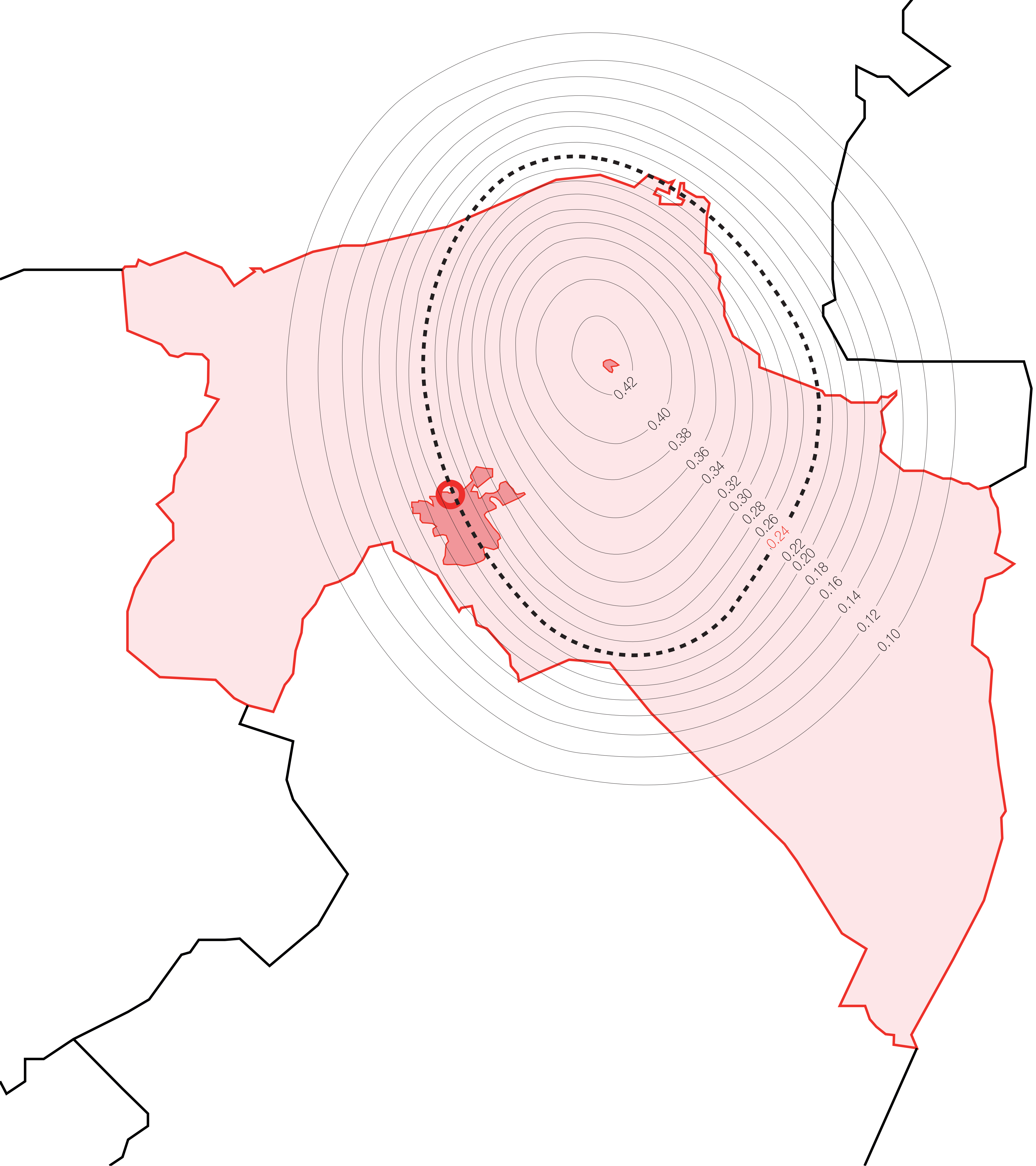
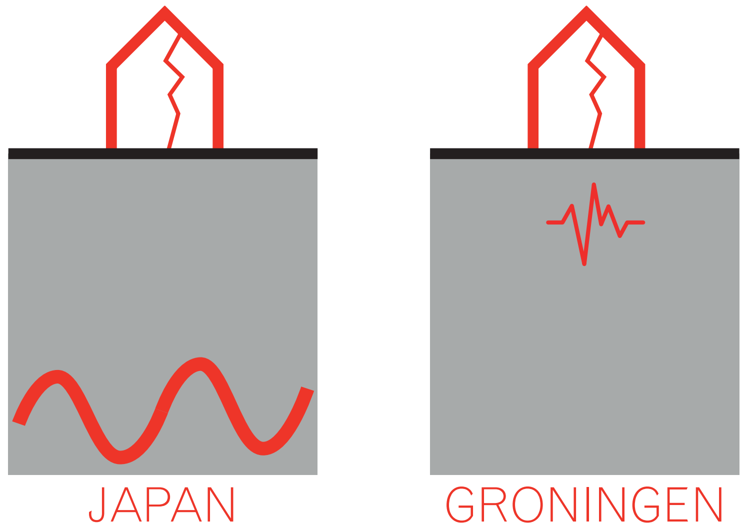
