



# Closing Loops

Student Competition for Circular  
Buildings

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**Aalto University  
School of Arts, Design  
and Architecture**

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# 1 Invitation to participate

The City of Helsinki organizes together with Aalto University's Department of Architecture a student competition for the design of a warehouse concept based on reused parts. Helsinki aims to replace the temporary containers serving the storage needs of the city's sports facilities with permanent storage buildings. The aim of the competition is to find a concept of cold storage buildings that is suitable for numerous locations, built from reused building parts, and meritorious from an urban perspective. The warehouse building concept must be flexible to different sizes depending on the location. The construction design and building of the first warehouse to be built from reused parts is tentatively scheduled for years 2023–2024. The competition invitation has been published on the email lists of the students of Aalto University's Department of Architecture and Department of Civil Engineering and on the competition's website.

## 1.1 Competition format

The competition is an open student competition for architecture students of the Department of Architecture and students of the Department of Civil Engineering who are in the bachelor or master phase of their studies on the return day of the competition. The competition languages are Finnish and English. In cases of incoherence, the Finnish documents are valid. All competition documents are prepared in both languages and proposals can be prepared in either language. Accepted competition entries will only be awarded 2 credits for each group member against an application sent after the award ceremony.

The competition will start on 12 October 2022 with an opening seminar. The opening seminar will be held in Väre (F102) at 17:00–18:00. It is possible to participate in the seminar remotely. Only the participants who are present can ask questions. The opening seminar will be recorded. The link for remote participants of the seminar is published on the competition's website.

## 1.2 Right to participate

All participants must be bachelor or master degree architecture students of the Department of architecture or students of the Department of Civil Engineering. The working group submitting the competition entry can consist of a single student or a group of several students. The size of the working group is not limited. The working group can consist of a student or students from one or more study departments. Each participant can only belong to one working group. Each working group can return only one proposal. Only Aalto University students are eligible to participate.

Jury members, their business partners or close relatives cannot participate in the competition. Persons who have participated in the preparation of the competition project to such an extent that they have a significant starting point advantage compared to other competitors are also prohibited.

