

- 3h written exam
- Thursday 19.06.2025 from 15h15 to 18h15. Room GC C3 30
- Open book exam.
- Calculator (not programmed)
- Topics: Exercises and questions will focus on topics seen from Week 8 to Week 14, but knowledge of all the course contents is essential for their solution/answer.

Q1: Seismic response of an unreinforced masonry building

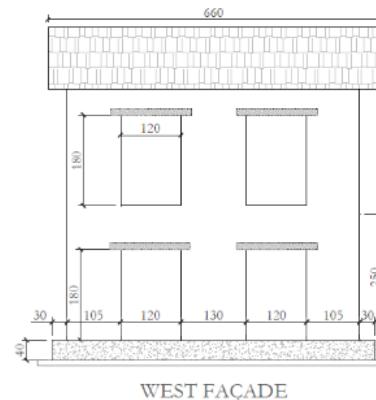
- Describe for each of the buildings shown below the structural system (as much as it can be inferred from the image), the type of damage observed and why seismic loading caused this type of damage. Comment also on the location of the damage within the building and explain why the damage occurred at this storey. Please use sketches as appropriate. (5 points)



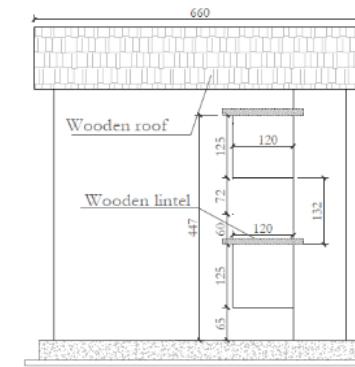
Example exam questions

Q2: For the building shown in the figure, identify for loading in the two principal directions

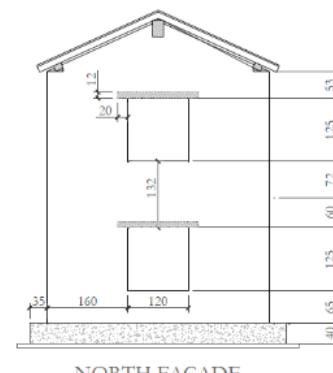
- Two in-plane failure modes
- Two out-of-plane failure modes
- What information would you like to have for a more detailed seismic assessment?



