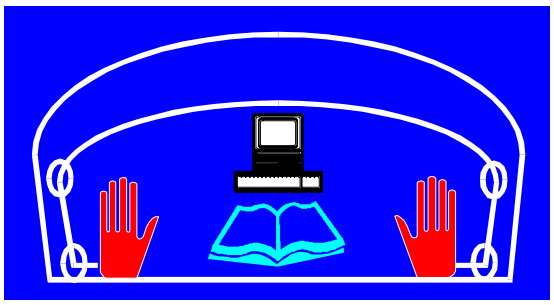


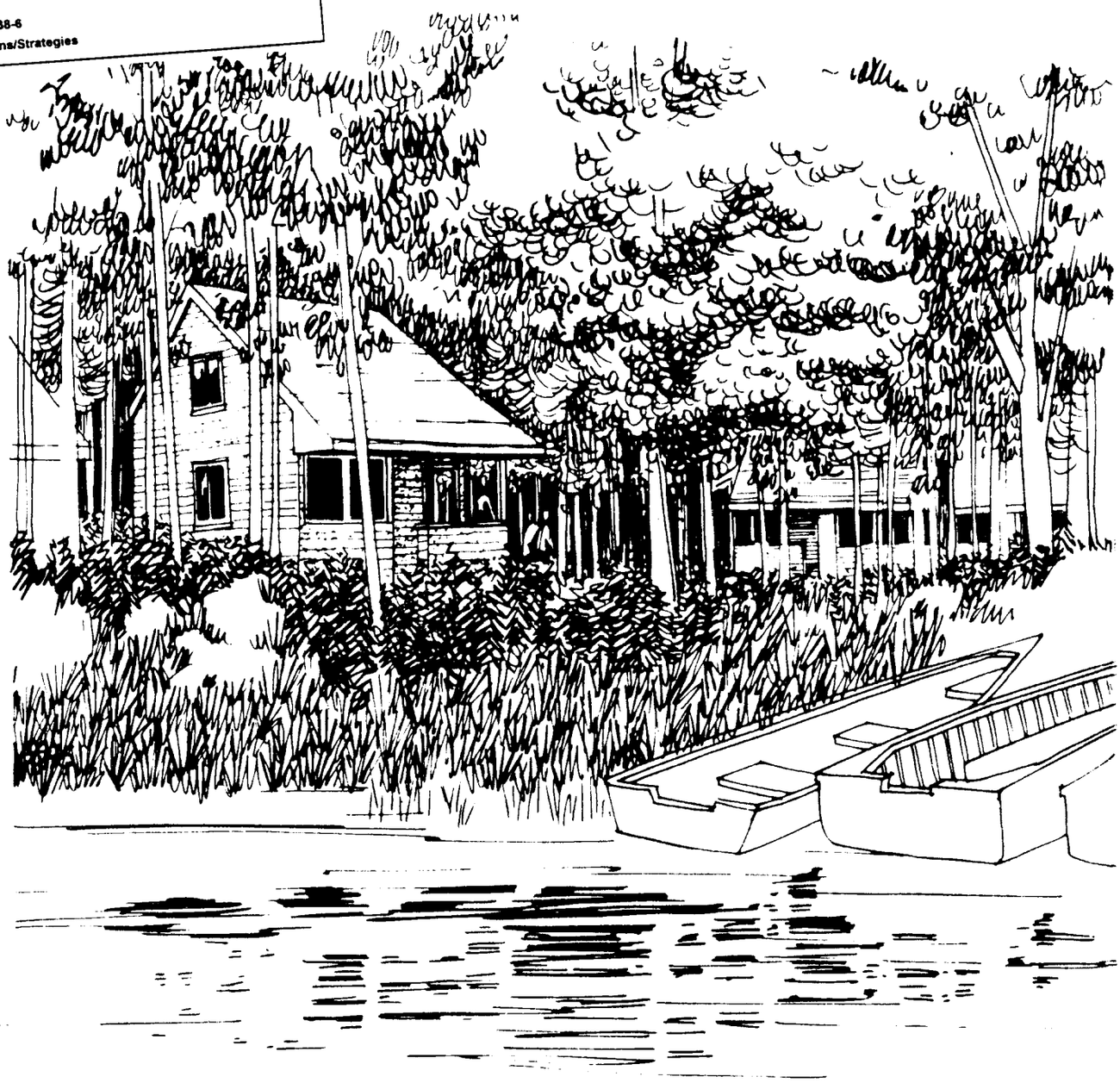
Low Investment Seasonal Accommodation - Phase I Working Report

Type of Study: Plans/strategies

Date of Report: 1975

Author: Roger Du Toit Architechs And Planners

Catalogue Number: 11-38-6



LOW INVESTMENT SEASONAL ACCOMMODATION

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LOW COST SEASONAL ACCOMMODATION
PHASE I WORKING REPORT
MARCH 25, 1975

A report to the Office of Tourism and the Office of Design, Department of Industry Trade and Commerce, prepared by Roger du Toit, Architects and Planners with Scanada Consultants Ltd., and Edward Galanyk, Architects.

Project Team:
Eric Bonnyman, Roger du Toit, Brian Forsyth (Project Architect), Edward Galanyk, Robert Hill and Bob Sumi.

Affiliated with du Toit Associates, Ltd

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1. INTRODUCTION

This working report documents the first phase in the preparation of a "do it yourself kit and/or manual for the construction of seasonal accommodation units, both single and multiple. We believe they are well designed, but low in cost, so that the investment required to construct them is in line with the income they can produce. They are intended for use during a 90-day season, either winter or summer, and are expected to be closed up for the rest of the year. The study resulted from interest expressed in many provinces in low investment units of this type, to assist in ensuring economic viability while encouraging expansion, growth and variety in the accommodation industry.

The intent of this project is to make available to owners and managers of small and medium size tourist accommodation a set of designs that:

1. Will up-grade the image of seasonal accommodation, by a design that is attractive, comfortable and functional.

2. Will fit well into almost any natural setting across Canada, in terms of groupings, form, and materials.

3. Is flexible enough to be used in a variety of circumstances — covering a range of densities, catering types, geographic, topographic and climatic conditions, size and character of tourist establishments.

4. Are able to cluster in a variety of group sizes and types.

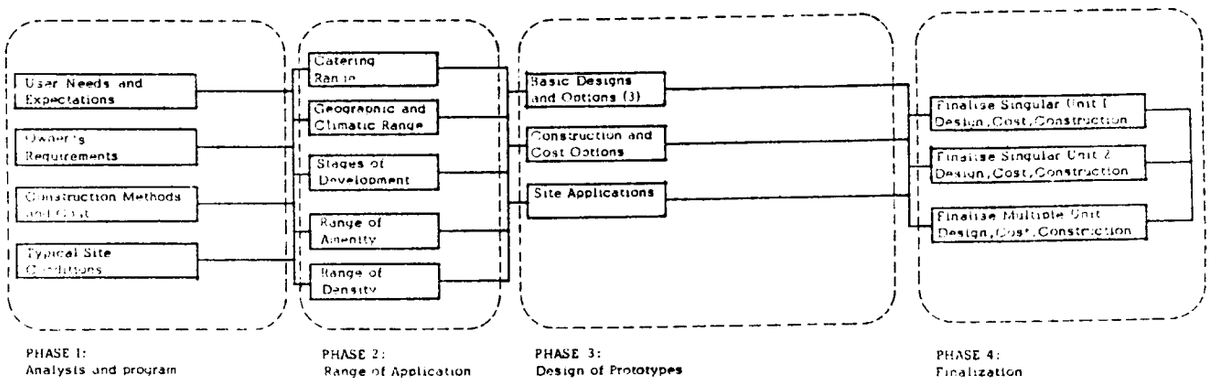
5. Can be built by the operator, or by a small contractor, using standard materials and construction techniques readily available across Canada.

6. Complies with building regulations and minimum requirements of provincial tourist accommodation standards in terms of materials, construction techniques and dimensions.

7. Could be easily prefabricated.

2. STUDY APPROACH

The work chart outlining the tasks undertaken in sequence is diagramed below.



Survey of Literature

We undertook a survey of the literature provided by the Office of Design and the Office of Tourism of the Department of Industry, Trade and Commerce, in particular the draft "Development Criteria: low cost structures for tourism recreation developments," Departments of Tourism and Development, Nova Scotia, "Low Cost Seasonal Tourist Accommodation Design Alternatives", Department of the Environment and Tourism, P.E.I., and the draft Accommodation Manual, Department of Industry, Trade and Commerce, and many others too numerous too mention.

Site Visits

We made site visits to several appropriate tourist establishments in the Muskoka area of Ontario, interviewing the owners to assess their requirements, and their perception of user preferences.

Provincial Communication

During the study, we kept in touch by letter and telephone with various provincial tourist agencies, in particular Prince Edward Island, Nova Scotia, New Brunswick, Saskatchewan and Manitoba.

Building Codes and Tourist Regulations

We assembled building codes and tourist regulations for the various provinces. Our approach here has been to take the national building code as our base and to meet the most stringent provincial regulations. The findings of these investigation are summarized in the written program for each unit design.

Regional Architectural Characteristics

We undertook a survey of regional architectural characteristics, by assembling information on a province by province basis of the historic building techniques of the area, together with traditional and contemporary design approaches to tourist accommodation. The result is a three ring binder of regional architectural images, and a set of sheets outlining our findings province by province. These were analysed to determine two things: whether there was a basic Canadian Architectural character that could be exploited as the basis of our design, and whether there were strong regional themes that could be translated into contemporary modifications of the basic design so that it fitted into a variety of regions accross Canada. Time did not permit a satisfactory investigation of this sort, but we came to the conclusion that although there are some characteristics that may be considered typically and universally Canadian, such as the use of "residential" wood construction, re-

gional differences are too basic to be treated as pre-set add-on components to a standard design. They often rely as much on changes in volume, form, and plan organization as they do on change of materials. The approach we took, was to rely on good contemporary design, fitting most rural tourist recreation areas in Canada, with the capability of enlarging window sizes, choosing a variety of appropriate footing conditions, and selecting local cladding. These unit designs should now be tested in the various provinces to see how appropriately they can b modified to local conditions. Suggestions are made in the sketches.

Financial Analysis

A financial analysis, described in section six, was developed in order to determin the range of construction costs that an operator could bear. Taking typical conditions, a construction cost was arrived at by determining the mortgage carrying cos that could be met by the income generated from the units after the costs of operatir them had been subtracted.

3. PRODUCT DESCRIPTION

Four unit types are investigated in this study: two singular free standing units, an two multiple or clustering units. The first free standing unit accommodates a coup with bedroom, livingroom, dining area and kitchen. The livingroom is convertible into a second bedroom area, so that two couples or a couple with children can be accommodated. It is square in plan, with an open L-shaped living-eating-kitchen area enclosing the sleeping/bathroom areas. This arrangement maximizes the

flexibility and open feeling of living space, while still zoning the separate functions. The second free standing unit has an additional loft area for two extra people, most suitable for children.

The multiple unit is smaller, can be clustered in groups of any reasonable size in a great variety of ways, and comes in two types: standard bed-sitting and efficiency units. The basic design premise was that these units should contain two separate sleeping areas to accommodate couples with children, or two couples with greater privacy than normal, or else be used as separate bedroom and living-room areas.

For each design type, a basic program, or list of room sizes, optimum relationships and facility requirements has been prepared. It is followed by a description of the design rationale, site layouts for a range of circumstances in different regions of Canada, working drawings, outline specifications, costs and construction techniques.

4. TOURIST REQUIREMENTS AND EXPECTIONS

Location in or near recreational magnets and touring areas is the major predetermining factor of the success of seasonal accommodation. If it does not have a good location, no amount of good design or low investment will make the venture financially successfull. However, location alone does not ensure success. Tourists are increasingly by-passing traditional seasonal "cabin" accommodation in favour

of modern motel and hotel units, because they see them as providing greater convenience, more housekeeping and other services, and better maintainance.

The basic rationale for the preparation of these designs is the belief that, if an image of quality and comfort can be generated by low cost seasonal accommodation, they will compete more effectively with hotels and motels. In fact, if handled positively these units have unmatchable possibilities in terms of rural holiday atmosphere, privacy, and incorporation into natural settings which would put them in front of their competition.

In establishing an image of quality and comfort, the first impression the tourist receives is of utmost importance. This comes often from advertising, signage, and the first view of the buildings from the road. It is this first impression that either captures the tourist's attention and makes him decide to stop, or turns him away. Therefore people should be able to assess the quality of the establishment, and the kind of facilities it offers, from a distance. The overriding impression should be neat and attractive, conveyed by careful siting and architectural treatment, porches, fireplaces and other elements that may be associated with a holiday pace. The design of these units, if used throughout the country and become associated in the mind of the public with convenience, comfort and service, will be recognized by tourists, and tend to build up the kind of repeat clientele that sustains motel and hotel chains.

The kind of tourist seeking this type of accommodation generally expects to find it in a rural, holiday setting. They are generally sight-seeing, visiting historical sites and national parks, and are often oriented to hiking or to water related activities, such as going to the beach, fishing and canoeing. The atmosphere should be natural. Past experience has shown that these tourists are not interested in organized recreational activities or elaborate facilities.

User expectations for the facilities in and around the free-standing units are therefore relatively simple, contained in the unit itself and it's immediate recreational setting. These are listed in section eight. The amount of facilities expected in the multiple units is higher. A restaurant, pool and some recreational facilities are usually required for the group. Within the rooms this is extended to include television and other facilities. These are outlined in section nine.

The basic requirement for the unit interior is that it is neat and attractive, and suited to its function. It is a place to relax, unpack, read and write, act as a holiday base, and perhaps perform the functions of a home for several days as well.

The party using the accommodation is no longer predominantly families. The proportion of couples only, or groups of adult couples, is increasing.

5. OWNER REQUIREMENTS

Probably the first requirement an owner has of these unit designs is that they meet the requirements of his customers as outlined in section four above. The second is that they can be constructed and maintained at a cost which he can afford in the first place, and carry with some profit in the second. His next requirement is that they are easy to construct, either that he can construct them himself, or that a local builder will be able to put them up with a minimum of delay and head-scratching. The materials should also be readily available, and he should find it simple to make adjustments to incorporate local materials or construction methods different from those nominally specified. The design, therefore, should not depend on architectural contortions for its effect, but on efficiency of layout, care of detailing, and good proportion.

One of the owner's main concerns will be to reduce both interior and exterior maintainance, by the specification of appropriate materials in the initial construction. For example, areas which receive the most wear, such as door frames, should be identified and a hard wearing material specified initially. Stains, which are relatively permanent, rather than paint, which require continual up-keep, should also be used.

Servicing is a prime concern because of high initial costs and possible high maintainance costs. Generally units which cluster in the most compact ways and relate most closely to the natural topography are the least costly to service.

Earth-moving is another major cost. The design should cause as little disturbance of the ground as possible for this reason, and also in order to preserve its natural setting.

Interiors are also important in terms of maintenance, the main factor being the need to maintain a good appearance. Drywall, is flexible, cheap and easy to install, although subject to deterioration when wet. It should not be used where rough useage is expected, because it is relatively difficult to repair when damaged Wood product panels are specified in these places. The $\frac{1}{2}$" drywall required for fireproofing party walls in the multiple units is more durable than thinner sheets an its wearing potential can be increased with waterproof wallpapers. For flooring, carpeting is most suitable for the smaller multiple units, sheet flooring for the larg free-standing units. Bathrooms are the highest maintenance area and fixtures shou be simple, functional, and have simple connections to piping. A moulding between bath tub and wall requires less maintenance than caulking.

Housekeeping is a time consuming, and therefore costly, part of the operation, and any design that will cut down the time involved (generally about 30 minutes for a room to be cleaned) will be of benefit. Standard practices have evolved with time in the motel industry. For instance, the beds should either be moveable or have enclosed sides, all furniture must be able to be scrubbed down, and mar-proo finishes should be used. If carpeting is in modular or strip sections, one part can be replaced if burned or stained. In groupings a storage area for maintenance equipment and linen storage which can efficiently serve all of the units,

should be provided.

6. FINANCIAL ANALYSIS

Background

The tourist industry is a broad and highly fragmented industry. Understandably, the conditions, rates, and costs vary widely from region to region, and even within a given region. Occupancy levels and rates depend heavily upon location, competition, and features and facilities available nearby.

In an effort to obtain a reading of current "average" rates, features, and occupancy levels, for 'comfortable' accommodation in the low to moderate cost range, contacts were made with various Provincial authorities. Also, some of the Provincial "Accommodations" publications were used for reference and guidelines.

The general range of these "average" or "typical" rates and occupancy levels was then used to develop the financial feasibility guidelines and the basic analysis. The range was kept reasonably broad so as to have wider applicability.

Financial Feasibility

Before venturing into a tourist accommodation operation, or expanding an existing facility, the prospective owner of the new units must satisfy himself that it will be a financially satisfying experience, regardless of other satisfactions he may derive from such a venture (some people look upon the operation of a small tourist accommodation facility as a "way of life" rather than as a true business operation).

Financial Feasibility (cont.)

For the more serious individual who may be considering a number of units, such financial feasibility analysis should be made with the assistance and guidance of an accountant or other financial advisor who is familiar with the region and site under study. To be valid and meaningful to the prospective owner this analysis must include, and evaluate the impact of, as many of the local factors as can be identified, including seasonal occupancy levels, competitive room rates and conditions, municipal tax rates, and local material and labor costs. From the development of a 'pro forma' balance sheet, dealing specifically with the particula site and conditions, the prospective owner will have a much clearer understanding of what to expect, and what he must devote more thought and attention to, before making any firm commitment.

However, most prospective owners or investors would like to have a means of making a quick appraisal of a given situation as a 'first round' approximation without taking the time and effort to develop a balance sheet. The enclosed Table (page 13) and Nomograph (page 14) are designed to serve this purpose. The table is condensed so as to bracket the range and then provide a couple of intermediate levels of costs at different occupancy levels.

