



Aalto University

AutoCAD – lecture 2

27.09.2021

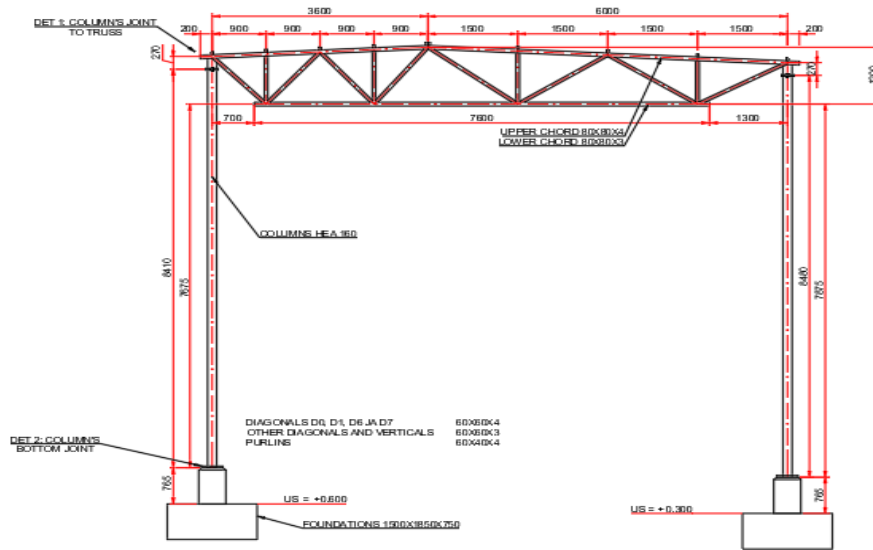
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Assignment 2: Cross Section

- Returned files:
 - AutoCAD drawing (.dwg)
 - PDF printout of the drawing
 - Edited plot style file (.cbt)
 - Initial model drawing
 - Text file obtained from the checker
- Everyone has **personal** initial values
- Deadline **during week 39**
- Grading scale is passed/failed
- Familiarize yourself with the assignment grading criteria!

