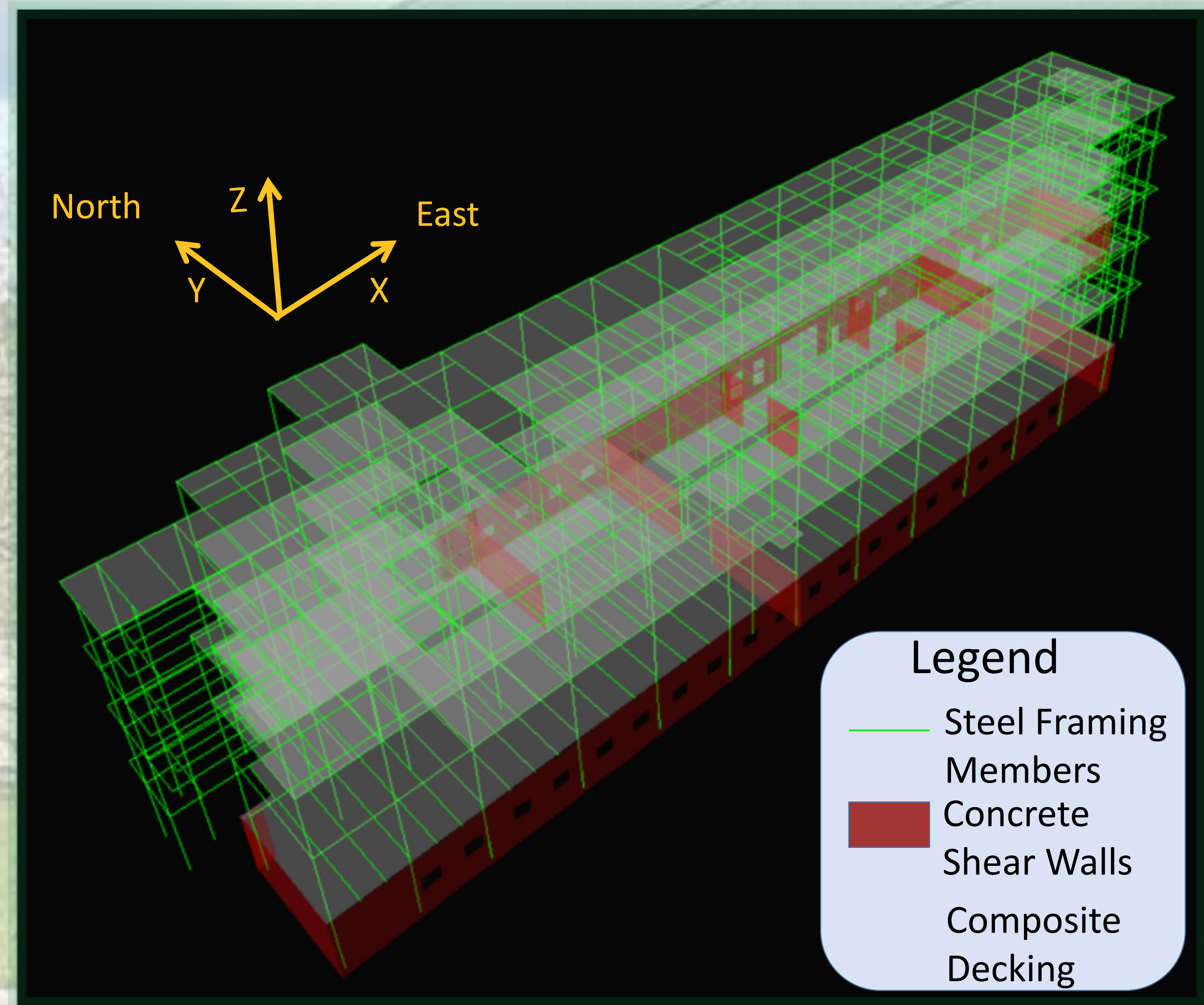


Abstract: On November 30th 2019, Anchorage Alaska experienced a magnitude 7.1 earthquake. As part of a design of a phase II addition to University of Alaska Anchorage (UAA) Engineering and Industry (EIB) PL&S Engineering created structural model using ETABS software to analyze the building's performance during the earthquake. Using data collected from seismic sensors placed in and around the EIB PL&S was able to compare the theoretical design response with the actual response of the building. PL&S Engineering was able to identify the issues within the current structure and apply those lessons to the design of a three-story, forty-thousand square foot Phase II addition to the EIB, providing a 35% plan set based on the client's specifications.

