2BR FLATLETS (2 buildings of 2 floors each)		
.1 Bedroom 1	12.5' x 12.5'	156.25
.2 Bathroom 1	5.5' x 8'	44
.3 Cupboard 1	5.5' x 4.5'	24.75
.4 Bedroom Suite 2	15.5' x 18'	225
.5 Common Living/Dining	12.5' x 17'	212.5
.6 Common Kitchen	8' x 9'	72
.7 Common Verandah	8' x 8'	44
.8 Common Laundry/Store	5.5' x 8'	44
.9 Circulation/Stairs	various	197.5
	Area	<u>1,050 ft.²</u>
	x 4	<u><u>4,200 ft.²</u></u>

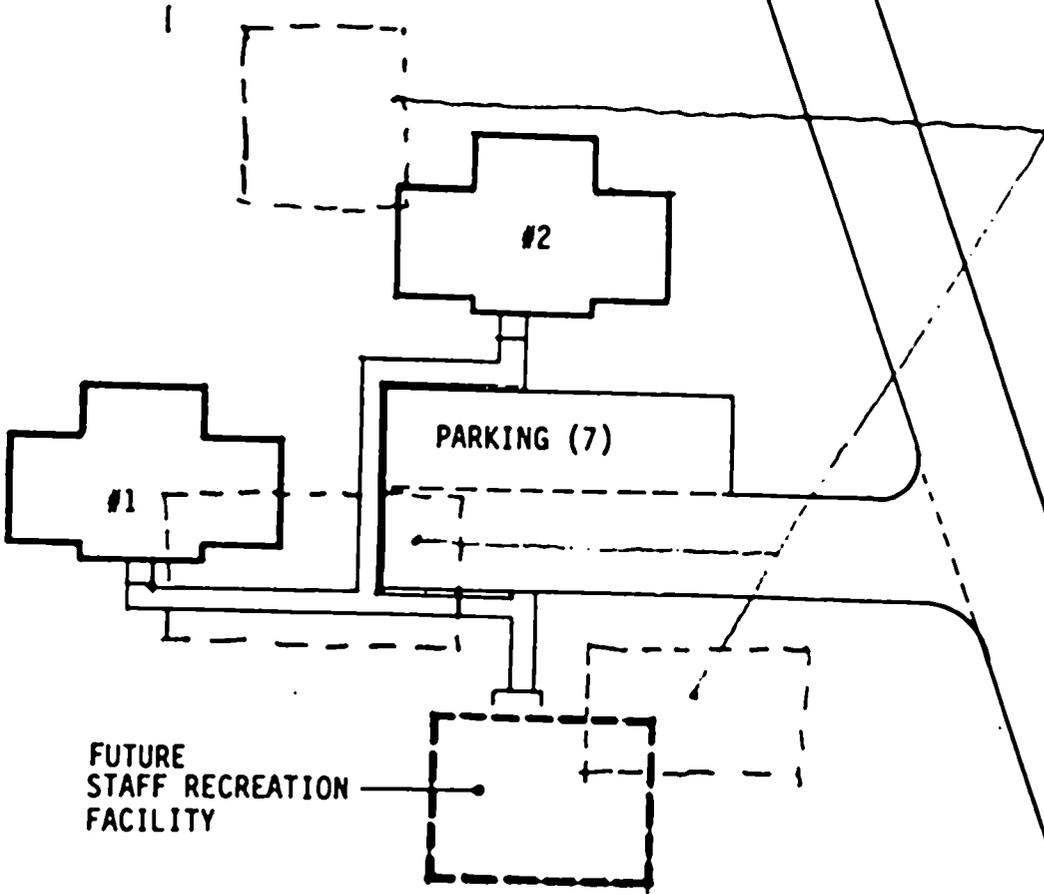
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		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)	
2.	1 No. 3BR RESIDENCE			
	.1	Master bedroom	13' x 16'	208
	.2	Master Bathroom	5.5' x 8'	44
	.3	Cupboard	7.5' x 8'	60
	.4	Bedroom 1	12' x 13'	156
	.5	Bedroom 2	12' x 13'	156
	.6	Bathroom	5.5' x 8'	44
	.7	Living/Dining	13' x 24'	312
	.8	Terrace	13' x 8'	156
	.9	Kitchen	13' x 8'	104
	.10	Laundry/Linen Store	7.5' x 8'	60
	.11	Circulation	4' x 26'	104
		Area		<u>1,404 ft.²</u>

SINGLE STAFF
RESIDENCES (2 FLOORS)



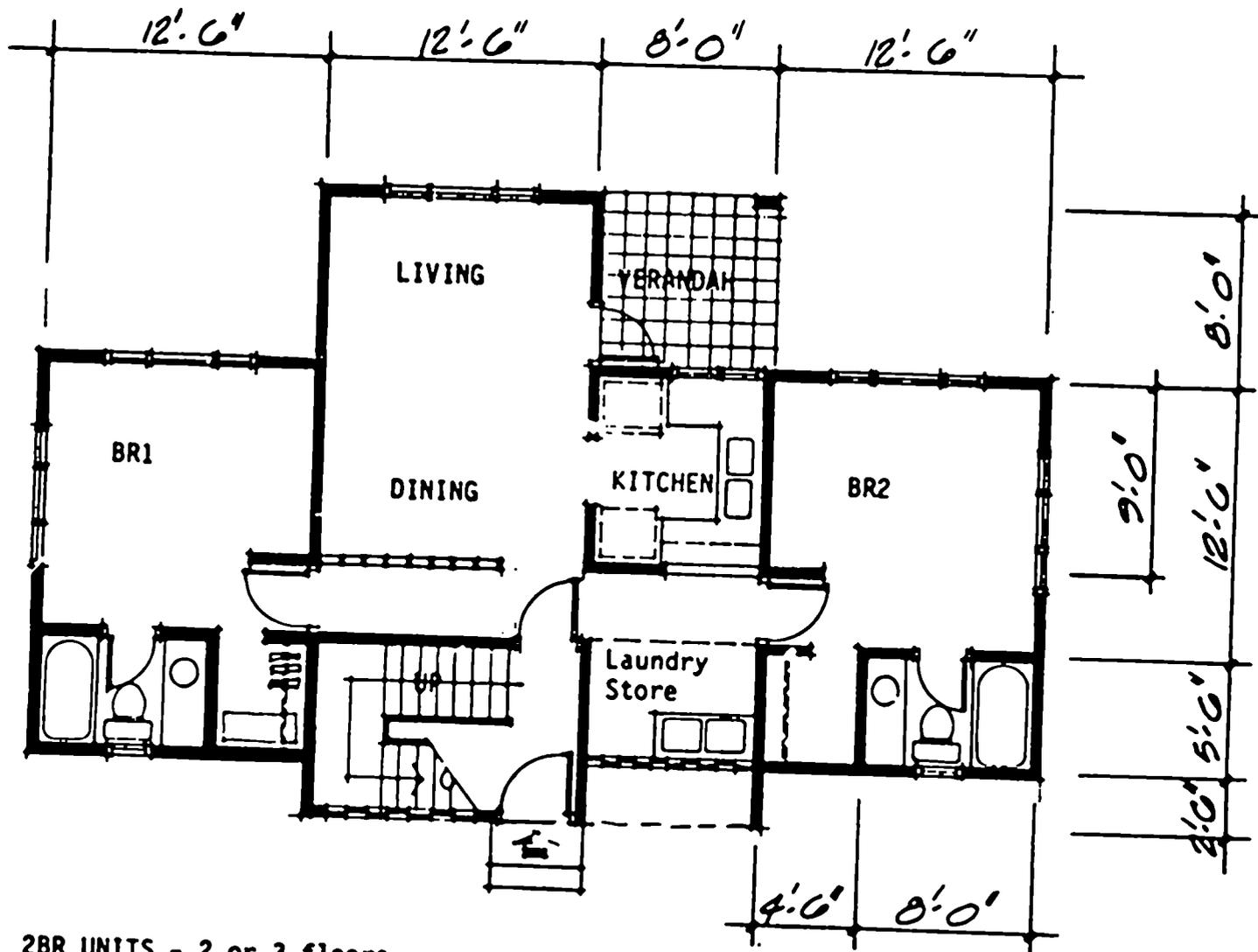
DEMOLISH EXISTING
PIGGERY & POULTRY
HOUSES



AREAS

1.	SINGLE STAFF RESIDENCE #1	(2 no. 2BR Apts.)	=	2,100 ft. ²
2.	"	"	"	#2 (2 no. 2BR Apts.) = 2,100 ft. ²
			TOTAL	= <u>4,200 ft.²</u>

PROPOSED SINGLE STAFF RESIDENCES/STAFF RECREATION
USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

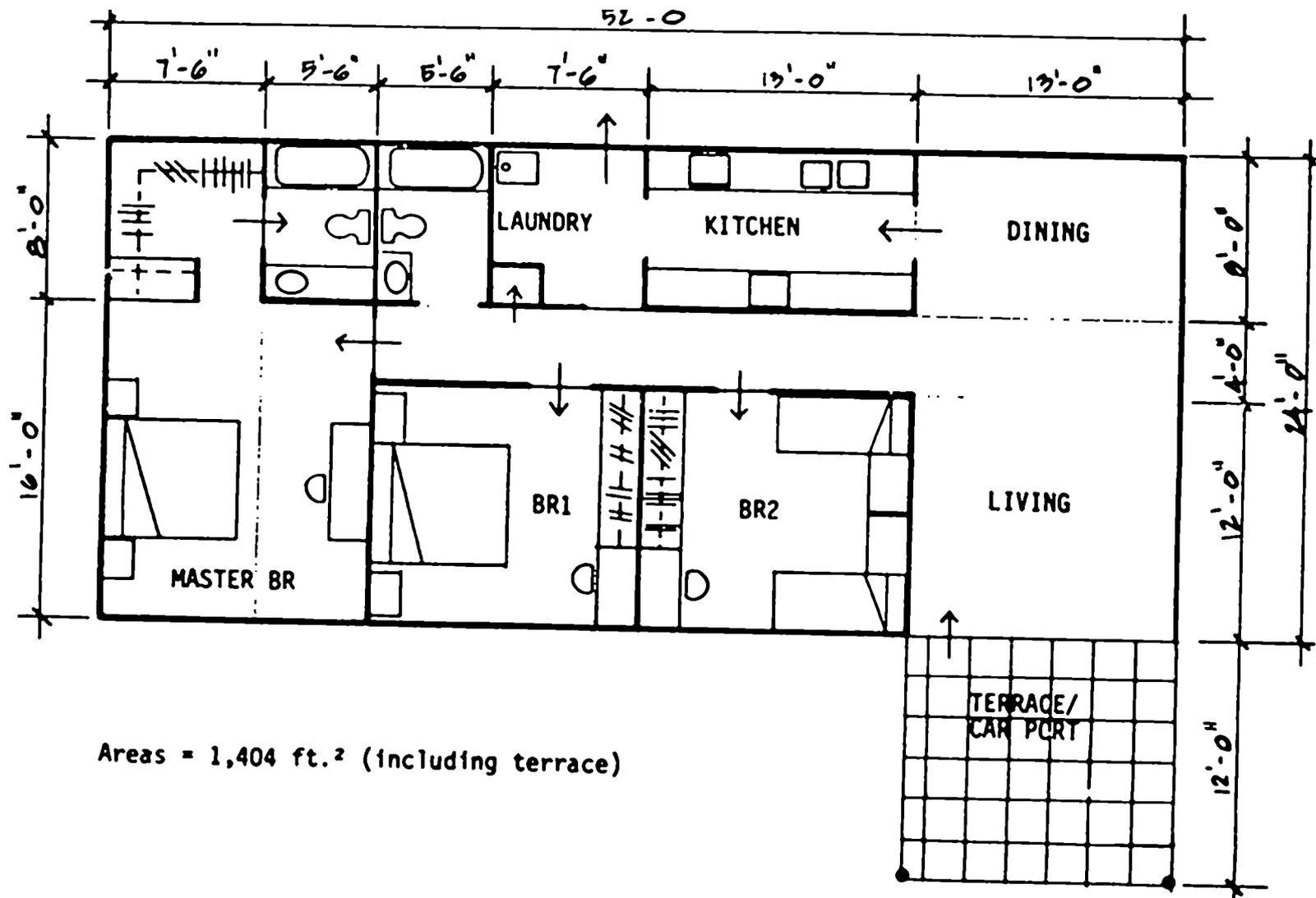


2BR UNITS - 2 or 3 floors

Area = 1,050 ft.² approximate

NEW STAFF RESIDENCES: 2BR UNITS
 USAID/GOJ AGRICULTURAL PROJECT

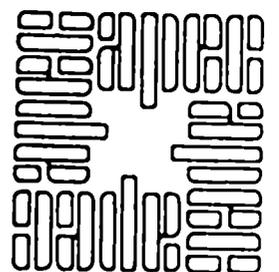
2/2/73



3BR HOUSE
 STAFF RESIDENCES
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

2/21

4. FARM COMPLEX



USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

FARM COMPLEX

A. EXISTING ACCOMMODATION

The present facilities are provided in two separate locations, one near to the central complex consisting of poultry and piggery houses and the other in a remote area on another part of the property housing a dairy complex. An existing building near to the present single staff residences is being re-modelled to provide agronomy/poultry classrooms. A sub-standard roadway connects the central complex to the dairy complex.

