

## 8. Deconstruction versus demolition

*Definition* – Deconstruction means dismantling buildings with the goal of maximising the reuse potential of its components. Demolition, by contrast, means the razing of a building in such a way that the building components are fit for nothing more than recycling and landfill.

*Process* – Deconstruction uses labour and sometimes mechanical equipment to some extent to disassemble buildings and salvage building components firstly for reuse and secondly for recycling. Demolition on the other hand uses mechanical equipment to tear buildings down converting materials with potential resale value to mixed debris destined for landfill.

*Duration* – Demolition takes a few days while deconstruction takes a few weeks.

*Economics* – the economics of demolition and deconstruction (contractor's perspective) are defined by equations (a) and (b) respectively [22].

- (a) Net Income = (Price paid by owner) – (Pre-Demolition + Demolition + Transport + Disposal)
- (b) Net income = (Price paid by owner + Salvage Value) – (Pre-Deconstruction + Deconstruction + Processing + Transport + Disposal)

The cost of deconstruction ranges between slightly higher than demolition to lower than demolition. Deconstruction can cost the same as demolition when all economical factors are considered i.e. including salvaged material resale value, avoided transport and disposal costs and the associated life cycle costing of landfill sites.

According to equation (a), the net income of demolition can be increased by the increase in the diversion of C&D waste from landfill to recycling. However, the mixed nature of demolition C&D waste would increase the pre recycling costs of sorting and screening, possibly removing the advantage of the exercise (unless of course some source control is practiced – essentially a move towards deconstruction).

According to equation (b), the net income of deconstruction can be increased in two ways viz. training and planning labour activities to make deconstruction and processing more efficient, linking salvage material quality to prevailing market resale value to avoid cases where salvage cost > resale value. Increasing landfill tipping fees will favour deconstruction and have a negative impact on demolition.

There are a number of questions that can be raised to argue the case for promoting deconstruction in favour of demolition. These include:

1. Time vs. employment – deconstruction takes longer because it is a labour intensive process, but it creates more employment opportunities than demolition. If a mandatory waiting period between granting demolition permits and commencing new construction were introduced, the current advantage would be removed from demolition.
2. Labour vs. salvage – the main cost of deconstruction is labour. It can be offset by the resale of salvaged materials. This relationship however, depends on issues such as the state of secondary markets and public perceptions of secondary materials.

3. Disposal *vs.* diversion – the environmental benefits of diverting waste from landfill sites are important and should be included in building assessments (i.e. environmental costs in life cycle costing).
4. Avoided costs *vs.* incurred costs – deconstruction presents an opportunity to avoid C&D waste transport and disposal costs as well as virgin material procurement costs, not to mention the delayed capital costs of landfill closure and new landfill development.