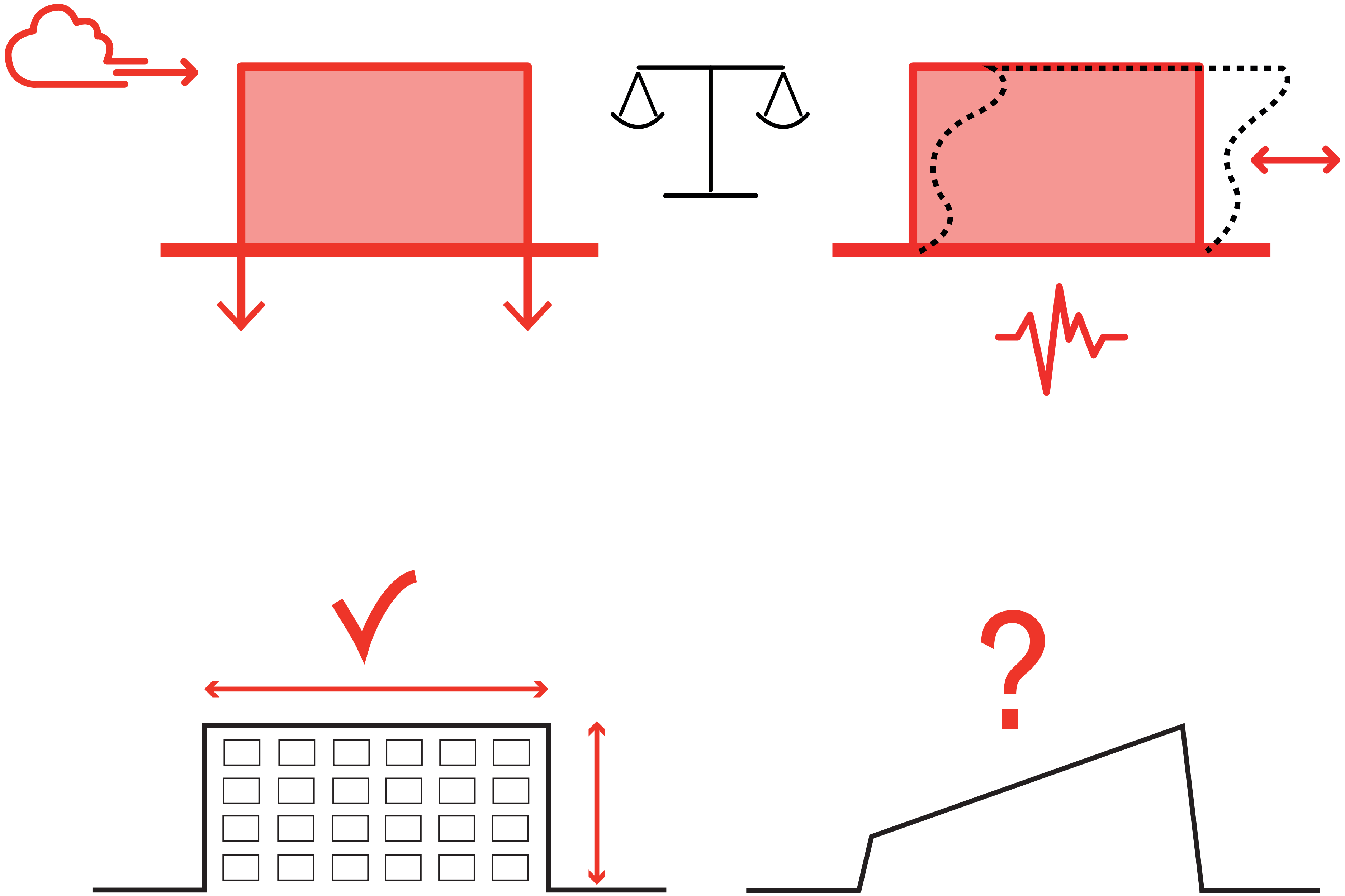
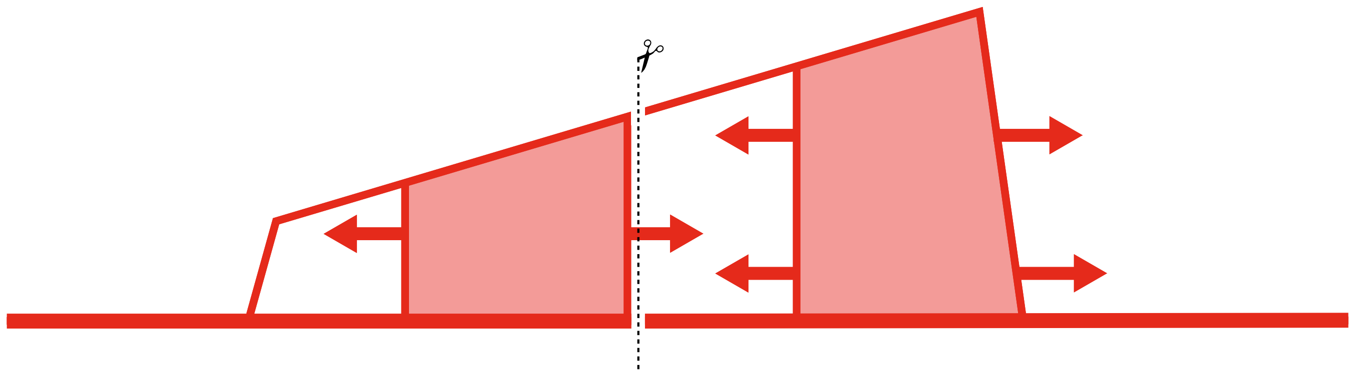


