

II. ROOFTOP UTILIZATION

a) Municipal regulations.

As a result of this project we have been able to identify a number of restrictions and precautions that must be considered when gardening, or any semi-public function, takes place on an existing roof.

The City of Montréal has no specific regulations covering what can, or cannot, be done on a roof, and a building permit for any such construction is issued at the discretion of the Superintendent of Building Permits, on a project by project basis.

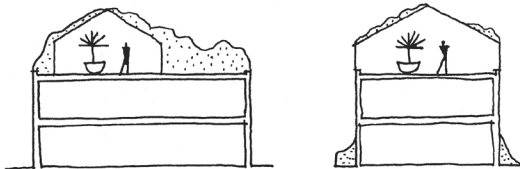
The main concern is with public safety with regard to either anyone falling from a roof, or with material falling from a roof to the sidewalk below.

Single access is considered ample for the roof which in a case of fire is probably the safest place in the building.

b) Rooftop structures & snow-drifting

The construction of large (over 6 feet high) structures on existing roofs is problematic. The National Building Code is quite explicit about the additional loads due to snow drifting caused by any vertical obstruction on a roof. This "drifting area" extends twice the height along the horizontal plane, and increases significantly (up to 3 or 4 times) the additional load that the roof must carry in this particular area.

As a result of this, any large structure, such as a greenhouse, that is built on an existing roof necessitates a strengthening of the roof adjacent to the structure.

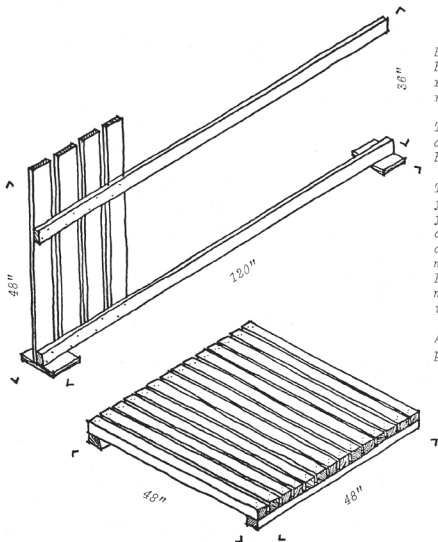


The cost of this roof reinforcing, probably more than the greenhouse itself, would in almost all cases preclude the greenhouse construction.

The one exception to this is the case where the roof is small enough, or the greenhouse large enough, to give 100% coverage. In this event drifting snow would simply fall off the roof and on the ground.

Obviously in new buildings adequate structural precautions could be taken, however the potential for building large greenhouses on roofs in areas with snowfall is distinctly small.

It is our conclusion that any structures built on existing rooftops must either be low enough, or small enough in area, to eliminate any danger of overloading due to snow-drifting.



Balustrades and decking should be built on a modular basis to allow re-arrangement, as well as prefabrication.

The decking modules are 48" X 48" and consist of 16 pieces of two by three, 48" long.

The balustrade modules are ten feet long and consist of four feet long 1" X 6" boards nailed onto 2" X 4" rails. These modules are assembled at right angles, much as old split-rail fences. Plywood pads protect the roofing membrane, and raise the balustrade to allow drainage.

All the wood is painted with preservative stain.

c) Soil-loads.

The imposition of loads due to the weight of soil is the second structural question that arises.

Once again the concern is directed towards existing buildings as new rooftop gardens can be designed to carry additional loads.

The main principle to be followed is to locate the additional soil-load in these areas of the roof which are strongest: along the edges, over structural walls or columns, along major beams. Obviously mid-span locations must be avoided.

This type of strategy will be most effective when dealing with relatively small containers, whose limitations with respect to gardening are discussed in Chapter III. The largest planters, located over columns, should not exceed 3-4 square meters in area.

At the same time the growing medium should be as light as possible - mixtures of soil/perlite/vermiculite/peat moss/compost. Hydroponic gardening is attractive for its light weight and our experiences are discussed in Chapter V.

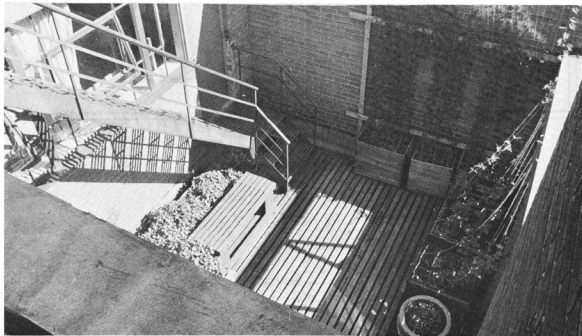
There is no question that large, unbroken areas of soil are superior from the gardening point of view and new structures designed for such loads should definitely take this approach.

d) Safety.

Safety on rooftops is of course a prime consideration but one that is easily dealt with through the use of balustrades, fences and railings. Rooftop gardens tend to be less visible at street level and are therefore less likely to attract vandals than gardens on the ground. It was our experience however that it is very difficult to make the roof completely inaccessible to non-gardeners.

e) Membrane & drainage.

It is necessary at all times to protect the roofing membrane from damage, and, at the same time never to impede the rainwater drainage. This can be done through the use of wooden decks and walkways wherever foot traffic takes place, as well as the provision of sleepers under planters and decking to allow free drainage below.





A view of the rooftop garden above the University Settlement community centre. The photograph was taken in September 1975 and does not show the Solar Cold Frames, windowframe greenhouse and senior citizens' area, which were all completed the following year.

