



MEJS

INGENIEURS & UITVOERING



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CIRCULAR OPPORTUNITIES

UTILISE THEM ALREADY
IN THE DESIGN PHASE
OF A BUILDING



CIRCULARITY AS A STARTING POINT

Sustainable building does not begin on the construction site, but at the design table. In a time when circularity is increasingly being identified as a precondition, it is essential to make this ambition concrete. Yet the inclusion of a circular building specialist in the construction team is not yet self-evident.

This knowledge document provides insight into how circularity can take practical shape within design processes and which steps are needed to safeguard reuse, CO₂ reduction and circular materialisation from the first plan onward.





CIRCULARITY IN THE CONSTRUCTION TEAM

A construction team typically involves a wide range of specialists: structural engineers, installation technicians, building physics consultants. The circular consultant is a valuable addition. Not as a replacement for existing disciplines, but as a connecting link that places materials, origin, detachability and impact at the centre. The goal: designing and building with attention to the entire life cycle. And that begins with insight.



“THE CIRCULAR CONSULTANT IS A VALUABLE ADDITION. NOT AS A REPLACEMENT FOR EXISTING DISCIPLINES, BUT AS A CONNECTING LINK THAT PLACES MATERIALS, ORIGIN, DETACHABILITY AND IMPACT AT THE CENTRE.”

WHAT IS A MATERIAL PASSPORT?

A material passport is a digital overview of all materials used in a building, including their properties, quantities, origin, connections and detachability. It makes materials traceable throughout the life cycle of a building and forms the basis for future reuse, valuation or accountability obligations (such as CSRD).

WHY DETACHABILITY IS ESSENTIAL

Detachability determines the extent to which materials can be easily dismantled and reused in the future. The more easily an element can be dismantled (without damage or loss), the higher it scores on the circular R-ladder. The report “Circular Buildings” by CB’23 provides a methodology for this. Think of dry connections, click systems or screw-based fixings instead of gluing or sealing.

PLATFORMS FOR REGISTRATION – INSERT AND MADASTER

Insert is a digital marketplace for reusable building materials. Madaster serves as a materials library and cadastre. By directly linking data from the material inventory to these platforms, the visibility and usability of materials are increased. At the same time, it contributes to recording material value, circularity and environmental impact.

MATERIALS AS A STARTING POINT: THE INVENTORY

Often in a design we only focus on the new building and forget to consider the demolition of the existing building at that same location as part of the project. Such a building can be a goldmine of materials that may find a place in the design. We view demolition and construction as one integrated project, but with a pragmatic approach.

A crucial step in circular design is preparing a material inventory. This forms the basis for a material passport. This involves looking not only at new building components, but also at materials from existing buildings that may be suitable for reuse. A thorough on-site analysis, combined with available construction drawings and environmental reports (such as those on asbestos, soil quality or chromium-6), forms the foundation for reuse scenarios.

The result is a data-driven overview including dimensions, material types, weights, connection types and dismantlability per element. This overview also includes codings according to NL-SfB and Eural. The data can be used in platforms such as Insert and Madaster. This makes circular building measurable and traceable.



**“THIS MAKES
CIRCULAR BUILDING
MEASURABLE AND
TRACEABLE.”**





ADVICE WITHIN THREE THINKING DIRECTIONS

Based on the inventory and additional analysis, an integrated advisory plan can be established. We distinguish three directions which together form the circular chapter within the construction plan.

CIRCULAR OUTFLOW TO THE MARKET

Not all materials from the demolition will return in the new building. Yet they provide a concrete contribution to circularity elsewhere in the market. Think of steel, brick or wooden beams that are reused in other projects. This contributes to the environmental impact of the project.

APPLICATION FROM THE DEMOLITION INTO THE NEW BUILDING

When it is possible to directly integrate materials from the existing building into the new design, a unique form of closed loops emerges. Think of reusing stairs, window frames or façade materials.

CIRCULAR SOLUTIONS FROM THE NETWORK

Materials that do not come from the demolition but are circularly produced can also become part of the new building. This requires collaboration with suppliers who deliver circular building products, including assurance of quality and supply reliability.

By considering these three lines integrally, a robust strategy for circular materialisation within the design emerges.

MAKING IMPACT VISIBLE

The circular ambitions of a design become tangible only when the environmental impact is calculated. For materials that are used in a circular way or reused, a CO₂ analysis can be carried out. This shows how much emissions are avoided compared to traditional applications. These data can also be used for accountability to clients, policymakers or financing parties.



Reuse of concrete stairs or floors saves an average of **70-80 percent** CO₂ compared to new



Reuse of brick (without crushing) saves approximately **85-95 percent** CO₂



Reuse of wood saves **50-60 percent** CO₂ and promotes longer CO₂ storage in the chain

CONCLUSION

Circularity is not a separate part of a construction project, but a mindset that connects design and execution. By incorporating materials, origin and detachability into the planning process from the start, room for smart choices emerges. With a clear inventory, a practically applicable advisory plan and measurable impact, a foundation is created for truly circular building.

CURIOUS HOW CIRCULAR YOUR DESIGN ALREADY IS?

Contact us for a no-obligation introductory meeting or visit our information centre.



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