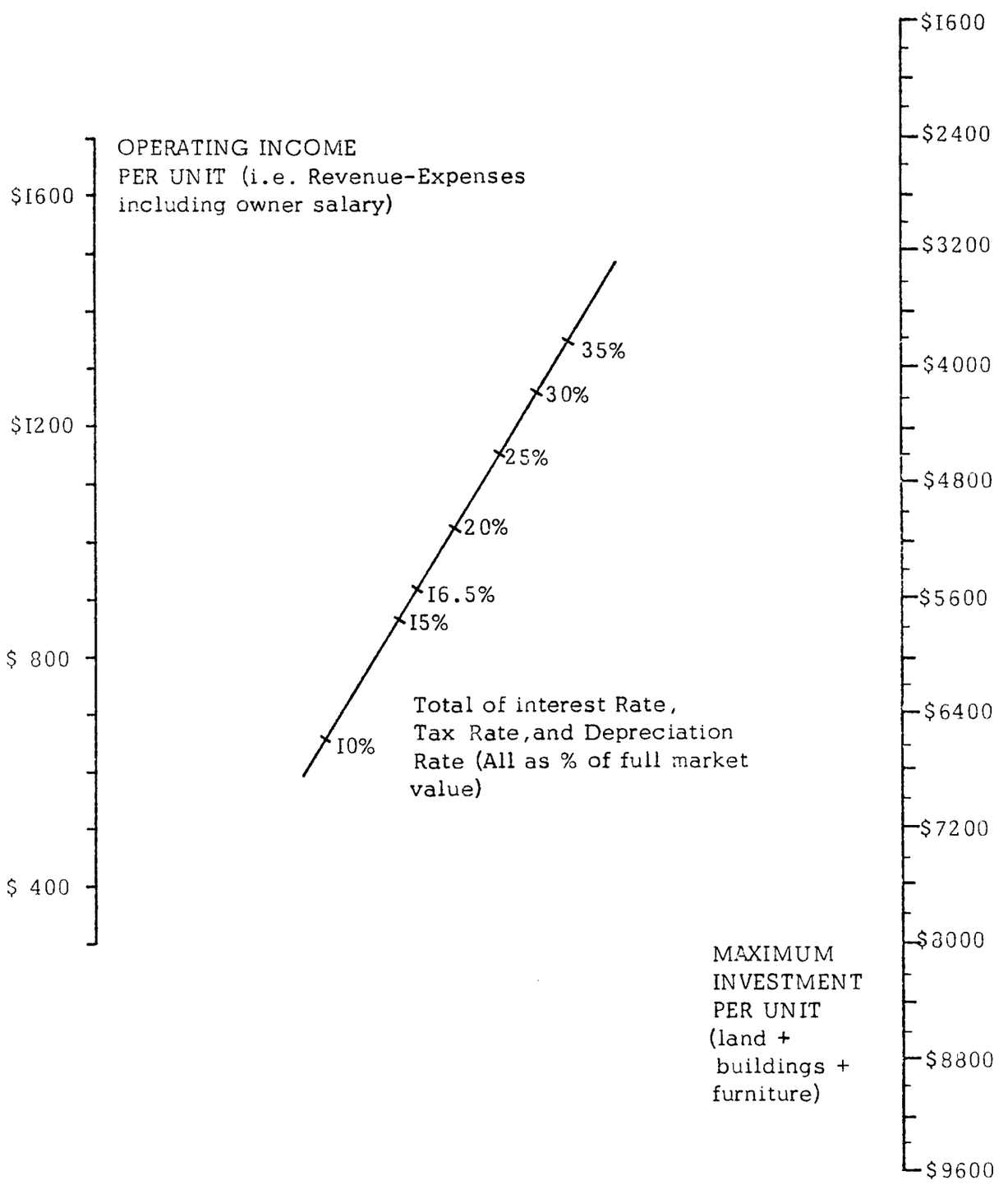
With reference to the Table, by selecting that combination of projections which best fit his particular situation (i.e. occupancy level, average rate, tax, interest and depreciation rates) the individual can quickly determine the 'Maximum Investment per Unit' that can be justified for a break-even operation. Discussions with

LOW COST TOURIST ACCOMODATION - SEASONAL USE (90 DAY) - APPROXIMATIONS[1] MADE ON PER UNIT BASIS

Occupancy Level	70%								80%								90%							
Number of Days Unit Occupied During Season	63								72								81							
Average Rate of Unit ($ per day)	$16.		$18		$25		$35		$16		$18		$25		$35		$16		$18		$25		$35	
Gross Revenue per Unit ($)	$1008		$1134		$1575		$2205		$1152		$1296		$1800		$2520		$1296		$1458		$2025		$2835	
Assume operating expenses are 50% of revenue (which is a normal level)																								
Operating income per Unit ($) (i.e. Revenue-Expenses)	$504		$567		$788		$1103		$576		$648		$900		$1260		$648		$729		$1013		$1418	
Assuming..... *Interest rate range 10% to 12% *Municipal tax rate range of 15 mill to 30 mill (on 100% market value) *Depreciation Rate Range of 5% to 10%, then range of these combined financial "burdens" could be 16.5 to 25%																								
Based on the Level of Burden (16.5% low to 25% high)	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high	low	high
Maximum Investment[1] per unit (land + building + furniture in $)	3055	2016	3437	2268	4776	3152	6685	4412	3491	2304	3928	2592	5455	3600	7637	5040	3928	2592	4419	2916	6140	4052	8594	5672

NOTE 1. The figures in this table (especially Maximum Investment per unit) must be considered as approximations, and will differ somewhat from those developed through a proper pro forma balance sheet analysis. However, they are sufficiently accurate for initial appraisal of opportunities, and represent the "break-even" level under the conditions of revenue, expense, and financial burden outlined. If the investment (or a portion thereof) is in the form of owner's equity, the figures do cover a normal return on this equity (i.e. the interest rate used).
Figures for combinations other than those contained in this table may be developed from the nomograph.

NOMOGRAPH


OPERATING INCOME
PER UNIT (i.e. Revenue-Expenses
including owner salary)
$I600
$I200
$ 800
$ 400
35%
30%
25%
20%
I6.5%
I5%
I0%
Total of interest Rate,
Tax Rate, and Depreciation
Rate (All as % of full market
value)
MAXIMUM
INVESTMENT
PER UNIT
(land +
buildings +
furniture)
$I600
$2400
$3200
$4000
$4800
$5600
$6400
$7200
$8000
$8800
$9600

Financial Feasibility (cont.)

a local builder, using the 'Bill of Materials' and 'Man Hour Requirements' for the selected unit, to obtain an estimated cost for the unit will soon tell the prospecti owner whether or not he can develop a facility within the cost levels indicated. If the cost per unit (including land, building, and furniture) is lower than, or clos to, the indicated 'Maximum Investment' a closer look and analysis should be initiated.

Maximum Investment figures for combinations of factors other than those containe in the Table can be readily developed using the Nomograph.

One very significant note referring to the overall financial feasibility question is to reiterate the fact that the developed figures deal with only a ninety (90) day season. If longer seasons are possible (shoulder seasons, or winter use), at reasonable occupancy levels, the economic feasibility becomes very much more positive in any given case.

Also, the projected costs and expenses assume payout by the owner for all necessary labour and services. Both initial costs and operating costs may be reduced by some owners by application of their own energy and talent, though allowance for this must be made in some way as a 'return' to the owner.

Nomograph

The Nomograph on Page 14 is simply a graphic representation of data used to calculate the figures in the Table on Page 13. The Nomograph can be used to

Nomograph (cont.)

determine the 'Maximum Investment Per Unit' based on selected conditions of revenue, expenses, and financial "burden" (interest rate, tax rate, and depreciation rate), or by reversing the steps can be used to determine room rates or occupancy levels that must be achieved for a break-even situation based on a selected level of Investment Per Unit.

To determine the "Maximum Investment Per Unit' do the following, all calculated on a per Unit basis:

1. Calculate Gross Revenue by multiplying the room rate ($) by number of days of occupancy expected (number of days in season multiplied by occupancy level)
2. Calculate Operating Expenses, including owner's salary for operation, other wages (maid service, accounting, and so on) maintenance (labor and material), insurance, heat and power, linen supplies, laundry, and so on.
3. Subtract 2 from 1 to get 'Operating Income Per Unit'.
4. Add together the interest rate (rate of interest paid on borrowed money), municipal tax rate (as percent of full market value of unit), and depreciation rate (percent).

Nomograph (cont.)

5. Draw a straight line on the Nomograph from the point identifying the 'Operating Income Per Unit' (Item 3) on the left hand scale, through the point on the centre scale identifying the total percentage values of interest, tax and depreciation (Item 4), and continuing to intersect the scale on the right hand side. This intersection point on the right hand scale identifies the 'Maximum Investment Per Unit' that can be justified for a break-even situation under the stated conditions.

For example, assume an individual had caluclated his project Gross Revenue as $1350 (Step 1) and operating expenses as $650 (Step 2). The difference between these gives an 'Operating Income Per Unit' of $700, which he plots on the Nomograph on the left hand scale. He then adds together the interest rate (12%), municipal tax rate for his site (3%) and depreciation rate per year (5%) to get a total of 20% which he plots on the centre scale. By joining these two points ($700 on left scale and 20% on centre scale) by a straight line and projecting this line to the right hand scale, the point on the right hand scale indicates 'Maximum Investment' per unit of $3500.

First Cost vs. Life-Cycle Cost

With the basic target of low to moderate-cost accommodation in mind, the prospective owner may evaluate the amount of his investment on different concepts or goals.

The first, and probably most natural, is to use a 'minimum first cost' approach selecting the lowest cost materials and components that will satisfy the code and design needs. He would thus keep his initial investment at the lowest possible level, at the sacrifice of having to spend money on yearly maintenance or early replacement, for many of the materials or components. Unfortunately, this approach is often dictated by the non-availability of capital to the small operator....or lack ofknow-how on his part to acquire sufficient capital at reasonable rates.

Alternatively, the prospective owner may take a more rational approach by considering the costs over the expected 'life-cycle' of the accommodation units, and selecting those materials and components which indicate the lowest life-cycle costs over other alternatives. In life-cycle costing one must consider and compare the total costs anticipated, including purchase, maintenance, repai replacement....and even allow a credit for salvage value if such is expected.

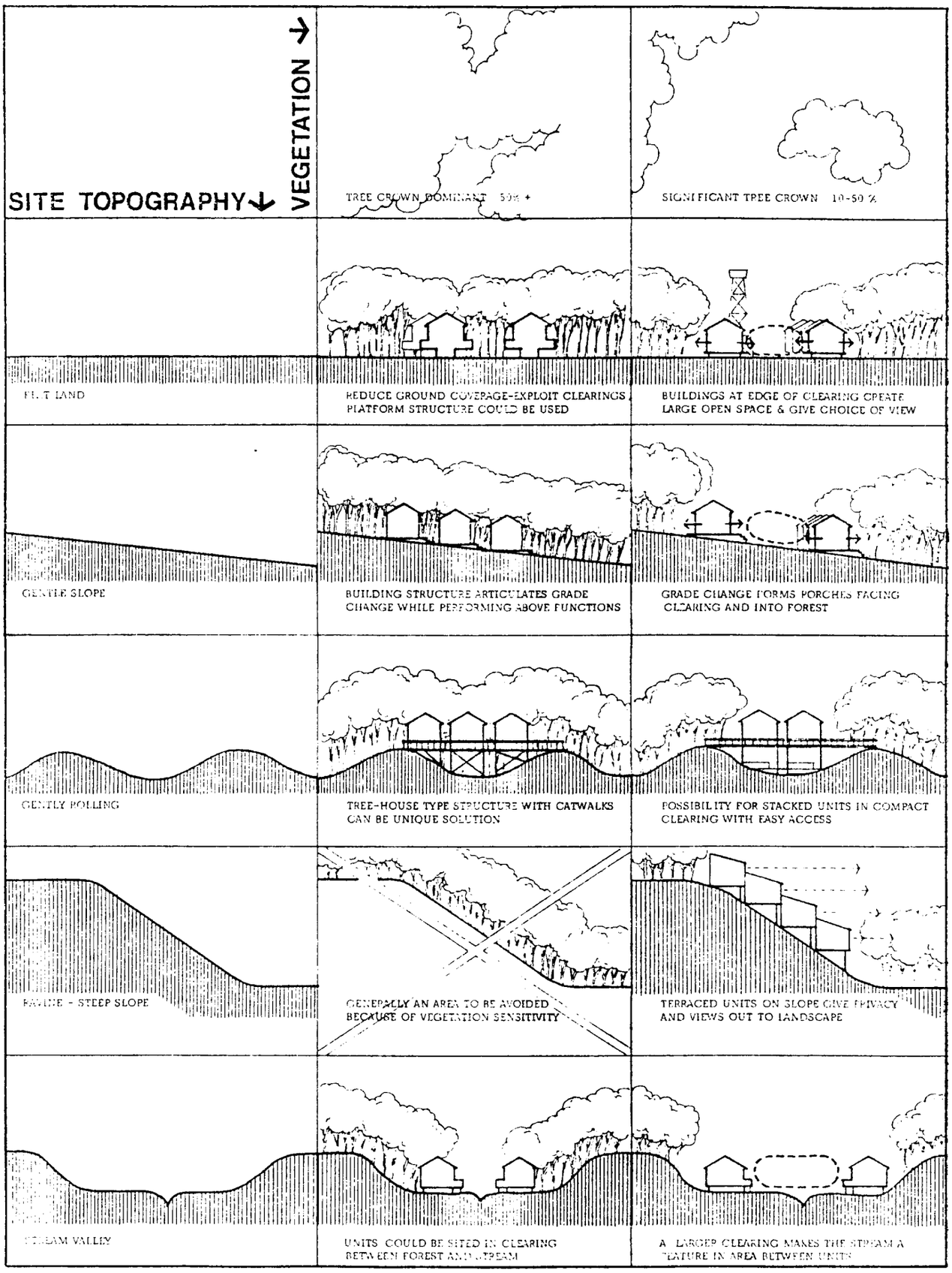
The advantages of the life-cycle costing approach can be quite meaningful, and the extra effort in the analysis well justified. Many times a marginal increase i purchase price — to acquire a better grade product — can render significant savi

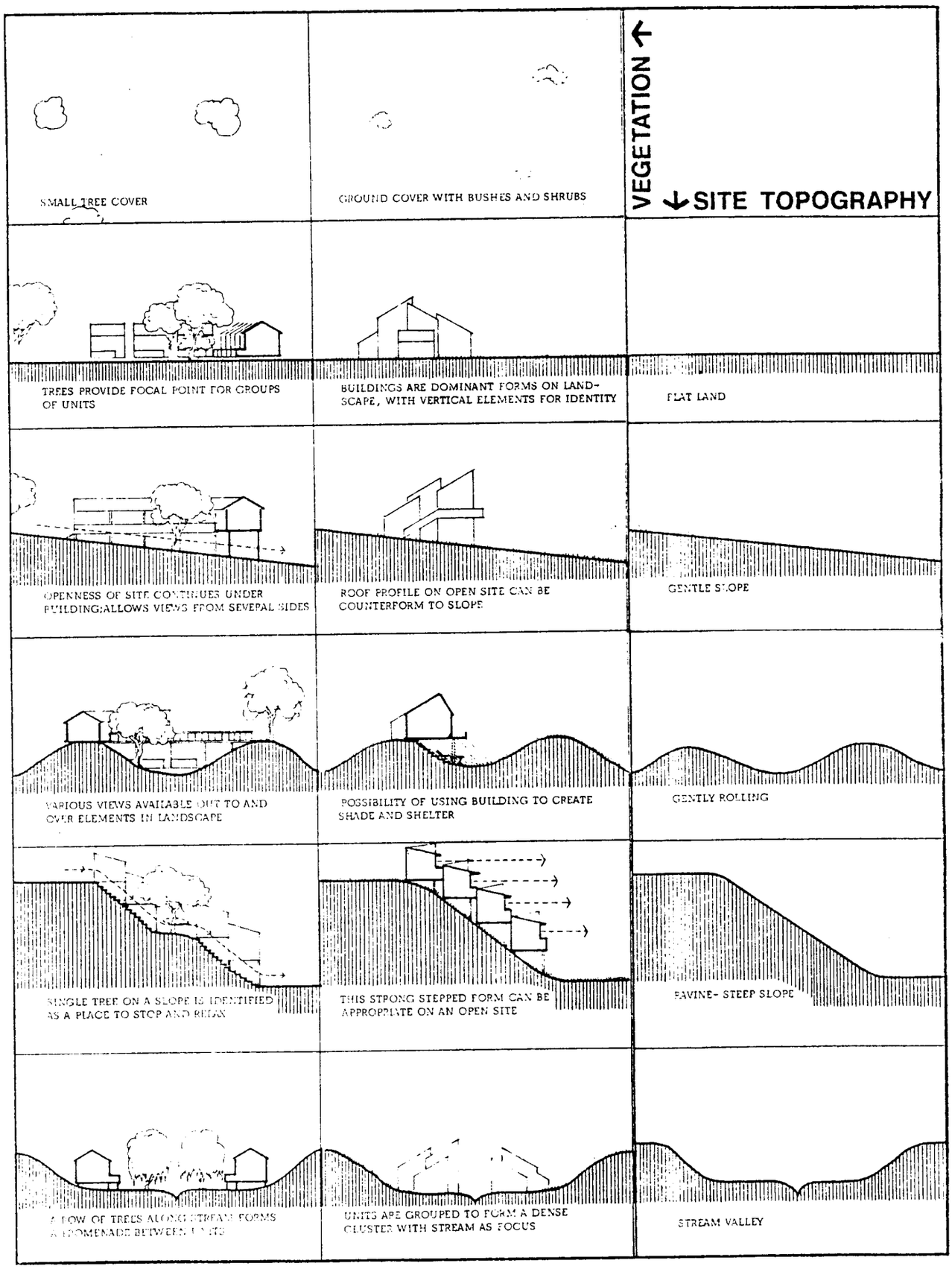
in yearly maintenance and service costs. The owner also begins operations with a better quality unit, a further 'plus' in his effort to attract clientele.