A major and serious complaint concerning the proximity of the piggery and poultry houses to the residential accommodation and central complex has been unanimously expressed. The environmental nuisances manifested by odours, flies etc. cannot be reasonably maintained given the proposed expansion of the school and the shortage of land suitable for new buildings near to the central complex.

Because of the relatively low capital replacement costs of the Piggery & Poultry Houses, and the factors mentioned above, it is clear that these facilities should be relocated to a more suitable site on the property. The land thereby released would provide much needed locations for the expansion of the central complex facilities.

B. NEW ACCOMMODATION

It is proposed that a new Poultry & Piggery Complex be constructed in the vicinity of the present Dairy Complex.

The new accommodation needs are -

- Layer Houses (1,500 birds)
- Broiler Houses (6,000 birds)
- Piggery (200 pigs)

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- 1 no. Agronomy Field Classroom (with preparation & store room)
- 1 no. Poultry Field Classroom (" " " " ")
- Central Storage (for feed, equipment etc.)
- Sanitary Facilities
- Stand-by Generator (for Dairy Complex & Cold Room)
- Abattoir (equipment presently exists)

The accompanying drawings illustrate proposals for these facilities, their exact location to be determined when detailed design is being undertaken.

A roadway from the central complex to the Farm Complex should be provided to accommodate the increased traffic.

After review of the draft final report, it was agreed that -

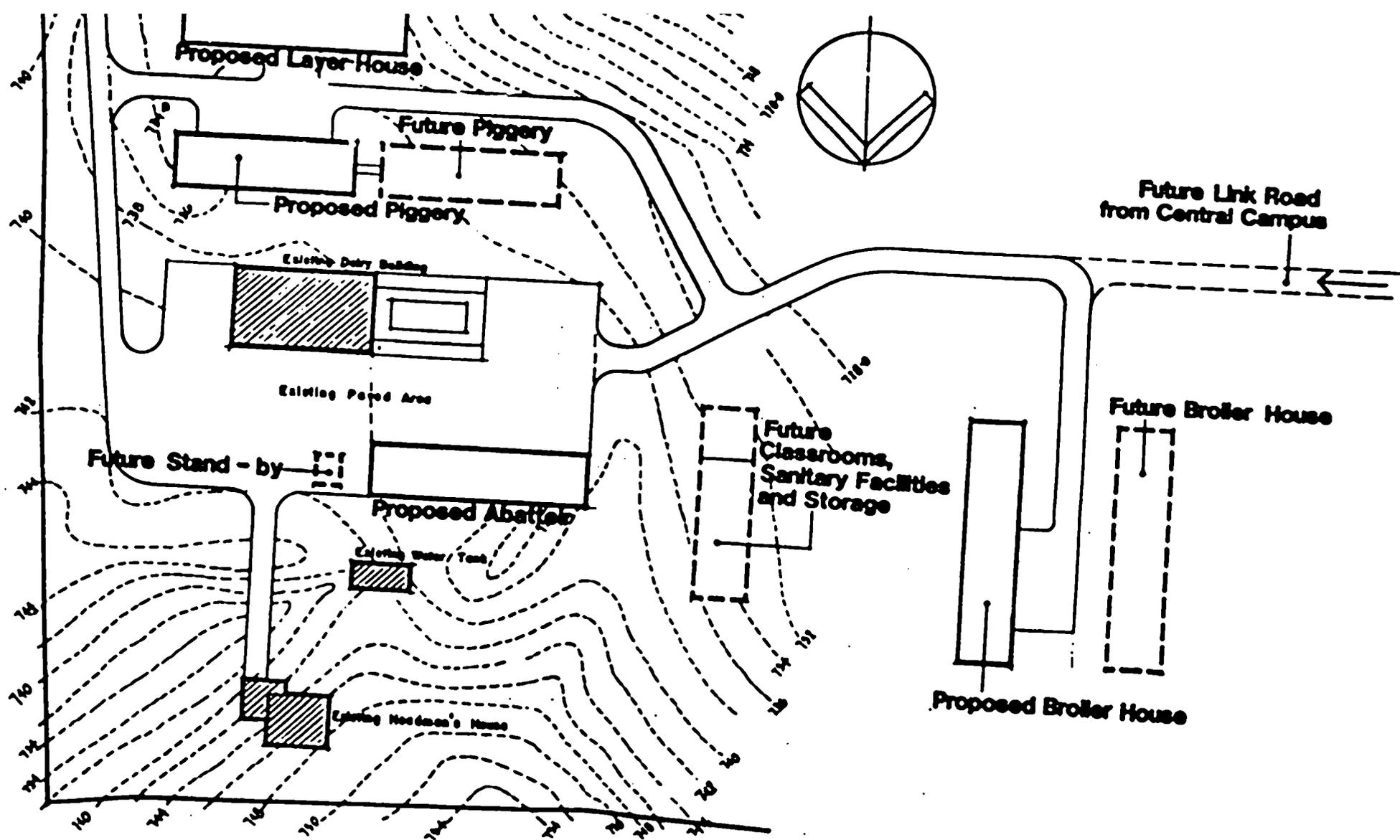
- only 1 Broiler House (capacity 3,000 birds) be included
- the Agronomy & Poultry Field Classrooms should be omitted
- the Central Storage, Sanitary Facilities and the Stand-by Generator should be omitted
- the Roadway should not be included.

C. SCHEDULE OF AREAS

		Approximate Dimensions (ft.)	Approximate Areas (ft.2)
1.	LAYER HOUSE (1,500 birds)		
	.1 Unit #1 (750 birds)	26' x 37.5	975
	.2 Unit #2 (750 birds)	26' x 37.5'	975
	.3 Feed Store	12.5' x 20'	250
	.4 Egg Room	12.5' x 20'	250
	.5 Circulation	6' x 25'	150
		TOTAL	<u>2,600 ft.²</u>

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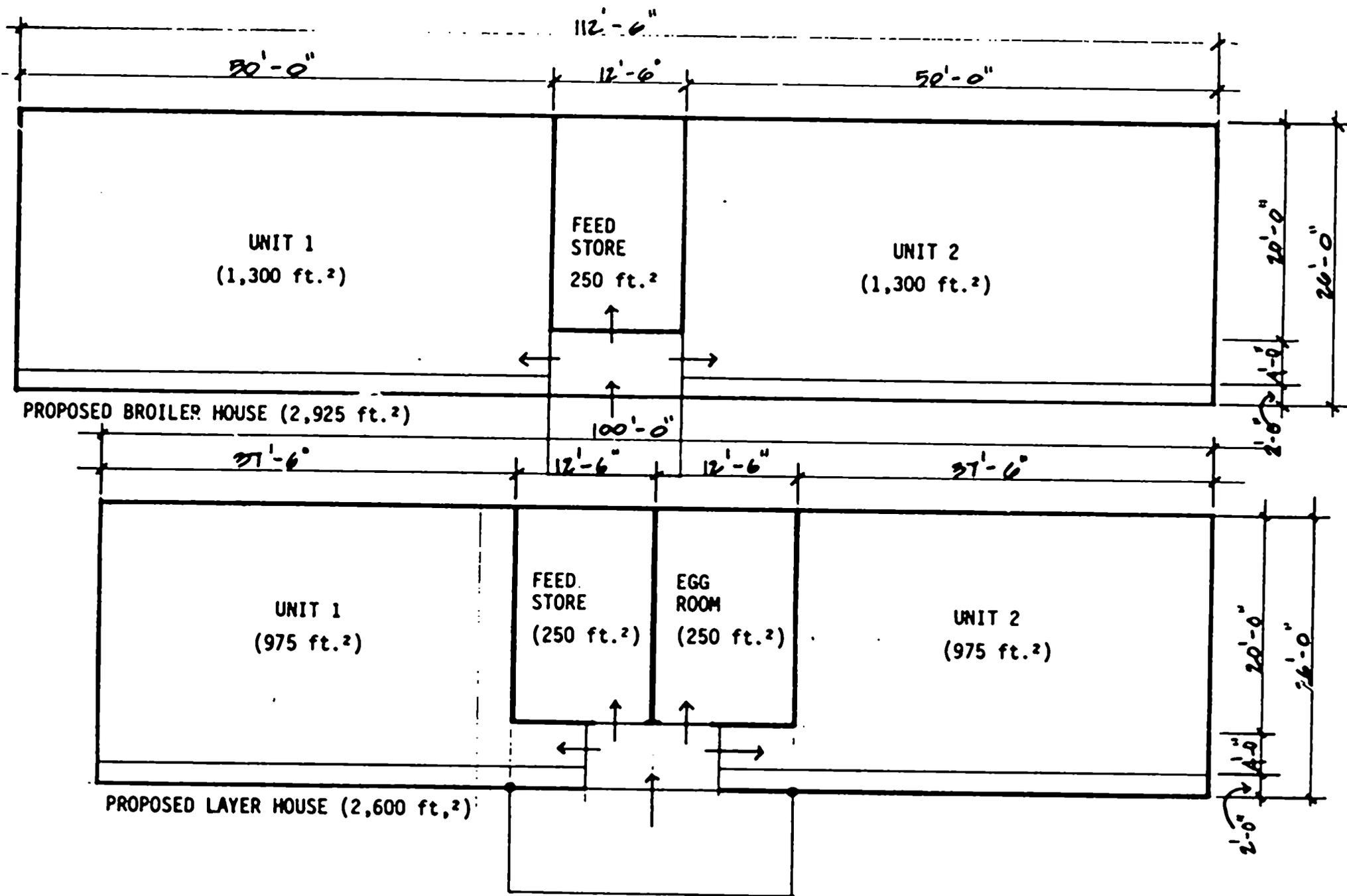
		Approximate Dimensions (ft.)	Approximate Areas (ft. ²)
2.	BROILER HOUSE (3,000 birds)		
	.1 Unit #1 (1,500 birds)	26' x 50'	1,300
	.2 Unit #2 (1,500 birds)	26' x 50'	1,300
	.3 Feed Store	12.5' x 29'	250
	.4 Circulation	6' x 12.5	75
		TOTAL	<u>1,925 ft.²</u>
3.	PIGGERY		
	.1 3 no. Farrowing Pens	3 x 7.5' x 15.5'	348.75
	.2 5 no. Nursery Pens	5 x 6' x 4.5'	135
	.3 Wash Area	10' x 10.5'	105
	.4 Service Area	10' x 10.5	105
	.5 6 no. Pens	6 x 10' x 10.5'	630
	.6 Feed Store	10' x 10.5'	105
	.7 Office	10' x 10.5'	105
	.8 Circulation	varies	476.25
		TOTAL	<u>2,000 ft.²</u>
4.	ABATTOIR		
	.1 Refrigeration Room	12' x 25'	300
	.2 Processing Room	48' x 25'	1,200
	.3 Equipment Store	12' x 10'	120
	.4 Cutting Room	12' x 10'	120
	.5 Smoke Curing	12' x 10'	120
	.6 Records Office	12' x 10'	120
	.7 Curing Room	12' x 25'	300
	.8 Circulation	5' x 24'	120
		TOTAL	<u>2,400 ft.²</u>
5.	TOTAL FARM COMPLEX		
	1. LAYER HOUSE	2,600	
	2. BROILER HOUSE	3,850	
	3. PIGGERY	2,000	
	TOTAL	<u>10,850 ft.²</u>	