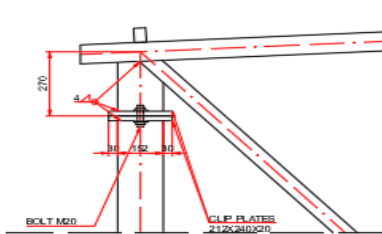
Cross Section

SECTION A-A, 1:50

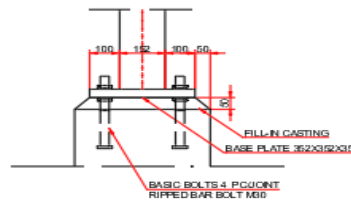


STEEL GRADE: S235H
TUBULAR BEAMS: RAUTARUUKKI

DET1, 1:10

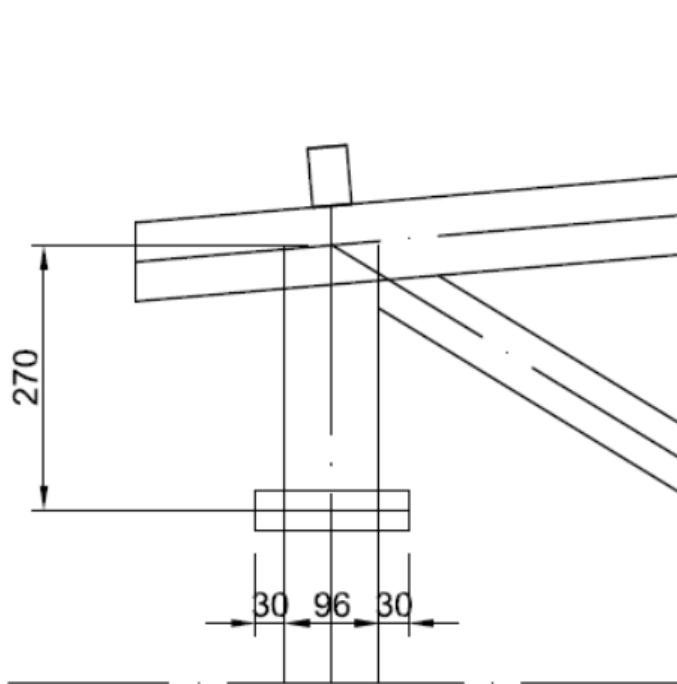


DET2, 1:10

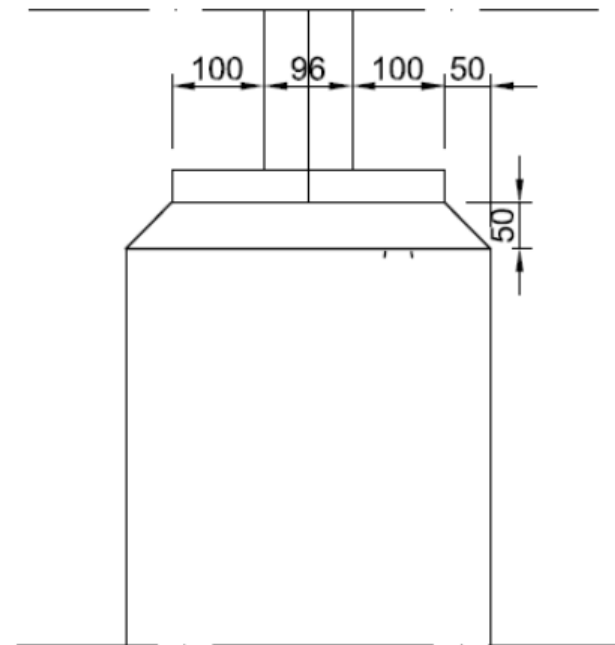
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Detail Drawings

