IOSUD – Universitatea Politehnica Timișoara
Școala Doctorală de Studii Inginerești

ANEXĂ CU ÎNTREBĂRI ȘI RĂSPUNSURI
la procesul verbal al susținerii publice a tezei de doctorat
elaborată de dl Ioan Mircea Mărginean, cu titlul: *Robustness of moment steel frames under column loss scenarios/ Studiul robusteții structurilor în cadre metalice prin aplicarea scenariilor de cedare a stâlpilor*

Conform protocolului de susținere publică a tezelor de doctorat, după susținerea tezei de doctorat de către autor și după prezentarea rapoartelor membrilor comisie de doctorat, președintele comisiei deschide sesiunea de întrebări din partea membrilor comisiei de doctorat și a publicului.

Întrebările din partea membrilor comisiei de doctorat și răspunsurile candidatului:
1. Dl Prof. JASPART Jean-Pierre :

Întrebare: Two words were used within the content of the PhD thesis (calibrate & validate) which are not the same. What was actually performed?

Răspuns: calibration was performed regarding the material samples, T-stubs, 2-D specimens for the FEM model, while in the case of the 3-D structure a validation was performed based on the previous calibration. In the case of the AEM model, for the 3D assembly, and for the case-studies, only calibration was performed.

Întrebare: Joint configurations were categorized as full strength and partial strength. As part of the seismic design process, the intention is to form the plastic hinge in the beam and to avoid the yielding in the connection. Consequently, the connection is provided with a certain amount of over-strength (1.4 … 1.5) which leads to a full strength joint. Were the joints designed for this level or for something different?

Răspuns: EPH and CWP connections were designed with an overstrength of over 1.375, therefore are full strength joints as you mentioned. The RBS would actually have less strength than the beam, due to its detailing. In the case of EP, the initial design is partial strength (0.8 from the beam capacity), but the improved configurations have more capacity than equal-strength, but less than full-strength, as increase of the bolts leads to a joint strength which enables the formation of the plastic hinge in the beam.

Întrebare: when you increase the thickness of the end-plate, you will reduce the ductility of the connection. Why should you not consider more flexible end-plate?

Răspuns: I would not recommend flexible configurations for connections, as they would not be enable the structure to profit of the entire capacity of the elements.

Comentariu: Within a structure, an inverted arch forms following the column loss, and in reality the load stops at a certain point. Consequently, a partial strength might work well.

Răspuns: We did not reach tension forces in the columns above the removed elements. It

was not the case for our studied configurations.

2. Dl Prof. VĂCĂREANU Radu:

Întrebare: In the thesis, it was stated that the strain rate is not important. Can you elaborate?

Răspuns: The strain rate influence for material properties would be of great importance in the case of the direct effect which would produce the local (initial) damage. Some examples would be blast or impact, where there are high strain rates. In the case of column loss, The velocity of the column descending is not high enough to produce large deformation rates in the material, also because these deformations are spread on significant areas, therefore the influence of material properties are neglectable.

Întrebare: A future research direction is related to fragility functions and curves. Regarding the development of fragility functions, what would represent the horizontal axis?

Răspuns: I think the L/d ratio, the span over depth, would be one relevant parameter

Întrebările din partea publicului și răspunsurile candidatului:

-nu au fost întrebări din partea publicului

Prezenta Anexă s-a întocmit în două exemplare.

Data: 10.03.2017

PREŞEDINTELE COMISIEI,
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