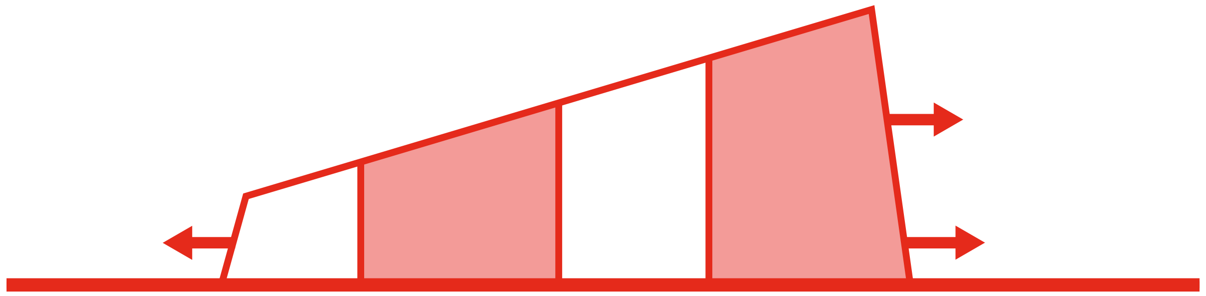


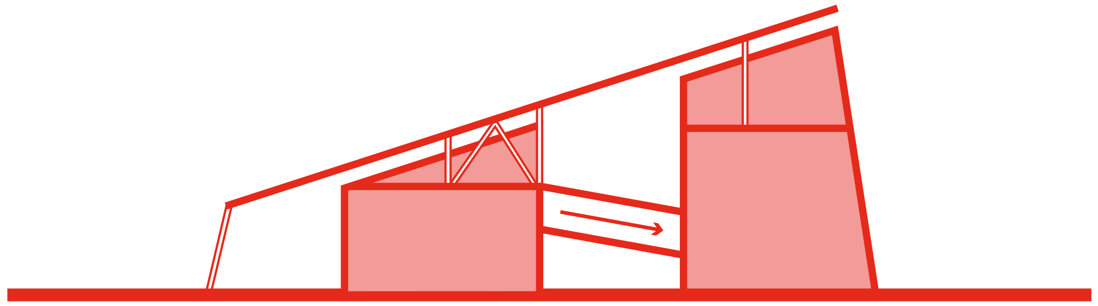
The Energy Academy is located in close proximity to the epicenter of the earthquakes. As the earthquakes occur at shallow depths, their effect is comparable to deep earthquakes in different countries.