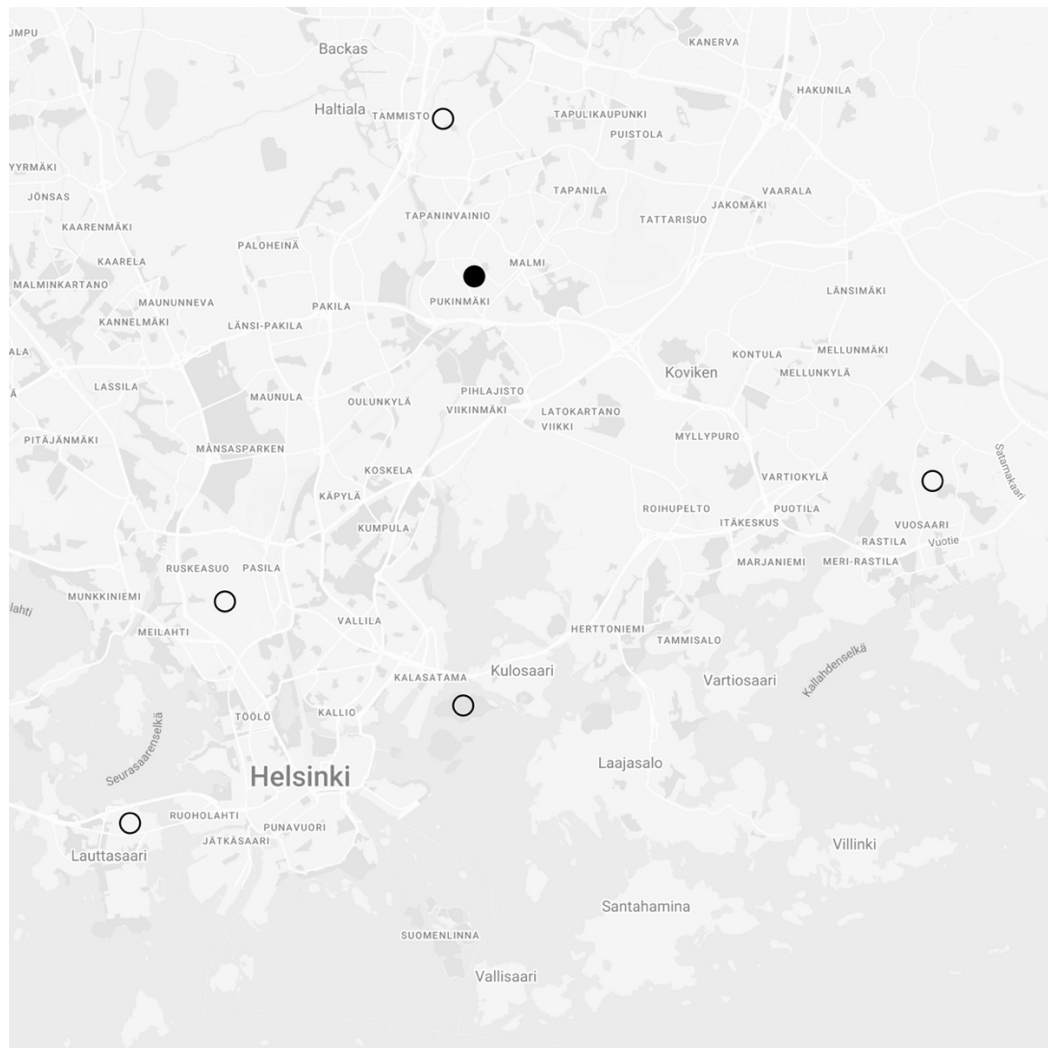


## 2 Goals of the competition

The goal of the competition is to find a concept for a cold storage building that is suitable for numerous locations, built from reused building parts. The concept should present a solution of three warehouse buildings of different sizes.

Facade solutions for warehouse buildings must be customizable according to the available demolished materials and the needs of the surrounding cityscape.

The concept of warehouse buildings must utilize the resources of the demolished and the most common demolition material flows. The warehouse concept should aim towards for a low-carbon, resource-efficient and architecturally high-quality functional entity.



*Possible warehouse concept locations in Helsinki.  
Competition location is marked with a black dot.*

## 3 Competition location

### Concept

The warehouse buildings are to be located near Helsinki's sports parks, arenas and other sports venues to serve their storage functions. Pukinmäki sports park has been selected as the location of the competition to illustrate the usual situation of the warehouse building concept (appendix 3). The exact location of the first storage building to be implemented will be specified after the competition.

### Pukinmäki sports park

The Pukinmäki sports field, which preceded the current sports park, was completed in the 1930s. The sports field had an exceptionally short track, which was only 350 meters long.

The current sports park was built on top of the old field in the 1980s. The sports park is open all year round and offers a variety of exercise opportunities for city residents and clubs. Liikuntapuisto's first field currently has 2 000 audience seats.

The sports park is regularly updated to meet the needs of the times. At the time of writing the competition program, the park's running tracks are being renovated, and the park is not open to the public.

