

Name: \_\_\_\_\_

ID number: \_\_\_\_\_

Department of the Built Environment

Chair ADE

Date:

Time:

Exam Architecture and Technology

Course code: 7T8X0

Location:

### **GENERAL REMARKS**

- Use of a Dictionary, Laptop / Smartphone / Tablet etc. is not allowed.
- Your name and ID number should be on all pages.
- Make extensive use of sketches and drawings, when necessary with colors.
- Make clear drawings in the right proportions, to scale and in different views (horizontal and vertical sections plus elevations). Don't forget to add annotations showing the materials and dimensions.
- The neatness in execution of your exam influences the grading. Do not hand in sloppy unreadable text, drawings or sketches. Take a new sheet and start over if necessary.
- Questions need to be answered within the number of lines provided in the exam. If you make a mistake you may add a separate sheet of paper, clearly stating your name, ID number and the question it relates to.
- This exam has three separate parts.

Good luck!

**PART 1**

This part of the exam consists of 3 open questions, testing your insight and knowledge about detailing and materializing buildings in relation to their architecture. All questions relate to subjects discussed in the lectures and/or in the reader. Please express your view in a short text. Keep your answers to the point and make clear what the essence of the subject is.

1.1

Name three important themes in the work of Atelier Kempe Thill and explain what they mean. Look beyond the mere formalistic aspects.

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*Compact Deep Buildings (around a core), Viewing Machine, Economic choices, Open facades, Getting the most out of the material, Working with prototypes, Using simple shapes (you can control), Typology, Flexible and generous buildings, Timeless architecture [10 points in total]*

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1.2

One could recognize some relations between the work of Bekkering Adams Architects and Neutelings Riedijk Architects. Be precise in naming at least three relations and explain what you mean.

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*Material use, Use of structure to express meaning, Spatial quality, Importance of routing, Skin wrapping around the building, Sculpturalità [10 points in total]*

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1.3

Name and explain two different ways in which the context has influenced the design of a building by HHF.

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*Use of concrete in Ruta de Peregrino because of limited accessibility, Arches relating to old building in Labels 2, shape of the Ruta building relating to the pilgrims route, local craftsmen available for Ruta determining the construction process and -material. Material use in Labels 2 in relation to harbor area. [10 points in total]*

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## **PART 2**

*This second part consists of a number of questions about the studied parts from the book *Constructing Architecture* by Andrea Deplazes. Please be brief and to the point in answering these questions.*

2.1

Deplazes uses the terms Solid- and Filigree construction. Explain what they mean.

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*Solid = Earthworks (casting and layering), Filigree = assembled structure of linear elements [2 points]*

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2.2

Concrete seems like a material with unlimited possibilities. However, its freedom of shapes is limited by a very important factor. What is this and why?

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*Casting mold / Formwork [2 points]*

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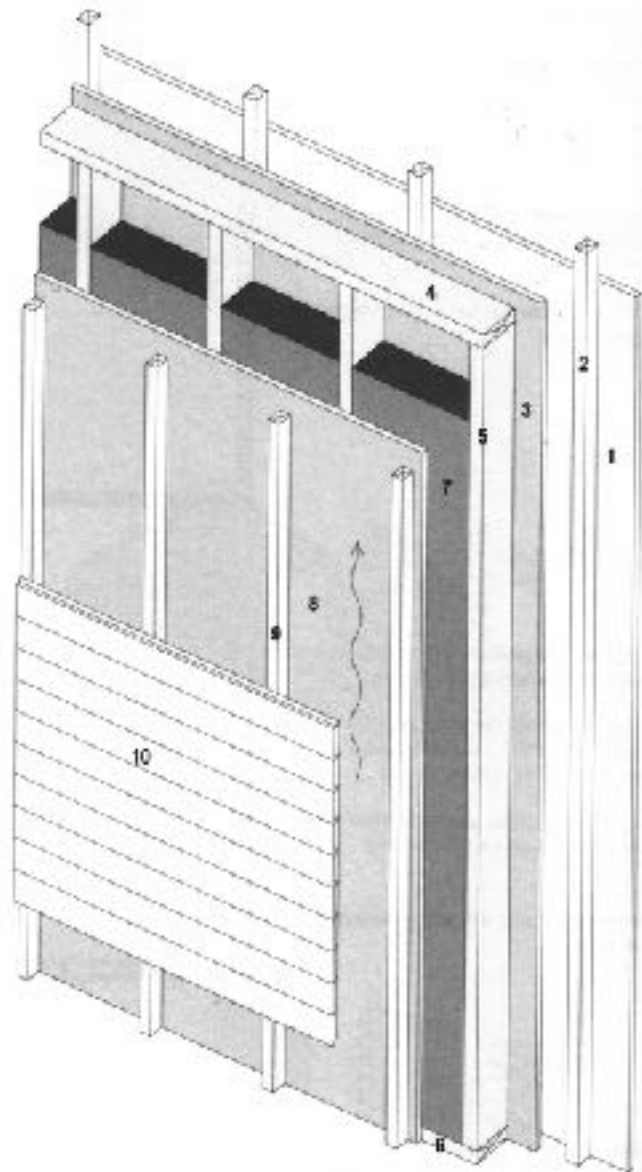
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2.3