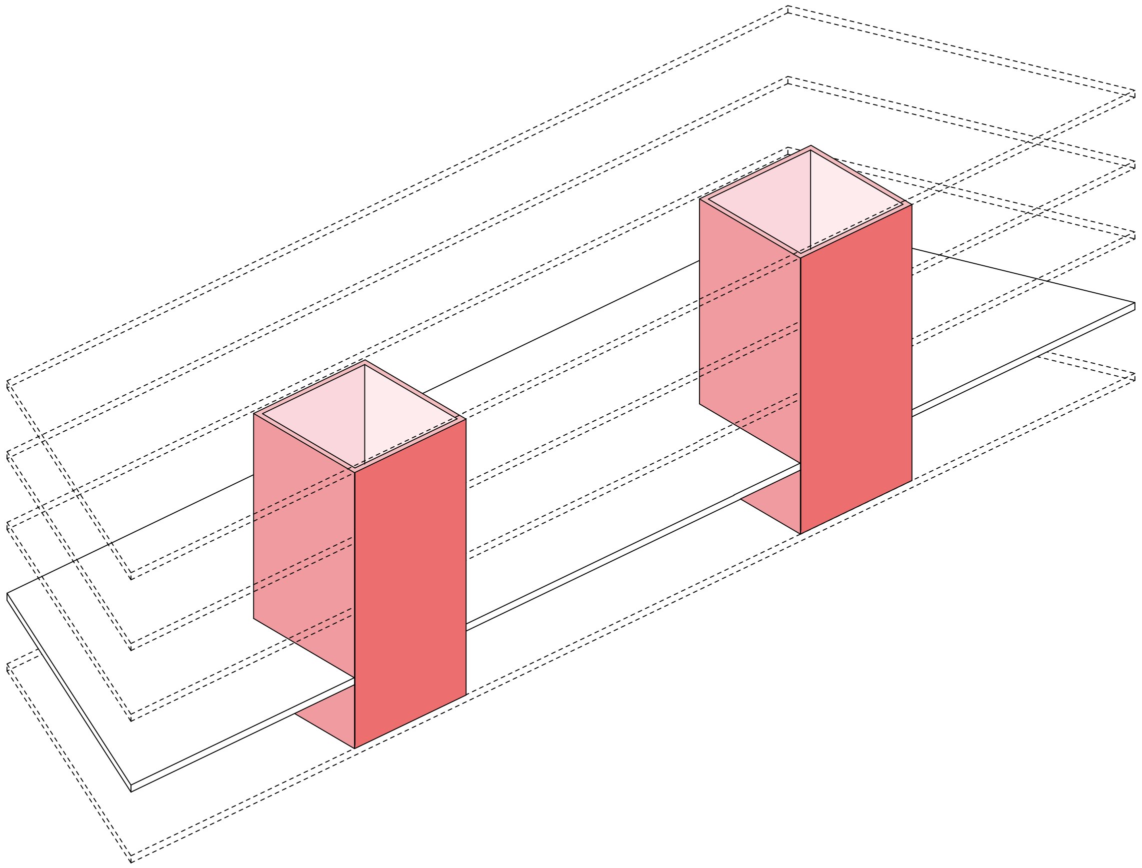
A balance needed to be found between stiffness against the wind and flexibility during earthquakes. Also, the irregular shape of the building provided an additional challenge.

