A DIANA MODEL OF A PRECAST-PRESTRESSED CONNECTION

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A two-year numerical and experimental research project at the Eucentre, related to the evaluation of the seismic behaviour of RC precast structures typically produced in Italy, has been planned in order to explore some performance information and mechanical properties of precast innovative connections. Preliminary results, coming from a predictive numerical analysis, are described in this presentation. The main issue of this paper is the numerical study of a post-tensioned beam-column connection addressed to a future comparison with the performances of other possible solutions. In particular, the examined precast dry joint is resolved with corbels, pre-tensioned (primary) and post-tensioned partially unbonded (secondary) tendons. The behaviour of the concrete is modelled with the total strain based constitutive model; the stress-strain relationship for the prestressing steel is a bilinear diagram; different meshes will be discussed and a non-linear analysis is performed with a BFGS iteration scheme. The final geometry, mesh, bars and sections are presented in the following figure.