The next drawing shows the build-up of a Timber platform frame wall-element:



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### 2.3a

For numbers 1 to 10 describe what they are (name and material) and what their function is.

1	description	internal lining (plasterboard)
	function	finishing
2	description	vertical battens
	function	space for services
3	description	wood-based panel, vapor tight
	function	vapor barrier and structural stability
4	description	frame: head binder
	function	structural
5	description	Frame: stud
	function	structural
6	description	frame: bottom plate
	function	structural
7	description	insulation material
	function	thermal insulation
8	description	bitumen impregnated wood fibre insulating board
	function	waterproof layer
9	description	vertical battens
	function	ventilation and fixing horizontal sheathing
10	description	horizontal sheathing
	function	facade material / protection layer

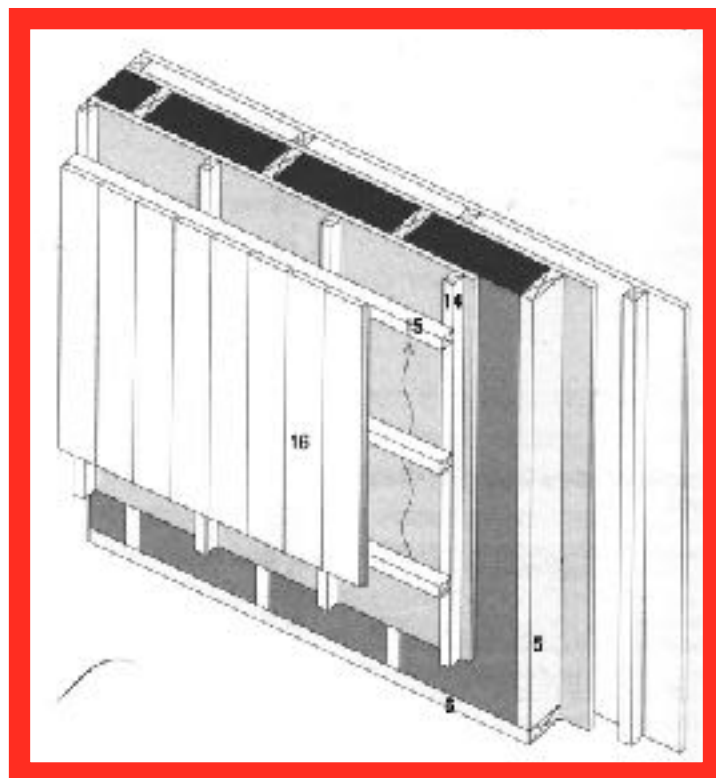
*[5 points in total, 0,25 points for each]*

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2.3b

If one would use vertical wooden sheathing instead of horizontal parts as an outside facade material, what would the difference be? Show this in a drawing below:



[3 points]



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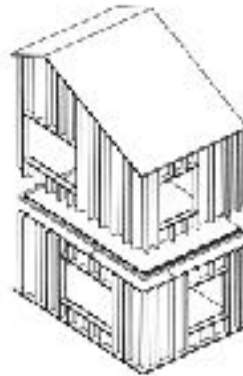
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## 2.4

Below you see a drawing of a Timber Platform frame construction (1) and Panel construction (2).



1.



2.

### 2.4a

What is the difference between the two systems structurally?

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*For 2. the load bearing elements are not the vertical studs but the inner layer (vertical slab of solid wood elements) The ribs prevent buckling of the slab. [2 points]*

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### 2.4b

What are the advantages for an architect when using Panel construction?

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*Freedom in making facade openings (studs don't have to align) [2 points]*

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2.5

What is the main limiting factor in all prefabricated construction elements (timber, concrete or steel)?