7. SITING + GROUPING REQUIREMENTS

The buildings will have to fit comfortably into a variety of different site conditions. The following two pages show an approach toward accommodating this, with the modifications that could be made to the grouping and footings of the units to respond to various conditions. The notes and diagrams are organized on a matrix which relates tree cover to topography. Thus sites which are on various slopes of land from flat, gentle and steep slopes, rolling or valley lands, which are heavily wooded, sparsely covered or in between, are all described.

Groupings or clusters will be determined according to the potential clientele, site constraints, social groupings, servicing and housekeeping requirements. Page 21 shows an approach to correlating these various requirements with unit densities.


SITE TOPOGRAPHY
VEGETATION
TREE CROWN DOMINANT 50% +
SIGNIFICANT TREE CROWN 10-50 %
FLAT LAND
REDUCE GROUND COVERAGE-EXPLOIT CLEARINGS PLATFORM STRUCTURE COULD BE USED
BUILDINGS AT EDGE OF CLEARING CREATE LARGE OPEN SPACE & GIVE CHOICE OF VIEW
GENTLE SLOPE
BUILDING STRUCTURE ARTICULATES GRADE CHANGE WHILE PERFORMING ABOVE FUNCTIONS
GRADE CHANGE FORMS PORCHES FACING CLEARING AND INTO FOREST
GENTLY ROLLING
TREE-HOUSE TYPE STRUCTURE WITH CATWALKS CAN BE UNIQUE SOLUTION
POSSIBILITY FOR STACKED UNITS IN COMPACT CLEARING WITH EASY ACCESS
RAVINE - STEEP SLOPE
GENERALLY AN AREA TO BE AVOIDED BECAUSE OF VEGETATION SENSITIVITY
TERRACED UNITS ON SLOPE GIVE PRIVACY AND VIEWS OUT TO LANDSCAPE
STREAM VALLEY
UNITS COULD BE SITED IN CLEARING BETWEEN FOREST AND STREAM
A LARGER CLEARING MAKES THE STREAM A FEATURE IN AREA BETWEEN UNITS


SMALL TREE COVER
GROUND COVER WITH BUSHES AND SHRUBS
VEGETATION
SITE TOPOGRAPHY
TREES PROVIDE FOCAL POINT FOR GROUPS OF UNITS
BUILDINGS ARE DOMINANT FORMS ON LAND-SCAPE, WITH VERTICAL ELEMENTS FOR IDENTITY
FLAT LAND
OPENNESS OF SITE CONTINUES UNDER BUILDING;ALLOWS VIEWS FROM SEVERAL SIDES
ROOF PROFILE ON OPEN SITE CAN BE COUNTERFORM TO SLOPE
GENTLE SLOPE
VARIOUS VIEWS AVAILABLE OUT TO AND OVER ELEMENTS IN LANDSCAPE
POSSIBILITY OF USING BUILDING TO CREATE SHADE AND SHELTER
GENTLY ROLLING
SINGLE TREE ON A SLOPE IS IDENTIFIED AS A PLACE TO STOP AND RELAX
THIS STRONG STEPPED FORM CAN BE APPROPRIATE ON AN OPEN SITE
RAVINE- STEEP SLOPE
A ROW OF TREES ALONG STREAM FORMS A PROMENADE BETWEEN UNITS
UNITS ARE GROUPED TO FORM A DENSE CLUSTER WITH STREAM AS FOCUS
STREAM VALLEY

LOW COST SEASONAL ACCOMMODATION
Grouping Requirements
Page 21

	Site Constraints	Relationship to Amenity	Social Groupings	Servicing water, power wastes, heat etc	Maintenance + Housekeeping
multiple type high density	topography or vegetation prescribe a compact building site	all units require equal access to 1 amenity-view, beach etc.	high general level of social interaction - individuals or couples	all servicing centralized for maximum efficiency	high turnover types need most maintenance + housekeeping
cluster type medium density	several smaller sites are available	several amenities exist on site - choice available	smaller more intense social grouping - families	mix of central and unit services according to efficiency	2-3 day occupancy lowers housekeeping requirements
detached type low density	conditions (like dense forest) require individual unit siting	conditions are general over the entire site	privacy suited to families or self-contained groups	high degree of individual serving because of distances	large units, rented per week require little housekeeping

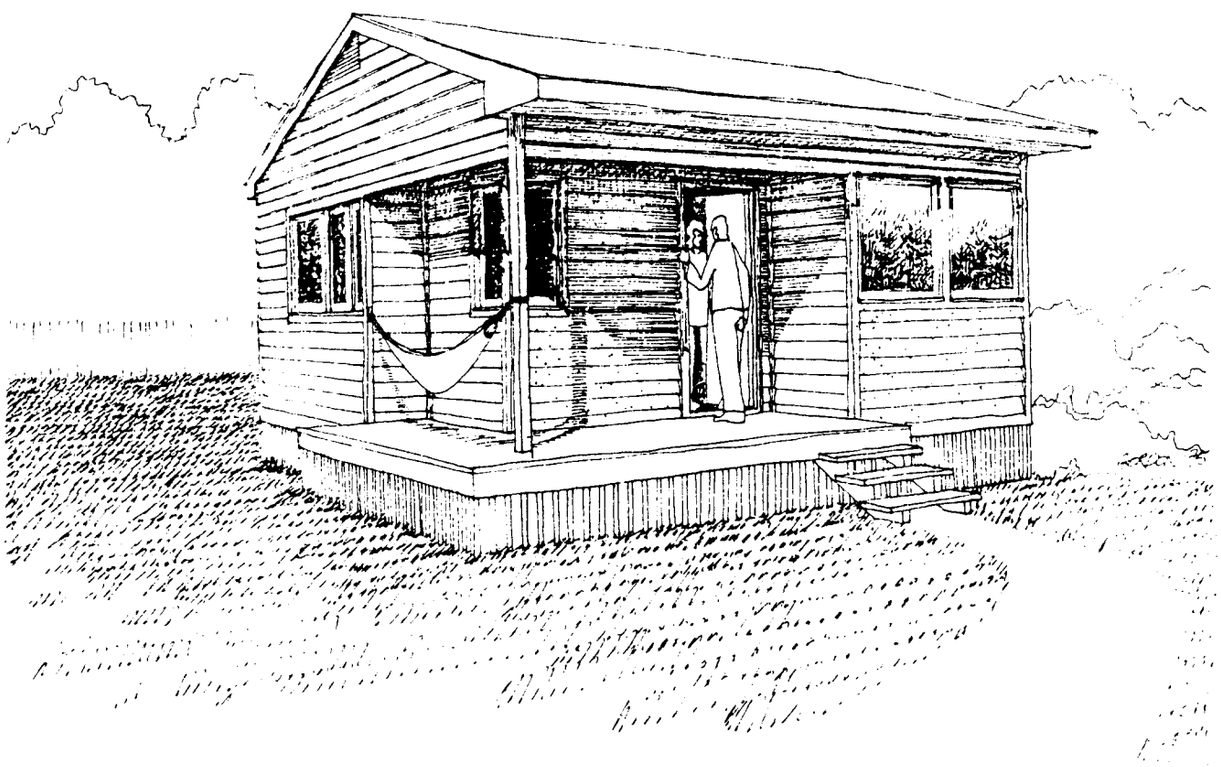
8. THE FREE-STANDING UNITS

This section describes the two free-standing units in terms of contents, design, and costs. It begins overleaf with the programme of space and facility requirements for both the six-person and four-person units. It proceeds to an explanation of the basis of the design, followed by plans and sections of both.

This is followed by a series of four perspective views, two of each unit, in different geographic locations of Canada. They show different cladding materials and footing treatment, which respond in character to their situation.

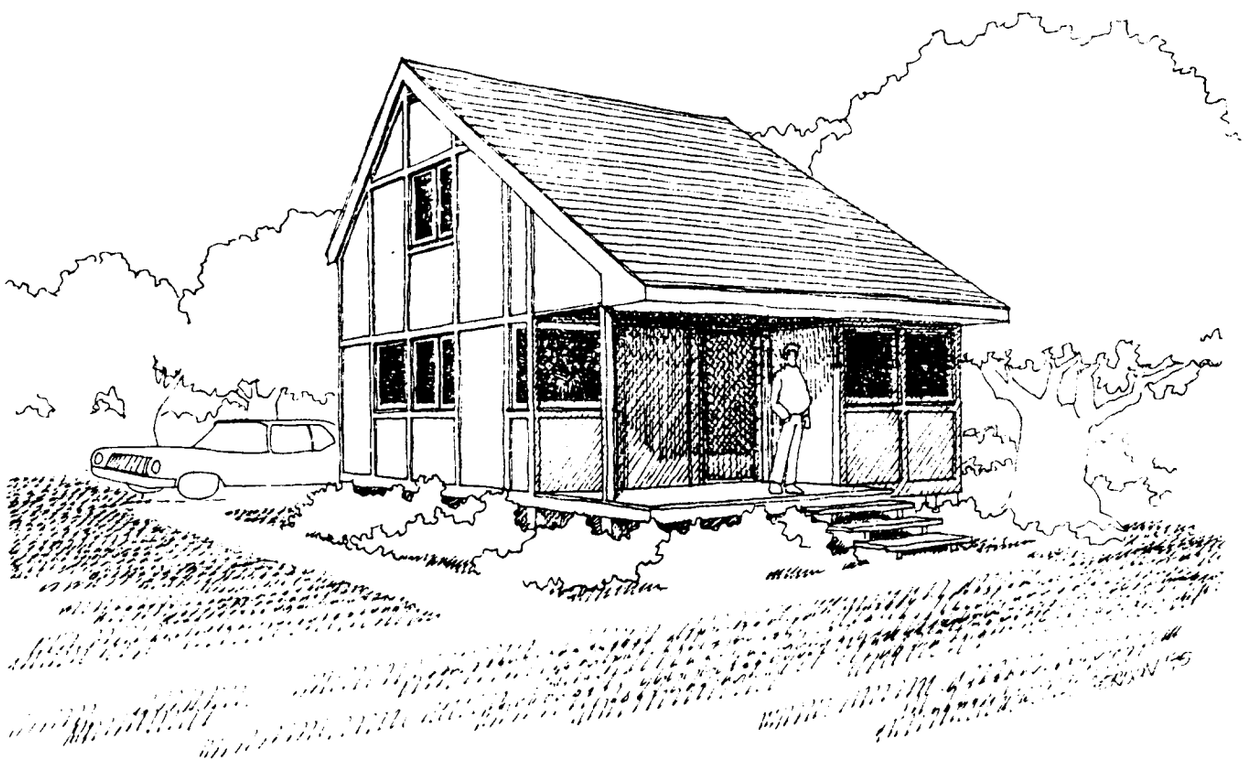
The costs of the units are treated next, in a series of tables which outline quantities of the specified materials, their cost, and the amount of time required to construct them.

Finally a summary financial analysis is provided so that the cost of the unit can be related to the amount of income it will generate.



Small Free-standing Unit

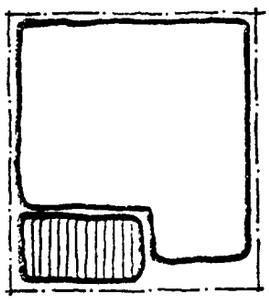
SMALL SINGLE FREE-STANDING UNIT (2 + 2 people)			
FUNCTIONAL AREAS	DESIGN REQUIREMENTS		PROVINCIAL STATUTES
	STANDARD	OPTIONAL	
UNIT			280 sq.ft.(Ont.) 300 sq.ft.(N.B.)
LIVING AREA			
sitting area	Couch 6'-4" x 2'-10" Lounge Chair Table	Studio Bed Built-in Bench	
eating area	50 sq.ft. Dining Table 4 Chairs	Built-in seating	
kitchen	Counter Space Sink Stove Refrigerator Shelf Storage	or Combination Unit	
SLEEPING AREA	1 Double Bed Night Table Luggage Rack Chair Dresser Hanging Storage Waste Basket	2 Single Beds Built-in Bench	80 sq.ft. per Bedroom (Ont.) 100 sq.ft. per Bedroom (N.B.)
BATHROOM	W.C. Sink Bathtub - bath &shower Towel Racks	- shower Storage Shelves	30 sq.ft.(Ont.) 35 sq.ft. (N.B.)
GENERAL		Private Outdoor Space Indoor Storage for Outer Clothes	



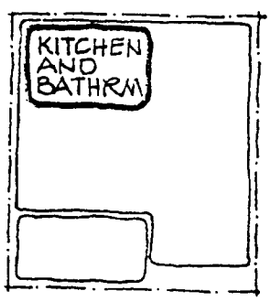
Large Free-standing Unit

LARGE SINGLE FREE-STANDING UNIT (4 + 2 people)			
FUNCTIONAL AREAS	DESIGN REQUIREMENTS		PROVINCIAL STATUTES
	STANDARD	OPTIONAL	
UNIT			330 sq.ft. (Ont.) 450 sq.ft.(N.B.)
LIVING AREA			
sitting area	Couch 6'-4" x 2'-10" Lounge Chair Table	Studio Bed Built-in Bench	
eating area	50 sq.ft. Dining Table 4 Chairs	Built-in seating	
kitchen	Counter Space Sink Stove — or Refrigerator Shelf Storage	Combination Unit	
SLEEPING AREA	1 Double Bed Night Table Luggage Rack Chair Dresser Hanging Storage Waste Basket	2 Single Beds Built-in Bench	80 sq.ft.(Ont.) 100 sq.ft.(N.B.) per bedroom
BATHROOM	W.C. Sink Bathtub-bath & shower Towel Racks	- Shower Storage Shelves	30 sq.ft.(Ont.) 35 sq.ft.(N.B.)
GENERAL		Private Outdoor Space Indoor Storage for Outer Clothes	

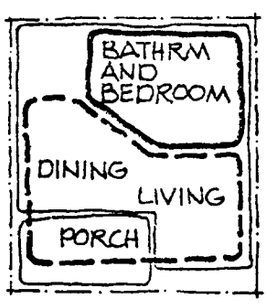
THE FREE-STANDING UNITS: DESIGN RATIONALE



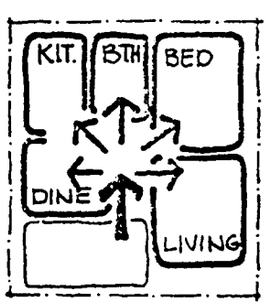
We begin with a simple rectangular plan that is easy to build, and efficient in terms of space enclosure. It has an integral entry porch. Dimensions are based on 2'-0" or 4'-0" modules for optimum utilization of standard building materials.



The serviced areas — kitchen and bathroom — are zoned together for plumbing efficiency.

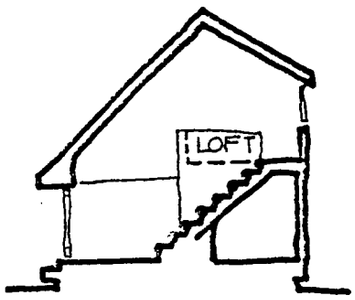


The 'private' areas — bathroom and bedroom — are zoned together to allow maximum flexibility and openness of living areas: dining, living, porch, and to some extent kitchen. These "wrap around" the private area.

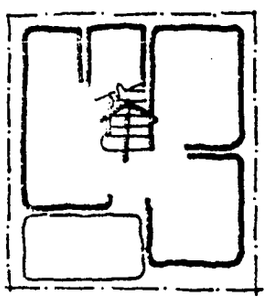


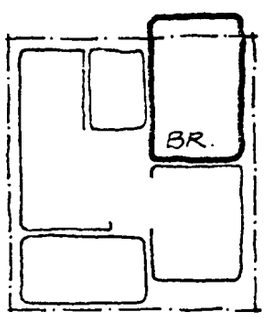
The entry and circulation is at maximum efficiency by bringing access right into the centre and arranging the "rooms" around it.

THE FREE-STANDING UNITS (cont.)



The large unit extends vertically to a loft, with stairs springing from the circulation centre. The lower steps are a place to sit, in the centre of things.

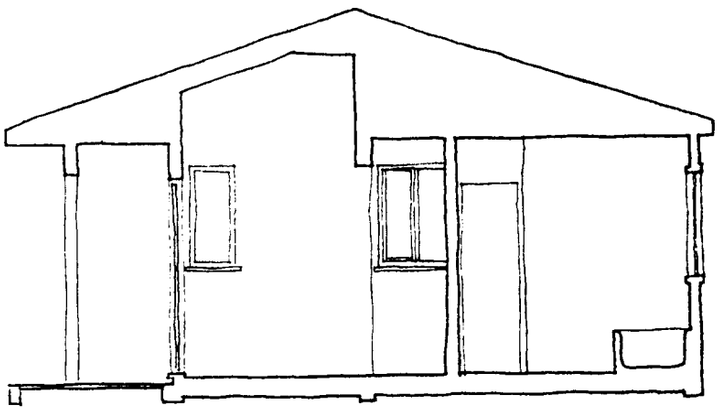




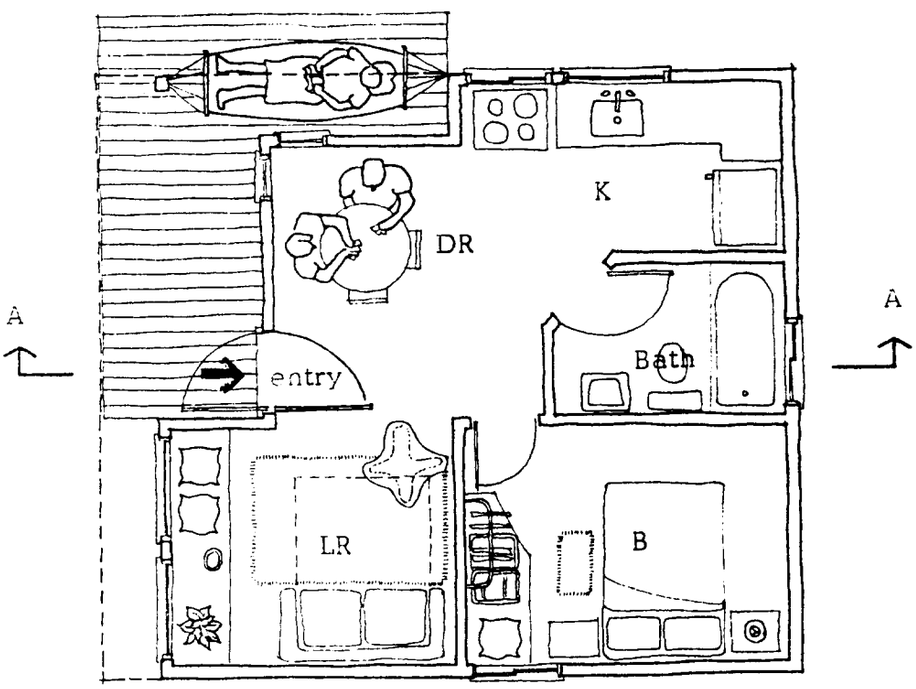
Where provincial codes call for greater than normal sizes (such as bedrooms in Nova Scotia) these extend out of the standard rectangle.