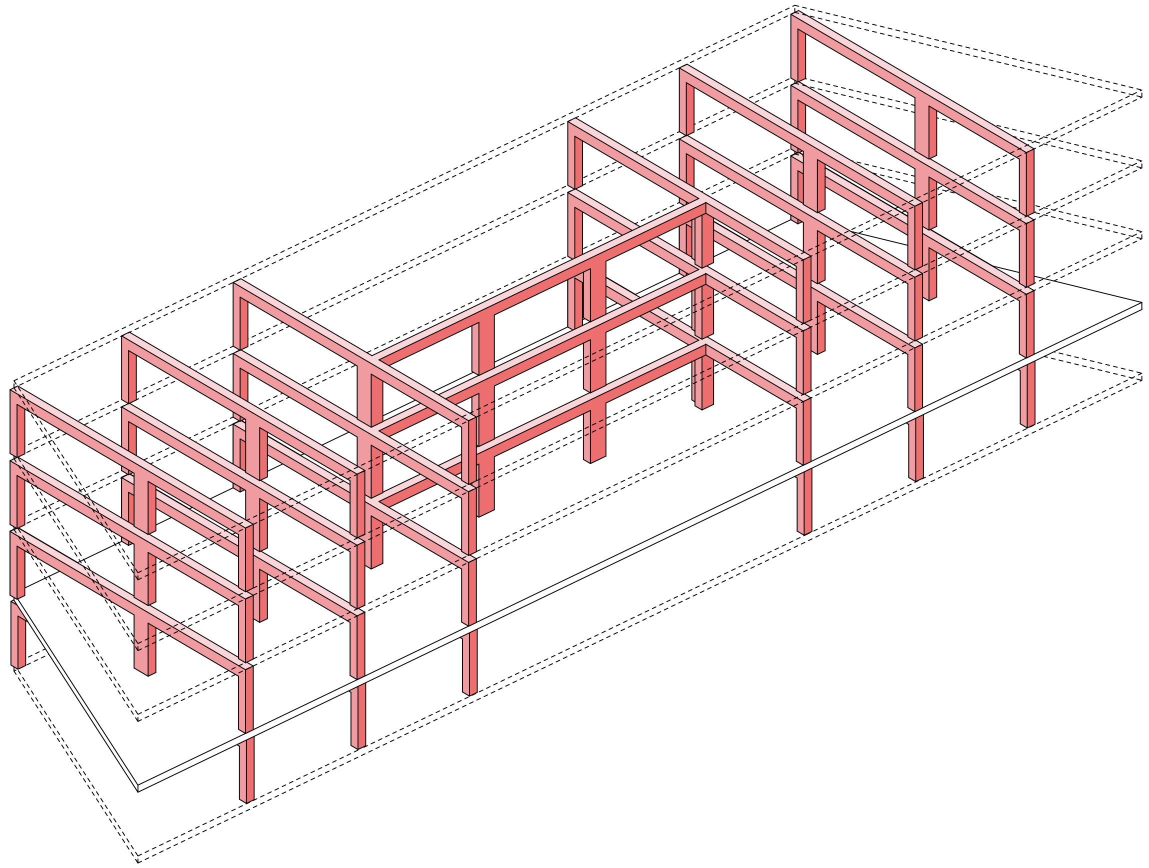


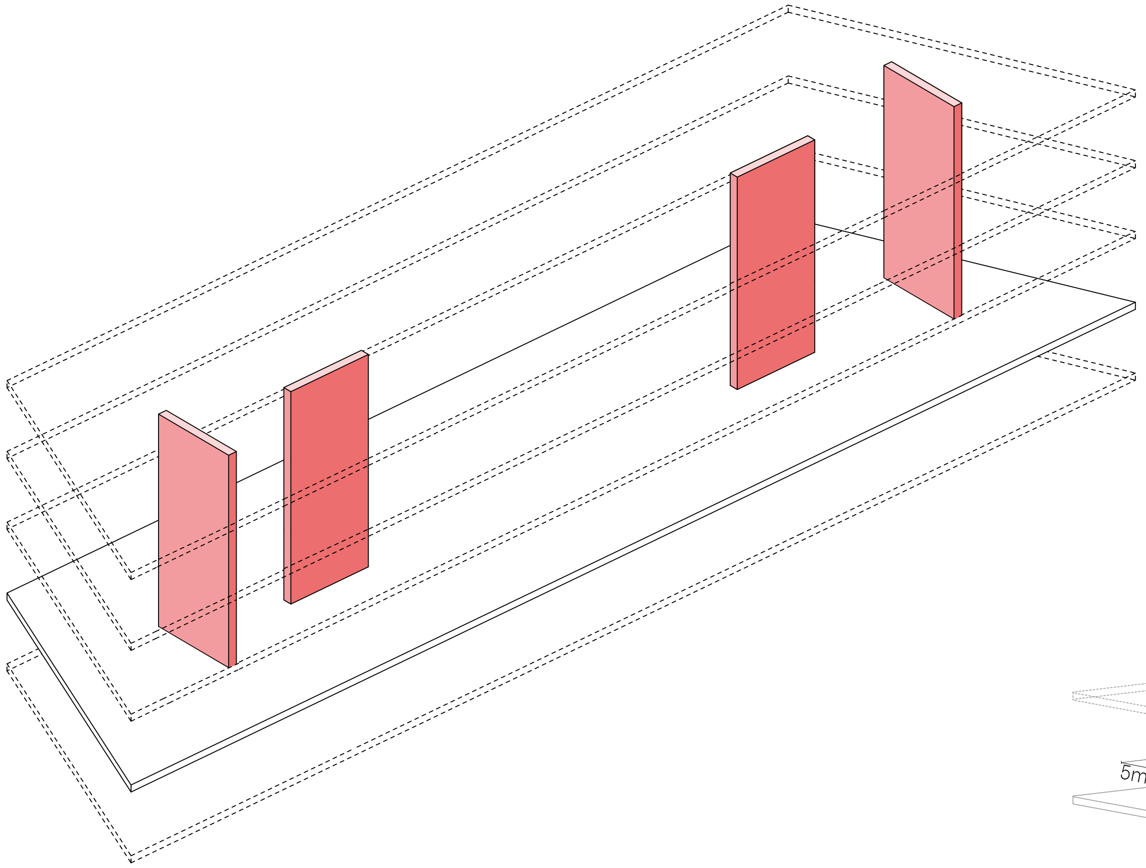


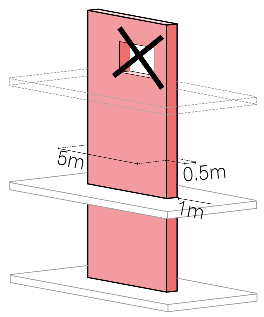


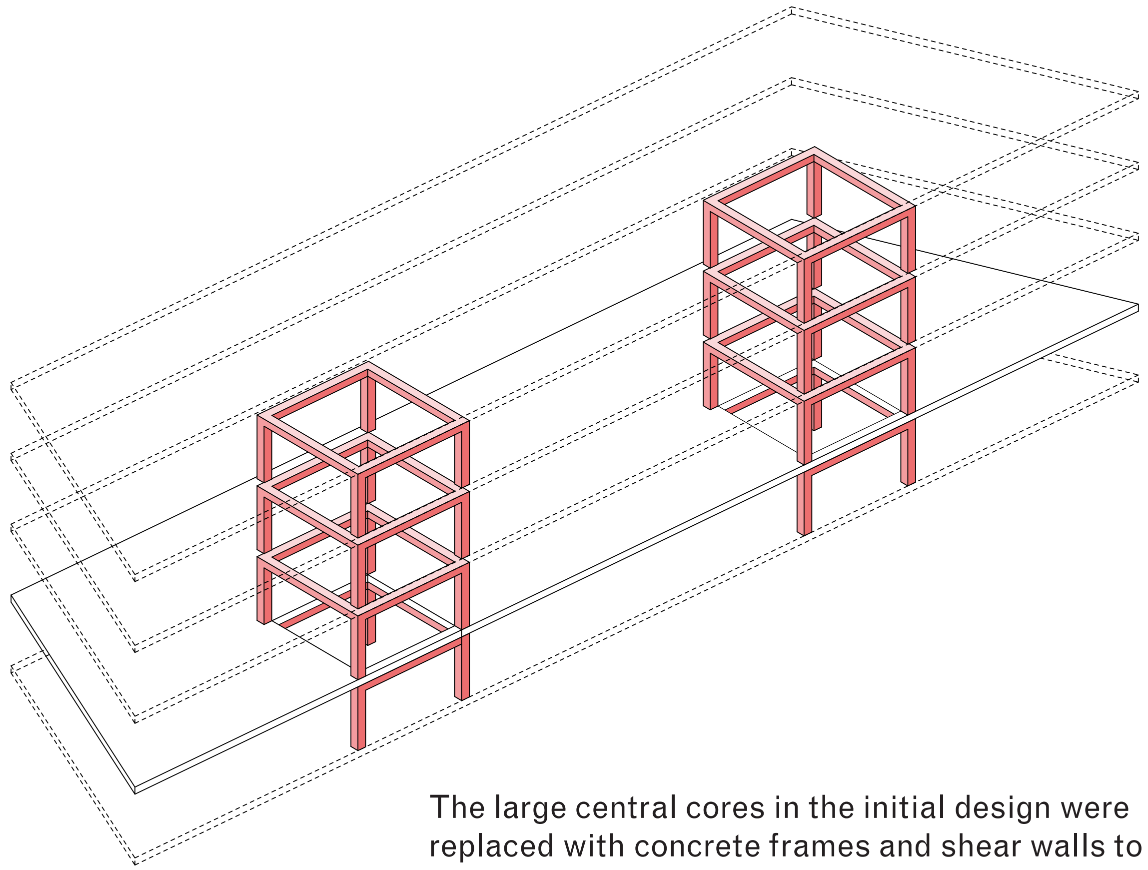
Although splitting the building into two halves would allow for both parts to move independently, in the Energy Academy the stiffer northern (right) halve was connected structurally to the less stiff southern (left) halve to promote movement together.