Proposed Extensions
 FARM COMPLEX

USAID / GOJ AGRICULTURAL PROJECT
 KAS (KNOCKALVA AGRICULTURAL SCHOOL)

APEC

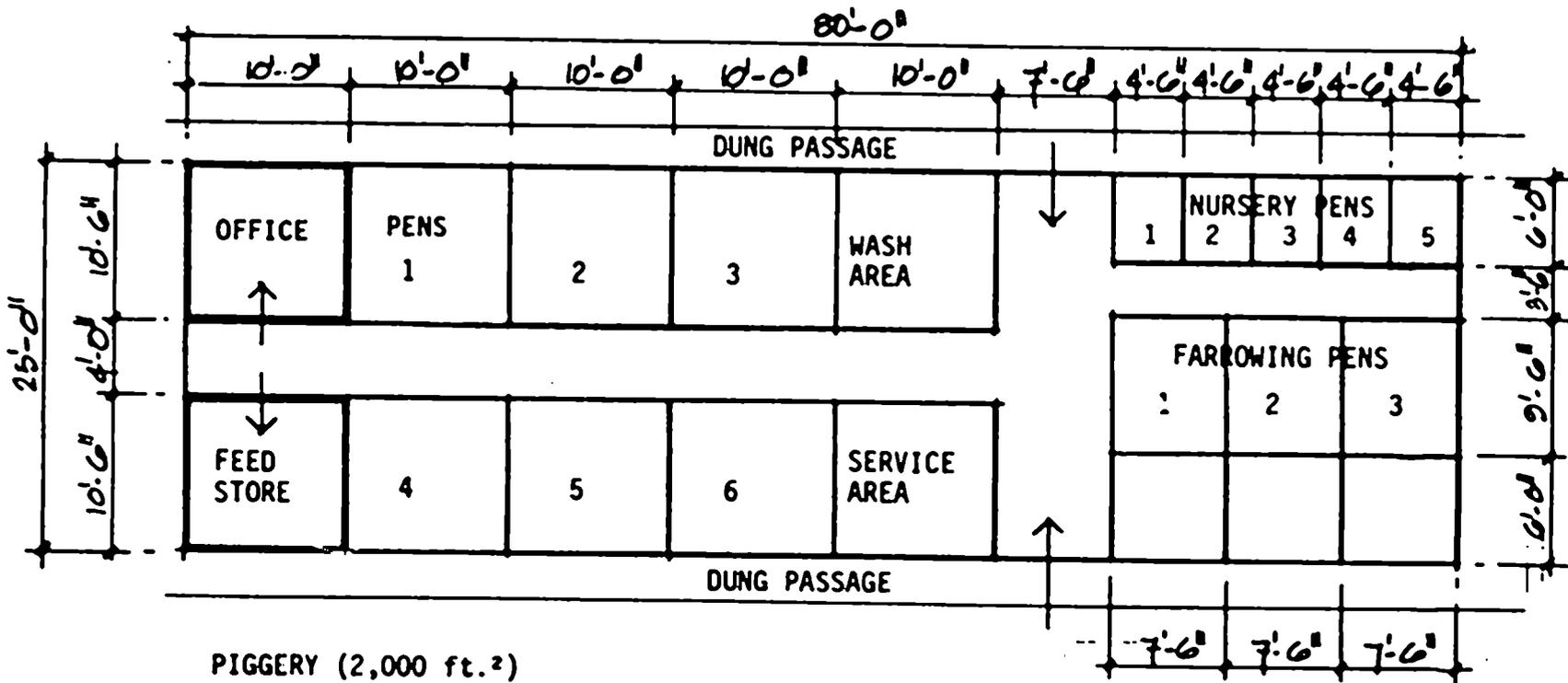


POULTRY HOUSES - NEW ACCOMMODATION

FARM COMPLEX

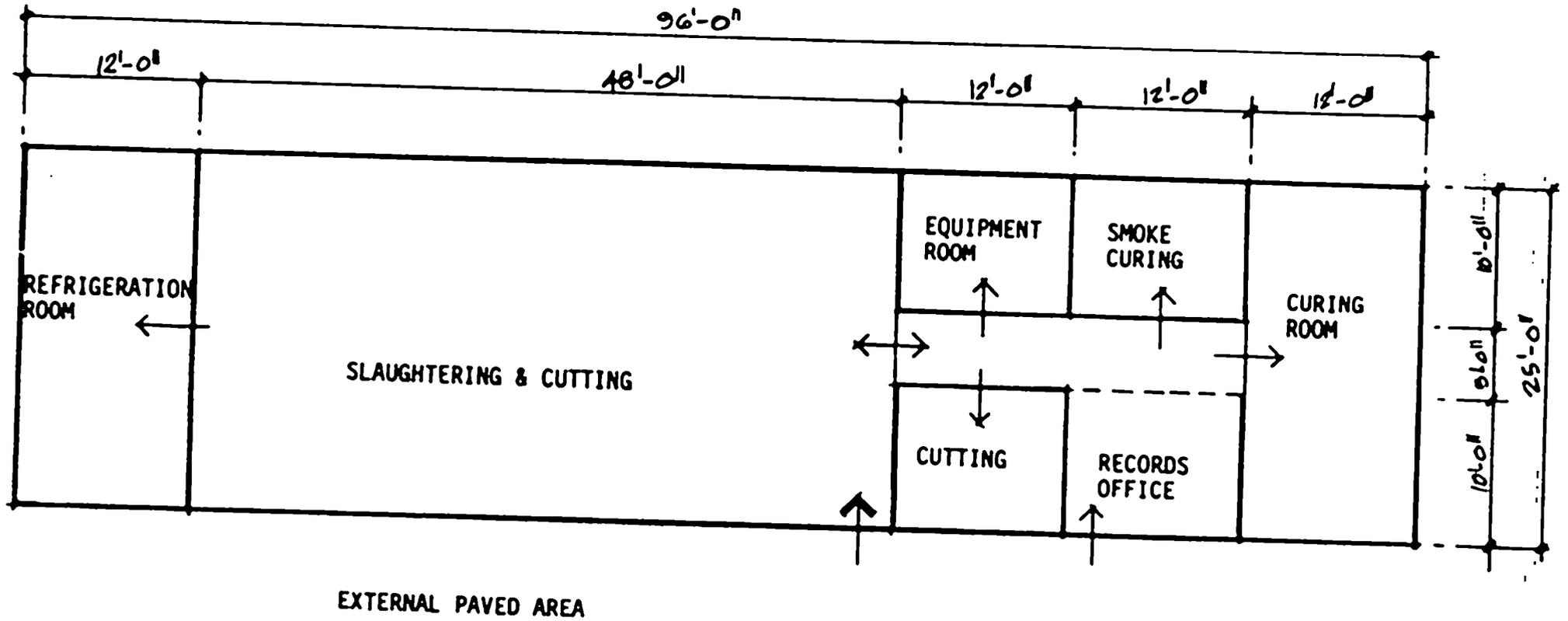
USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

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PIGGERY
 FARM COMPLEX
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

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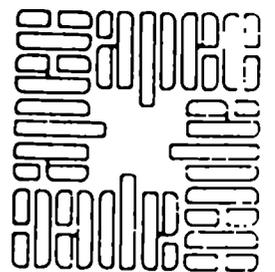


Area = 2,400 ft.²

PROPOSED ABATTOIR
 FARM COMPLEX: NEW ACCOMMODATION
 USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

017

5. ENGINEERING



USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

STRUCTURAL CONSIDERATIONS

1. GROUND BEARING CONDITIONS

In 1978 Messrs. Hill-Betty (Engineers) Limited carried out soils investigations in the area allocated for the dormitory and sick-bay blocks #1 to #6 and bored four trial holes, one to a depth of 20 feet, two to fifteen feet and one to ten feet. All the holes revealed a similar soil structure, that is to say, a variable thickness of stiff silty clay over dense sand and gravel, with an intervening layer of soft sandy silt/clay in one hole only.

The layer of clay/sandy clay varied between four feet and twelve feet six inches in thickness, and from our inspection of the site and the soils engineer's description we anticipate that similar conditions will exist in all the areas surrounding the main building where it is proposed to construct new buildings.

In these circumstances the soils engineer's recommendations were, understandably, that foundations should not be placed in the clay layer, but that the load should be transferred to the underlying gravel, either by removing the clay overburden or by means of short bored piles. We endorse this recommendation most heartily, and although it is not possible to assess the most economical methods of construction at this stage, an allowance for the additional expense has been made in our estimate of foundation costs for new dormitory accommodation, staff residences and auditorium.

The new farm buildings, being of steel framed, and for the most part, open-sided construction, will not be so susceptible to differential settlement, which will be controlled by placing foundations in the clay layer, but with a maximum bearing pressure of 1,000 lb. per square foot.

2. PROPOSED STRUCTURAL CONCEPTS FOR INDIVIDUAL BUILDINGS

A. AUDITORIUM/STUDENT DINING

Thermally insulating and reflective roof panels on steel purlins on steel lattice trusses supported by steel stanchions on individual concrete pad footings. Infill wall panels of six inch thick reinforced concrete blockwork with stiffeners and belt beams on concrete strip footings. Floor, six inch thick reinforced concrete slab on 9 inch thick layer of consolidated marl.

B. STUDENT DORMITORIES, CLASSROOMS, AND STAFF RESIDENCES

Roof of Aluminium sheeting on tongued and grooved sarking on timber rafters, and reinforced concrete floors, on load bearing 6" thick reinforced concrete blockwork with stiffeners and belt beams, carried to concrete strip footings (with load transfer to underlying gravel layer).

C. FARM BUILDINGS

If the existing poultry houses and piggery are to be relocated we presume that their structural form will be maintained, which is of timber posts and rafters with galvanised steel sheet roofing.

For new buildings designed to resist hurricane and earthquake loading, we would propose aluminium roof sheeting on steel portal frames for open sided buildings, or steel trusses where there are supporting concrete blockwalls. Floors would be of six inch thick concrete with reinforcing mesh on 9 inch thickness of consolidated marl.

HS

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

SEWAGE DISPOSAL

1. GROUND ABSORPTION POTENTIAL

The soils investigation carried out in November 1978 describes the upper layer as being "clay of high compressibility, highly colloidal in texture, and heavily saturated". The substratum, to the depth of the bore holes, is described as "Compact to very dense calcareous silty sand and gravel". No percolation tests were carried out, but it is reasonable to assume that the upper layer would have negligible absorption capacity, while the marly limestone would allow relatively slow percolation of treated effluent, free from suspended solids.

2. EXISTING SEWAGE DISPOSAL

We are advised that sewage from the existing buildings is retained in septic tanks for a period of not less than 24 hours, during which period suspended solids are allowed to settle, and the resulting effluent is disposed of by means of leaching beds or tile fields, for which no detailed drawings were available. These have apparently been operating satisfactorily, however, since there are no reports of flooding or sewage backing up in the system.