The base of the unit can be treated in a number of ways to accommodate different site conditions — flat land, rocky slopes, treed slopes etc. Several conditions are shown on pages 28A and 28B.

FREE - STANDING UNIT 2+2 PEOPLE 335 SQ. FT. NET
Plan and section



Section "A - A"

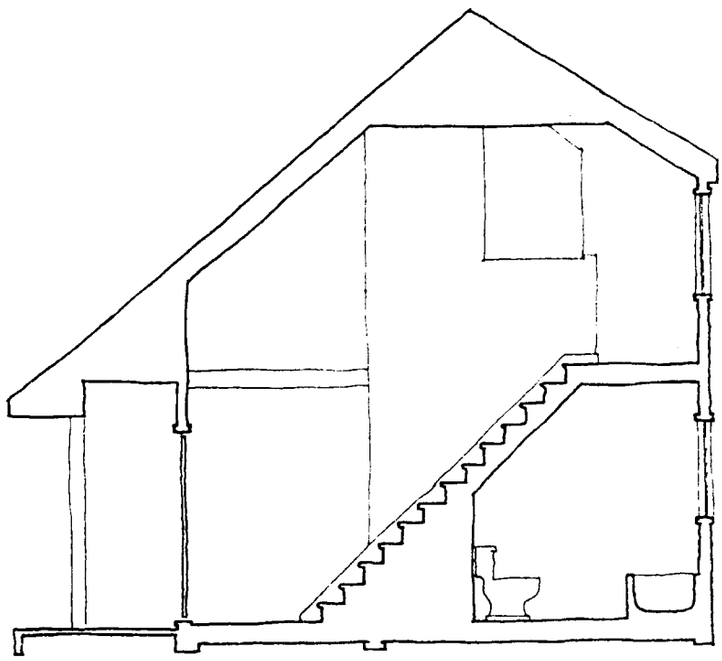


First Floor Plan

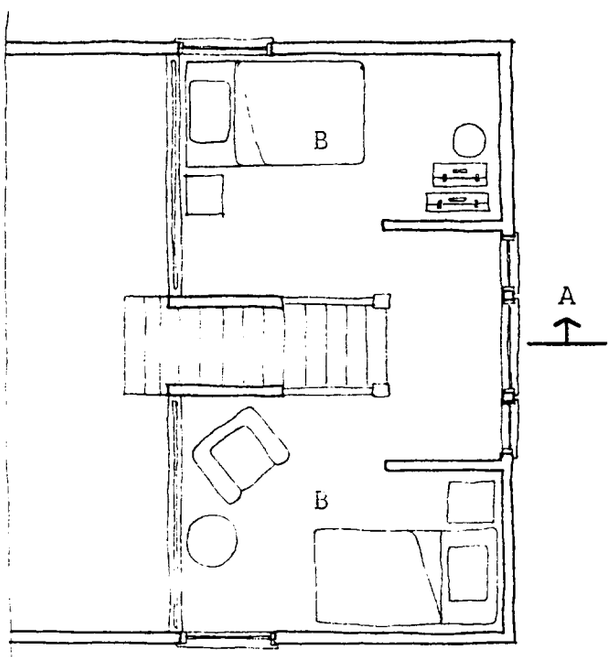
0 4 8 FT

FREE - STANDING UNIT: 4+2 PEOPLE, 550 SQ. FT. NET

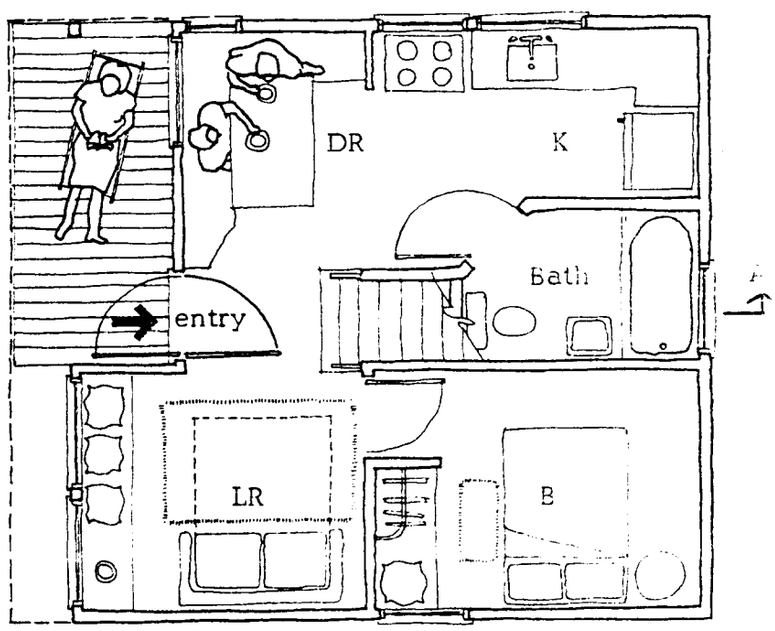
Plan and Section



Section "A-A"



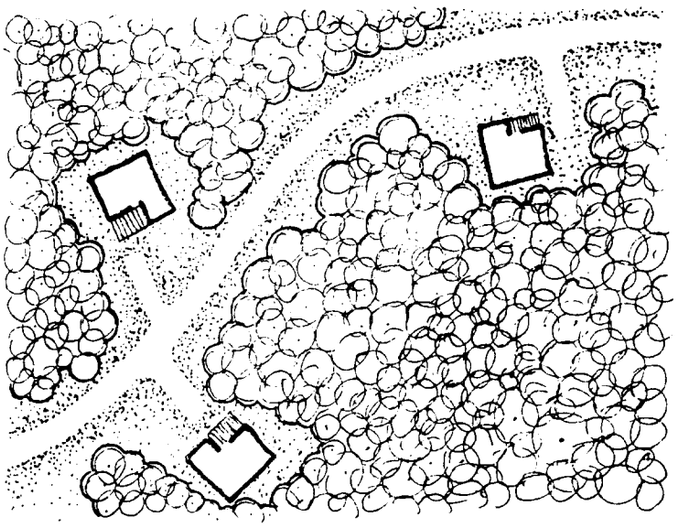
Loft Plan



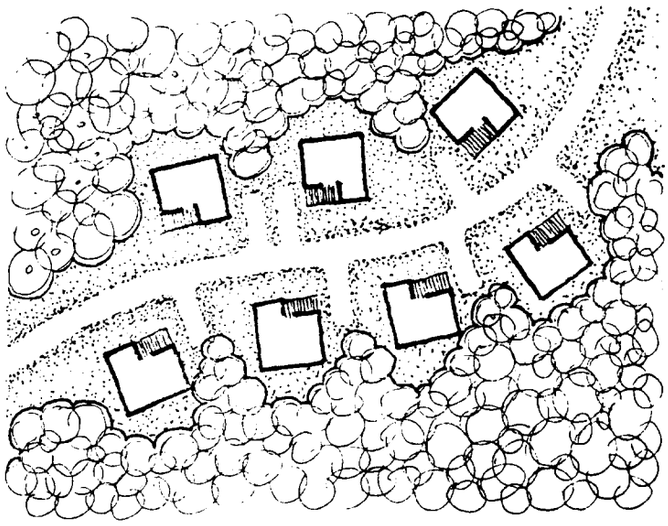
First Floor Plan

0 4 8 FT

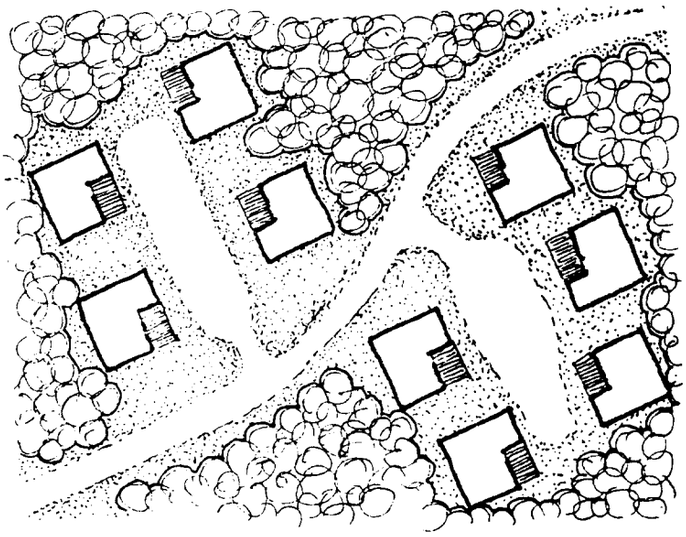
FREE STANDING UNITS
Site Groupings for Detached Units
Page 28A



Solitary Units
Buildings contained by the landscape-extremely private. Used in a park-like setting suitable for family groups.

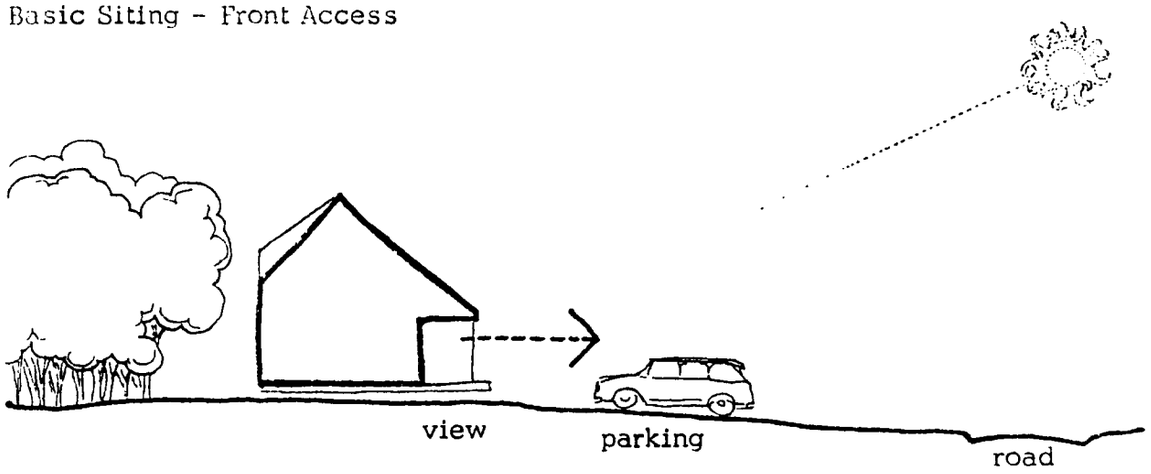


Streets
More "urban" situation appropriate to beach or lake front situation increases possibilities of social interaction.

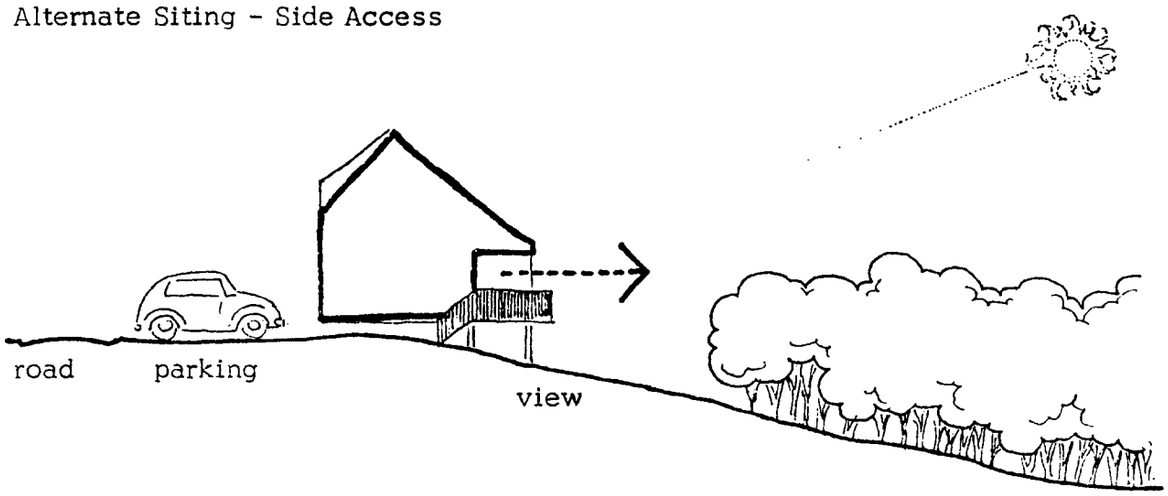


Clusters
Also an "urban" situation. Suitable for longer term rental situations where social activities can take place between several families.

Basic Siting - Front Access



Alternate Siting - Side Access



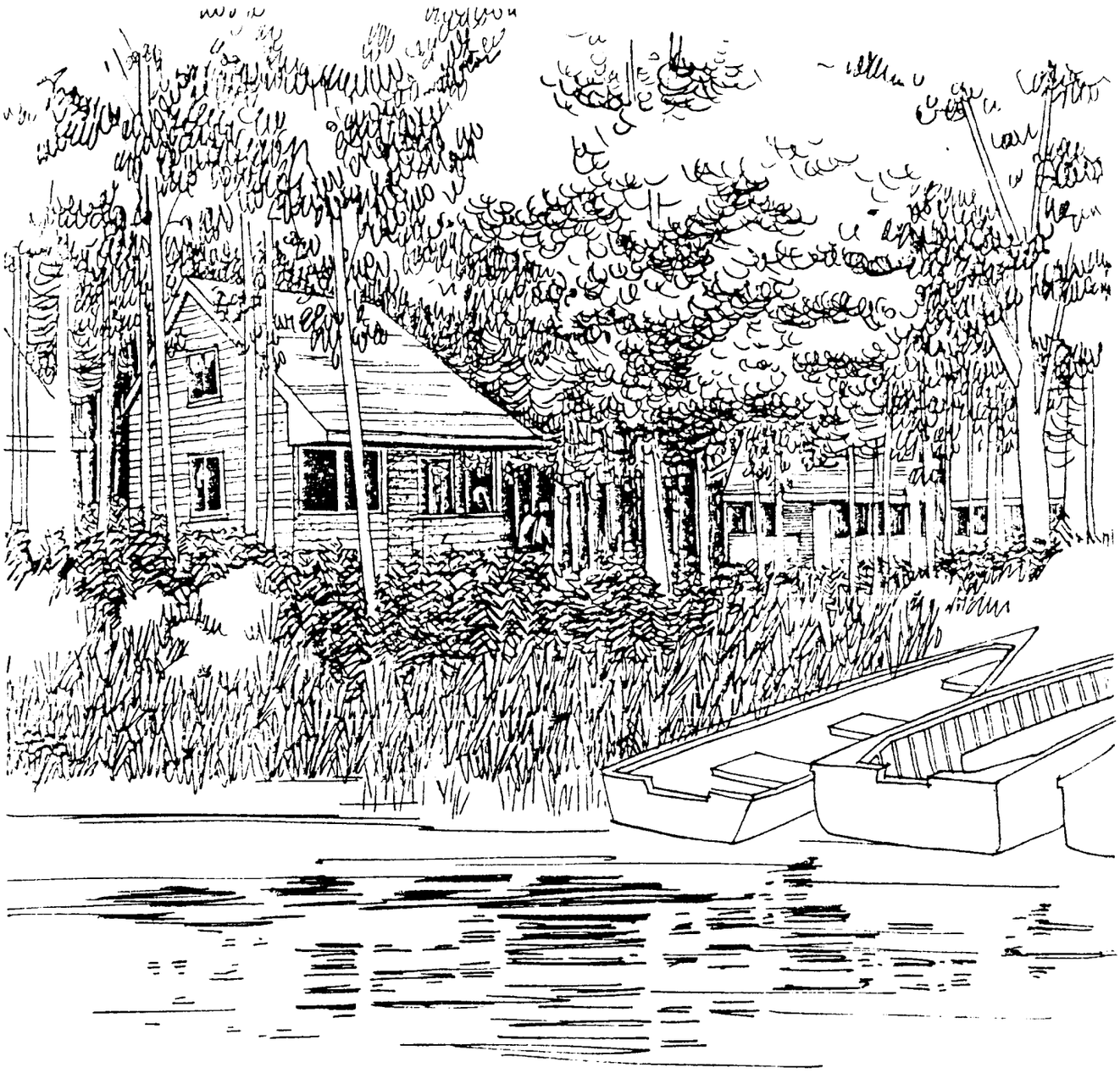
FREESTANDING UNITS:
PERSPECTIVE VIEWS ACROSS CANADA

The first drawing shows the larger unit in a prototypical Canadian recreation situation — a lake in the woods. These conditions typically apply in parts of the midwest (the scene is from Saskatchewan) to central Canada, and in many places in the east. It has rough, "wilderness" siding from local sawmills.