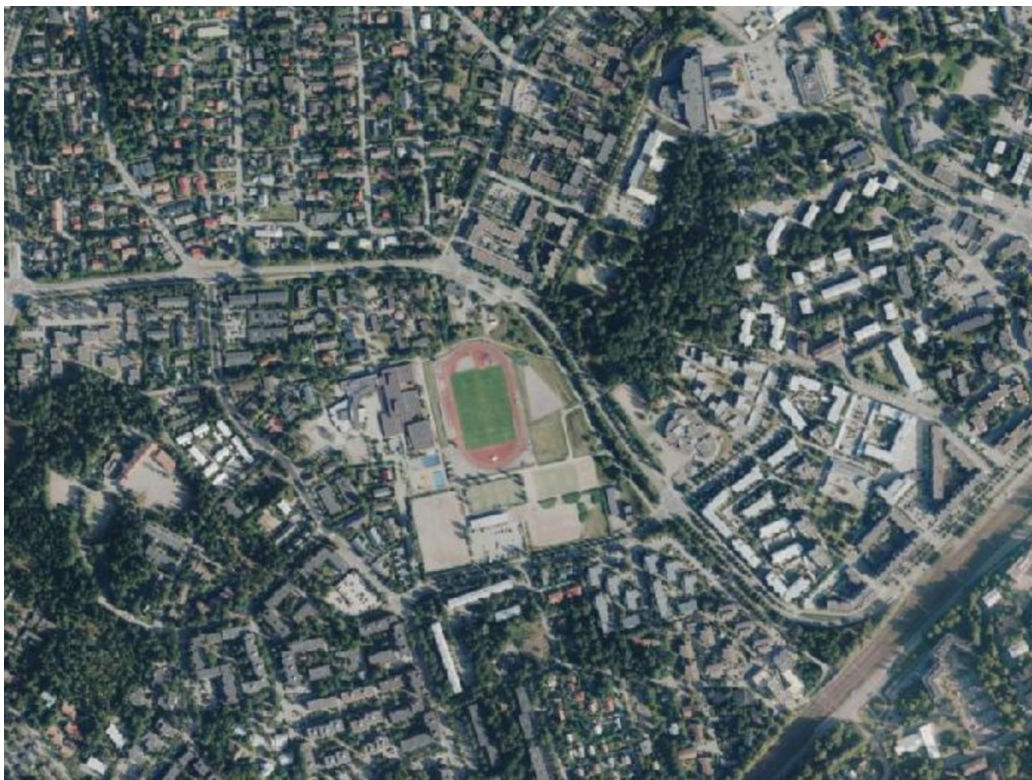


*Pukinmäki sports field 1950.*





*Pukinmäki Sports Park 1988.*



*Pukinmäki sports park 2019.*

## 4 Design instructions

### 4.1 Objectives

In several Helsinki sports venues, there are currently insufficient storage spaces for the storage of seasonal furniture and equipment, supplies, maintenance materials, work tools, small work machines and accessories for work machines required for the care, use and maintenance of the areas, or for seasonal storage outside the operating season.

The competition seeks a concept that solves the described needs. The goal is a clear, simple, sturdy, dry and cost-effective, cold storage space with natural ventilation and the possibility of placing free-standing storage shelves and, on some walls, also attached to the wall's support structures.

The equipment, materials, equipment and machines to be stored are e.g.:

- Loose furniture and equipment for athletics performance venues needed by different sports, such as jumping racks, landing spots cushions, running track equipment, etc. furniture and equipment
- Sports equipment for different sports, such as javelins, etc.
- Seasonal furniture and equipment for different ball sports, such as hockey goals, soccer field equipment, etc.
- Field maintenance and field markings, equipment such as meters, paint and chalk carts, etc.
- Various work machines, such as miniature tractors, lawn mowers and other motor-driven machines and equipment
- Additional equipment for machines
- Handheld tools and carts such as wheelbarrows
- Audio equipment
- Fertilizers, lime and other similar materials
- Gauzes, blankets, tarpaulins
- Various nets and repair materials
- Summer storage of hockey rink parts

## 4.2 Space requirements

The space requirement is based on the size of the exercise area/place and the need for storage

- Small storage building approx. 70 m<sup>2</sup>
- Medium-sized storage building approx. 130–150 m<sup>2</sup>
- Large storage building approx. 210–240 m<sup>2</sup>

A medium-sized warehouse building is expected to the site of the Pukinmäki sports park.

The warehouse should be rectangular, so that the depth of the warehouse is 6–7 meters and the length is 10 meters (small warehouse) / 20–21 meters (medium-sized warehouse) / 31–32 meters (large warehouse).

One of the long walls must have 3-meter-wide doors that are next to each other all the way, so that there is good access to the interior parts along the entire length of the storage building and easy access to all materials and equipment, and the doors can fit a tractor, property maintenance machine and a light truck. In addition, the warehouse should have 1–2 personnel access doors. All doors must be lockable and have a hold-open mechanism to ensure that the doors remain open during the material movement procedures.