DET1, 1:10



DET2, 1:10

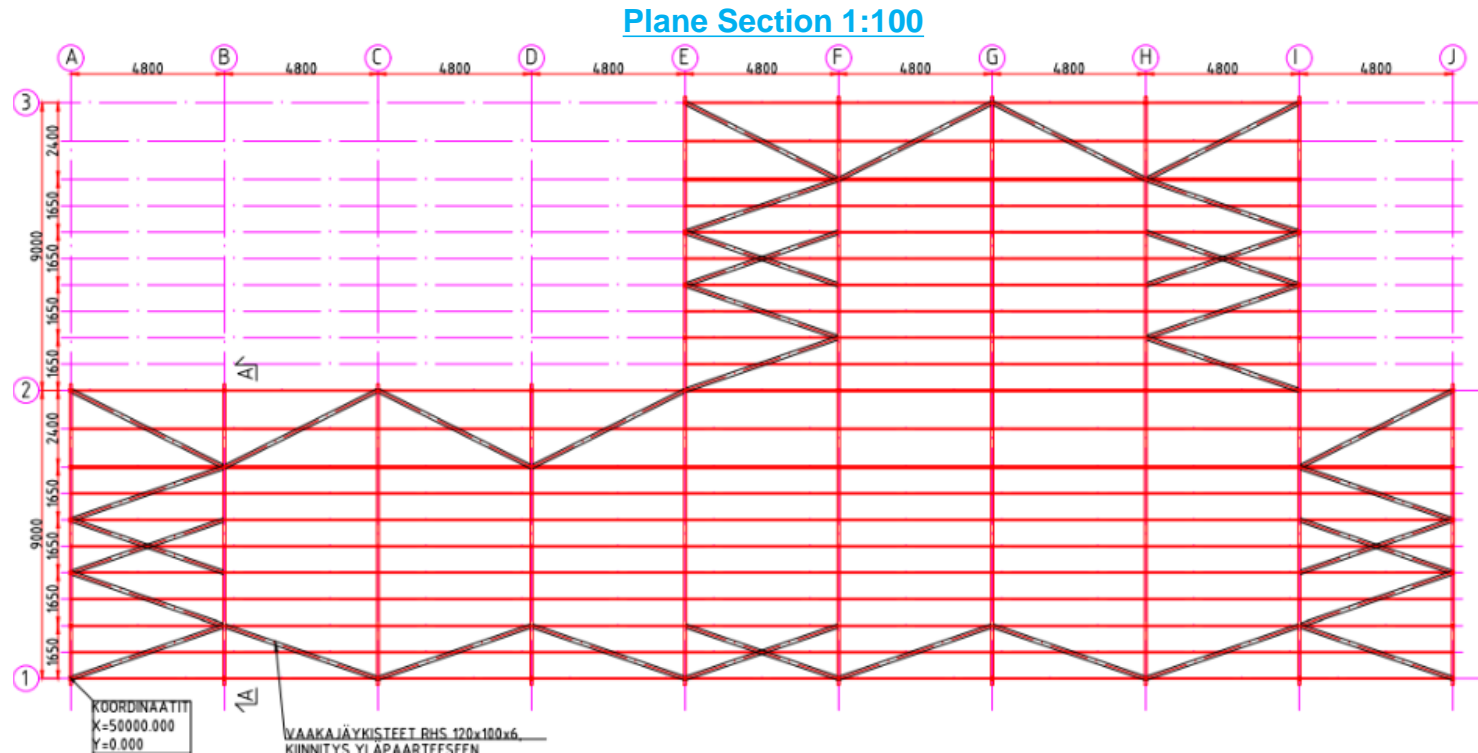


Infotable

- Each plan drawing has an infotable
- Displays e.g. subject, content, author, date of the plan
- There are different kinds of infotables, e.g. project specific or company specific
- Infotable shown is not a direct example of the one in the assignment!

[illegible]

Assignment 2: Plane Section



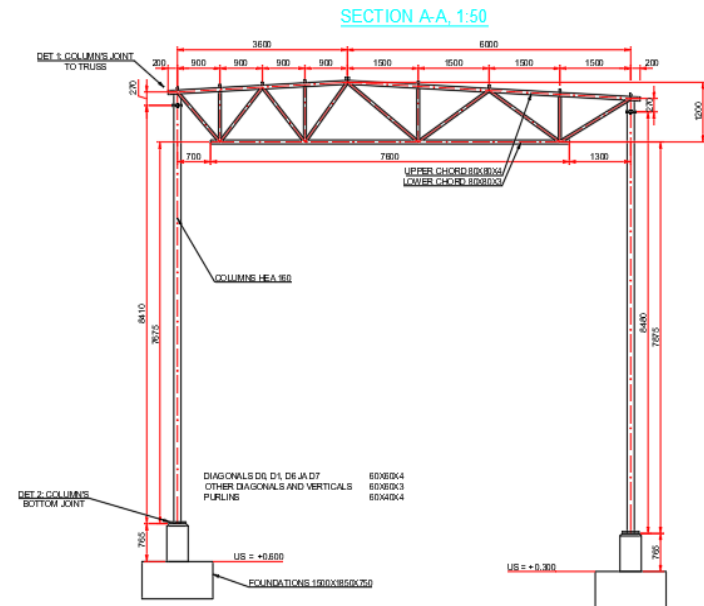
- Not needed in assignment 2, will later be used in **B module**

Tips for the Assignment

- Read the file **EX_AC_2_EN_2020** carefully
- First, plan what you are going to do and do one part at a time
- Feel free to try the program's commands
- Find symmetries and repetition in the drawing → think how you could utilize it
- Help is given in the exercise sessions and MyCourses forum
- **Remember to save regularly**

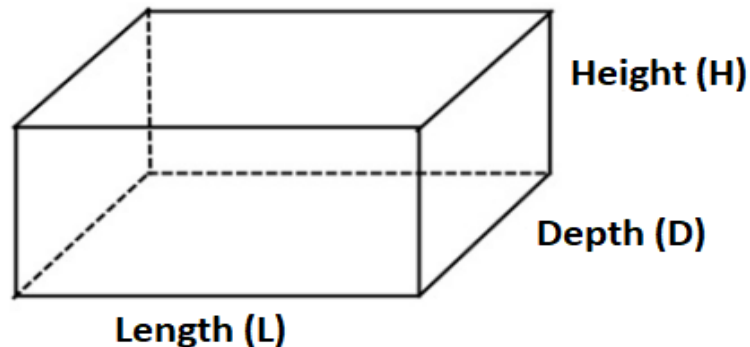
New Concepts

- Exercise presents concepts that are unknown to many before hand
- These concepts are basic in the field of construction technology
- Concepts will also be explained in the instruction material



