

## Reclaiming the Attic

### Introduction

An attic provides flexible space which can be used in a variety of ways. It can provide storage space, serve as additional sleeping, working or living space for a large family, or be used as a separate rental unit. The “cut-roof” attic, which is assembled on-site and provides ample attic space, was common in Canadian housing until the 1950s. Its successor, the prefabricated roof truss, speeds up construction and uses lumber more efficiently, but prevents the use of the attic space. This study set out to identify ways of re-introducing the use of the attic without losing construction speed or increasing cost. Building habitable attics can make an important difference to the house buyer:

#### 1. Ease the entry into homeownership

First-time buyers can purchase a house with an unfinished attic at a lower cost and develop the attic later. The finishing can be done either by the owner in stages or by contractors at a later date.

#### 2. Increase tenure flexibility

Families change in size over the years. Neighbourhoods also change as communities grow. A family can meet all of its space needs or generate income when they own a house with a developable attic. Children, grandparents or tenants could be accommodated in self-contained areas of the house. This becomes feasible when there is room to expand in the attic.

Habitable attics also offer advantages for builders and municipal governments. Builders can expand their markets by catering to first-time home buyers with an affordable product.

Municipalities can maintain stable neighbourhoods by permitting growth while retaining their original character.

### Research Scope

Known advances in truss manufacturing, composite wood members, roofing materials, panelized building envelopes, and skylights indicated that methods of construction could be developed to regain the use of the attic. The study identified a variety of attic structures of the *pre-50s* era and, applying current manufacturing technologies, proposed construction systems for the attic that are

efficient, cost-competitive and could replicate most of the traditional attic forms.

### Findings

Several truss systems were found to be available which offer both construction speed and low cost. Three of the systems share many desirable attributes for attic construction but system “A” in particular seems to be ideally suited for that purpose (see Figure 1).

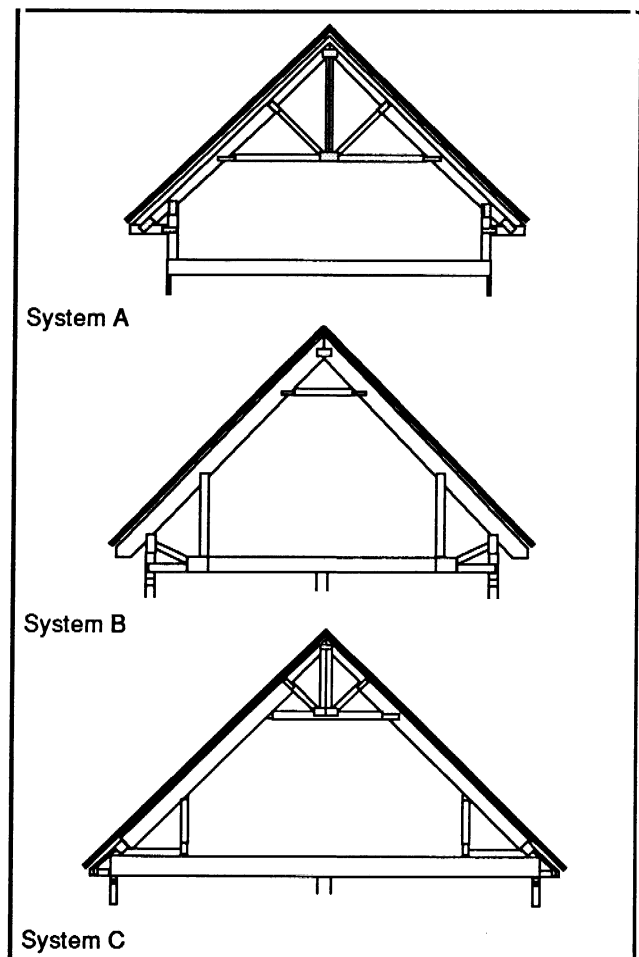


Figure 1

All three truss systems are:  
- engineered and pre-assembled

- comparable in weight to common trusses
- easy to install with common tools
- amenable to skylights or dormers
- easily insulated to code levels
- designed with a pony wall in place

System "A" is also:

- considerably more efficient in the cost per floor area ratio
- easier to insulate and make airtight
- easier to transport and lift, since it can be delivered in two halves
- easier to finish on the exterior, since it provides its own soffit supports

### Cost Comparison

The costs of these three truss systems compare as follows with the commonly used low-pitch truss (calculations do not include land or other costs that would be the same in both cases):

1. Between putting 100 m<sup>2</sup> (1076 sq. ft.) on one floor and one-plus-attic floors:

ONE FLOOR (Bungalow) 100m<sup>2</sup>    ONE FLOOR 60m<sup>2</sup> & ATTIC 40m<sup>2</sup>~2

COMMON TRUSS	SYSTEM "B" AND "C"
<b>Total \$52,426</b>	<b>\$49,540 (\$41,800)</b>
<b>\$524perm<sup>2</sup>(\$49perft<sup>2</sup>)</b>	<b>\$495perm<sup>2</sup>(\$46perft<sup>2</sup>)</b>
	<small>* If attic unfinished</small>

2. Between putting 120m<sup>2</sup> (1290 sq. ft.) on two full floors and one-plus-attic:

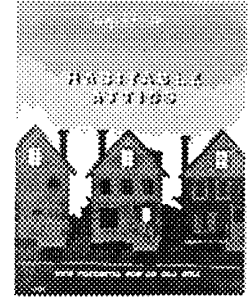
ONE FLOOR (Bungalow) 100m<sup>2</sup>    ONE FLOOR 60m<sup>2</sup> & ATTIC 40m<sup>2</sup>

COMMON TRUSS	SYSTEM 'A'
<b>Total \$56,062</b>	<b>\$51,587</b>
<b>\$463perm<sup>2</sup>(\$43perft<sup>2</sup>)</b>	<b>\$430perm<sup>2</sup>(\$39perft<sup>2</sup>)</b>

These comparisons show that it is more economical to build a house with a habitable attic than either a bungalow or a two-storey house (all costs are in 1989 dollars).

**Project Manager: Fanis Grammenos.**

**Research Report:**  
**Habitable Attics: New Potential for an Old Idea (NHA 6565).**



**Research Consultant: The Hulbert Group**

*A full report on this research project is available from the Canadian Housing Information Centre at the address below.*

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