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*Transportation: limits of dimensions [2 points]*

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2.6

Name three advantages of using a steel structure.

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*Cheap / Fast / Low weight / Large spans [2 points]*

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2.7

Name two disadvantages of using a steel structure.

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*Non-fireproof / Thermal bridges / Corrosion / Hard to weld on site [2 points]*

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2.8

Name four different ways to make a steel beam fire-proof

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*Cast inside a concrete floor / Fireproof paint (coating) / Fireproof lowered ceiling / Fireproof cladding around the beam [2 points]*

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2.9

In any facade design you are sooner or later confronted with the issue of joints between different elements. You could accentuate these joints or try to mask them. In the diagrams below sketch three different ways to approach the issue of joints in relation to making facade openings. Explain what you are trying to achieve with each drawing.



<i>Varying the parts</i>	<i>Varying the joints</i>	<i>Disruption of parts and joints</i>

*[6 points in total, 2 for each drawing]*

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### **PART 3**

*The third and final part of this exam consists of questions to be answered mainly by making detailed drawings. Make sure to draw neatly and clearly, annotate your drawing (text and arrows) to explain the different materials and elements. Make sure the build-up of your facade/floor/roof is absolutely clear. Use the proper hatches and line-weights.*

*First set up your drawing on an extra piece of sketch paper so your final drawing is perfect.*

#### **3.1**

The position of the window within the facade is of great importance for your architecture. At a scale of 1:20 and 1:10 make a section through the facade from the first floor to the roof in the following configuration:

Window frame:	Wood, with the window opening to the inside.
Reveal depth:	200mm
Facade:	Brickwork outer leaf with a Concrete load bearing inner leaf (think about the thickness of both leaves)
Floor:	Wide-slab floor
Roof:	Wide-slab

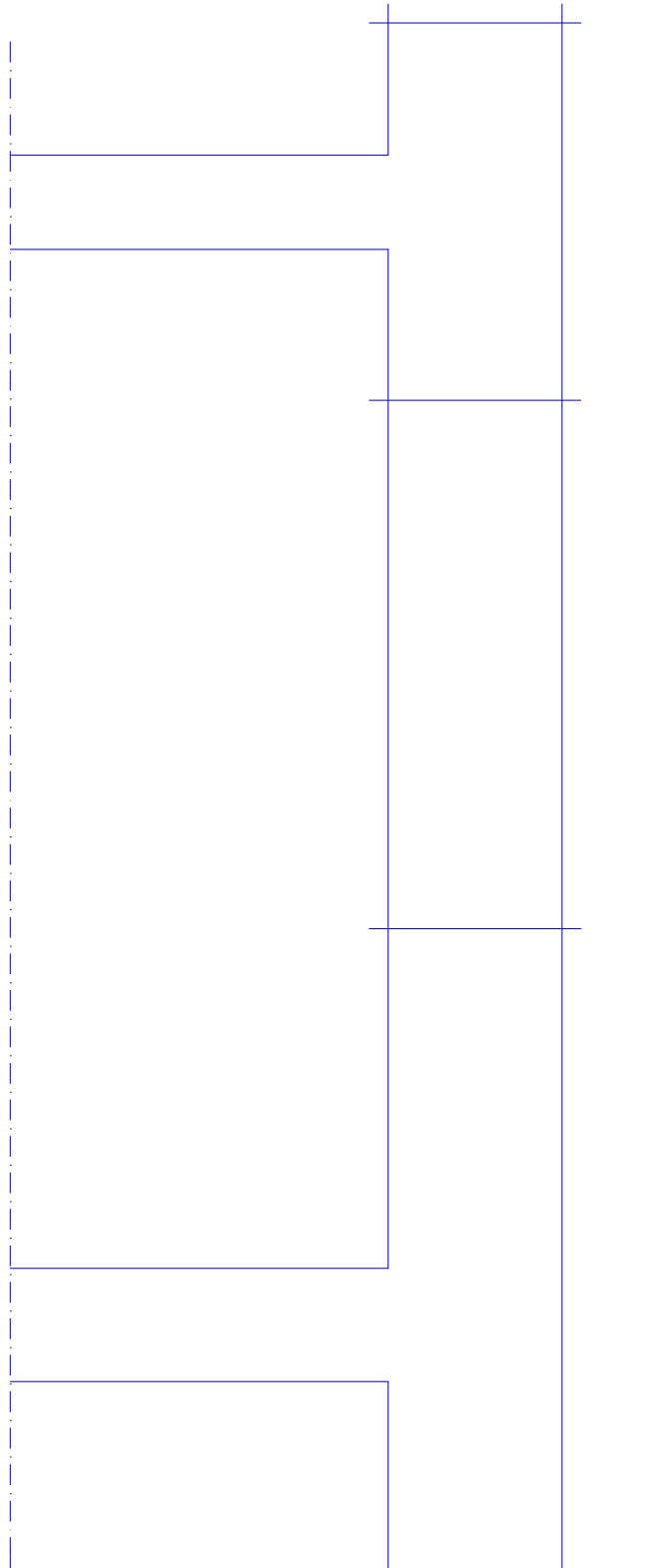
Make the drawings on the next three pages within the guide-lines provided. Start with the 1:20 overview of the facade, clearly showing all the layers of the wall and the floors. Then make the two 1:10 details showing exactly how the window connects to the wall, how you make the lintel, window sill etc.