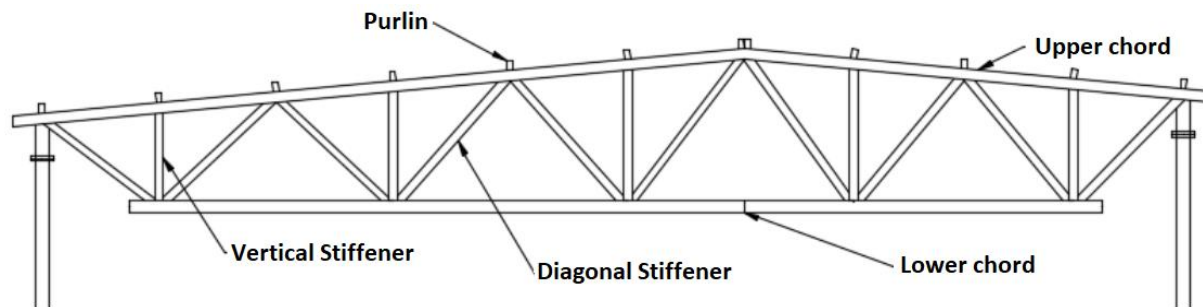
Foundation

- The lowest point of a basis, often concrete casted, which's function is to divide the weight of the structure so that structure will not sink
- Dimensions of an individual foundations is given form $L \times D \times H$ (L = length, D = depth, H = height)



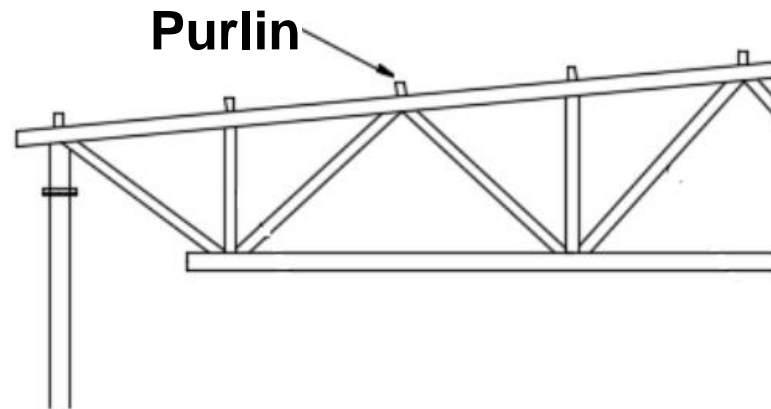
Lower and Upper Chords

- Forms the truss frame
- Truss can be raised or stiffened by placing stiffeners between the chords