3. PROPOSED SEWAGE DISPOSAL

It is recommended that percolation tests should be carried out for the marly limestone material and that the sewage system for the new buildings should be designed with double chamber baffled septic tanks to accommodate $1\frac{1}{2}$ times the maximum anticipated daily outflow leading to leaching beds constructed to give sufficient contact area with the marly limestone material to allow absorption of this outflow in twenty four hours. We visualise the most economical way to construct these beds would be to excavate trenches (by back hoe) through the clay and to a calculated depth into the limestone. These trenches would then be back-filled with graded broken limestone (3" maximum to 1" minimum) to two feet from the surface.

The perforated discharge pipes would be laid and surrounded with broken limestone, following which the surface would be covered with polyethylene sheeting or similar and the remainder of the trench backfilled with the original clay and humus.

4. ENVIRONMENTAL CONSIDERATIONS

In the absence of any existing system for the complete treatment of sewage effluent, it is considered that the proposals described above offer the best solution for disposal of this material with minimum environmental impact and health hazard for the following reasons.

- a. Primary treatment will take place in the septic tank, and the effluent will be a relatively clear liquid with reduced B.O.D.
- b. The effluent will not again be exposed to outside air, but anaerobic digestion will continue in the trench.
- c. Percolation through the marly limestone is expected to be slow, which means that the effluent will be inert before it has reached a significant depth (estimated 15 ft. maximum).
- d. There are no wells or known watercourses in the vicinity which are likely to be adversely affected.

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

ROAD CONSTRUCTION

1. GROUND CONDITIONS

Soil tests and observation indicate that the ground surface conditions consists of clay to a variable depth over marly limestone, and it is reasonable to assume therefore that the road from the Campus to the Farm School will be constructed in clay for most of its length.

2. SPECIFICATIONS

The type of road construction required at Knockalva is likely to be as described in section 2.2 for Passley Gardens, with the same provision for external grading and drainage to protect the road bed.

Since marly limestone exists in abundance below the clay layer it would be wise to explore the site to see if there were any areas where this material could be economically quarried for use in road construction.

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

ELECTRICAL & MECHANICAL CONSIDERATIONS

The present system is fed by the Jamaica Public Service Company limited overhead with the high tension wires terminating at the Administrative Area with pole mounted transformers to provide a 3 phase, 4-wire, 240/120 volts, 50 hertz supply.

The buildings are fed via open-wire on racks then overhead to the various unit buildings. The Farm Complex is fed by an extension of the high voltage supply.

Expansion of the system can be achieved by increasing the transformer capacity and extending the low voltage lines.

Stand-by power should be provided for the Dairy Buildings and the Abattoir in the Farm Complex and for the Multi-Purpose Auditorium.

The lightning protection system in place on the Central Building is in need of maintenance. This is important as this site is in a high lightning risk area. Any two storey building or buildings in an open area with critical equipment should carry lightning protection.

The particular requirements for individual buildings are itemized below:

1. STUDENT RESIDENCES

- a. New power supplies and distribution.
- b. Appropriate lighting for study areas at desk height (minimum 30 foot candles).

2. MULTI-PURPOSE FACILITY

- a. 70 Foot candle lighting for games area at table height.
- b. Exhaust system for kitchen.
- c. Mains power supply.
- d. Fire extinguisher for kitchen (CO² or BCF).

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3. CLASSROOM/LABORATORY COMPLEX

- a. New power supply.
- b. 30 Foot candle lighting at desk height.

4. STAFF RESIDENCES

- a. New power supply.

5. FARM COMPLEX

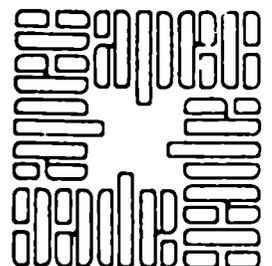
a. Abattoir

- i. New power supply.
- ii. Refrigeration equipemnt.
- iii. 5 Foot candle lighting level.

- b. Layer House)
- c. Broiler House } Lightng levels are 5 foot candle.
- d. Piggery)

COST ESTIMATES & CONSTRUCTION RECOMMENDATIONS

D.



COST ESTIMATES

The cost estimates have been computed on the basis of a cost analysis (updated) of buildings of a similar type construction at Elim Agricultural Training College and for this exercise, the services of the Quantity Surveyor for that project, Mr. A. Twyman, were utilized.

The rates used in compiling the estimates are in Jamaican dollars and are those applicable as at the 1st May 1984. It should be pointed out that Jamaica is currently going through a period of economic instability resulting in a steady devaluation of the currency accompanied by substantial escalation in the prices of building materials (e.g. steel, cement, lumber etc.). This means that building costs are subject to significant but unpredictable increases in the near future, although it is hoped that prices will settle down once the external fluctuations have subsided to an acceptable level.

The rates for labour currently in force will remain static until the 31st January 1985, after which new rates (probably substantial) will be negotiated.

Allowances should therefore be made for significant labour and material price increases during the likely construction period of this project.

It must be stressed that the estimates given are approximate only based on the following factors:

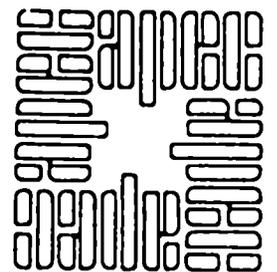
- the proposed buildings are only at preliminary conceptual stage and would have to be developed in more detail (construction systems, structural design, foundations etc.) in order to allow detailed breakdowns to be computed.
- the very short time (4 - 6 weeks) available for planning, design & preparation of this report.
- the uncertainty of sub-soil conditions in some sites and the lack of time to carry out necessary surveys and borings in order to establish structural criteria and percolation characteristics (for disposal etc.).

Should you, however, require more detail, then more time would have to be made available to carry out the various exercises necessary to provide you with meaningful detailed elemental analyses of each building or project.

We should point out that while it may be possible to prepare detailed estimates using current prices at 1st May 1984 the recent devaluations and cost increases taken together with future labour increases will have a disproportionate effect on building elemental costs.

We are satisfied, nevertheless, that the figures represent a reasonably accurate estimate of cost based on the current information available.

**1. COST ESTIMATES:
COA (PASSLEY GARDENS)**



USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATE OF COST

SUMMARY

1.	CENTRAL COMPLEX	Page No.	4	6,594,000
2.	STAFF RESIDENCES	" "	5	4,075,000
3.	PLANT PROPAGATION COMPLEX	" "	6	465,000
4.	LIVESTOCK COMPLEX	" "	8	1,078,000
5.	ENGINEERING FARM COMPLEX	" "	10	2,029,000
6.	WATER SUPPLIES ETC.	" "	11	<u>251,000</u>
				14,492,000
7.	CONTINGENCIES			<u>750,000</u>
				15,242,000
8.	PROFESSIONAL FEES AND EXPENSES			<u>2,288,000</u>
				J\$17,530,000
				<u>say J\$17.50m</u>

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATES OF COST: CENTRAL COMPLEX

A. STUDENT RESIDENCES

1.0 CONVERSION OF EXISTING ACCOMMODATION

.1	Electrical Modifications		10,000	
.2	Laundry (new building)			
	a. building	75,000		
	b. laundry tubs	7,000		
	c. drying yard/fence	14,000		
	d. electrical installation	7,000	103,000	
			<u>103,000</u>	<u>113,000</u>

2.0 NEW BUILDINGS (240 students)

.1	BLOCK #1 (4 floors - 96 students)			
	a. 8 no. living units @ 150,000 ea. =	1,200,000		
	b. 4 no. common areas @ 40,000 ea. =	160,000		
	c. main electrical supply	5,000		
	d. sewage disposal	160,000	1,525,000	
.2	BLOCK #2 (3 floors - 72 students)			
	a. 6 no. living units @ 150,000 ea. =	900,000		
	b. 3 no. common areas @ 40,000 ea. =	120,000		
	c. main electrical supply	5,000		
	d. sewage disposal	120,000	1,145,000	
.3	BLOCK #3 (3 floors - 72 students)			
	as for BLOCK #2		1,145,000	3,815,000
			<u>1,145,000</u>	<u>3,815,000</u>

3.0 TOTAL STUDENTS RESIDENCES

.1	CONVERSION OF EXISTING	113,000
.2	NEW BUILDINGS	3,815,000
		<u>3,815,000</u>

B. LIBRARY BUILDING

1.0 ALTERATIONS TO EXISTING

.1 Alterations to Layout	30,000		
.2 Electrical Alterations and Light Fixtures	40,000	<u>70,000</u>	<u>\$70,000</u>

C. CLASSROOM COMPLEX

1. UPWARD EXPANSION ALTERNATIVE

1.0 LEVEL TWO EXTENSION - NORTH

.1 Superstructure	620,000		
.2 Structural Floor Screed	60,000		
.3 Laboratory Fittings & Benches	100,000		
.4 Main Power Supply	15,000		
.5 Modify Panelboards	1,000		
.6 Propane Gas Supply	12,000	808,000	

2.0 LEVEL 2 EXTENSION - SOUTH

.1 Superstructure	700,000		
.2 Structural Floor Screed	55,000		
.3 Laboratory Fittings & Benches	80,000	835,000	

3.0 COMMON STAIRCASES

	<u>30,000</u>	<u>\$1,673,000</u>
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2. NEW BUILDINGS ALTERNATIVE

1. Two Floor Building	1,475,000		
2. Seating, Benches etc.	30,000		OR
3. Platform, Blackboard etc.	10,000		
4. Laboratory Benches & Shelving	100,000		
5. Main Power Supply	10,000		
6. Propage Gas Supply to Laboratory	12,000		
			<u>\$1,637,000</u>

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D. ADMINISTRATION BUILDING

1.0 ALTERATIONS TO EXISTING LEVEL 1

.1	Level 1 Modifications	25,000	
.2	Electrical Modifications	20,000	<u>45,000</u>

2.0 LEVEL 2 EXTENSION

.1	Superstructure	550,000	
.2	Structural Floor Screed	100,000	
.3	New Columns & Beams	105,000	
.4	Main Electrical Supply	7,000	
.5	Airconditioning to Board Room, Dean's Suite, Computer Room	42,000	<u>804,000</u>

3.0 TOTAL ADMINISTRATION BUILDING

.1	ALTERATIONS TO LEVEL 1		45,000
.2	LEVEL 2 EXTENSION		<u>804,000</u>
			<u>\$849,000</u>

E. MULTI-PURPOSE BUILDING

1.	Building Modifications	50,000	
2.	Electrical & Mechanical	10,000	
3.	Welfare Facilities	50,000	<u>\$110,000</u>

COLLECTION

A. STUDENTS RESIDENCES

1.	CONVERSION OF EXISTING	113,000	
2.	NEW BUILDINGS	3,815,000	3,928,000

B. LIBRARY BUILDING

1.	ALTERATIONS TO EXISTING	70,000	70,000
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C. CLASSROOM COMPLEX

1.	LEVEL TWO EXTENSIONS ALTERNATIVE	1,673,000	
2.	NEW BUILDING ALTERNATIVE	1,637,000	1,637,000

D. ADMINISTRATION BUILDING

1.	LEVEL TWO EXTENSION	849,000	849,000
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E.	MULTI-PURPOSE BUILDING	110,000	110,000
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TOTAL CENTRAL COMPLEX CARRIED TO SUMMARY			<u>3,928,000</u> <u>\$6,594,000</u>
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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATE OF COST: STAFF RESIDENCES

A. NEW STAFF RESIDENCE COMPLEX

1.	10 no. Garden Houses 'C' (2 floors) @ \$245,000 ea.	2,450,000	
2.	8 no. 2BR Apartments (2 & 3 foors) @ \$130,000 ea.	1,040,000	
3.	Roadways and Parking	125,000	
4.	Sewage Disposal & Water Supply	80,000	
5.	Landscaping & External Works, Paths etc.	50,000	
6.	Main Power Supply (depends on JPSCo.)	<u>25,000</u>	3,770,000

B. STAFF RESIDENCES (CONVERSION OF GREAT HOUSE)

1.	Conversion of Floors, Walls, Windows etc.	150,000	
2.	New Roof	100,000	
3.	Electrical Installation	25,000	
4.	External Works, Landscaping	<u>30,000</u>	305,000