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3.1a

Drawing of the facade section (1:20) *[8 points]*



**Detail 1**

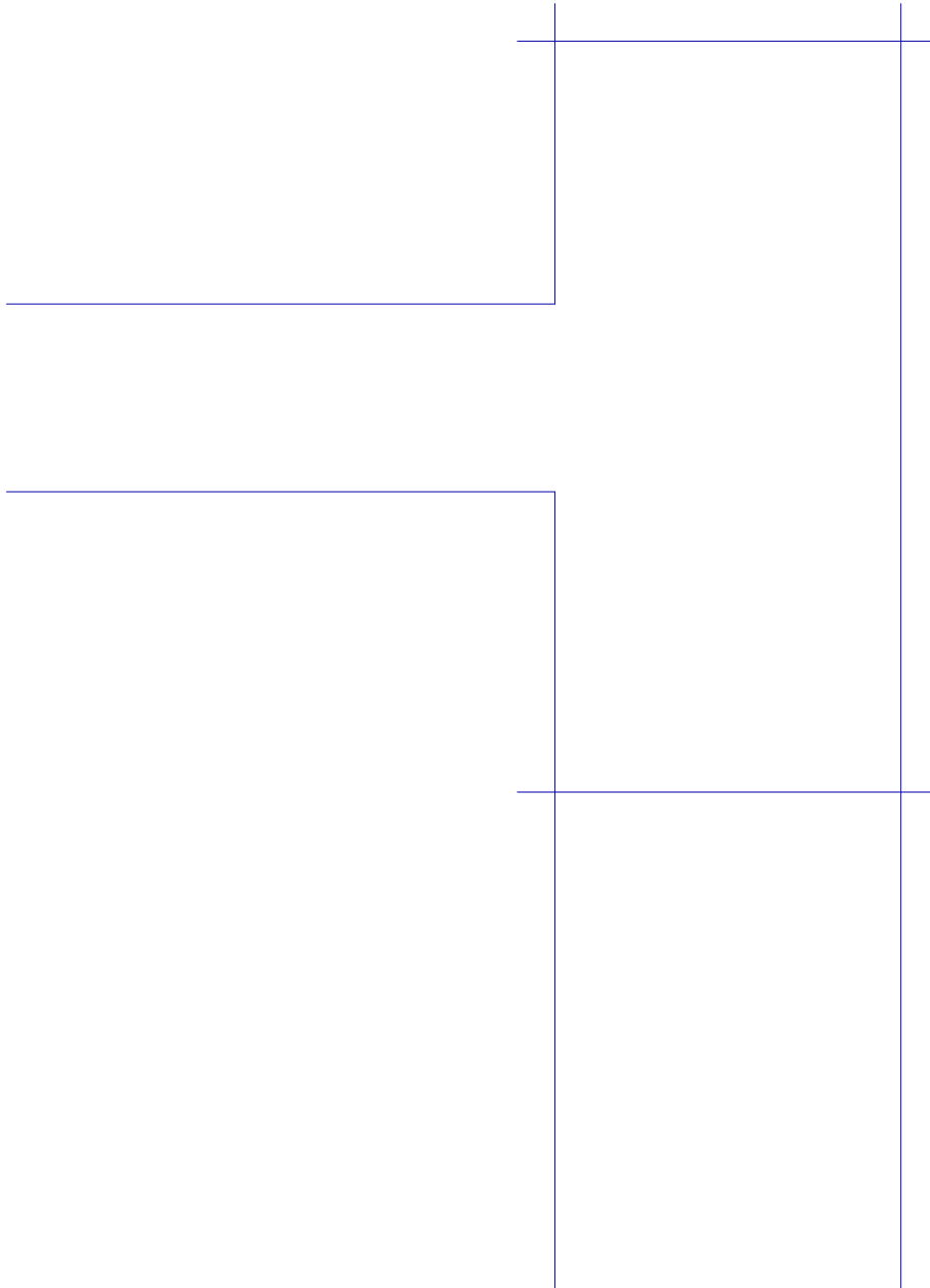
**Detail 2**

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3.1b

Drawing of Detail 1 (1:10) *[12 points]*

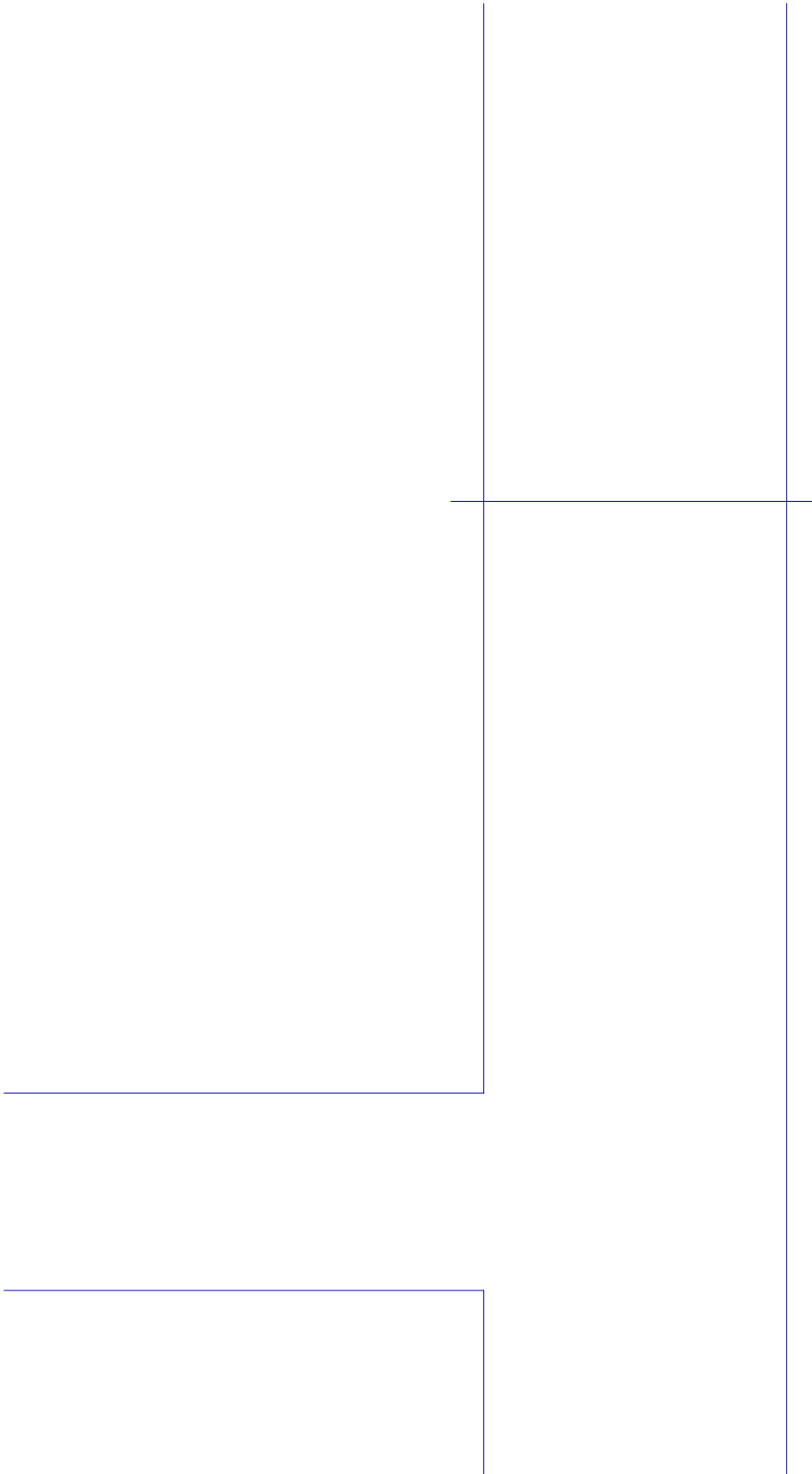