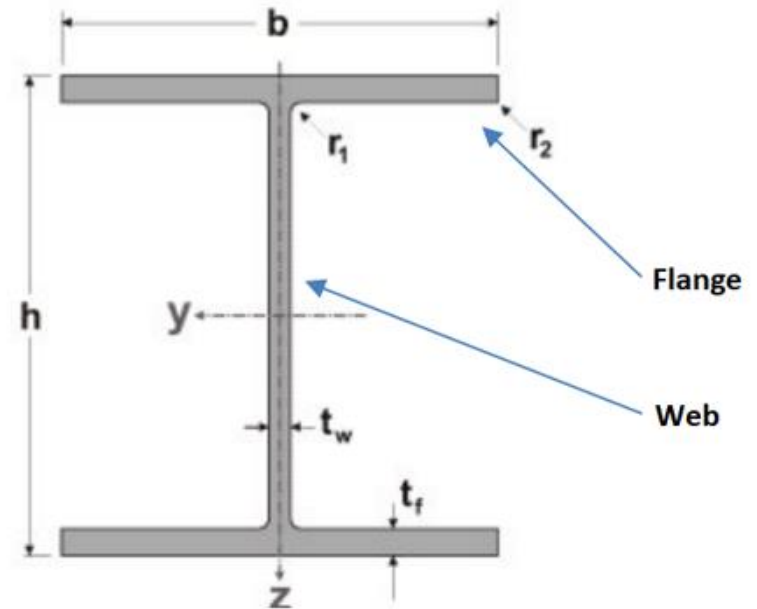
Purlins

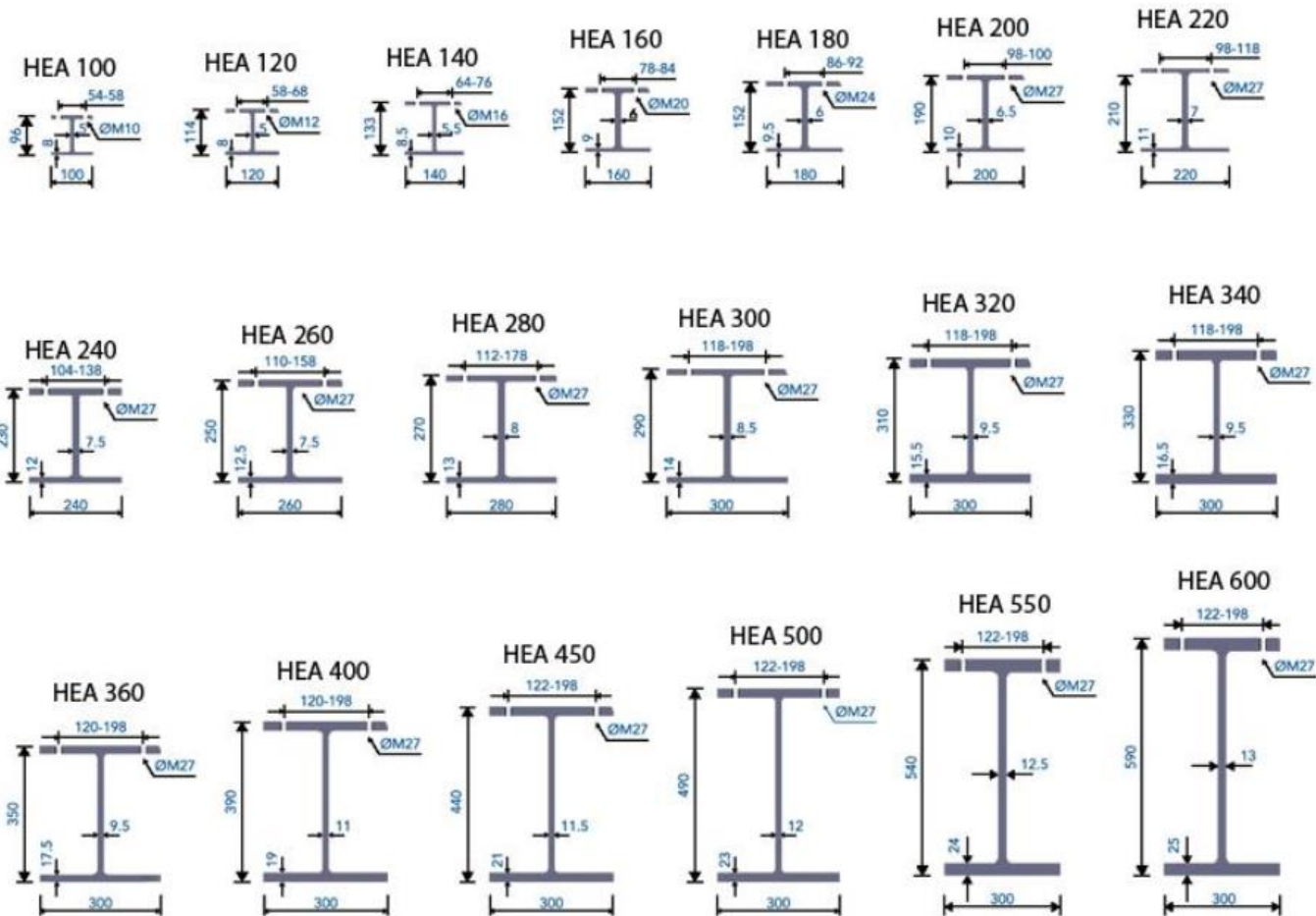
- Structures parallel to the length of the building, the function of which is to direct the weight of the roof structure to the truss



HEA Profile

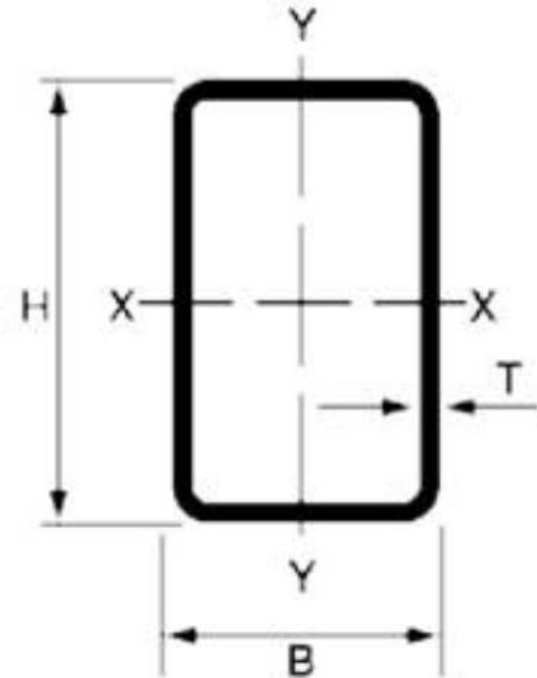
- DIN standardized steel profile commonly used in Europe
- Dimensions should be looked from a table in the case of HEA beam