TOTAL STAFF RESIDENCE COMPLEX CARRIED TO SUMMARY \$4,075,000

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATES OF COST: PLANT PROPAGATION COMPLEX

LABORATORY/LECTURE STORAGE

1.	Level 2 Superstructure	270,000
2.	Benches, Shelving and Fume Cupboard to Labs	30,000
3.	Level 1 Superstructure (undercroft)	120,000
4.	Main Power Supply	10,000
5.	Propane Gas System	5,000
6.	Terracing	<u>30,000</u>

TOTAL PLANT PROPAGATION COMPLEX CARRIED TO SUMMARY \$465,000

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATES OF COST: LIVESTOCK COMPLEX

A. POULTRY HOUSES

1. Alterations to Existing Broiler Houses/Layer	15,000	
2. 2 no. New Broiler Houses @ 180,000 ea.	360,000	
3. Roadway Extension	50,000	
4. Mains Power Supply	<u>10,000</u>	<u>\$435,000</u>

B. PIGGERY

1. New Fattening House	90,000	
2. Power Supply	<u>5,000</u>	<u>\$95,000</u>

C. DAIRY

1. New Calves House	40,000	
2. Solar Water Heater	<u>20,000</u>	<u>\$60,000</u>

D. ENGINEERING BUILDING CONVERSION TO ANIMAL SCIENCE LABORATORY/CENTRAL STORE

1. Building Modifications	75,000	
2. Lab Benches, Storage, Shelves etc.	35,000	
3. Electrical Modifications	3,000	
4. Propane Gas System	<u>2,000</u>	<u>\$115,000</u>

E. ABATTOIR

1. New Extension	100,000	
2. Complete Refrigeration Room	10,000	
3. Mains Power Supply	5,000	
4. Refrigeration Equipment	88,000	
5. Stand-by Generator	<u>100,000</u>	<u>\$303,000</u>

F. COMPLETION OF FEEDMILL, HATCHERY & WELFARE BUILDING

1. Complete Feedmill	45,000	
2. Complete Hatchery	10,000	
3. Main Power Supply	<u>15,000</u>	<u>\$70,000</u>

COLLECTION

A. POULTRY	435,000	
B. PIGGERY	95,000	
C. DAIRY	60,000	
D. ANIMAL SCIENCE LABORATORY/CENTRAL STORAGE	115,000	
E. ABATTOIR	303,000	
F. FEEDMILL & HATCHERY	<u>70,000</u>	
TOTAL LIVESTOCK COMPLEX CARRIED TO SUMMARY		<u>\$1,078,000</u>

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USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

ESTIMATES OF COST: ENGINEERING/FARM COMPLEX

A. ENGINEERING COMPLEX

1.0 ENGINEERING WORKSHOP

.1	Building Structure	850,000	
.2	Special Base for Equipment	20,000	
.3	Service Yard	20,000	
.4	Mains Power Supply	10,000	
.5	Power Distribution	12,000	
.6	Air Compressor	15,000	
.7	Exhaust Systems	10,000	
.8	Sanitary Facilities	30,000	

TOTAL ENGINEERING WORKSHOP

\$967,000

B. FARM COMPLEX

1.0 ANCILLARY STAFF HOUSING

.1	1 no. Double Unit @ 180,000	180,000	
.2	Mains Power Supply	5,000	

185,000

2.0 MAINTENANCE/REPAIR WORKSHOP

.1	Building Structure	150,000	
.2	Pits	25,000	
.3	Parking Area	5,000	
.4	Drains, Grease Traps etc.	10,000	
.5	Mains Power Supply	5,000	
.6	Power Isolators	5,000	
.7	Compressor	15,000	

215,000

3.0 FARM STORE

.1 Building Structure	95,000	
.2 Drying Area	20,000	
.3 Lockers, Shelves etc.	25,000	
.4 Mains Power Supply	2,000	<u>142,000</u>

4.0 TOTAL FARM COMPLEX

.1 ANCILLARY STAFF HOUSING		185,000	
.2 MAINTENANCE/REPAIR WORKSHOP		215,000	
.3 FARM STORE		<u>142,000</u>	<u>\$542,000</u>

C. OTHER SERVICES

1. Access Roadway from Central Campus (including cutting, grading, filling, culvert and retaining walls)	500,000	
2. Mains Power Supply from Campus (depends on JPSCo.)	<u>20,000</u>	<u>\$520,000</u>

COLLECTION

A. ENGINEERING COMPLEX	967,000	
B. FARM COMPLEX	542,000	
C. OTHER SERVICES	<u>520,000</u>	
TOTAL ENGINEERING/FARM COMPLEX CARRIED TO SUMMARY		<u>\$2,029,000</u>

USAID/GOJ AGRICULTURAL PROJECT - COA (Passley Gardens)

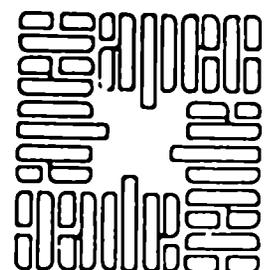
ESTIMATES OF COST: HYDRAULIC ENGINEERING

1. UPGRADE WATER SUPPLY TO COLLEGE CAMPUS AND FARM BUILDINGS

1.	189,000 Gallon Storage Tank	170,000
2.	Chlorinating Equipment	12,000
3.	Additional 4" ϕ galv. iron pipe	48,000
4.	Remove existing tanks and realign system	6,000
5.	Pump and collection chamber to boost water supply from Parish Council main (OPTIONAL)	<u>15,000</u>

TOTAL UPGRADE WATER SUPPLY CARRIED TO SUMMARY \$251,000

**2. COST ESTIMATES:
KAS (KNOCKALVA)**



USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

ESTIMATE OF COST

SUMMARY

A.	STUDENT RESIDENCES	Page No. 1	2,145,000
B.	MULTI-PURPOSE FACILITY	" " 2	980,000
C.	CLASSROOMS	" " 2	505,000
D.	STAFF RESIDENCES	" " 2	857,000
E.	FARM COMPLEX	" " 3	700,000
F.	OTHER SERVICES	" " 3	100,000
			<hr/>
			5,287,000
G.	CONTINGENCIES (say)		260,000
			<hr/>
			5,547,000
H.	PROFESSIONAL FEES AND EXPENSES (say)		830,000
			<hr/>
			J\$6,377,000
			<hr/>
			say J\$6.40m
			<hr/>

2/8/81

USAID/GOJ AGRICULTURAL PROJECT - KAS (Knockalva)

ESTIMATES OF COST

A. STUDENT RESIDENCES

1.0	NEW GIRLS DORMITORIES (48 students)		
.1	4 no. Living Units @ 150,000 ea.	600,000	
.2	2 no. Common Areas @ 30,000 ea.	60,000	
.3	1 no. 1BR Apartment (Level 1)	60,000	
.4	Main Power Supply	10,000	
.5	Sewage Disposal	80,000	<u>810,000</u>
2.0	NEW BOYS DORMITORIES (72 students)		
.1	6 no. Living Units @ 150,000 ea.	900,000	
.2	3 no. Common Areas @ 30,000 ea.	90,000	
.3	External Staircase	10,000	
.4	Main Power Supply	15,000	
.5	Sewage Disposal	120,000	<u>1,135,000</u>
3.0	CONTINGENCY for possible adverse sub-soil conditions		<u>200,000</u>
4.0	TOTAL STUDENTS RESIDENCES		
.1	GIRLS DORMITORIES	810,000	
.2	BOYS DORMITORIES	1,135,000	
.3	CONTINGENCY	200,000	
	TOTAL STUDENTS RESIDENCES CARRIED TO SUMMARY		<u>\$2,145,000</u>

B. MULTI-PURPOSE FACILITY

1.	Building Structure	900,000	
2.	Terraces	35,000	
3.	Counters, Shutters, Shelves	40,000	
4.	Main Power Supply	5,000	
		<u> </u>	
	TOTAL MULTI-PURPOSE FACILITY CARRIED TO SUMMARY		<u>\$980,000</u>

C. CLASSROOMS

1.	New Classroom Block	500,000	
2.	Main Power Supply	5,000	
		<u> </u>	
	TOTAL CLASSROOM CARRIED TO SUMMARY		<u>\$505,000</u>

D. STAFF RESIDENCES

1.0	SINGLE STAFF COMPLEX		
.1	4 no. 2BR Apartments in 2 blocks of 2 floors @ 150,000 ea.	600,000	
.2	Mains Power Supply	12,000	
.3	Sewage Disposal	30,000	642,000
			<u> </u>
2.0	MARRIED RESIDENCES (3BR)		
.1	1 no. House @ 195,000	195,000	
.2	Mains Power Supply	5,000	
.3	Sewage Disposal	15,000	215,000
			<u> </u>
3.0	TOTAL STAFF RESIDENCES		
.1	SINGLE STAFF COMPLEX		642,000
.2	1 no. MARRIED RESIDENCE		215,000
			<u> </u>
	TOTAL STAFF RESIDENCES CARRIED TO SUMMARY		<u>\$857,000</u>

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E. FARM COMPLEX

1.	1 no. Layer House	155,000
2.	1 no. Broiler House	100,000
3.	Piggery	125,000
4.	Abattoir	220,000
5.	Mains Power Supply	12,000
6.	Refrigeration Equipment	<u>28,000</u>

TOTAL FARM COMPLEX CARRIED TO SUMMARY

\$700,000

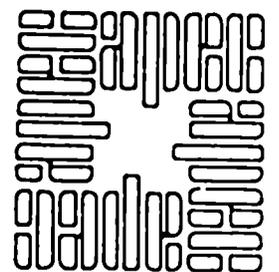
F. OTHER SERVICES

1.	Civil Works and Demolitions	<u>100,000</u>
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TOTAL OTHER SERVICES CARRIED TO SUMMARY

\$100,000

3. CONSTRUCTION RECOMMENDATIONS



CONSTRUCTION RECOMMENDATIONS

1. CONTRACT PACKAGES AND TENDERING

A. COLLEGE OF AGRICULTURE - PASSLEY GARDENS

The buildings and construction works to be carried out at Passley Gardens fall into four fairly distinct categories, viz:

- i. New buildings and extensions to buildings on Central Campus:
 - a. Alterations and extensions to Library, Administration Building, Cafeteria and Classroom Blocks.
 - b. Construction of New Dormitory accommodation and minor modifications to existing.
- ii. New Residential accommodation for Staff & Alterations to Great House.
- iii. New Farm Buildings, extensions and modifications to existing.
- iv. Civil Engineering works - roads, water supply, culverts retaining walls etc.

We recommend that tender packages should be prepared for each of these four categories and tender lists of suitably qualified contractors (at least six per package) assembled as follows:

	approx. value
PACKAGE 1 (CENTRAL COMPLEX):	
- Grade A Building Contractor	\$6.6m
PACKAGE 2 (STAFF RESIDENCES, GREAT HOUSE CONVERSION):	
- Grade A Building Contractor	\$4.1m
PACKAGE 3 (PLANT PROPAGATION, LIVESTOCK COMPLEX, ENGINEERING/FARM COMPLEX):	
- Grade A and Grade B Building Contractors	\$3.1m
PACKAGE 4 (NEW ROADWAYS, WATER SUPPLIES ETC.):	
- Grade A or B Engineering and Grade A Building Contractors	\$0.8m

There would be no objection to suitably qualified contractors securing two or more of the packages, and to this end the tender documents should allow for an overall reduction in the tender sums on multiple bids.

B. KNOCKALVA SCHOOL OF AGRICULTURE

In this case, only three parcels of work are identified as follows:

- i. Construction within the Central Complex comprising classrooms, multi-purpose facility and student residences.
- ii. Residential accommodation for staff.
- iii. Farm Complex and general civil works (roads etc.)