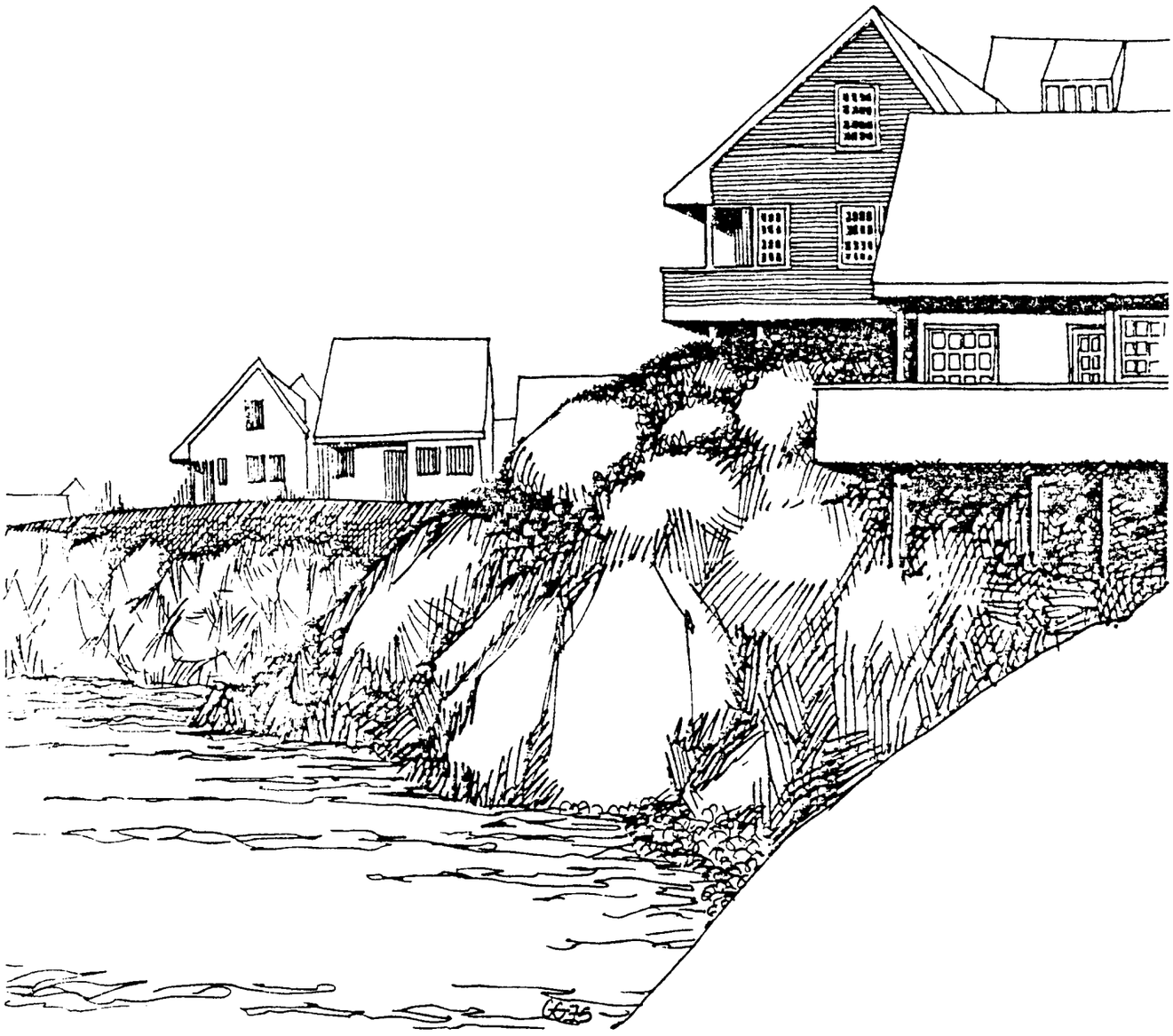
Drawing 2 shows large units in an eastern seaboard scene - rough rock, topped by rolling grass meadow. It has narrow white horizontal siding, with stained trim.. The grouping is close, but relatively random, in character with the site and region.

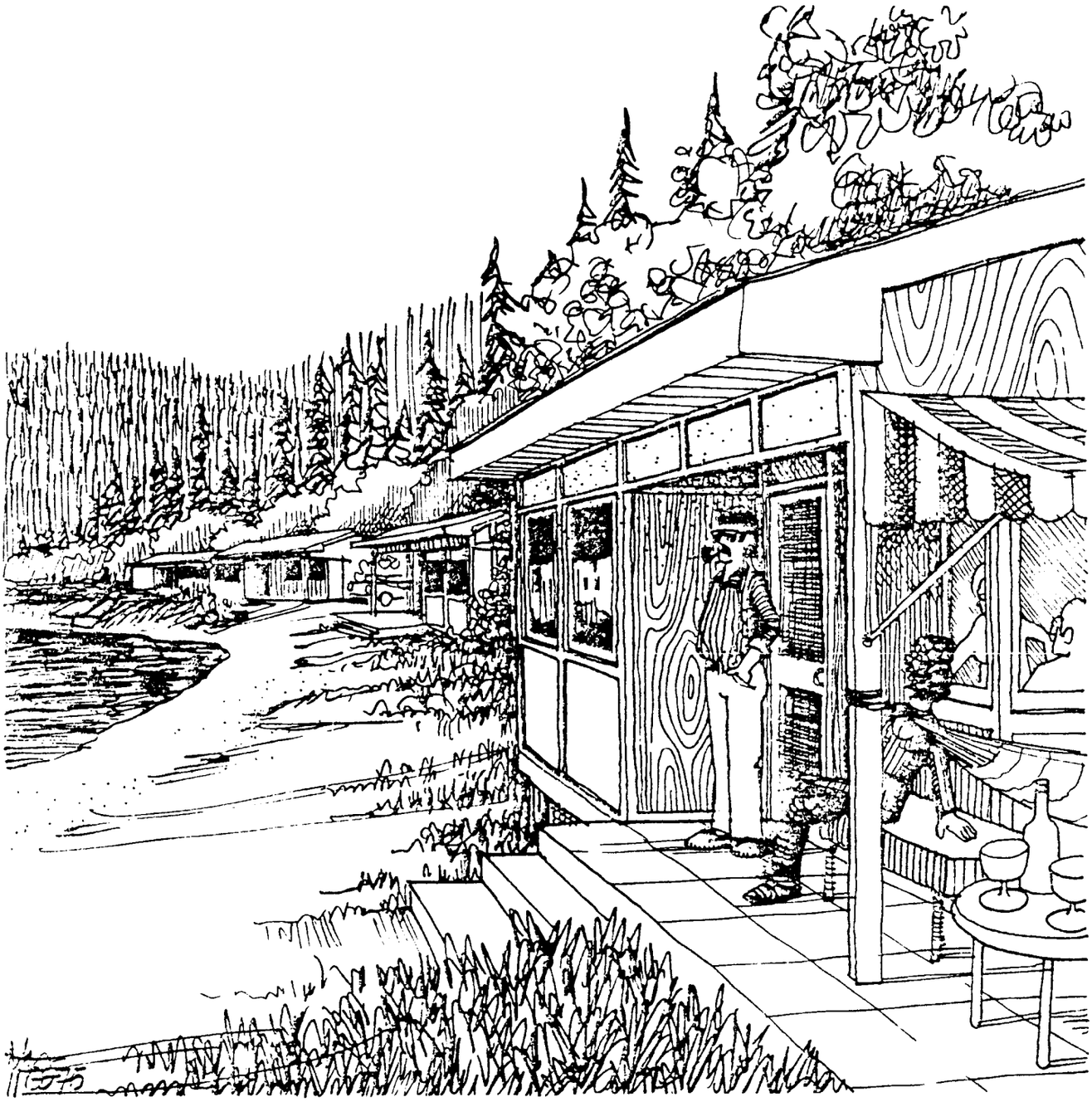
Drawing 3, shows the smaller units in the foreground of a western ski area. It has rough sawn vertical cladding. The large single units and a group of multiple units can be seen in the background, to show how they might mix.

Drawing 4, shows how the smaller units ,might string out along a beach. The cladding is plywood.



1





4

THE FREE-STANDING UNIT:
MATERIALS, COSTS, AND MAN HOURS

The following tables outline material and labour costs for the construction of the pro-types of free standing unit. These units will be satisfactory for summer and shoulder seasons. They are insulated (R7) and have baseboard electric support heating. For winter seasonal use, additional insulation (to R12), storm windows and full winter heating would be required. The additional costs for these additions are itemized below as a "Winterized Ootion Package". The cost of shipping materials to remote location must also be considered. In summary the costs break down as follows:

4 PERSON UNIT

Materials	$3,669.00
Labour 238 manhours x $8.50	2,023.00
Total Cost	$5,692.00
Cost per sq. ft. $14.37	

4 PERSON UNIT - WINTERIZED OPTION PACKAGE

Insulation -	Walls:	R7 to R13 - 600 sq.ft. (.128-.074)	$ 32.40
	Ceilings:	R7 to R20 - 560 sq.ft. (.208-.074)	75.05
	Floors:	R7 to R20 - 395 sq.ft. (.208-.074)	52.95
			$160.40

(cont'd overleaf)

Storm Windows (Aluminum)

Materials	8 x $27	$216.00
Labour	5 manhours x $8.50	42.50

Storm Doors - All ready incl. in basic package price.

Baseboard Heaters - allow additional for material		100.00
" "	10 manhours x $8.50	85.00
		$604.00

6 PERSON UNIT

Materials		$4,795.00
Labour	307 manhours x $8.50	2,610.00
Total Cost		$7,405.00

Cost per sq. ft. $11.47

6 PERSON UNIT - WINTERIZED OPTION PACKAGE

Insulation - Walls:	R7 to R12 - 970 sq. ft. (.054)	$ 52.40
Ceilings:	R7 to R20 - 600 sq. ft. (.134)	80.40
Floor:	R7 to R20 - 395 sq. ft. (.134)	52.95
		$ 185.75

Storm Windows (Aluminum)

Materials	13 x 27	$ 351.00
Labour	8 manhours x $8.50	68.00

Storm Door - incl. in basic package price.

Baseborad Heaters - allow additional for materials		145.00
" "	10 manhours x $8.50	85.00
		$ 835.00

Material costs are based on retail prices in an urban centre (Ottawa) in Spring 1975. Prices will vary according to the specific location where the units are to be built.

'4 PERSON FREE-STANDING UNIT

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Foundation (assuming crawl space, piers to frost, skirting				
8" concrete block	120	.48	$58.00	
Mortar	8 c.f.	1.25	10.00	147
Anchors	15	.25	4.00	
Concrete Footings	.5 c.f.	25.00	13.00	8.3
4 mil poly, dampproof	400 sq.ft	.05	20.00	3.0
3/8" pentoxed skirting	172 " "	.25	43.00	4.8
excavate		Equip. rental	25.00	.8
			$175.00	31.6
Framing				
Floor				
2 x 8 @ 16"o.c.	395 fbm	.178	$70.00	
2 x 10	423 "	.208	88.00	
2 x 3	41 "	.17	7.00	8.0
1 x 4	9 "	.168	2.00	
nails	14 lbs.	.30	4.00	
			$171.00	8.0
Sub-flooring				
½" ply	13 shts	8.00	$140.00	
nails	6 lbs.	.30	2.00	2.6
			$106.00	2.6

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Framing (cont.)				
Exterior Walls				
2 x 4	687 fbm	.168	$115.00	
2 x 6	60 "	.17	10.00	12.0
nails	20 lbs.	.30	6.00	
			$131.00	12.0
Sheath Ext. Walls				
15# Sheath Paper	700 sq.ft.	.02	$ 14.00	2.2
Partitions				
2 x 4	127 fbm	.168	$ 22.00	
2 x 6	88 "	.17	15.00	5.5
nails	7 lbs.	.30	2.00	
			$ 39.99	5.5
Roof				
½ truss	11		$125.00	
2 x 8	338 fbm	.178	60.00	
2 x 4	28 "	.168	5.00	15.0
2 x 10	67"	.208	14.00	
nails	13 lbs.	.30	4.00	
			$208.00	15.0
Roof Sheathing				
3/8 " ply.	17 shts.	5.76	$ 98.00	
H. Clips	75	.03	3.00	2.9
nails	4 lbs.	.30	1.00	
			$102.00	2.9
TOTAL FRAMING			771.00	48.2

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Roofing - Insulation Ext. Doors - Windows				
Roofing				
210# Self Seal Shingles	5.6 sq.ft	15.00	$ 84.00	
Poly Eave Protection	123.0 " "	.05	6.00	5.5
nails	12 lbs.	.30	4.00	
			$ 94.00	5.5
Insulation				
*R-7 Insulation (will depend on region & use)	1555 sq.ft	.074	$115.00	8.5
Exterior Doors				
2'-8" x 6' Door (incl. hardware etc.)	1	58	$ 58.00	3.7
2'-8" x 6'-8" Screen Door (incl. all accessories)	1	42	42.00	
			$100.00	3.7
Windows (single glazed)	8	(allowance)	$425.00	8.5
TOTALS, Roofing, Insulation Doors, Windows			$734.00	26.2
Services				
Plumbing		(allowance)	$500.00	12.0
Electric & Heat		(allowance)	290.00	30.0
TOTAL SERVICES			$790.00	42.0

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hour
Exterior Finish				
Siding				
3/8" plywood (varnished) with battens at joints	730 sq.ft.	.25	$182.00	22.6
Fascia	93'	.30	28.00	6.5
Porch, Stair & Railing				
2 x 10	200 fbm	.208	$ 42.00	
2 x 6 cedar	210 "	.26	55.00	
Railing & posts		(allowance)	27.00	8.5
Stairs	1	"	30.00	
			$154.00	8.5
TOTALS, Exterior Finish			$364.00	37.6
Interior Finish				
Walls				
Panelling	990 sq.ft.	.15	$150.00	14.7
Bath Tile	61 sq.ft.	1.00	61.00	
			$211.00	14.7
Ceiling				
Panelling	450 sq.ft.	.20	$ 90.00	5.2
Floors				
Sheet Vinyl	396 sq.ft.	.50	$198.00	4.3
Kitchen Cabinets		(allowance)	$200.00	3.3

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Interior Finish (cont.)				
Interior Doors (incl. all hardware)	2	28	$ 56.00	5.0
Misc., Trim, etc.		(allowance)	40.00	10.0
TOTALS, Interior Finish			$795.00	42.5
TOTALS, Painting		(allowance)	$ 40.00	10.0

6 PERSON FREE-STANDING UNIT

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Foundation (assuming crawl space, piers to front, skirting)				
8" concrete block	120	.48	$ 58.00	
Mortar	8 cf.	1.25	10.00	14.7
Anchors	15	.25	4.00	
Concrete Footings	.5 cy.	25.00	13.00	8.3
4 mil poly dampproof	400 sq.ft.	.05	20.00	3.0
3/8" pentoxed skirting	172 sq.ft.	.25	43.00	4.8
Excavate		Equip. rental	25.00	.8
			$175.00	31.6
Framing				
Floors				
2 x 8	767 fbm	.178	$137.00	
2 x 10	423 "	.208	88.00	
2 x 3	41 "	.17	7.00	11.7
1 x 4	9 "	.168	2.00	
nails	20 lbs.	.30	6.00	
			$240.00	11.7
Sub-flooring				
1/2" ply	21 shts.	8.00	$168.00	
nails	10 lbs.	.30	3.00	4.4
			$171.00	4.4
Exterior Walls (incl. Dormer & Gable walls)				
2 x 4	990 fbm	.168	$166.00	
2 x 6	72 "	.17	12.00	17.0
nails	28 lbs.	.30	9.00	
			$187.00	17.0
Sheath Ext. Walls				
15# Sheathing Paper	1090 sq.ft	.02	$ 22.00	3.5

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Framing (cont.)				
Partitions				
2 x 4	463 fbm	.168	$ 78.00	
2 x 6	74 "	.17	13.00	13.7
nails	18 lbs.	.30	5.00	
			$ 96.00	13.7
Roof				
2 x 8	736 fbm	.178	$131.00	
2 x 6	82 "	.17	14.00	18.3
2 x 4	65 "	.168	11.00	
nails	17 lbs.	.30	5.00	
			$161.00	18.3
Roof Sheathing				
3/8" ply	19 shts.	5.76	$109.00	
H-clips	105	.03	3.00	3.4
nails	5 lbs.	.30	2.00	
			$114.00	3.4
TOTAL , Framing			$991.00	72.0
Roofing, Insulation, Ext. Doors, Window				
Roofing				
210 # shingles	6.3 sq.	15.00	$ 95.00	
Poly Eave Protect	123 sq.ft.	.05	6.00	7.2
nails	14 lb.	.30	4.00	
Flashing	24 lb.	.55	13.00	
			$113.00	7.2

6 PERSON CABIN (cont)

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Insulation *R-7 insulation (will depend on region & use)	1965 sq.ft.	.074	$145.00	10.7
Exterior Doors				
2'-8" x 6'-8" door (incl all hardware etc.)	1	58	$ 58.00	3.7
2'-8" x 6'-8" screen door (Incl. hardware)	1	42	42.00	
			$100.00	3.7
Windows (single glazed)	12	(allowance)	$560.00	11.7
TOTALS, Roofing, Insulation Ext. Doors, Windows			$923.00	33.3
Services				
Plumbing		(allowance)	$500.00	12.0
Electric & Heat		(allowance)	350.00	32.0
			$850.00	44.0
Exterior Finish				
Siding				
3/8" plywood (varnished) with battens at joints	970 sq.ft.	.25	$242.00	30.2
Fascia	120 '	.30	$ 36.00	8.7

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Porch, Stairs & Railings				
2 x 10	125 fbm	.208	$ 26.00	
2 x 6 cedar	108 "	.26	28.00	
Railing & Posts		(allowance)	27.00	4.2
Stairs		"	30.00	
			$111.00	4.2
TOTALS, Exterior Finish			$389.00	43.1
Interior Finish				
Walls				
Panelling	1800 sq.ft.	.15	$270.00	
Bath Tile	61 sq.ft.	1.00	61.00	23.8
			$331.00	23.8
Ceiling				
Panelling	740 sq.ft.	.20	$148.00	8.5
Floors				
Sheet Vinyl	645 sq.ft.	.50	$322.00	7.2
Kitchen Cabin etc.		(allowance)	$200.00	3.3
Interior Doors (incl. all hardware)	2	28	$ 56.00	5.0
Stairs & Railing		(allowance)	$280.00	5.0
Misc. Trim, etc.			$ 70.00	15.0
TOTALS, Interior Finish			$1407.00	67.8
TOTALS, Painting		(allowance)	$ 60.00	15.0

THE FREE-STANDING UNITS: FINANCIAL ANALYSIS

In order to evaluate the economic feasibility of these units, the prospective owner should identify the 'Maximum Investment Per Unit' that is justified, for comparison to the costs of the unit as outlined in Section 6.