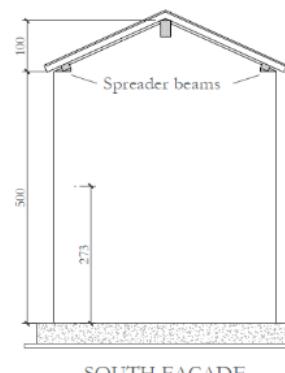
WEST FAÇADE



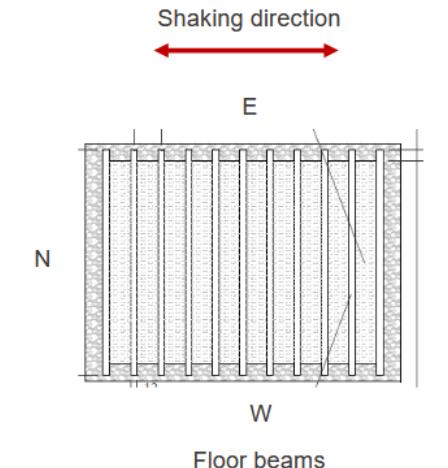
EAST FAÇADE



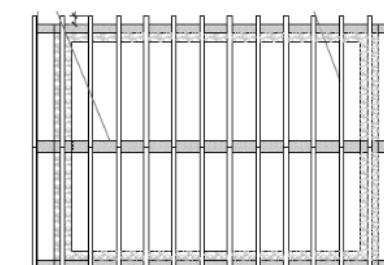
NORTH FAÇADE



SOUTH FAÇADE



Floor beams

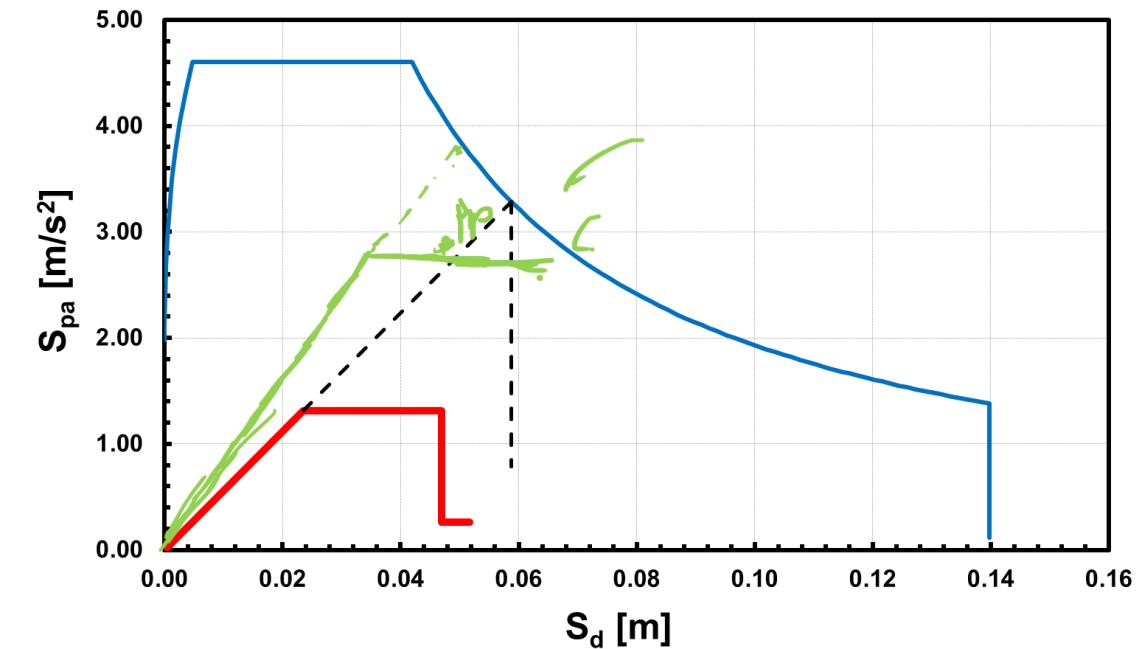
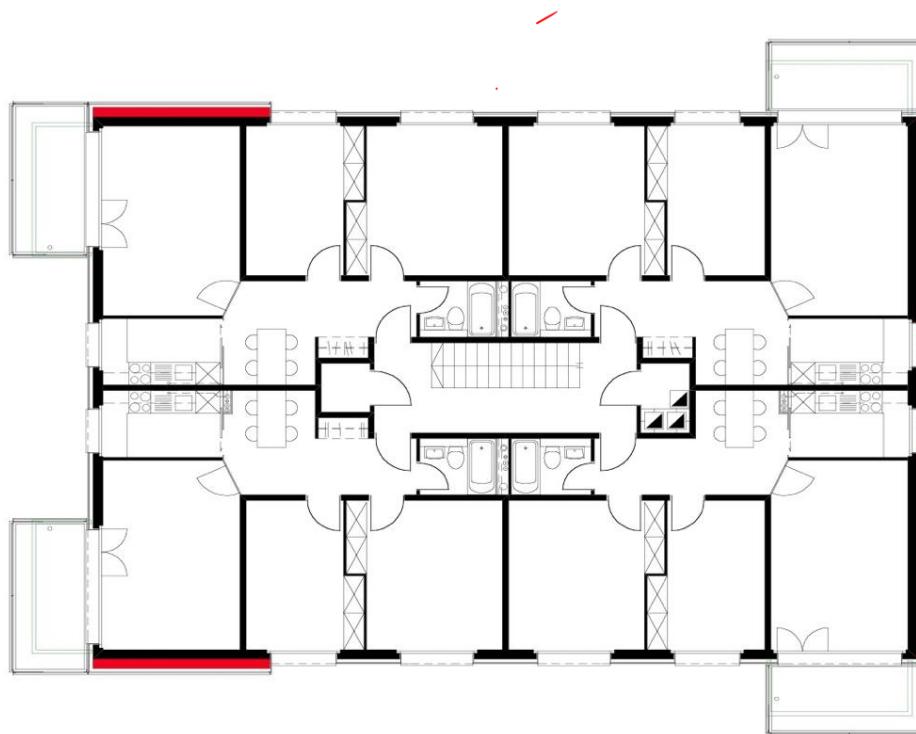


Roof beams

Example exam questions

Q3: The building shown in the image is retrofitted by adding new RC shear walls. Its capacity in the unretrofitted state is shown in the figure

- Show graphically the performance point in the non-retrofitted state
- Show the effect of the retrofit in the capacity/demand
- Show graphically (or compute) the new performance point



Q4: For the structure shown in the figure

- What is the developed failure mechanism?
- What's the cause of it?
- What intervention would be sufficient to increase the capacity against this mechanism?



Other past questions

- Exercises as Assignment 6: Compute the out-of-plane capacity of an unreinforced masonry wall using kinematic non-linear analysis.
- See questions in weekly quizzes