There is some imbalance between the packages, in that the first is estimated to be four times the size of either of the other two. Nevertheless, we do not recommend splitting the work on the main campus and suggest that tender lists of suitably qualified contractors (six per package) should be prepared as follows:

	approx. value
PACKAGE 1 (STUDENT RESIDENCES, MULTI-PURPOSE FACILITY, CLASSROOM BLOCK):	
- Grade A Building Contractor	\$3.7m
PACKAGE 2 (STAFF RESIDENCES):	
- Grade A or B Building Contractors	\$0.9m
PACKAGE 3 (FARM COMPLEX & CIVIL WORKS)	
- Grade A or B Building Contractors	\$0.8m

Again, there would be no objection to two or more packages being awarded to the same contractor, and some economy could be achieved thereby.

2. CONSTRUCTION MANAGEMENT

Both sites are situated in the country, at some distance from where the consultants' offices and other administrative bodies are likely to be located. We therefore recommend that each project should have full time resident supervision by suitably qualified personnel having good communication links with their principals.

In the case of the College of Agriculture, we consider that the project is large and important enough to have a Construction Manager supported by two well-experienced Clerks of Works, while at Knockalva this function could be handled by a Resident Architect/Engineer with good administrative capabilities.

3. PROGRAMMING

Programming is normally the responsibility of the contractor, within start and finish dates prescribed in the contract, but for both of the sites under consideration it will be necessary to undertake some pre-planning and incorporate any restrictive criteria in the conditions of contract.

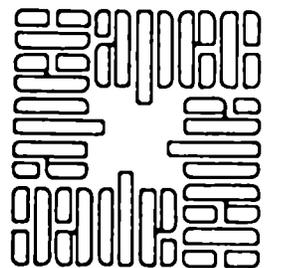
This is particularly important at Passley Gardens, where modifications to buildings on campus could result in severe dislocation of academic life, with attendant noise and discomfort.

It is evident that such dislocation could be significantly reduced if the most disruptive work were carried out during vacation periods; plans were made in advance to re-house administrative staff during remodelling of their offices, and roads were realigned before building operations blocked existing routes.

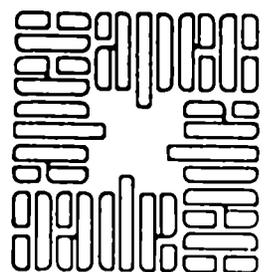
These considerations suggest that an outline construction programme should be developed before inviting tenders and the successful tenderer(s) should be required to conform with this in all major respects.

APPENDIX

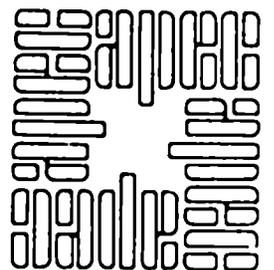
E.



1. LETTER OF APPOINTMENT



2. TERMS OF REFERENCE



A. STATEMENT OF WORK

Terms of Reference for Agricultural and Engineering Inputs for Agricultural Project Paper Preparation

- 1 Synopsis: The Ministry of Education of the Jamaican Government contemplates expansion of the facilities at the College of Agriculture (COA) at Passley Gardens and at the Knockalva Agricultural School (Knockalva). The expansion may include approximately 50 new or expanded buildings consisting of dormitories, classrooms, laboratories, library, administration, cafeteria, faculty housing, service buildings, etc. and the related civil works infrastructure. Also contemplated is water supply and storage for irrigation purposes, and watershed conservation measures. The project also includes curriculum development, training, technical assistance, and procurement of commodities, all of which do not require any inputs under these Terms of Reference.

Preliminary master planning of the facilities contemplated for construction under the project including determination of the specific needs for the various facilities and the rationale therefor, the siting of all buildings and the preliminary designs thereof together with the related civil works, utility services, necessary drainage, and access is to be provided taking into account the need to keep adverse environmental impacts to a minimum. The time available to accomplish the scope of work below is approximately six weeks.

II Scope of Work

1. In conjunction with Project Officer, James Scanlon, determine the specific needs for the facilities contemplated under the project.
2. Review the existing data that may be available, as identified by Mr. Scanlon, to determine its usefulness to the master planning effort.
3. Develop topography at a suitable scale for the areas of the COA and Knockalva campuses where new facilities will be sited if such topography does not already exist.
4. Determine adequacy and potential of existing utility.

5. Develop a preliminary site plan for the proposed new facilities including appropriate space for the Energy Conservation Demonstration Center to be sited at Knockalva under another project.
6. Carry out preliminary designs of all new facilities and related civil works in sufficient detail to support a reasonably firm estimate of costs of construction.
7. It is contemplated that some of the new facilities can be provided by adding a second storey to three of the existing buildings. In these cases, the existing structures are to be analysed to determine the feasibility of adding the additional storey.
8. In conjunction with direction from Mr. Scanlon, determine the water resource potential of the watershed contributing to on campus water courses at COA and the potential for impoundment and storage of these flows taking into account other claims to such water. Determine the feasibility of diversion to storage or direct usage of excess flows at the existing diversion point on the stream at the eastern boundary of the COA campus.
9. Carry out preliminary designs of feasible and needed water resource developments at the COA campus.
10. Investigate the adequacy or need for auxillary power to compensate for power outages.
11. Develop recommendations for construction contracting packages and schedules for implementing the proposed construction work.
12. Develop cost estimates for all proposed construction bearing in mind that the normal operations at both campuses are to continue during project implementation.
13. Prepare a draft report describing the proposed facilities, the rationales used for design decision, basis of cost estimates, and the proposed implementation plan and schedule. Provide plans and outline specifications for all facilities. Site plans, building layouts and preliminary designs are to be presented such that they may be later incorporated into an 8½" x 11" report document. This may be accomplished by either reductions or fold out sheets not exceeding 11" x 16" . Draft report is due on May 4, 1984.
14. Following acceptance of draft report, prepare final report in 12 copies and submit them to USAID.

III Plan of Work

Activity 1. Establish Terms of Reference

- a. Review Client's brief.
- b. Review information available.
- c. Determine additional information required and means of obtaining it.
- d. Refine and expand brief and obtain Client's approval.
- e. Prepare project schedule and agree with Client.

Activity 2. Schedule of Requirements

- a. Conceptualise activity and behavior patterns within the organization among students, academic and administrative staff.
- b. Identify space requirements with their inter-relationships to satisfy the activity patterns.
- c. Prepare preliminary schedule of services, equipment and furniture required for the efficient functioning of the areas.
- d. Prepare relationship diagrams showing alternative layouts of areas with circulation patterns, activity and social links, and communication bonds.
- e. Assemble design criteria from foregoing, and basic criteria for civil, structural, mechanical and electrical work, obtain approval from Client.

Activity 3. Analysis

- a. Obtain topographic survey and note omissions or discrepancies.
- b. Note additional information required and make arrangements for its provision.
- c. Assess sub-soil conditions - obtain available soil borings and technical report, assessing bearing capacities and absorption characteristics.
- d. Investigate natural surface water drainage.
- e. Identify areas of high environmental quality. Compare building costs in alternative locations.
- f. Identify available utility services and capacities.
- g. Determine water resource potential of watershed at COA campus.

- h. Determine potential for impoundment or storage of waterflow at COA.
- i. Determine feasibility of diversion (to storage or use) of excess flow at existing diversion point (eastern boundary of COA campus).

Activity 4. Preliminary Planning and Design

- a. Analyse site in terms of suitability for functions to be provided.
- b. Prepare land use plans taking into account environment and ecological factors.
- c. Prepare alternative development concepts for comparison purposes, considering:
 - i. single, double or three storey buildings
 - ii. density of land use
 - iii. upward expansion of existing buildings
 - iv. minimising disturbance/dislocation of on-going operations on the campuses during implementation.
- d. Estimate costs of alternatives using various construction materials and methods appropriate to the project.
- e. Carry out preliminary designs of feasible and needed water resources development at COA campus and make recommendations for watershed conservation.
- f. Prepare alternative solutions to the planning and design problems for presentation to Client.
- g. Discuss preliminary planning proposals with Client and select solutions which best meet, in a practical and economical way, his functional requirements and budget.

Activity 5. Final Planning and Design

- a. Establish final space requirements and spatial relationships.
- b. Evaluate required environmental control systems.
- c. Consider and fix overall building design in terms of construction systems and building materials.
- d. Allocate economical space for services, etc..
- e. Define pedestrian and vehicular circulation.
- f. Establish requirement and routing of site services - water, electricity, etc.
- g. Prepare Final Design Report containing the following:

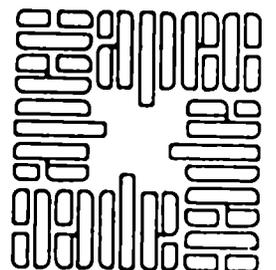
- i. Draft rationale for the Proposed Facilities.
 - ii. Design drawings.
 - iii. Outline specifications for materials, finishes, etc.
 - iv. Proposed structural system(s).
 - v. Services to be provided and applicable standards.
 - vi. Recommendations for domestic, agricultural and irrigation water supply, water recovery (surface and underground), water storage and distribution, and watershed conservation.
 - vii. Estimates of Cost and their basis.
 - viii. Recommendations for construction schedules and contract packages.
- h. Obtain Client's approval of the Draft Final Design Report.

Activity 6. Preparation and Assembly of Final Report

- a. Make alterations to Draft Final Report as requested by Client.
- b. Collate, edit, print and assembly Final Report.
- c. Present 12 copies of Final Report.

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3. PRELIMINARY BRIEFING:
COA (PASSLEY GARDENS)



USAID/GOJ AGRICULTURAL PROJECT

EXPANSION OF THE COLLEGE OF AGRICULTURE (COA)

OUTLINE SCHEDULE OF REQUIREMENTS

BRIEFING MEETING (3rd April 1984 held at the College of Agriculture)

Drs. E. R. Thomas, D. E. Ampratrum & others - COA

Drs. J. Scanlon, J. Talbot - USAID

R. McIntyre, J. Thomson, D. Marks - APEC

PURPOSE OF MEETING

- To outline and define as far as possible the physical expansion requirements of the COA within the framework of the agricultural education objectives of the Project.
- To identify any deficiencies in the existing buildings and infrastructure whose correction would reasonably form part of the Project.
- To carry out a preliminary visual inspection of the complex with a view to identifying potential sites for expansion of new development.

A. CENTRAL CAMPUS

1. STUDENT RESIDENCES

- a. Existing Accommodation (approx. 40,000 sq.ft. gross)
 - 200 Men in 1 Hall of Residence with 100 double rooms.
 - 100 Women in 1 Hall of Residence with 50 double rooms.

It was felt that the rooms as designed were too small to provide double study/bedroom accommodation for the more mature students that the COA would have to cater for, and were perhaps too large for single study/bedroom accommodation. Primarily, there were deficiencies in the space allocated for clothing storage and working areas.

b. Additional Requirements

340 Men in double and single rooms (existing + additional)
110 Women in double and single rooms (existing + additional)

The additional accommodation for women (and perhaps some for the men) could be designed on the self-catering concept similar to that of other institutions in Jamaica (Mico, Shortwood), where 8 to 10 students were grouped in a living unit. Each living unit would provide shared bathroom, kitchen and living/dining facilities, and the students would be responsible for their own housekeeping and cooking (except for lunch during weekdays). Laundry facilities of the commercial 'laundromat' type would be provided centrally as would a provision store from which students would obtain meats, groceries etc. on a weekly order basis.

It was suggested that the existing double rooms be converted to single rooms and that the new accommodation be based on the 'living unit' concept. Other alternatives could be proposed for the purposes of comparison.

There were some criticisms regarding the space and layout of facilities in the lecturers' accommodation attached to the student residences. No additional requirements were indicated for this type of accommodation.

2. LIBRARY COMPLEX

a. Existing Accommodation (approx. 6,000 sq.ft. gross)

The existing building has a capacity for 5000 volumes. One room in the building (originally designated audio-visual room) is being used as a student lounge. Some problems are being experienced with noise from the playing fields and other parts of the campus. The arrangement for display is said to be over-generous and inappropriate and its removal could provide much needed additional stacking space.