A 'first round' approximation can be made quickly by use of the Nomograph. A simple calculation follows, using 'typical' cost figures:

Assumptions:
- 90 day season
- 80% occupancy level
- Unit rate $32.00
- Minimum of 5 units being operated.

1) Gross Revenue (per unit) = 90 x 0.8 x $32.00 = $2,304.00

2) Operating Expenses:

Direct labour 90 x0.8 x $3.00	=	$216.00
Maintenance (per season)	=	150.00
Insurance	=	35.00
Heat, light, power	=	36.00
Office Operation (tel., stationary)	=	50.00
Supplies (linen, laundry)	=	180.00
Owner Salary & accounting	=	400.00
		$1,067.00

3) Operating Income Per Unit (1) - (2) = 2,304 - 1,067 = $1,237.00.

4)

Assume Interest Rate	11.0%	
Municipal Tax Rate	1.5%	
Depreciation (15 years)	6.7%	(per year, on straight line basis)
	19.2%	

5) Using the Nomograph, a straight line from $1,237.00 on the left scale, through 19.2% on the centre scale, projects to the figure $6,400 (±) on the right scale. Therefore, under the given set of conditions the owner should not exceed a cost per unit of $6,200 (including land, building, and furniture.)

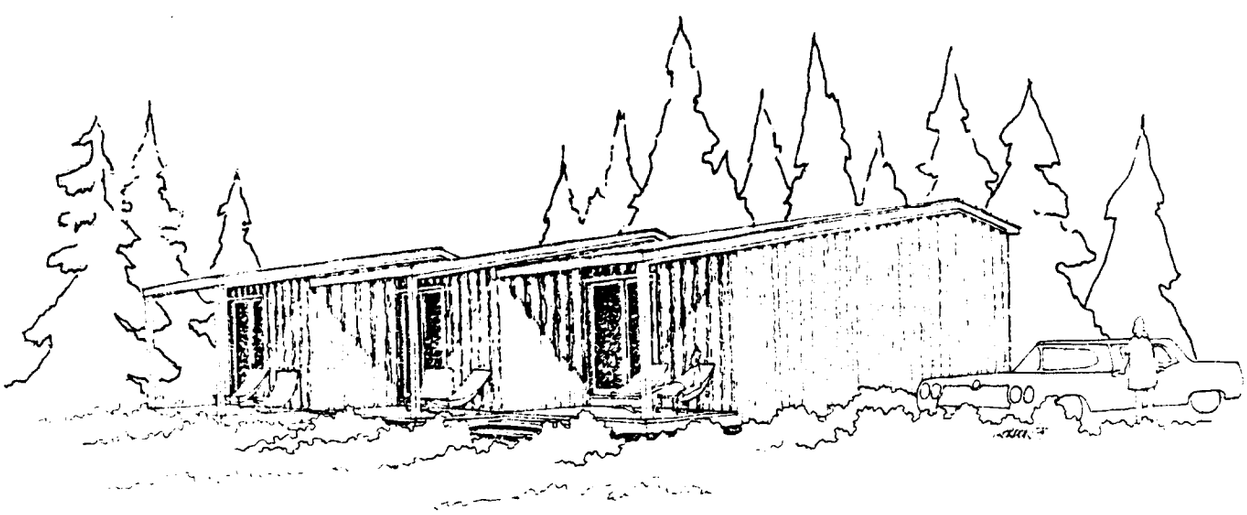
9. THE MULTIPLE UNITS

This section describes the two multiple units in terms of contents, design, groupings, and costs. It begins overleaf with the programme of space and facility requirements for both the normal and efficiency units. It proceeds to an explanation of the basis of the design, plans and sections, and diagrams of the kind of grouping that can be achieved.

This is followed by 5 perspective views, showing different groupings, roof treatment, cladding materials and footings, for different circumstances across Canada.

The costs of the units are treated in a series of tables outlining materials, costs, and manhours required for construction.

Finally, a summary financial analysis is provided so that the cost of the unit can be related to the amount of income it might generate.

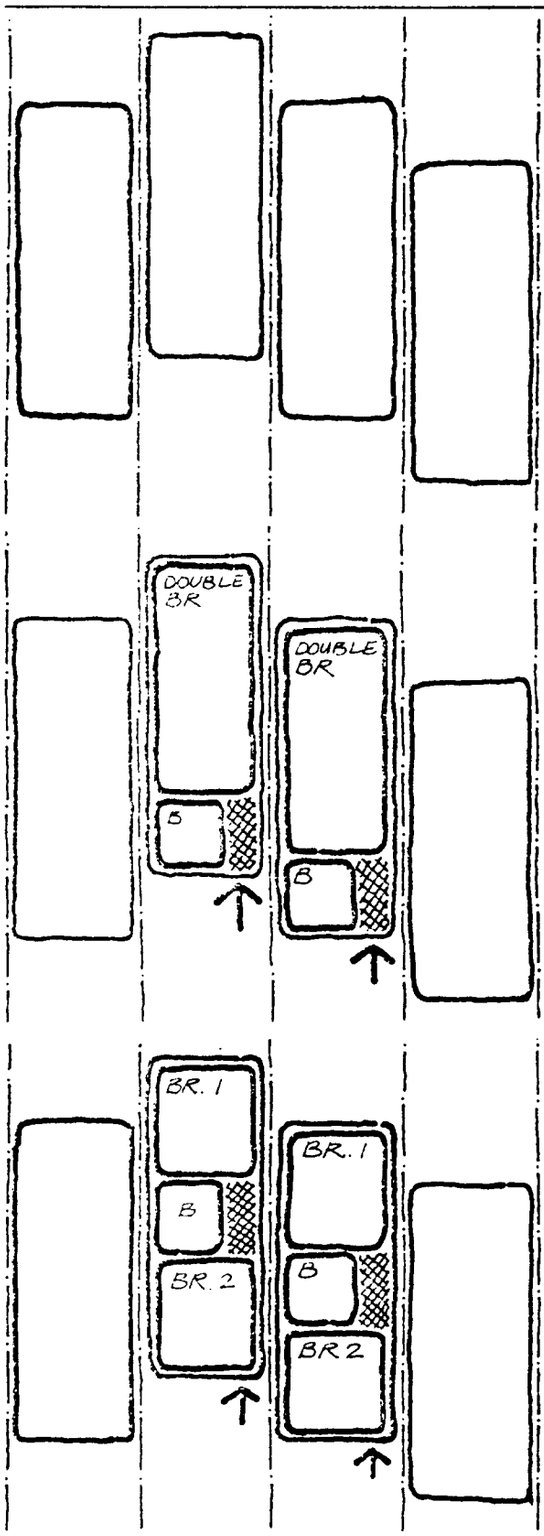


Multiple Units

STANDARD MULTIPLE UNIT (2 + 2 people)			
FUNCTIONAL AREAS	DESIGN REQUIREMENTS		PROVINCIAL STATUTES
	STANDARD	OPTIONAL	
TOTAL UNIT			280 sq.ft.(Ont.) 235 sq.ft.(N.S.)
BED-SITTING AREA	1 Double Bed 4'6" x 6'7" 1 Double Bed 4'6" x 6'7"	Studio Couch 6'4" x 2'10"	
	Night Table Luggage Rack Chair	Built-in Bench	
	Dresser 4'0"x1'7"	Built-in Combination Desk-Dresser	
	Desk 3'0"x1'6" Desk Chair		
	Hanging Storage Waste Basket		
BATHROOM	W.C. Sink Bathtub-bath & shower Towel Racks	- Shower Storage Shelves	35 sq.ft.(N.S.)
GENERAL		Private Outdoor Space Indoor Storage for Outer Clothes	

EFFICIENCY MULTIPLE UNIT (2 + 2 people)			
FUNCTIONAL AREAS	DESIGN REQUIREMENTS		PROVINCIAL STATUTES
	STANDARD	OPTIONAL	
UNIT			380 sq.ft. (not covered by statute)
BED-SITTING	1 Double Bed 4'6" x 6'7" 1 Double Bed 4'6" x 6'7"	Studio Couch 6'4" x 2'10"	
	Night Table Luggage Rack Chair	Built-in Bench	
	Dresser 4'0" x 1'7" Desk 3'0" x 1'6" Desk Chair	Built-in Combination Desk-Dresser	
	Hanging Storage		
	Waste Basket		
BATHROOM	W.C. Sink Bathtub - bath & shower Towel Racks	- Shower Storage Shelves	35 sq.ft. (N.S.)
KITCHEN	Counter - 2 lineal ft. adjoining sink		
	Sink Stove Refrigerator Shelf Storage	or Compact Combination Unit	
EATING AREA	Table 4 Chairs	Built-in Seating	
GENERAL		Private Outdoor Space Indoor Storage for Outer Clothes	

THE MULTIPLE UNITS : Design Rationale

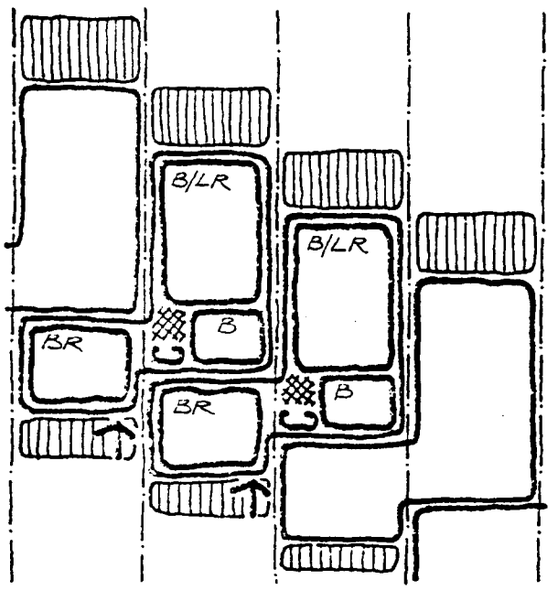


We begin with a straightforward, partywall structural module at 12'-0" centres, ± 28 foot long, making up the regulatory internal square footage requirements. They can be "slipped" along the module lines to create variations, and to fit site conditions.

The normal approach to interior layout is to place the bathroom and entry circulation area at one end, and both beds in the "main" room at the other.

The space can also be divided by the bathroom to creat two "bedroom for privacy.

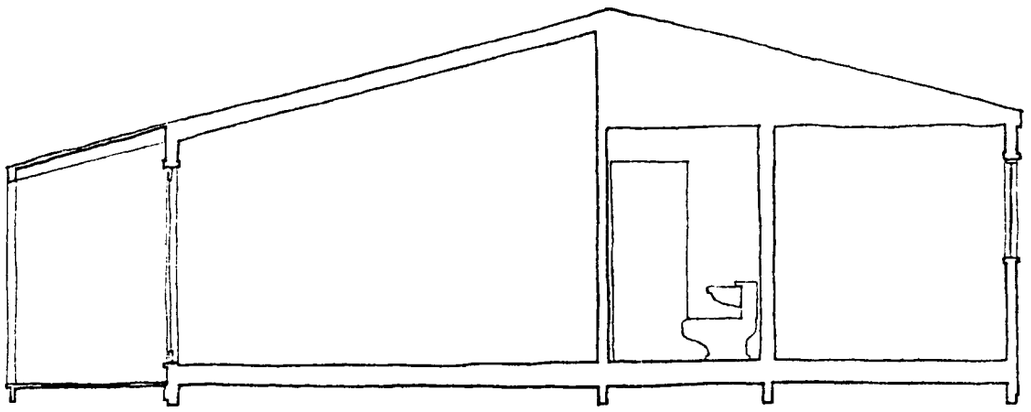
THE MULTIPLE UNITS (cont.)



If the internal space crosses over into the adjoining module, creating overlapping units, greater efficiency of circulation is obtained. The cupboard and bathroom are central, and greater spacial variation and interest is achieved. A private porch off the "living room" area, and an entry porch, are added.

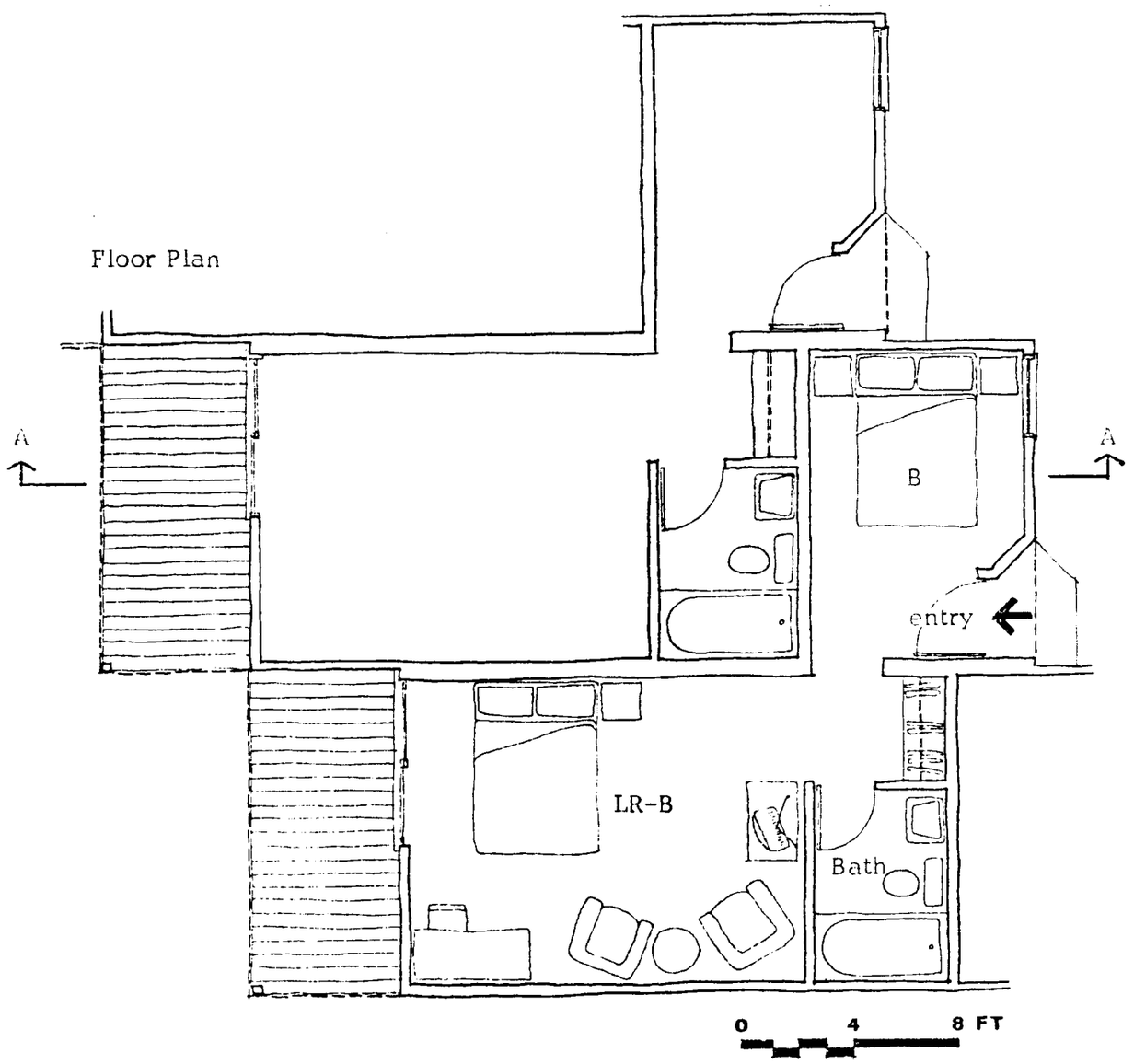
The units can nest in a number of ways, in lines, clusters, or courts. Each unit has its own identity because of the off-setting, while the group has unity as well.