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3.1c

Drawing of Detail 2 (1:10) *[12 points]*



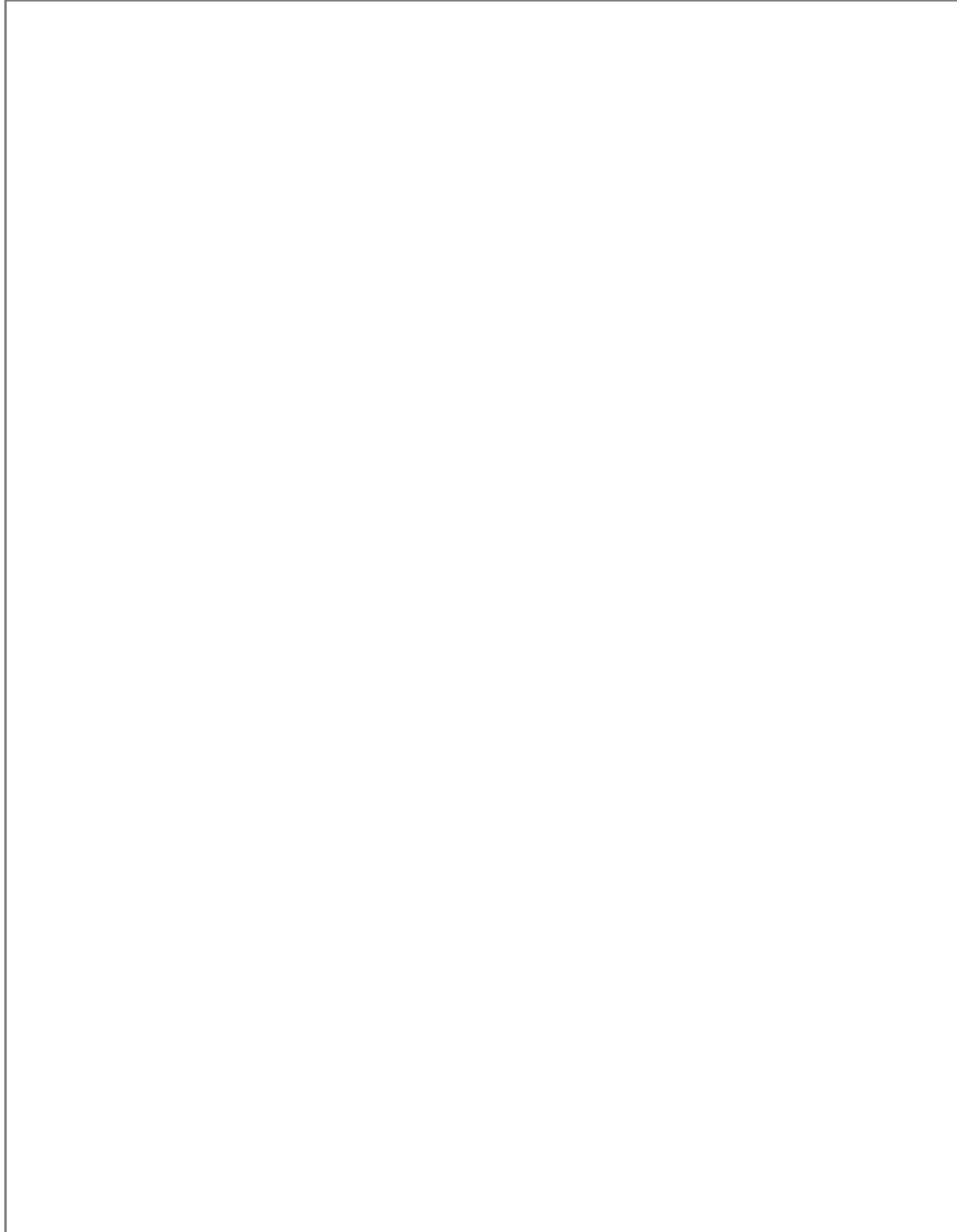
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3.2

Make a 3D drawing of the outside of the facade, showing how you would add more architectural expression to the window opening with the deep reveal (from question 3.1) by adding an expressive frame around it.

Name the materials you use and make notes about your thoughts and design choices. (use arrows etc.) *[8 points]*

A large, empty rectangular box with a thin black border, intended for the student to draw a 3D architectural facade and provide design notes. The box is currently blank.