Additional Requirements

It is estimated that a total capacity of 50,000 volumes will be required.

Associated with the library complex should be 2 other facilities

1. Curriculum Development Centre (suggested accommodation - 3 rooms at 400 sq.ft. each).
2. Learning Resource Centre (to provide individual booths for 24 students with access to a central data bank - a control room and storage room would be necessary)

Suggestions for physical expansion include the addition of another floor (if structurally feasible) with re-organisation of the existing facilities.

3. CLASSROOMS

- a. Existing Accommodation (approx. 12,500 sq.ft. gross)
 - 1 no. arts/craft suite
 - 1 no. general purpose classrooms
 - 1 no. physics/chemistry laboratory
 - 1 no. biology laboratory
 - 1 preparation room shared between the physics/chemistry and biology labs
 - 1 no. domestic science suite
 - sanitary facilities

Current problems being experienced are inadequate cross-ventilation and natural lighting, insufficient preparation room space to laboratories, and inadequate space in the laboratories for students (short by 6 students each).

- b. Additional Requirements

- 6 no. general purpose classrooms to house 25 - 30 students each
- 2 no. lecture rooms with tiered seating, audio/visual facilities to house up to 100 students

- 5 no. specialized labs, each with adjacent preparation rooms for Botany, Chemistry, Physics, Zoology and Biochemistry/ Microbiology with capacities for up to 30 students
- Science Faculty Offices for up to 6 no. lecturers.

The areas previously reserved for classroom expansion have been compromised by a recently constructed student pavilion. Other expansion possibilities are to add another floor to the existing blocks (if feasible) or to provide a new two floor block on open ground to the immediate north of the existing complex.

4. MULTI-PURPOSE FACILITY

a. Existing Accommodation (approx. 9,000 sq.ft. gross)

- Main Hall to seat up to 600 students
- Kitchen, Cold Rooms and a Store Room (used for general storage)
- Toilet and other ancillary accommodation.

Shortcomings appear to be a rather restricted serving counter (cafeteria style) and equipment, unsatisfactory garbage collection, lack of other equipment (e.g. dishwashing) and a reported general lack of space.

b. Additional Requirements

It was agreed that the main hall had adequate capacity for the proposed additional intake, but that the food preparation, serving and storage facilities would need to be expanded and fully equipped.

Observations indicate that the present space is not being utilized efficiently and economically and that whilst some expansion may be necessary, revision of work flow and complementary space re-organisation would reduce the need for expansion.

5. ADMINISTRATION BLOCK

- a. Existing Accommodation (approx. 4,800 sq.ft. gross)
- 6 no. Individual Offices
 - 1 no. Dean's Office with secretary and private w.c. ensuite
 - 1 no. Deputy's Office
 - 1 no. Bursar's Office
 - 1 Typing Pool for up to 5 persons
 - 1 General Office
 - 1 Staff Study/Clerical area
 - 1 no. Board Room
 - Storage Room and Sanitary Conveniences
 - 1 no. Conference Room

The deficiencies appear to be lack of a formal reception/waiting area, lack of auditory privacy in the board room (perhaps excessive in size), spartan facilities in the board room and Dean's office.

b. Additional Requirements

- offices for 18 no. staff (Humanities, Mathematics & Agricultural Economics)
- new Board Room, smaller in size (20 - 24 persons), more private but more generously fitted out (perhaps a small refreshment area)
- new Dean's office more generously fitted out
- Computer Room (with airconditioning)
- Central Reception/Telephonist/Waiting Area.

Expansion could be to the east in an area so designated, and/or upwards (if structurally feasible) in association with the re-scheduling of the present Board Room.

6. WELFARE FACILITIES

a. Existing Accommodation

- apart from the facilities provided for kitchen staff, no other welfare facilities exist on the Central Campus.

b. Additional Requirements

- changing rooms, showers, toilet, washroom and amenity area facilities for up to 10 male ground staff, 8 male kitchen staff and 6 female kitchen staff.

Suggested location for this facility is an area adjacent to the incomplete stand-by generator room. The sizing and arrangement will depend on the re-organisation strategy adopted for the kitchen area.

7. STUDENTS' UNION

a. Existing Accommodation

- a pavilion to the south of the playing fields providing wash-room and other accommodation (2,304 sq.ft.).

b. Additional Requirements

- 1 tiered multi-purpose Auditorium to seat between 450 - 600 persons with facilities for drama, dance and other cultural presentations, film and video shows, religious services and other public performances. Rental possibilities to the outside community could be considered.
- 1 Conference Room for up to 20 persons
- 5 no. Offices for a variety of purposes (clubs, societies, hobbies etc.)
- 1 Bookshop (students' cooperative)
- 1 Grill/Cafeteria (fast foods & beverages)
- Recreational Halls (table tennis, darts, pool/billiards, card games) and lounges
- 12 no. guest bedrooms (with individual bathrooms) with a common lounge.

There were no unanimously agreed suggestions for the location of the facility. Substantial parking areas in the near vicinity would have to be provided in anticipation of public oriented functions.

B. LIVESTOCK COMPLEX

1. POULTRY

a. Existing Accommodation (approx. area 7,000 sq.ft. gross)

- 2 no. Broiler/Feed Store Houses (4000 birds capacity)
- 1 no. Layer/Feed Store House (500 birds capacity)

The two broiler units so close to the layer unit present a disease hazard.

b. Additional Requirements

- increase broiler capacity to 10,000 birds
- increase layer capacity by 2,000 birds.

The suggested method of achieving the expansion is to create a new Broiler Complex (away from the present facilities, possibly on the Farm Complex portion of the property) capable of holding 10,000 birds. This complex could be in two units of 5,000 birds each, and each unit having two compartments of 2,500 birds each. The existing broiler houses could then be converted to laying units to provide the additional capacity.

1. PIGGERY

a. Existing Accommodation (approx. 3,800 sq.ft. gross)

- 1 unit providing facilities for farrowing, breeding and fattening (75 pigs).

b. Additional Requirements

- 1 new pen for fattening only for 200 fatteners of approximately 2,000 sq.ft., located in the vicinity of the present piggery.

3. GOAT REARING

a. Existing Accommodation

- no facilities

b. Additional Requirements

- 5 acres of pasture with fencing and an open fenced shed of approximately 1,000 - 1,500 sq.ft. Security is important.

4. DAIRY BUILDING

a. Existing Accommodation (approx. 1,700 sq.ft. gross)

- 1 building providing facilities for 17 milking animals and 4 calves.

b. Additional Requirements

- extension to provide for 12 - 20 calves (suggested area 500 sq.ft.)
- hot water supply for washing down Milk Room.

The additional requirement for milking (50 animals) can be satisfied by phasing operations.

5. ABATTOIR

a. Existing Accommodation (approx. 800 sq.ft. gross)

- 1 building for slaughtering and cutting

b. Additional Requirements

- 1 cutting room of say 100 sq.ft. (40°F)
- 1 curing room of say 250 sq.ft. (35°-45°F) with space for kegs and barrels

- 1 smoke curing room of say 100 sq.ft. (piped smoke)
- complete and upgrade refrigeration room
- equipment store of say 100 sq.ft.
- records office of say 100 sq.ft.

Expansion should be adjacent to existing facilities.

6. FEEDING/HATCHERY/STAND-BY GENERATOR

a. Existing Accommodation

- one incomplete feedmill for milling and mixing (some walls-constructed)
- one incomplete hatchery for incubation and hatching (some walls constructed)
- one incomplete stand-by generator building (walls only).

b. Additional Requirements

- complete construction of feedmill, hatchery and stand-by buildings as proposed.

7. ANIMAL SCIENCE LABORATORY

a. Existing Accommodation

- no facilities exist.

b. Additional Requirements

- 1 animal science laboratory for 25 - 30 students, side walls to be used for demonstration/storage/work top. Four students can share 1 work station (sink, gas & electricity supply)
- 1 preparation/store room with fume cupboard
- 3 no. offices for staff of 100 - 120 sq.ft. each.

8. GENERAL STORAGE

a. Existing Accommodation

- no specialized facilities.

b. Additional Requirements

- a general storage building for feed, equipment and tools. Security essential. (Suggested area 400 sq.ft.)

Location should be central to Livestock Complex.

9. OTHER

a. Existing Accommodation

- Farm Manager's House (2BR)
- Market Store.

C. ENGINEERING COMPLEX

a. Existing Accommodation (approx. 2,500 sq.ft. gross)

- mechanical, welding, woodwork and metal work shops with adjacent storerooms
- classroom (25 students), 1 office and sanitary facilities
- incomplete extension to classroom.

b. Additional Requirements

- a new complex to provide facilities for teaching/research, faculty offices and services.
- Teaching/Research facilities should include 5 no. laboratories (25 - 30 students each) for Engine Testing, Electrical and Processing Equipment, Materials Testing, Hydraulics and Drafting.

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- Faculty Offices should include 5 offices (say 100 - 120 sq.ft. each) for Power and Machinery (Tractors, Field Machinery etc.), Electricity & Processing (Rural Electrification, Agric. Processing etc.), Structure & Environment (Farm Buildings etc.), Soil & Water (Irrigation, Drainage etc.), and Food Engineering (Food Industries, Food Processing etc.).
- The Services Facility should include housing for vehicles & equipment and infrastructure for routine repair and maintenance.
- 1 Large Lecture Room to hold 100 students.
- appropriate sanitary facilities.

It is suggested that because of the lack of space adjacent to the existing facilities, a completely new complex should be constructed, possibly on the northern side of the property.

D. FOOD PROCESSING PLANT/BOILER ROOM

- a. Existing Accommodation (approx. 2,400 sq.ft. gross)
 - a processing building with equipment installed but not commissioned
 - a boiler room with equipment installed but not commissioned.
- b. Additional Requirements
 - complete and commission existing plant
 - Food Science lab.

Further details regarding the Food Science lab are required.

E. AGRONOMY

1. PLANT PROPOGATION AREA

- a. Existing Accommodation (approx. 4,700 sq.ft. gross)
 - 1 complex providing a green house, a classroom, a plant science lab, an office, storerooms and sanitary facilities
 - fenced planting areas
 - Great House and outbuildings used for a variety of associated functions (lime juice factory, pimento store etc.) - not included in area stated.

- b. Additional Requirements
 - 1 Laboratory (25 - 30 students) - say 900 sq.ft.
 - 1 Green House (say 4,500 sq.ft.)
 - 1 Finishing House (say 5,000 sq.ft. plus)
 - 6 to 7 lecturers' offices of 120 sq.ft. each
 - storeroom (size to be determined)
 - ¼ - 1 acre Shade House.

Whilst the land area immediately adjacent to the existing facilities may just be sufficient to accommodate the proposed additional requirements, serious consideration should be given to the continued use of the Great House and outbuildings as part of the Agronomy Area. Given the strategic and imposing site of the Great House and its intrinsic values, other College functions could more suitably and economically be carried out there.

2. FARM COMPLEX

- a. Existing Accommodation
 - crops under cultivation
 - an access road in poor condition.

- b. Additional Requirements
 - Farm Manager/Ranger's House
 - Changing Rooms for Farm Workers
 - Storage area (covered) for tools & supplies (say 100 sq.ft.)

- Storage area (covered) for produce (say 300 sq.ft.)
- Drying Platform (say 600 sq.ft.)
- Irrigation System
- Upgraded Access Roads
- Sheds for vehicles

Potential sites for those facilities have yet to be identified.

F. FACULTY/STAFF HOUSING

a. Existing Accommodation

- 1 Guard House
- 1 Gate House
- 1 Dean's Residence (3BR) (2,300 sq.ft. gross)
- 5 no. 3BR Residences (1,650 sq.ft. gross each)
- 1 Block of 4 no. 1BR units (350 sq.ft. per unit)
- 1 Block of 3 no. 1 BR units (350 sq.ft. per unit)

The 1BR units have been found to be unsatisfactory, whilst it is felt that the 3 BR residences take up too much land area relative to the need for additional housing.

b. Additional Requirements

- 15 no. 2BR units (one bedroom to have separate entry)
- 15 no. 3BR Cottages or Town Houses

Two possible sites have been suggested - one on a small hill adjacent to the existing staff housing and the other on a relatively flat area near to the beach house at the north-eastern end of the playing fields.