MULTIPLE UNIT: 2+2 PEOPLE, 310 SQ.FT. NET
Plan and Section
Page 50

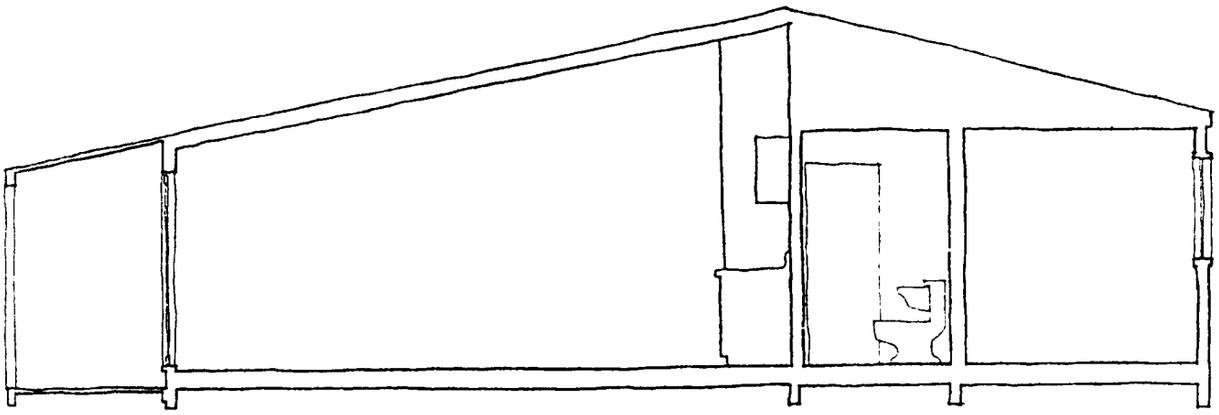


Section " A-A "

Floor Plan

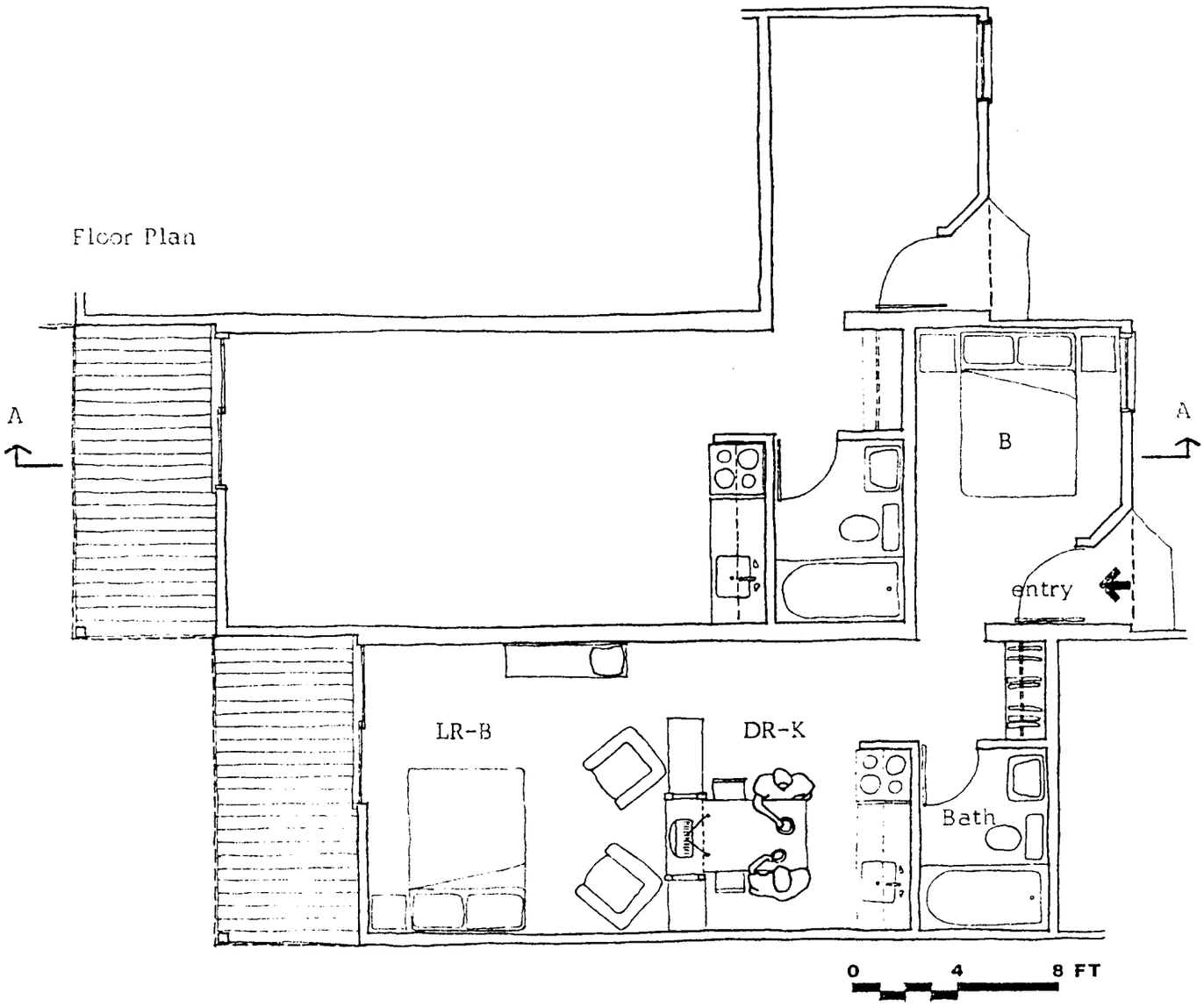


MULTIPLE UNIT: 4±2 PEOPLE, 340 SQ. FT. NET
Plan and Section
Page 5I

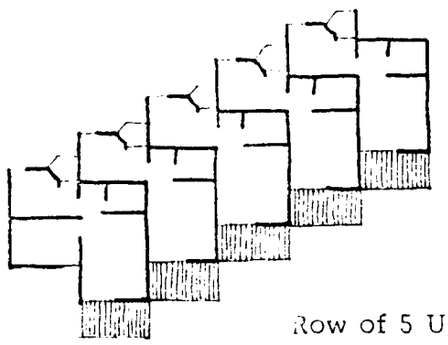


Section " A-A "

Floor Plan

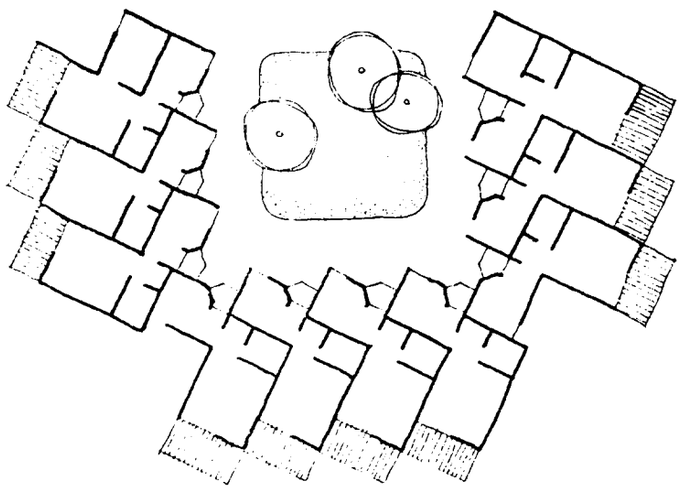


ALTERNATIVE SITE GROUPINGS FOR MULTIPLE UNITS

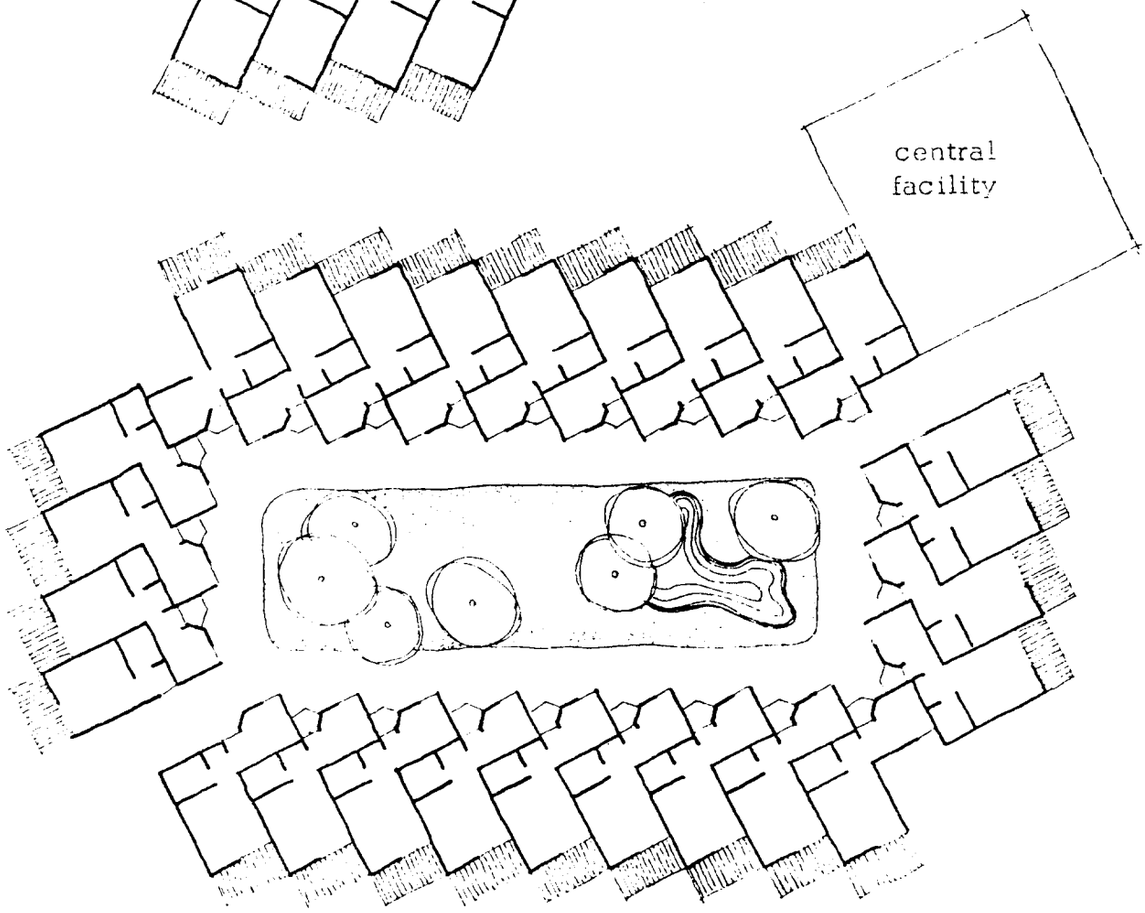


Row of 5 Units

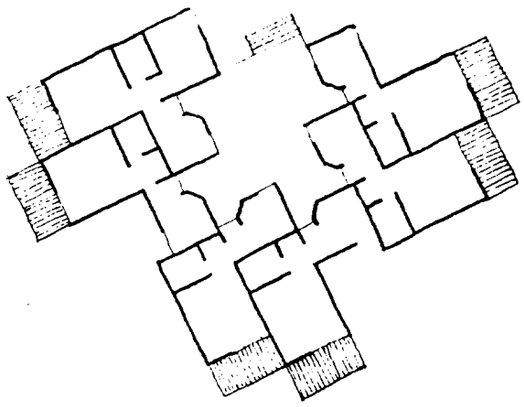
10 Unit Cluster



Courtyard Grouping

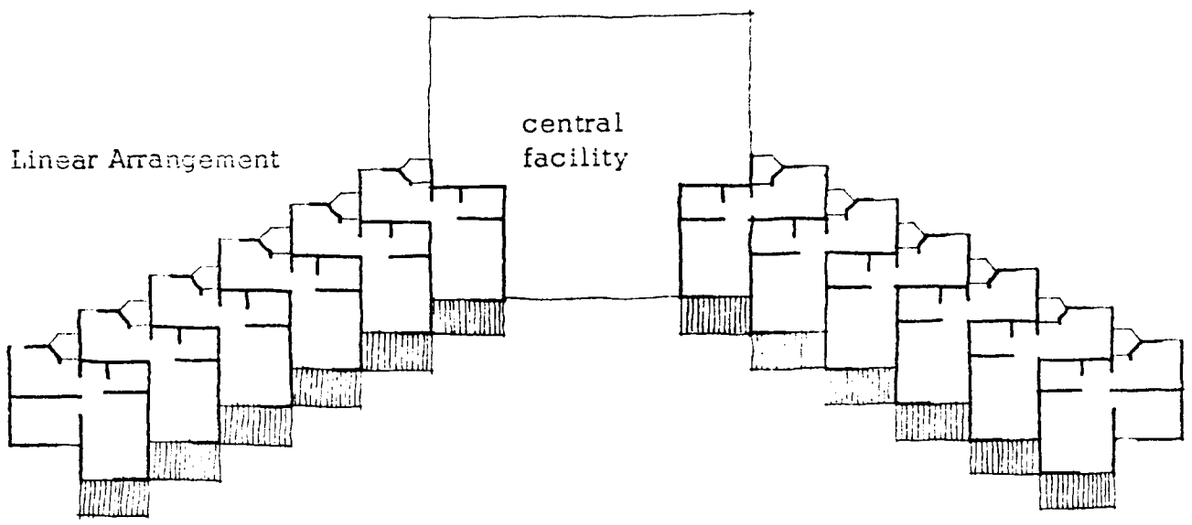


ALTERNATIVE SITE GROUPINGS FOR MULTIPLE UNITS

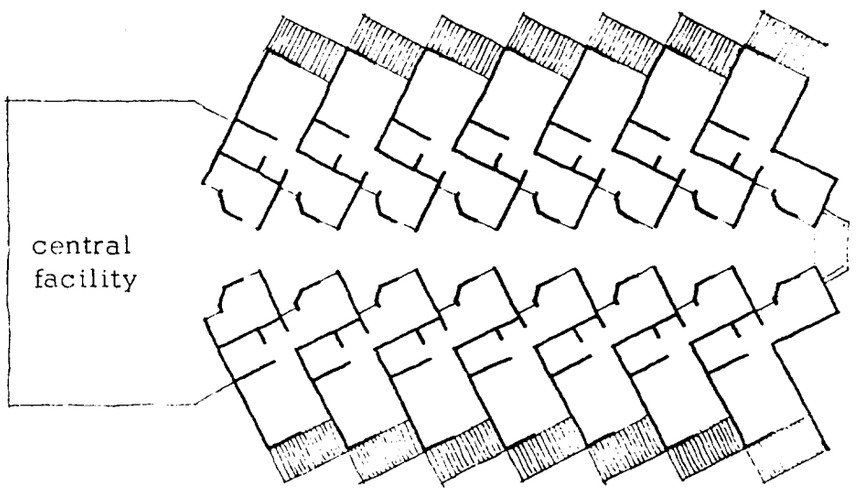


6 Unit Cluster

Linear Arrangement



Corridor Arrangement



THE MULTIPLE UNITS:
PERSPECTIVE VIEWS ACROSS CANADA

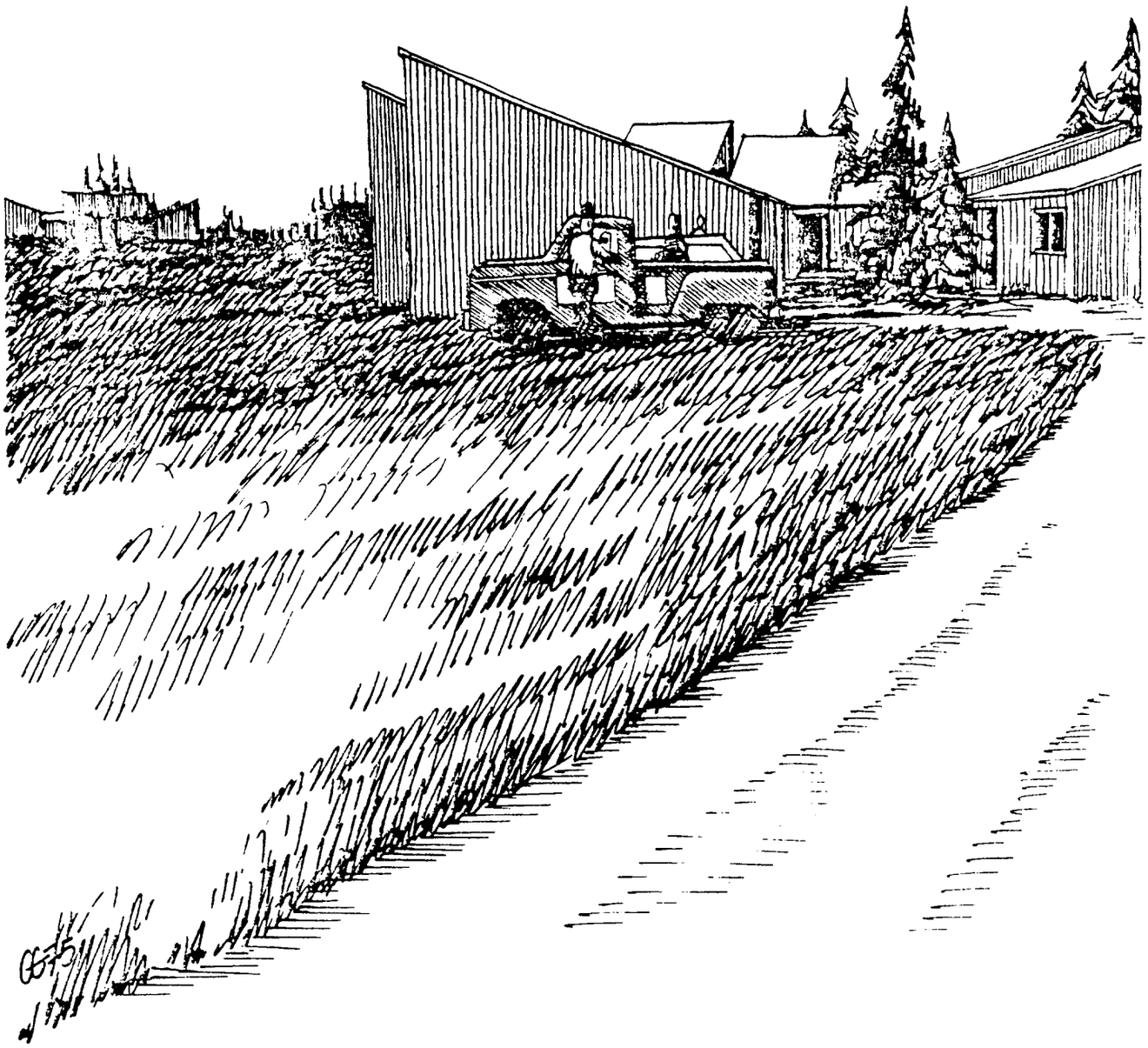
The first view (number 5) shows six unit clusters in a prairie setting. It has a bold shed roof option, and vertical siding.