Hollow Structural Profiles (HSS)

- Hollow steel profiles
- The most important dimensions are given in form $H \times B \times T$ (H = external height/diameter, B = external width, T = material thickness)
- In case of circular hollow structure (CHS), the width is not mentioned
- There can be a mention of the manufacturing method in the name of the profile e.g. CF = Cold-formed





Aalto University

Drawing Markers

27.09.2020

General Information About Drawings and Drawing Markings

- Millimeters is always the used unit
- Always according to standards
- Important things are clarity, readability, and comprehensibility



The basic division of the drawing sheet surface and the order of the text section on the drawing sheet. In the main drawings and other drawings submitted to the authorities, the cover page must have space for authorities' markings.

Learning the drawing markings

- Finnish Association of Civil Engineers (RIL) guides, can be found from our library
- Finished drawings
- AutoCAD has some markings and symbols as ready-made blocks (Design center, ctrl+2)
- Finished product drawings can be found on the Internet

Use of the Lines

- • Visible surface, section surface, dimension lines
 - • Emphasizes an existing structure
 - • Surface behind a visible surface
 - • Surface in front of a visible surface
 - • Modules
-
- In accordance with ISO 128-20 or RT 15-10635
 - Can already be found from AutoCAD by default

Line thickness

- Subsidiary, dimension, and guide lines 0.25
- Contours 0.35
- Highlighted structures 0.50
- Pen assignment, or plot style file (.cbt) determines what the lines will look like in the printout

Text height

- Following the RT 15-10635

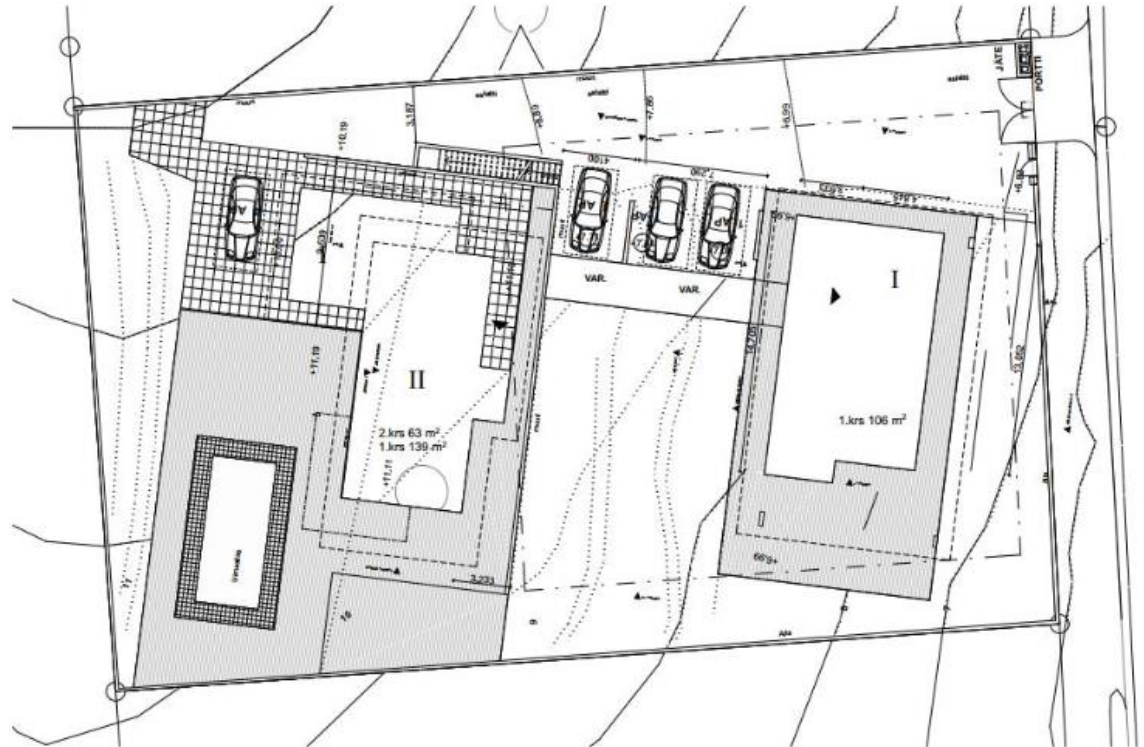
Scale	Normal 2.5 mm on paper 12.5 px on screen	Title 5.0 mm 25 px	Special large 7.0 mm 35 px
1:5	25	50	70
1:10	50	100	140
1:20	125	250	350
1:50	250	500	700
1:100	500	1000	1400
1:200	1250	2500	3500