In smaller warehouses, the interior space should be as uniform as possible; in the largest ones, the space can consist of 2–3 separate indoor spaces.

The inside height of the warehouse must be at least 3 meters on the side of the wide doors, so that one can drive directly into the canopy with a tractor or property maintenance machine for bringing in and taking out materials and furniture. On the other long wall side, the interior height can be slightly lower than this if necessary. The factors determining the height are the size of the equipment used for transportation and transfers, as well as the material and goods loads to be lifted and transported. The floor of the warehouse must be hard and load-bearing and should be easily kept clean. The height of the floor should be slightly higher than the surrounding ground surface, about 100–200 mm, so that spring meltwater and stormwater from heavy rains cannot enter the warehouse building.

In the storage building, the inside parts must be lit and above the entrances there should be outdoor lights, energy-efficient LED lighting. The interior parts of the warehouse should have the availability of operating electricity.

The goal is the possibility, on a case-by-case basis, to place a summer water point connected to the seasonally operated water pipes of a nearby sports venue in connection with the warehouse. If there is a year-round water pipe within a reasonable distance, you can also consider placing a winter water pipe in connection with the storage shed on a case-by-case basis.



### 4.3 Exterior areas

There must be direct driving access to the warehouse building with a tractor or property maintenance machine. Yard areas vary according to location. The location and site map of the competition area building are attached to the tender documents

### 4.4 Utilization of reused parts

The competition searches for solutions for utilizing the available demolished construction waste streams as part of construction in accordance with the goals of the circular economy, architecturally meritorious design, and a low lifetime carbon footprint.

The architectural expression of the competition entry is an essential part of the standardization of the utilization of reused parts and the public debate that arises by the new architecture it generates.

When utilizing reused parts and materials, the value of reuse should be taken into account from the perspective of the building's entire carbon footprint and environmental load: a reused frame means more than reused coatings.

The reused parts and materials must be durable, serviceable, replaceable and, at the end of their purpose, easily removable and reusable.

The dismantled construction materials already owned by the city are listed in appendixes 07a & 07b. The appendix is indicative of the estimated material quantities required by different warehouse sizes and maps the dimensions of the elements after their demolition. The report does not bind the competitors. Competitors are encouraged to propose the elements of houses 1 and 2 that they want to reuse in the amount, scope, dimensions and ways they want to meet the needs of their concept. Additional shortening of the wall elements is possible, but the competitor should take into account the high costs of diamond sawing in terms of the feasibility of the concept. In addition to the already existing disassembled parts, the contestants have the opportunity to propose the utilization of the parts of the to-be-demolished kindergarten from appendix 08.

Competitors can, if they wish, propose other building parts to be utilized in addition to the already available parts and the resources of the to-be-demolished kindergarten. These parts should be selected through the perspective of concept's scalability and according to the dominant Finnish demolition waste streams.

## 5 Evaluation criteria

The jury will emphasize the following points in evaluation:

Architectural quality and overall impression

- The value and quality of circular economy based architecture and the ability to create meaningful built environment

Cityscape solution

- Urban quality and suitability
- Flexibility for different urban environments

The replicability of the concept for the utilization of demolished construction waste streams

- Availability of reused parts and scalability of the concept

The extent of reuse of parts and the durability of the solution

- The relevance and extent of reuse of building components
- Entire life cycle carbon footprint
- Repairability and maintenance

Reusability of the building at the end of its intended use

- Solution's readiness for design for disassembly
- Enabling the further reuse use of reused parts

Adaptability and development potential of the proposal

- Flexibility of the concept to of different storage sizes and different environments

The quality of the technical and economic solutions

- The practicality and effectiveness of the solution according to the competition brief
- Construction methods, durability of use and maintenance

The merits of the overall solution are considered more important than the flawlessness of partial solutions or details.