G. WATER CONSERVATION & SUPPLY (irrigation, drinking water, hot water, fire fighting)

Existing and Additional Requirements

H. ELECTRICAL SUPPLY/TELEPHONE SERVICE

Existing and Additional Requirements

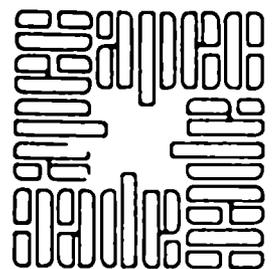
J. SEWAGE DISPOSAL

Existing and Additional Requirements

K. CIVIL WORKS (new roadways, upgrading existing, site drainage)

Existing and Additional Requirements

4. PRELIMINARY BRIEFING:
KAS (KNOCKALVA)



USAID/GOJ AGRICULTURAL PROJECT

EXPANSION OF THE KNOCKALVA AGRICULTURAL SCHOOL (KAS)

BRIEFING MEETING (5th April 1984 held at Knockalva)

- Drs. J. Scanlon, J. Talbot - USAID
- Messrs. Owen Henny, Donald Aird - KAS
- Messrs. J. Thomson, R. M. McIntyre, R. A. McIntyre - APEC

PURPOSE OF MEETING

- To outline and define as far as possible the physical expansion requirements of the KAS within the framework of the agricultural education objectives of the Project.
- To identify any deficiencies in the existing buildings and infrastructure whose correction would reasonably form part of the Project.
- To carry out a preliminary visual inspection of the complex with a view to identifying potential sites for expansion of new development.

1. STUDENTS DORMITORIES

a. Existing Accommodation (154 students + 29 farmers)

- 2 2-floor Boys Dormitory Blocks of 42 boys each (total 84 - 7,056 sq.ft. gross), containing study rooms and sanitary facilities.
- 1 2-floor Girls Dormitory Block of 35 girls (3,528 sq.ft. gross), containing a studio apartment, study rooms and sanitary facilities.
- 1 2-floor Farmers Dormitory Block of 29 farmers (3,528 sq.ft. gross), containing a recreation room and sanitary facilities.
- 1 single floor Sick-bay Block for 4 students (1,324 sq.ft. gross), containing a studio apartment, examination/treatment room, doctor/nurse's office, sanitary facilities and storage.

The studio apartments are for boys' and girls' wardens and the nurse. There are criticisms of restricted space in the girls and boys dormitories, particularly with respect to the study rooms. The age group of students is 15 - 19. The Sick-bay Block is designed to take an additional floor and areas for the development of future blocks are indicated on the existing plans.

b. Additional Requirements

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It is anticipated that the school will be expanded to 300 students (an additional requirement of 150). There is some doubt regarding the ratio of boys to girls, but the consensus appears to be that the girls not exceed 20% of the total complement (i.e. 45 - 60 girls total). It was also stressed that any expansion should attempt to segregate the girls' accommodation as far as possible away from the boys' accommodation because of current problems being experienced. The additional accommodation could therefore be the following -

- Dormitory accommodation for 60 girls with adequate study areas, sanitary facilities and a strategically located studio apartment for the house mother.
- Dormitory accommodation for 90 boys with adequate study and sanitary facilities.
- Additional sick-bay accommodation related to the increased student intake.

It was requested that as far as possible the individual annual enrolments should be kept together (i.e. 3 groups of 80 boys); the total girl enrollment could be in one complex (i.e. 60 girls). In view of the stated problems regarding study areas in the existing blocks, it may be that some bed areas could be converted to study areas which could assist in achieving the numerical enrolment requirements. It was also suggested that the new accommodation could be planned on the basis of 2-person rooms.

The location of new facilities should generally be within the vicinity of the existing accommodation and the increased sick-bay accommodation could be satisfied by adding another floor to the existing.

2. THEORETICAL CLASSROOMS/LABORATORIES

a. Existing Accommodation

- 3 large and elongated classrooms, parts of which are being used as makeshift laboratories. There are adjacent preparation rooms.

These classrooms are located in the upper 2 floors of a 3-floor block within the immediate vicinity of the main house. The shape, size and layout of these classrooms make it difficult for efficient utilization and teaching.

b. Additional Requirements

- 6 no. general purpose classrooms for 25 students each
- 3 no. laboratories for Physics, Chemistry, & Biology with associated preparation rooms. (The Chemistry lab should contain a fume cupboard)

It was suggested that the 3 existing classrooms/labs be converted into the 3 laboratories required and that a new 6-classroom block (possibly 2 floors) be located to the SW of the main building over the existing bar-b-q terraces, thus creating a closely integrated teaching complex.

3. CENTRAL ADMINISTRATION

a. Existing Accommodation

The existing main building is presently used for a variety of functions including the Principal's Office, staff rooms, staff dining room, student cafeteria, classrooms, small library, guest rooms, kitchens, clerical/secretarial areas, and associated storage and sanitary facilities.

The building, 2 floors plus sub-basement, is in reasonably good condition, having undergone upgrading and renovation.

b. Additional Requirements

It is proposed that the main building be further renovated and altered to provide the following facilities -

- Principal's Suite
- Staff Rooms and Staff Lounge
- Secretarial/Clerical
- Large Library
- Audio-Visual Room (studio environment for preparation of video teaching material, storage areas)
- Guest Rooms with Sanitary Facilities
- Conference Room
- Sanitary Facilities
- Storage Areas
- Repairs to roof of Main Building (leaking experienced).

4. LAUNDRY/WELFARE FACILITIES

a. Existing Accommodation

The laundry occupies a room adjacent to and below the existing classrooms. Washing is carried out by hand for all students.

Welfare Facilities for support staff are housed in a dilapidated building near to the main building and the existing classrooms.

b. Additional Requirements

- new extension to laundry to provide for commercial type washing machines (6 no.) and some hand washing sinks (6 no.)
- upgrading of existing laundry to provide space for ironing (8 persons) and storage
- hot water supply (possibly solar system)
- demolition of existing welfare facilities to provide room for new classroom block
- new welfare facilities (changing rooms, showers, sanitary facilities, rest room, and amenity area) possibly in association with the laundry extension.

5. MULTI-PURPOSE AUDITORIUM/CAFETERIA/STUDENT CENTRE

a. Existing Accommodation

There is no auditorium or defined student centre at present and the students presently eat on the verandahs of the main building.

b. Additional Requirements

A new multi-function complex housing the following facilities

- multi-purpose auditorium for student dining, various functions (performances, prize-givings etc.), student indoor recreation (table tennis, billiards, card games etc.) and lounge facilities
- kitchens with cafeteria style service and associated food storage
- kitchen staff welfare facilities
- student commissary
- students' council room/lounge
- student/parent reception lounge
- appropriate sanitary facilities
- storage areas
- a stand-by generator plant (for essential loads).

The auditorium should provide for a raised stage area or moveable platform and should be capable of security control should paying functions be carried on.

Because of its likely size, no particular site for its location is readily evident, but it was agreed that it should be close to the main building. The presence of a poultry complex to the north of the main building and the agricultural equipment maintenance workshop and the Energy Conservation Centre (under construction) to the north-west severely constrain development in that area. There is a suggestion that (because of its relatively low capital cost and its environmental unsuitability in that location) the poultry complex could be relocated elsewhere on the property (where the environmental nuisances would be minimised) and the land area thus released be utilized for the proposed complex.

This arrangement would be ideal in that the complex would be close to the main building and to the playing fields to the north, whilst retaining the Maintenance Workshops and the Energy Conservation Centre.

6. OUTDOOR RECREATIONAL COURT COMPLEX

a. Existing Accommodation

No specialized facilities exist at present, however, a relatively flat grassed area immediately to the north of the carpark and main building is being used.

b. Additional Requirements

Paved (concrete or asphalt) courts with lighting capable of accommodating basketball, netball, volleyball, badminton and perhaps tennis.

It is suggested that this facility be located adjacent to the multi-purpose complex and it is possible that it could be accommodated between that complex and the main building if the arrangement suggested in 5 is adopted.

7. STAFF RESIDENTIAL ACCOMMODATION

a. Existing Accommodation

- 2 staff residences (access off main road)
- 4 no single floor 2BR cottages in one complex at the western end of the property.

There is a serious complaint regarding environmental nuisances (smells, flies etc.) from the nearby piggery and poultry houses which are sited upwind from the 2BR cottages. The sizes of these cottages appear to be very restricted and all are experiencing leaking from concrete water tanks which form part of their roofs.

b. Additional Requirements

- 1 no. Principal's Residence (3 bedrooms, study, with reception area near to study)
- 2 no. 3BR Residences for married staff (should not be too close)
- 4 no. 2BR Flatlets (separate access for bedrooms).

The siting for the 3BR Residences could perhaps be in the area of the existing residence at the south-eastern portion of the property. No site for the Principal's residence was recommended.

Areas adjacent to the existing 2 BR Cottages could be considered for the additional 2BR Flatlets. However, they would be even closer to the Environmental nuisances already mentioned.

Again, because of the relatively low capital replacement costs of the Piggery and Poultry Houses, serious thought should be given to their relocation elsewhere on the property.

There already exists a milking shed/dairy complex in the north-east portion of the site which is a good distance from the rest of the buildings on the property, and as some new facilities are being proposed in that location, it would seem logical that all the livestock operations should be relocated in that area. An immediate policy decision on this matter is required for the preparation of this study.

8. STUDENTS CHANGING ROOMS

a. Existing Accommodation

The reported problem is that when students come from farm practice, there is no facility for changing out of muddy water boots and clothing, prior to going into dormitories or other buildings.

b. Additional Requirements

A changing room facility providing locker rooms, showers and minimal sanitary facilities for 120 boys and 30 girls at one time.

Suggested numbers are -

Boys - 5 showers, 5 L.basins, 2 wc's, 2 urinals, 120 double lockers
in changing room.

Girls - 2 showers, 3 L.basins, 2 wc's, 30 double lockers.

A washing area immediately outside the changing rooms should be provided for cleaning water boots etc.

9. LIVESTOCK/AGRONOMY FACILITIES

a. Existing Accommodation

- Piggery
- Poultry Houses
- Milking Sheds
- An existing building near to the 2BR Staff Cottages is being re-modelled to provide agronomy/poultry classrooms.

b. Additional Requirements

- 1 Agronomy Field Classroom (approx. 500 sq.ft.) with preparation room and store room
- 1 Poultry Field Classroom similar to Agronomy
- 1 Stand-by Generator building to serve existing Milking Shed.

The location of the Classrooms will directly depend on whether a decision is taken to relocate the Piggery and Poultry Houses previously referred to, as the Classrooms are associated with them.

10. WATER STORAGE AND SUPPLY

a. Existing Facilities

Water supply is presently from mains supplied by Shettlewood.

Storage is - 20,000 gallons near main road

- 110,000 gallons by house (also fed from roof of main building)
- 60,000 gallons by dairy complex
- a pond near main entrance gate.

b. **Additional Requirements**

The main water supply for domestic purposes appears adequate at present. However some additional storage may be required.

Irrigation water is required for 100 acres of pasture and 6 acres of crops.

The tanks to existing cottages have to be re-lined.

11. **SEWAGE DISPOSAL**

The present system is by individual septic tanks and absorption pits and appears to be working satisfactorily. The systems adopted for new facilities will depend on location and sizing.

12. **ELECTRICITY SUPPLY/TELEPHONE SERVICES**

13. **CIVIL WORKS**

The roadway to the dairy complex will need upgrading, particularly if the other livestock facilities are relocated there. Depending on the location and layout of other new facilities, (i.e. multi-purpose complex, staff housing etc.) new roadways and parking areas will be required.