Drawing type

- Different kinds of drawings are used for different purposes
- Compare e.g. architecture, building, HVAC, electrical
- Some drawing types:
 - Site plan
 - Elevation drawing
 - Ground plan
 - Section drawing
 - Detail drawing
 - Reinforcement drawing
 - Structure type drawing
- Each of the drawing types has their own directives and standards

Site Plan

- Site plan describes how the buildings will be located in surrounding area



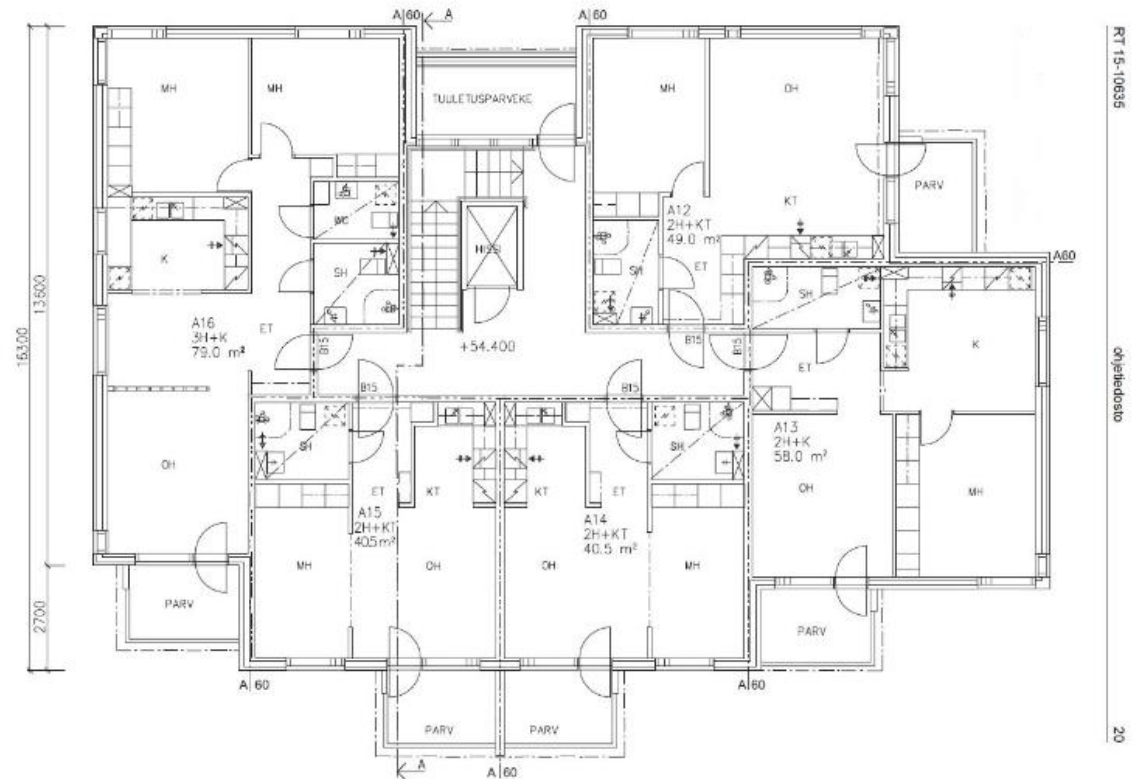
Elevation drawing

- Elevation drawing gives information about visible surfaces to the user



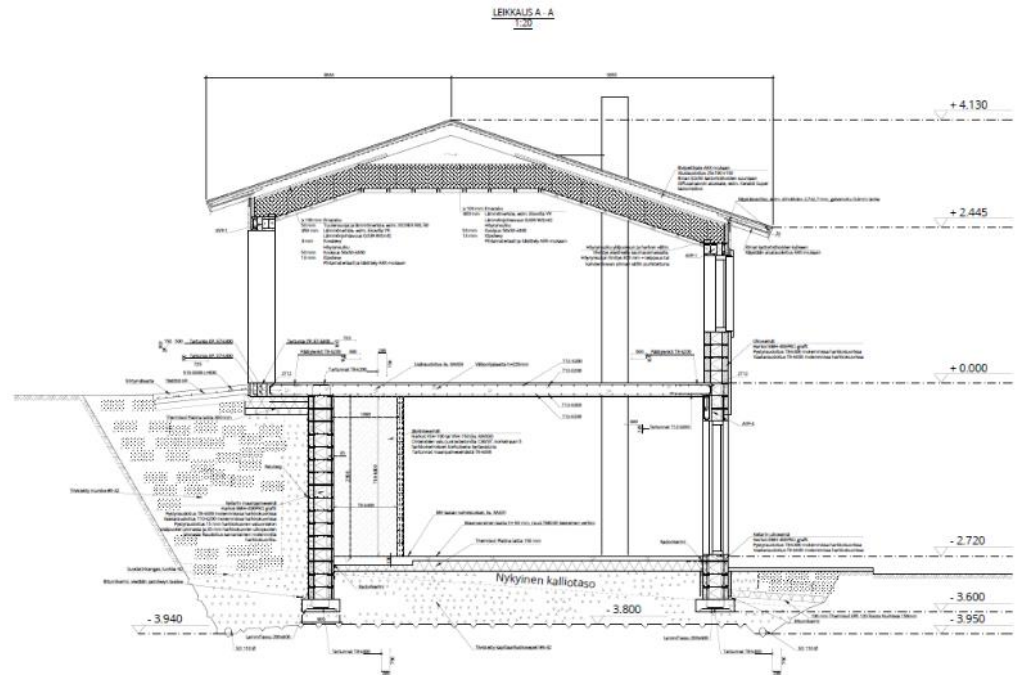
Ground Plan