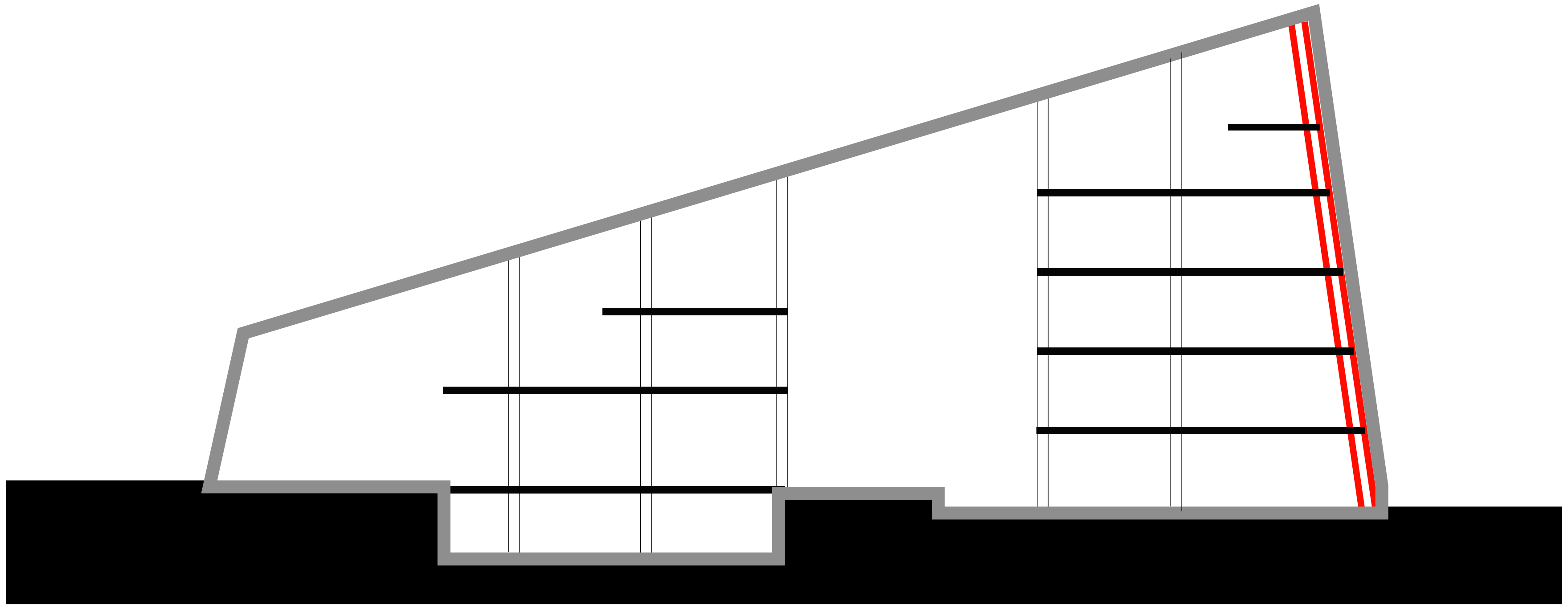


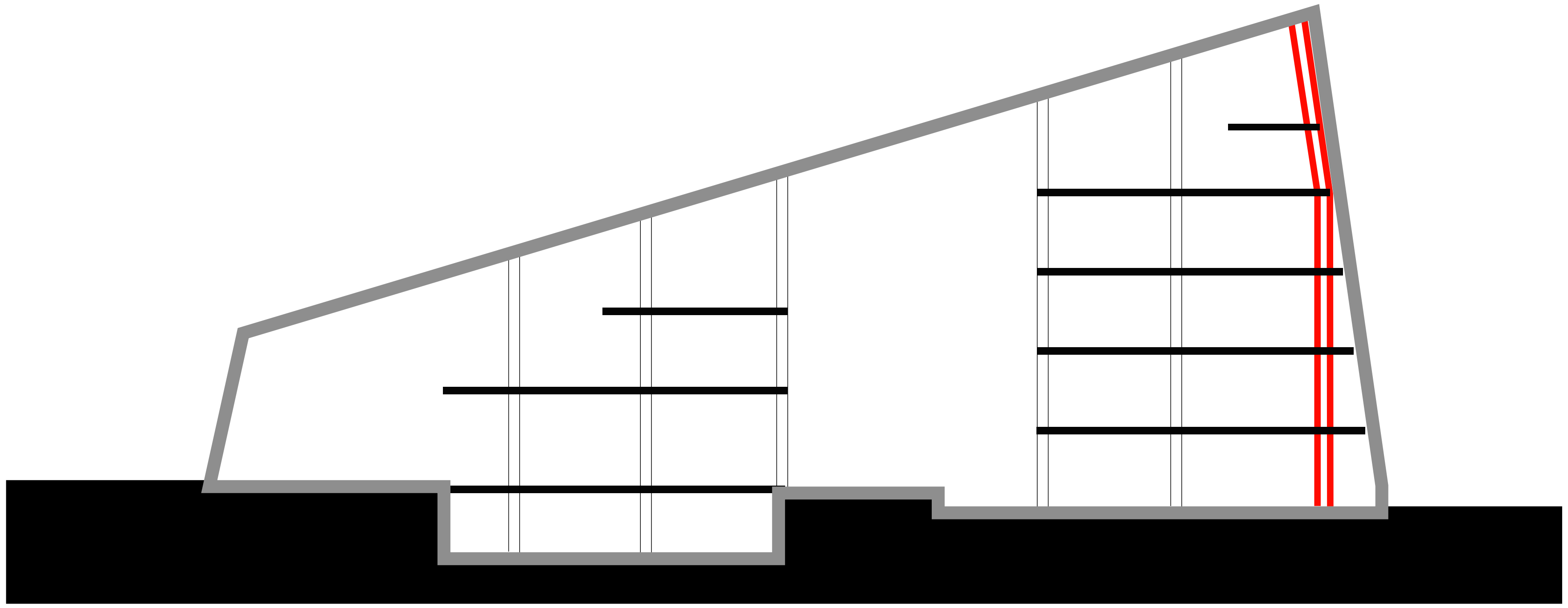




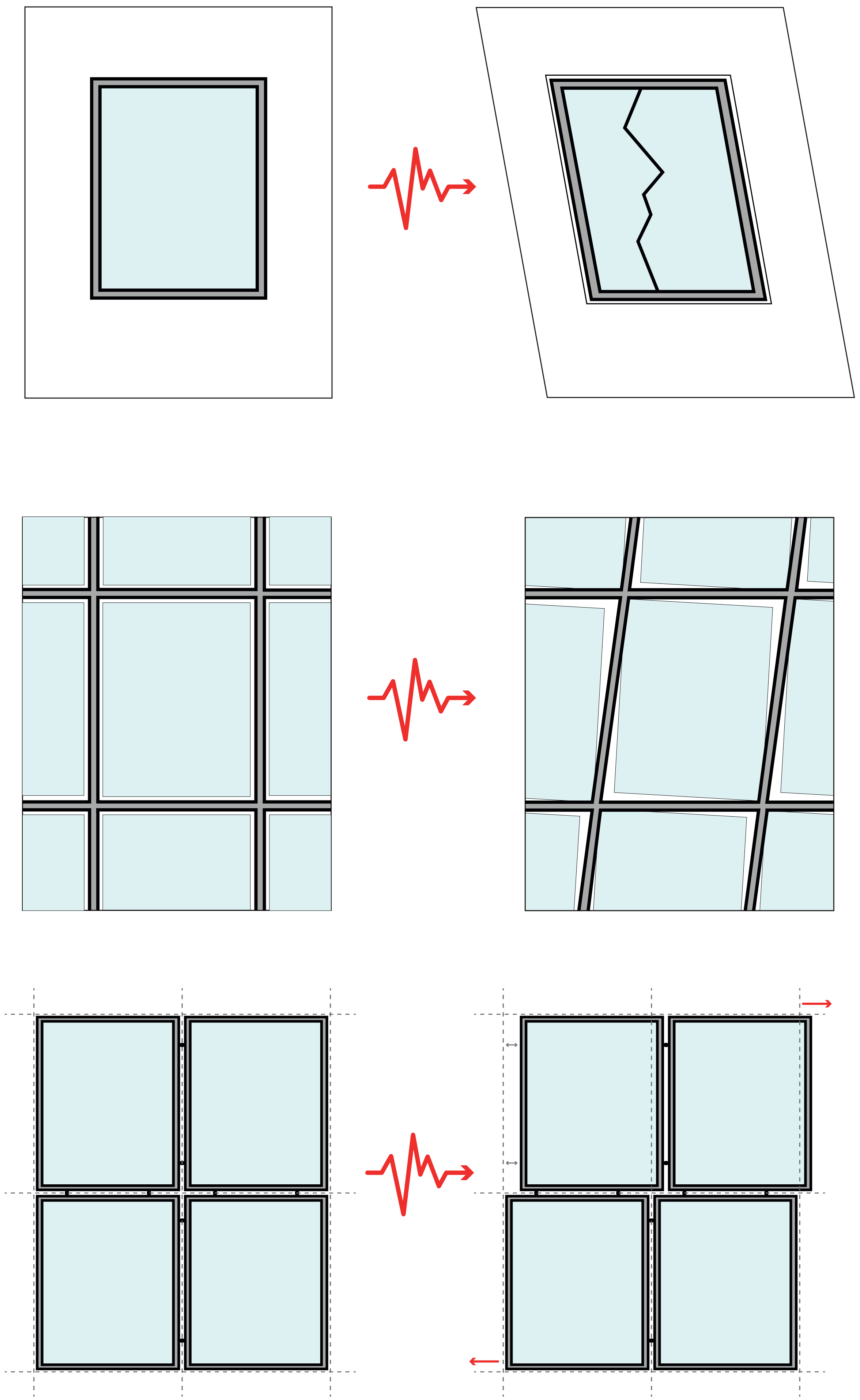


The large central cores in the initial design were replaced with concrete frames and shear walls to allow for flexibility during earthquakes. It was not allowed to make cuts into the shear wall to keep its behavior predictable.