## 6 Competition process

### 6.1 Schedule

The competition starts	12.10.2022
Competitors' questions submitted	30.11.2022
Answers to competitors	14.12.2022
Submission deadline	27.1.2023
Competition entries on display	1.2.-28.2.2023
Announcing the results and awarding prizes	2.3.2023
Exhibition of awarded entries	3.3.2023-

### 6.2 Competition documents

The competition documents can be downloaded from the competition website at:  
<https://cc.tietoa.fi/helsinki/closing-loops>

01a\_kantakartta\_(Map).dwg  
01b\_kantakartta\_(Map).pdf  
02\_sahko\_vesi\_viemari\_(ElectricityWaterSewage).pdf  
03\_sijainti\_(Location).pdf  
04\_ilmakuvat\_(AerialPhotos)  
05\_kuvasovituspohja\_(ImagePlate).jpg  
06\_kuvatiedot\_(ImageData).pdf  
07a\_Laakson\_irrotettavat\_ontelolaatat\_(LaaksoDetachedHollowCoreSlabs).pdf  
07b\_Laakson\_irrotettavat\_seinaelementit\_(LaaksoDetachedWallElements).pdf  
08\_Tahvonlahti\_purettava\_paivakoti\_(ToBeDemolishedDaycare)

### 6.3 Questions about the competition

Competitors can request explanations and additional information about the program. Questions are submitted anonymously via the competition's website according to the schedule (section 5.1).

The questions and answers to the questions will be published on the competition's website according to the schedule (section 5.1).

### 6.4 Jury

Mari Koskinen, City of Helsinki (Project Leader, Architect, SAFA)  
Jarmo Metsälä, City of Helsinki (Contractee, Project Manager)  
Hannu Airola, City of Helsinki (Green area and nature expert, Project Manager)  
Antti Lehto, Aalto University (Assistant Professor, Architect, SAFA)  
Havu Järvelä, Aalto University (University Teacher, Architect, SAFA)  
Matti Kuittinen, Aalto University (Professor, Doctor of Science, Architect)

Emilia Syväjärvi (kiertotalousklusteri@hel.fi) acts as the secretary of the competition. Jukka Lahdensivu (Civil Engineering) and Eeva Jalovaara, (City of Helsinki, Special Planning Officer, Architect, SAFA) will also be heard as an expert in the review. Other experts than the ones mentioned in this document can be heard. Experts and the secretary do not participate in decision-making and do not have the right to participate in the competition.

## **6.5 Presentation of competition proposals**

The awarded proposals are rewarded 2.3. at an event in Kaupunki ympäristö talo (Työpajankatu 8, Helsinki) 15:30–17:30.

Awarded and honored competition proposals are presented in Kaupunki ympäristö talo from 3.3. The duration of exhibition is 2-3 months and ending date will be clarified later.

## **7 Rewards and follow-up after the competition**

### **7.1 Awards**

12 000 euros will be distributed as prizes as follows:

I prize	7 000 euros
II prize	3 000 euros
III prize	2 000 euros

The circular economy cluster of the city of Helsinki has applied for tax exemption for the awards for the year 2023.

The jury can distribute the prize amount differently by unanimous decision. The jury can also award honourable mentions if it wishes.

### **7.2 The solution of the competition and the announcement of the results**

All entries will be graded and divided into categories. A public evaluation document is published, which includes a general evaluation of the competition as well as a proposal-specific evaluation. The results of the competition will be announced according to the schedule (section 5.1), after which the judging protocol and the awarded and honoured works will be displayed.

### **7.3 Follow-up after the competition**

The jury gives the competition organizer its recommendation on further actions based on the competition result. The goal is to carry out further planning in cooperation with the authors of the winning proposal as part of Aalto University's research project on reused building parts. The commission is made by the city of Helsinki. Further planning will be discussed with the winner separately after the prize distribution. The aim is to start planning the project immediately after the announcement of the competition results.

### **7.4 Right to use competition proposals**

The competition organizer has ownership rights to the awarded competition proposals. Copyright remains with the authors of the proposal. In addition, the competition organizer has the right to publish all proposals on the competition website, as well as in exhibitions and publications. The recipient of a possible assignment has the right to use the topics and ideas of the awarded proposals in accordance with the Copyright Act. In connection with the publication, the author of the proposal is always mentioned, with the exception of proposals that are published anonymously during the competition.