- Is drawn in large scale, usually 1:100-1:200
- The most important information is dimensions and use of structures



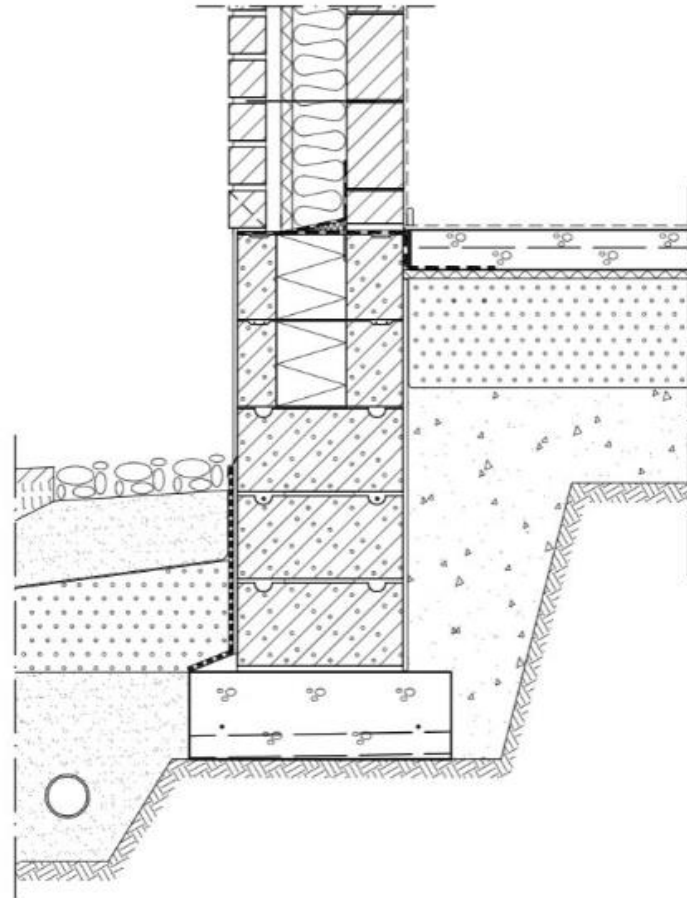
General Section Drawings

- Section drawings must always be drawn from the same direction, so that the drawings remain understandable



Detail Drawings

- Detail of a structure
- Usually drawn in a scale of 1:2-1:10



Structure types

- Each building material has their own presentation style
- In addition to material, layer thickness and other definitions, such as U-factor (thermal transmittance) and surface treatment type, of a structure is given

Thank you!

Questions, comments?