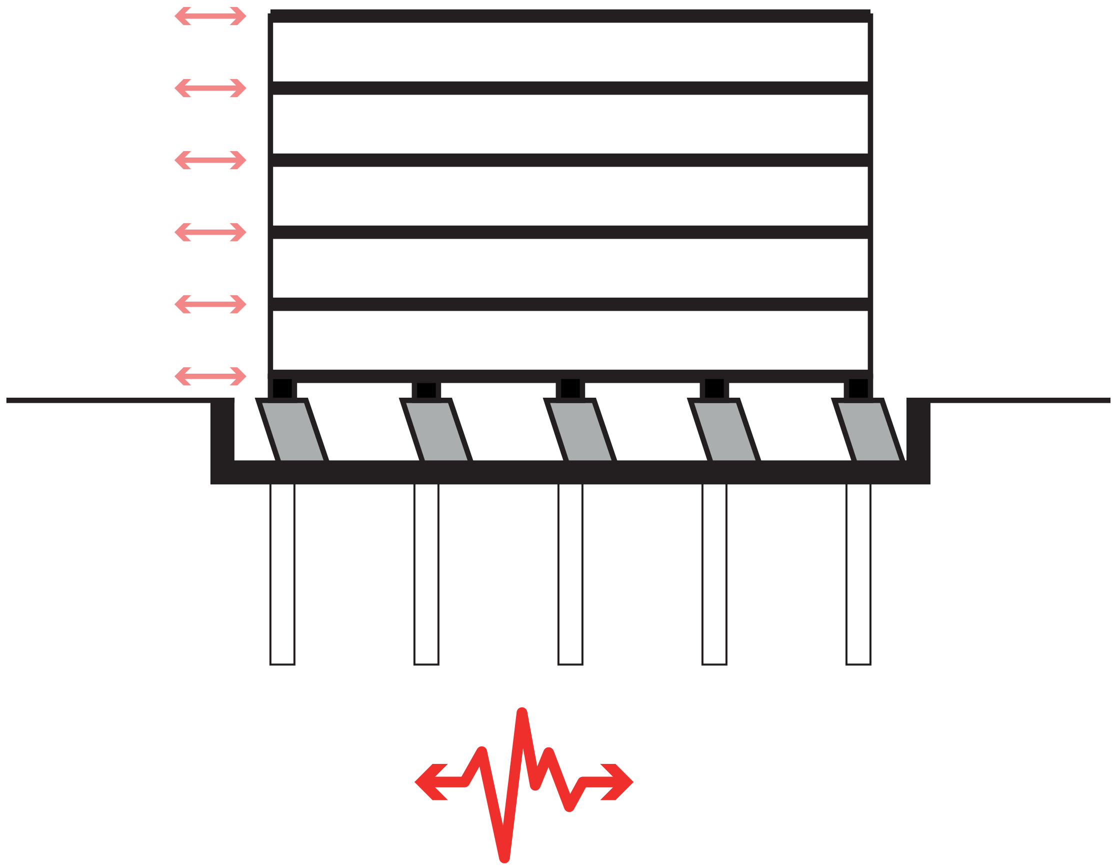


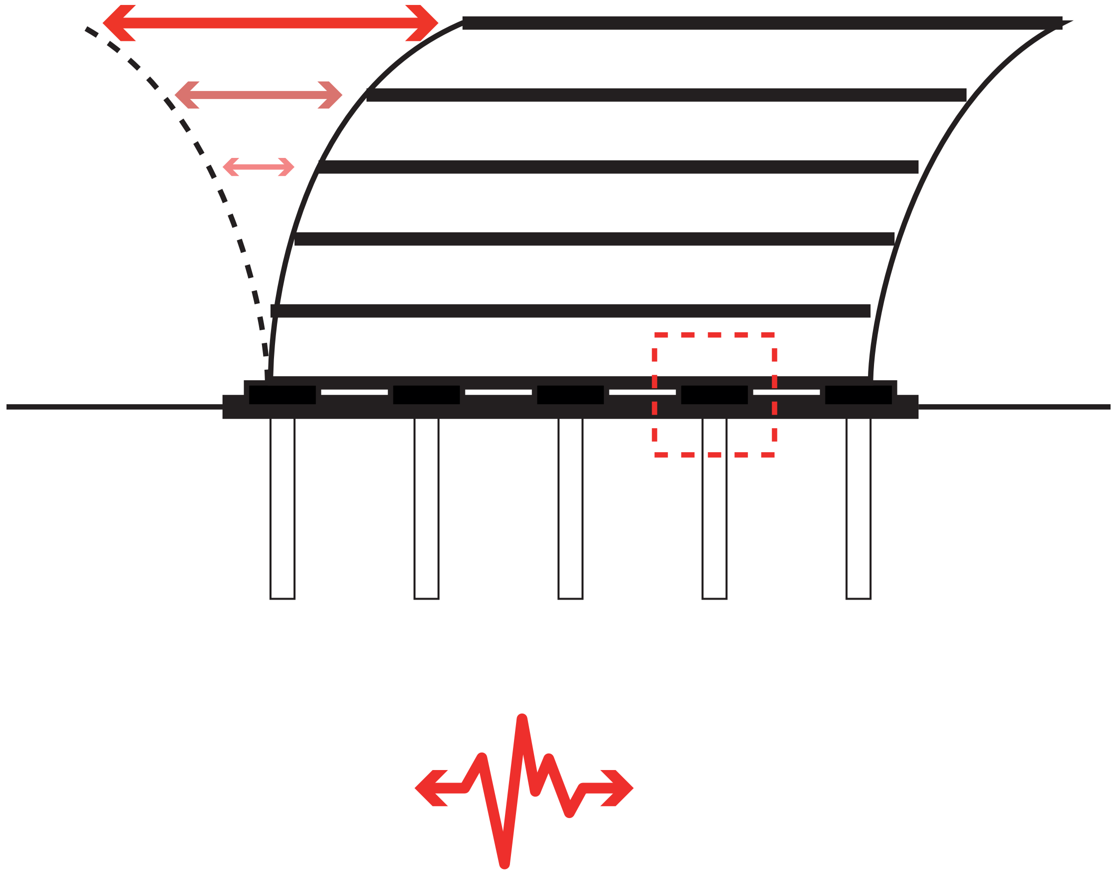


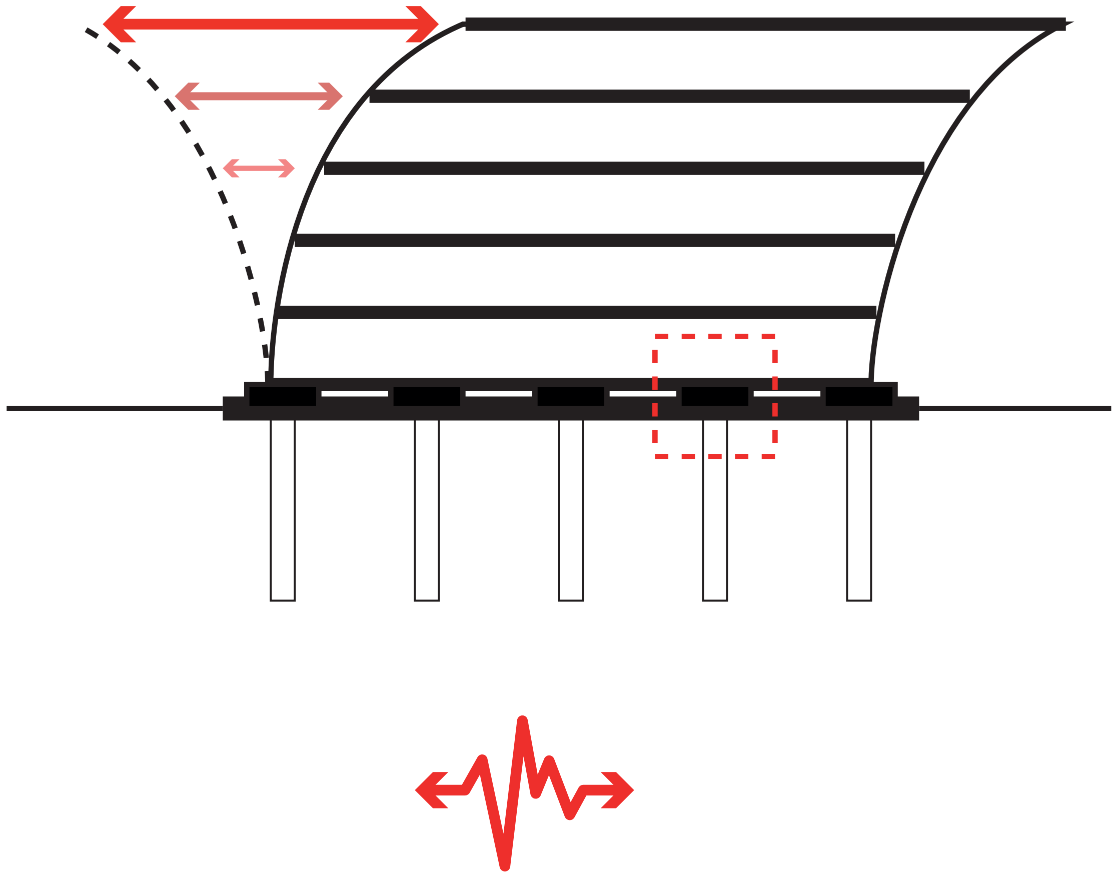
The columns on the north facade were designed as inclined columns initially. To keep their behavior predictable as well, the columns were straightened as much as possible.