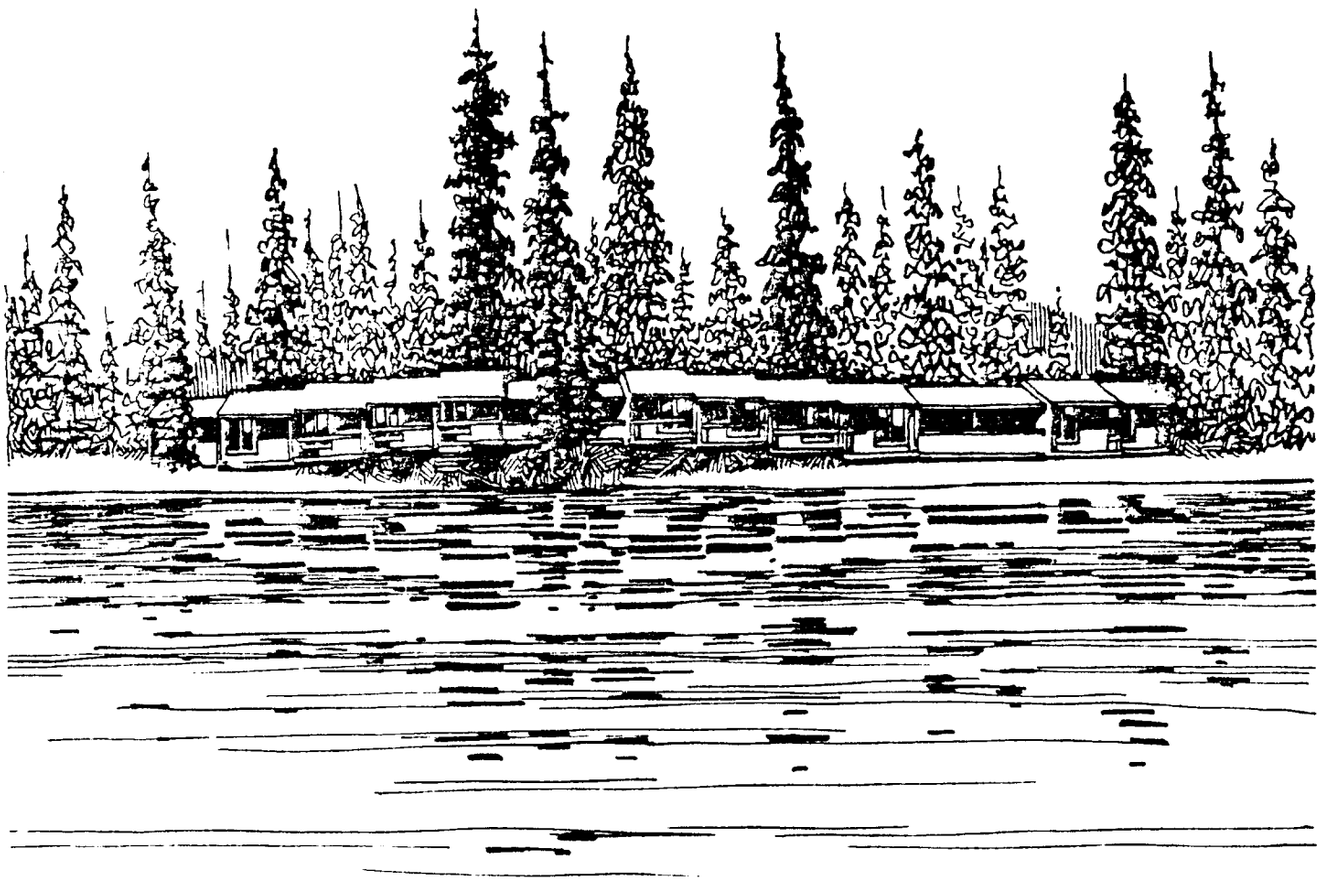
Drawing 6 shows larger groupings in a forest setting, found across most of Canada's recreation land, particularly in the central region. The cladding is rough sawn vertical boarding. The roof is the standard, pitched, option.

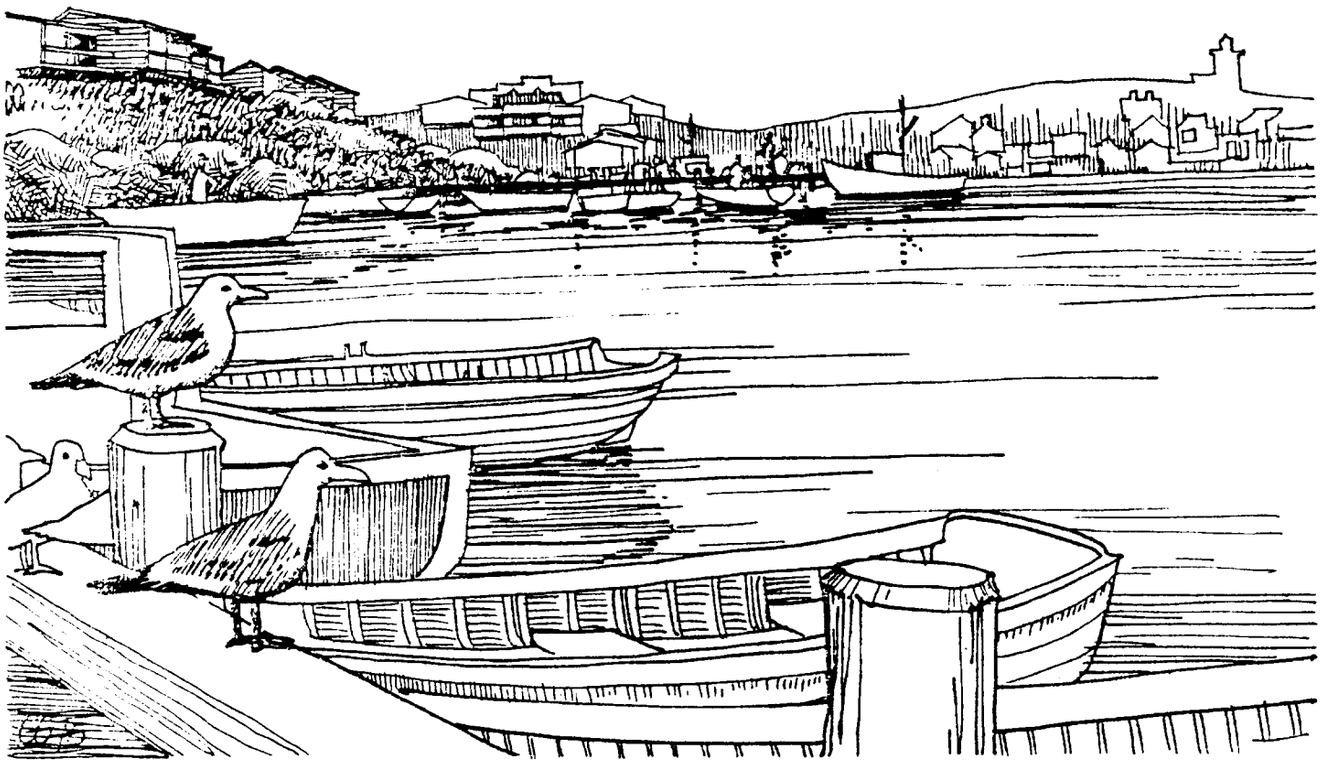
Drawing 7 is of a northern beach, of the linear arrangement. The cladding is plywood.

Drawing 8 shows small linear groups in western mountainous country, with vertical cedar cladding. The windows would likely be larger than usual.

Drawing 9 shows how the clusters would fit into a setting near an eastern seaboard village. It has narrow horizontal siding.







9

THE MULTIPLE UNITS:
MATERIALS, COSTS, AND MANHOURS

The following tables outline material and labour costs for the construction of the two types of multiple units. These units will be satisfactory for summer and shoulder seasons. They are insulated (R7) and have baseboard electric support heating. For winter seasonal use, additional insulation (to R12), storms and full winter heating would be required. The additional costs for these additions are itemized below as a "Winterized Option Package". In summary the costs break down as follows:

STANDARD UNIT

Materials	$2,907.00
Labour 210 manhours x $8.50	1,785.00
Total Cost	$4,692.00

Cost per sq.ft. $14.00

STANDARD UNIT-WINTERIZED OPTION PACKAGE

Insulation-walls:	R7 to R12 - 240 sq.ft. (.054)	$ 12.95
ceilings	R7 to R20 - 370 sq.ft. (.134)	49.60
floors	R7 to R20 - 348 sq.ft. (.134)	46.65
		$109.20

Note: No increase in party walls unless exposed

Storm windows - Aluminim

Materials	1 x $27	27.00
Labour	1 manhour x $8.50	8.50

Storm Door - incl. in basic package price.

(cont'd overleaf)

Baseboard Heaters - allow additional for materials		$ 70.00
" "	7 manhours x $8.50	59.50
	Total Cost	$274.20

EFFICIENCY UNIT

Materials	$3,371.00
Labour 230 x $8.50	1,955.00
Total Cost	$5,326.00

Cost per sq. ft. $12.50

EFFICIENCY UNIT WINTERIZED OPTION PACKAGE

Insulation-walls: R7 to R12 - 245 sq.ft. (.054)	$ 13.25
ceilings R7 to R20 - 460 sq.ft. (.134)	61.65
floors: R7 to R20 - 426 sq.ft. (.134)	57.10
	$132.00

Note: No increase in party walls unless exposed

Storm Windows (Aluminum)

Materials	1 x 27	27.00
Labour	1 manhour x $8.50	8.50

Storm Door - incl. in package price

Baseboard Heaters - allow additional for materials		70.00
" "	7 manhours x $8.50	59.50
	Total Cost	$297.00

Material costs are based on retail prices in an urban centre (Ottawa) in Spring 1975. Prices will vary according to the specific location where the units are to be built. The cost of shipping materials to remote locations must also be considered.

STANDARD MULTIPLE UNIT

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Foundation (assuming crawl space, continuous foundation) - 4 depth				
6" concrete block	368	.41	$ 151	46.7
Mortar	25 c.f.	1.25	31	
Sill Plate & Anchors	70'	.286	20	5.3
Concrete Footings	.75 yd.	25	19	5.1
4 mil Poly Dampproof	340 sq.ft.	.05	17	2.5
Vents	3	1.00	3	(incl.)
Excavate & Backfill		Equip. Rental	$ 75	2.7
			$ 316	62.3
Framing				
Floor				
2 x 8	480 fbm	.178	$ 86	
1 x 4	11 fbm	.168	2	5.3
nails	6 lb.	.30	2	
			$ 90	5.3
Sub-flooring				
½" ply	11 shts.	8.00	$ 88	2.3
nails	5 lb.	.30	2	
			$ 90	2.3

STANDARD MULTIPLE UNIT

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Framing (cont'd)				
Ext. Walls & Part/Walls				
2 x 4	621 fbm	.168	$104	
2 x 6	54 fbm	. 17	9	11.2
2 x 8	30 fbm	.178	6	
nails	20 lb.	. 30	6	
			$125	11.2
Sheath Ext. Walls				
15# Sheath Paper	350 sq.ft.	.02	$ 7	1.7
Partitions				
2 x 4	87 fbm	.168	$ 15	2.2
nails	3 lb.	. 30	1	
			$ 16	2.2
Roof				
½ Trusses	7		$109	
2 x 8	328 fbm	.178	59	10.0
nails	11 lb.	. 30	3	
			$171	10.0
Roof Sheathing				
3/8" ply	14 shts.	5.76	$ 81	
H-Clips	90	.03	3	2.4
nails	4 lb.	.30	1	
			$ 85	2.4
Totals - Framing			$584	35.1

STANDARD MULTIPLE UNIT (cont'd)

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Roofing - Insulation - Ext. Doors - Windows				
Roofing				
Shingles	4.6 sq.	15	$ 69	
Poly Eave Protection	72 sq.ft.	.05	4	4.5
nails	10 lb.	.30	3	
Flashing	36'	.55	20	
			$ 96	4.5
Insulation				
* R-7 Insulation (will depend on region & use)	1100 sq.ft.	.074	$ 81	6.1
Exterior Doors				
2 8 x 6 8 Door	1	58	$ 58	
2 8 x 6 8 Door	1	42	42	5.6
6 0 x 6 6 Patio Door	1	250	250	
			$ 350	5.6
Windows				
(Single Glazed)	1	45	$ 45	1.1
Totals - Roofing-Insulation etc			$ 572	17.3
Services				
Plumbing		(Allowance)	$ 400	9.0
Electricity & Heating		(Allowance)	200	18.0
			$ 600	27.0

STANDARD MULTIPLE UNIT (cont.)

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hour
Exterior Finish				
Siding	310 sq.ft.	.30	$93.00	10.0
Fascia	73 '	.30	$22.00	5.3
Porch, Railing & Steps		(allowance)	$125.00	6.7
Totals - Exterior Finish			$240.00	22.0
Total - Painting			$ 40.00	10.0
Interior Finish				
Walls - drywall & panelling	843 sq.ft.	.15	$127.00	12.0
- bath tile	67.5 " "	1.00	$ 68.00	
			$195.00	12.0
Ceiling - drywall & panelling	400 sq.ft.	.20	$ 80.00	4.7
Floors - polyproplene carpet	245 " "	.60	147.00	2.5
- sheet vinyl	70 " "	.50	35.00	1.0
Int. Doors	1	28.00	$ 28.00	2.5
Misc. trim etc.		(allowance)	$ 40.00	10.0
Attic Party Separation		(allowance)	$ 30.00	3.0
			$555.00	35.7

4 PERSON MULTIPLE UNIT (Efficiency)

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Foundation (Assuming crawl space, continuous foundation) - 4' depth				
6" Concrete Block	370	.41	$152	47.0
Mortar	25 c.f.	1.25	32	
Sill Plate & Anchors	70'	.286	20	5.3
Concrete Footings	.75 cy.	25.00	19	5.2
4 mil Dampproof	436	.05	22	3.2
Vents	3	1.00	3	incl.
Excavate & Backfill		Equip. rental	85	3.0
			$333	63.7
Framing				
Floor				
2 x 8	600 fbm	.178	107	
1 x 4	14"	.168	2	6.6
Nails	8 lbs.	.30	3	
			$112	6.6
Sub-Flooring				
½" Ply	14 shts.	8.00	112	
Nails	6.1 lbs.	.30	2	2.8
			$114	2.8
Ext. Walls & Party Walls				
2 x 4	740 fbm	.168	124	
2 x 6	54 fbm	.17	9	
2 x 8	30 fbm	.178	6	13.1
Nails	25 lbs.	.30	8	
			$147	13.1

4 PERSON MULTIPLE UNIT (Efficiency) Cont'd

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hour
Framing (cont'd)				
Partitions				
2 x 4	104 fbm	.168	$ 18	2.5
Nails	3 lbs.	.30	1	
			$ 19	2.5
Sheath Ext. Walls				
15# Sheath Paper	370 sq.ft.	.02	8	1.9
Roof Framing				
½ Trusses	7		109	
2 x 8	448 fbm	.178	80	11.0
Nails	12 lbs.	.30	4	
			$193	11.0
Roof Sheathing				
3/8" Ply	17 shts	5.76	98	
H-Clips	100	.03	3	2.9
Nails	5 lbs.	.30	2	
			$103	2.9
TOTAL FRAMING			$696	40.8
Roofing-Insulation-Ext. Doors Windows				
Roofing				
Shingles	5.7 sq	15.00	$ 86	
Poly Eave Project	72 sq.ft.	.05	4	5.6
Nails	13 lb.	.30	4	
Flashing	38'	.55	21	
			$115	5.6

4 PERSON MULTIPLE UNIT (Efficiency) Cont'd

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Roofing-Insul.-Doors-Windows (cont'd)				
Insulation				
#R-7 Insulation (will depend on design & use)	1,316 sq.ft.	.074	$ 98	7.3
Ext. Doors				
2'-8" x 6'-8"	1	58.00	58	
2'-8" x 6'-8" screened	1	42.00	42	5.6
6'-0" x 6'-6" Patio	1	250.00	250	
			$350	5.6
Windows				
(single glazed)	1	45.00	45	1.1
TOTALS - ROOFING - INSUL.			$608	19.6
Services				
Plumbing		(allowance)	450	10.0
Electric & Heat		"	200	18.0
			$650	28.0
Exterior Finish				
Siding	320 sq.ft.	.30	96	10.3
Fascia	75'	.30	23	5.5
Porch, Stairs etc.		(allowance)	125	[illegible].7
			$244	22.5

Operation	Quantity (approx)	Unit Cost	Materials Cost	Man Hours
Interior Finish				
Walls				
Drywall & Panelling	1,065 sq.ft.	.15	$160	15.1
Bath Tile	67.5 "	1.00	68	
			$228	15.1
Ceiling				
Drywall & Panelling	435 sq.ft.	.20	87	5.2
Floors				
Polypropylene Carpet	270 sq.ft.	.60	162	
Sheet Vinyl	120 "	.50	60	4.3
			$222	4.3
Interior Doors	1	28.00	28	2.5
Misc. Trim etc.		(allowance)	45	11.0
Kitchen Cabinets		(allowance)	150	2.5
Attic Party Separation		(allowance)	35	3.5
TOTAL INTERIOR FINISH			$795	44.1
Painting		(allowance)	$ 45	11.0

THE MULTIPLE UNITS: FINANCIAL ANALYSIS

In order to evaluate the economic feasibility of these units, the prospective owner should identify the 'Maximum Investment Per Unit' that is justified, for comparison to the costs of the unit as outlined in Section 6. A 'first round' approximation can be made quickly by use of the Nomograph. A sample calculation follows, using typical cost figures:

Assumptions: 90 day season
85% occupancy level
Unit rate $22.00
Minimum of 10 units being operated

1. Gross Revenue (per unit) = 90 x 0.85 x $22,00 = $1,683.00

2. Operating Expenses:

Direct Labor 90 x 0.85 x $1.00	=	$115.00
Maintenance (per season)	=	75.00
Insurance " "	=	23.00
Heat, light, power "	=	22.00
Office operation (tel., stationery)	=	20.00
Supplies (linen, laundry)	=	140.00
Owner Salary & accounting	=	240.00
		$635.00

3. Operating Income Per Unit (1) - (2) = $1,683.00 - $635.00 = $1,048.00

4. Assume Interest Rate 11.0%
Municipal Tax Rate (20mills) 2.0%
Depreciation 6.7% (per year on straight line basis)
19.7%

5. Using the Nomograph, a straight line from $1048.00 on the left scale, through 19.7% on the centre scale, projects to the figure $5,300.00 (±) on the right scale. Therefore, under the given set of conditions the owner should not exceed a cost per unit of $5,300.00 (including land, building, and furniture).