## 8 Preparation and submission of the competition entry

### 8.1 Preparation of the competition entry

The competitor prepares the competition entry to be returned in electronic form. The material consists of A4-sized written description and A3-sized image pages. All files must be provided with a pseudonym of the entry and the files must not contain identifiers related to the author.

Sketch-level concept plans are returned as visual material. They are delivered as a single PDF file containing 5 horizontal, A3-sized (420 x 297 mm) pages. The documents do need to include a pseudonym of the entry. The resolution of the files is 300 dpi and the maximum size is 30 MB.

### 8.2 Page-specific instructions

#### Page 1

*Perspective image and written description*

The overall idea, materials and facade treatment of the competition entry are described with a perspective picture of the competition entry embedded to the given image template (appendix 6). The provided perspective image can be cropped if necessary.

Written description is to be returned both as a separate PDF and as a part of the five A3-pages. If desired, the content of the written description can be illustrated on this page with small legend diagrams or pictures.

#### Pages 2–3

*Floor plans and facade drawings 1:100*

Floor plans are presented separately for each warehouse unit sizes (3 different sizes). The floor plans show the height of the floor in relation to the ground surface, the module dimensioning of the structural division, the legends of the structures, the overall dimensions of the building (length, width), the places of sections, the purposes of use of the premises and any other markings that clarify the purpose of use.

Facades should be coloured and lightly shaded; angle of shadows 45°. The materials of the facade should also be explained with material descriptions.

#### Page 4

*Site plan 1:200 and sections 1:100*

The site plan shows and describes the connection to the environment, entrances, canopies and shelters, vegetation, maintenance, and pedestrian arrangements, as well as the most important heights for the assessment, with accuracy appropriate to the scale. The competition plot and surrounding areas are shown lightly shaded, the angle of light relative to the ground surface is 45°, the shadows are towards northeast.

Section drawings are presented with height markings, slope angles, modular divisions of structures and overall dimensions. Explanations of the structure types are described in the sections.

## **Page 5**

### *Facade projections 1:20 and other documents*

In its proposal, the working group must present facade projections from a typical façade part on a scale of 1:20. The concept must adapt to different dimensions and environments, as well as different demolition material flows. For this reason, facade projections are presented in colour and with at least two different facade materials. The façade projection should describe the qualities and processing of reused materials.

If needed, the competition entry can include idea pictures describing the nature of the solution (sections, axonometric projections, vignette drawings) of the arrangements of the concept in the scope it is considering, within the available page space and maximum number of pages.

## **8.3 Written description**

In addition to the A3-pages, the written description is returned as a separate PDF file. The length of the description is a maximum of 3 000 characters including spaces. The description (1) is returned without pictures as a separate A4-sized PDF page with a maximum size of 1 Mb (2) is included in the A3-pages and (3) is copied to the text field in the competition web page.

The written description explains the overall idea of the competition entry. The description must contain at least:

- description of design solutions related to building part reuse
- description of the concept's different facade solutions and adaptability to different locations
- functional solutions of the warehouse buildings

## 8.4 Submission of proposals

The competition ends according to the schedule (section 5.1). The files of the competition entries must be submitted by 15:00 (Finnish time) via the competition website:

<https://cc.tietoa.fi/helsinki/closing-loops>

The name, address, e-mail address and phone number of the authors are reported to the competition web page. In addition, it must be stated who owns the copyright of the competition entry.

When returning a competition entry, you get a secret code from the competition page. With this code, the competition entry can be modified and updated throughout the competition period. It is recommended to upload an up-to-date version of the competition entry well in advance of the deadline and update the proposal as it progresses. Last-minute returns can put excessive load on the competition web page, and this is not recommended.

Competition entries returned late, or submitted not according to the return instructions, will not be accepted. Competitors are encouraged to submit their proposals well in advance before the submission deadline. One receives a confirmation from the competition web page of a successful entry.