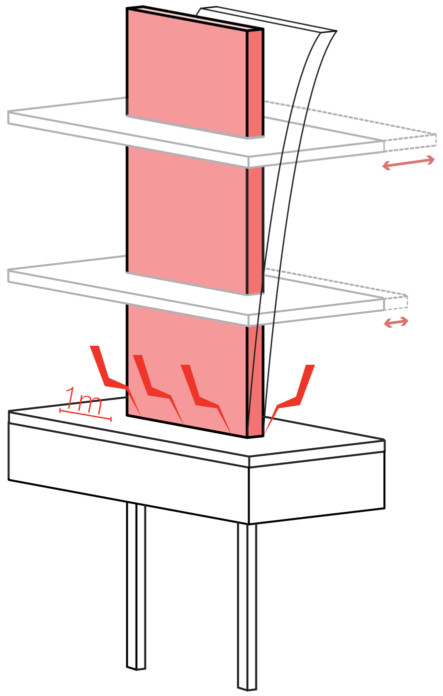


The facade required special attention during the redesign. A stick system would create large gaps during earthquakes that could lead to a compromise in the weathertightness. Therefore, a unitized system was chosen instead that could move independently from each other.

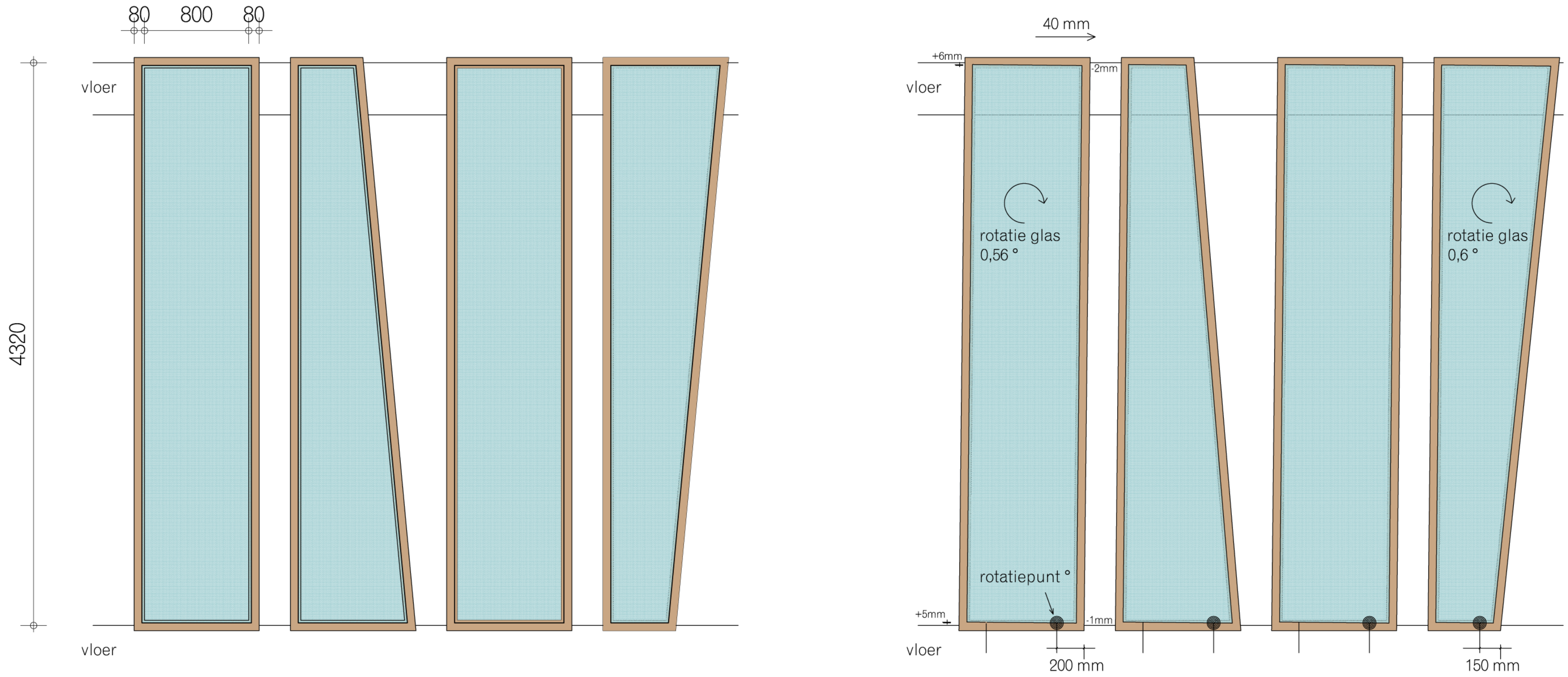








Although different foundation types were investigated, finally a cheaper system with predictable shear walls was chosen.



Expected movements and toleranced of the unitized facade system.