circular economy 2 ...

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Circular Economy 1

  Circular Economy and Regenerative Sustainability

  Circular Economy Principles

  Designing Out Waste

Break

Circular Economy 2

  UKGBC

  Design for deconstruction

  Circular Economy: Building Layers

  Circular Economy Future

Q and A
Video

How the construction industry can apply CE

UKGBC

https://youtu.be/2649GaNmNRg
Design for DeConstruction Principles
An Introduction
10 PRINCIPLES OF DESIGN FOR DISASSEMBLY

1. Document a deconstruction plan
2. Use the Precautionary Principle
3. Design accessible connections
4. Eliminate chemical connections
5. Use bolted/screwed/nailed connections
6. Separate M-E-P systems
7. Design to the worker & labor
8. Simplicity of structure and form
9. Interchangeability (modularity)
10. Safe Deconstruction

by Brad Guy and Nicholas Ciarimboli
How will this building be used, reused, at end of first life

PRINCIPLE ONE: Implement a Deconstruction Plan

Demolition Plan
Deconstruction Plan
Material Conservation Plan
CE Plan
Consideration of future impact
Future human, ecological health
Future value

PRINCIPLE TWO:
Select materials using the Precautionary Principle

Material Strategy
Red List
Declare
Mindful Materials
The precautionary principle states that

if an approach or product has any suspected risk of causing human or environmental harm,

then,

in the absence of scientific consensus that the approach or product is harmful,

the burden of proof that it is not harmful falls on those undertaking the design, specifying or procuring products.
Control of Substances Hazardous to Health???
PRINCIPLE THREE:
Connections that are accessible …

Visually
Physically
Ergonomically
PRINCIPLE FOUR: Eliminate Chemical Connections

Binders, Glues, Sealers,
Increase future health ecological issues
Decrease future reuse potential

Bullitt Centre, Seattle
Red List Compliant
No Toxic Materials
250 year design life
PRINCIPLE FIVE:
Use Mechanical Connections

Bolted, screwed, nailed.
Standard palette of connections
Decrease future health ecological issues
Increase future reuse potential
Improves component repair, upgrade, reuse, recycling

PRINCIPLE SIX: Separate MEP Systems
PRINCIPLE SEVEN: Design to the Human

Human scale components
Improves ease of repair and replacement,
Maintains skill variety

Workhouse Tools, Inglewhite Lancashire
PRINCIPLE EIGHT:
Simplicity of Structure and Form

Simple forms, standard dimensions
Increases flexibility
Ease of future incremental
construction and / or deconstruction
Using materials and systems that exhibit principles of modularity, independence, and standardization to facilitate reuse.

NINE: Interchangeability

Baxall Const. Hankham School, Sussex
PRINCIPLE TEN: Safe Deconstruction

Access
Material Flow
Enable re-use
Improves renovation,
Improves disassembly risk and cost
1. Document a deconstruction plan
2. Use the Precautionary Principle
3. Design accessible connections
4. Eliminate chemical connections
5. Use bolted/screwed/nailed connections
6. Separate M-E-P systems
7. Design to the worker & labor
8. Simplicity of structure and form
9. Interchangeability (modularity)
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Circular Economy
Building Layers
(Exercise)
1. WHAT ARE THE IMPACTS OF LINEAR INPUTS AND OUTPUTS
2. WHAT ARE THE BENEFITS OF CIRCULAR INPUTS AND OUTPUTS
3. What 3 things should we be doing / start doing?

- CE Project Kick Off Meetings
- Design Modular Structures
- Every building has a passport
- Material transparency in procurement
Anything that cannot be replaced, remanufactured or recycled, demounted or re-used – belongs to the old construction world,

not in a new world of circular construction and prostruction
Circular Economy
Futures …
If it can’t be reduced, reused, repaired, rebuilt, refurbished, refinshed, resold, recycled or composted, then it should be restricted, redesigned or removed from production.

— Pete Seeger —
EXTENDED PRODUCT RESPONSIBILITY ...

is a policy or legislative approach under which producers have significant responsibility – financial and/or physical – for the treatment or disposal of their products post-consumer.

Imagine buildings returned to architects / constructors when the building reaches ‘end of life’ ...
Imagine a city where the concept of ‘buildings as material banks’ is fully developed:

• A city where buildings are designed to be easily transformed and disassembled into smaller parts for other purposes!
• A city where information on buildings and building products is shared in order to get building materials and products into valuable technological and biological cycles and eliminating the concept of waste
• A city where circular businesses are thriving by creating mutual benefits for building professionals, manufacturers, financers and building users through sustainable product service systems.
Working Towards a New Sustainability ... Healing the Future.

Imagine a built environment that not only provides function, but improves people and planet health, enriches prosperity for all, and is more beautiful than the one we have today.

Martin Brown. FutuREstorative
SOURCES

FutuREstorative (B)
Cradle to Cradle - Remaking the Way We Make Things (B)
Building Revolutions (B)
The ReUse Atlas (B)

Helen MacArthur Foundation (Web)
BAMB Buildings as Material Banks (Web)
Living Building Challenge (Web)

Circular economy guidance for construction clients (PDF)
Designing Out Waste (PDF)
RIBA Plan of Work / Sustainability Outcomes (PDF)
RESTORE Publications (PDF)
Design for DeConstruction (PDF)