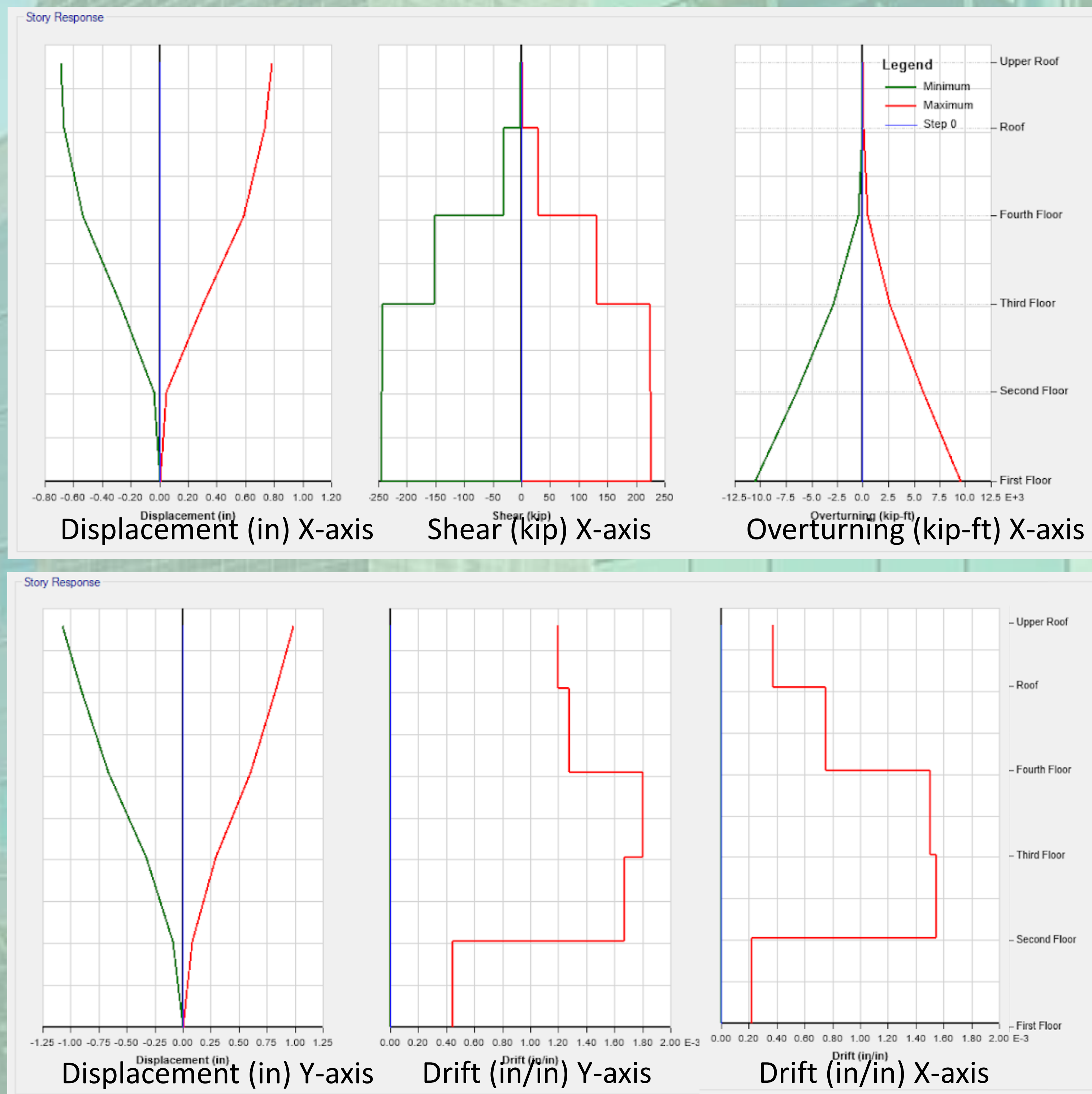


The figure above shows the deliverable ETABS model of the EIB. ETABS is a finite element analysis software used to analyze the dynamic motion of structures. The EIB is a four-story steel moment frame lined with concrete shear walls laterally bracing the structure up to the second floor

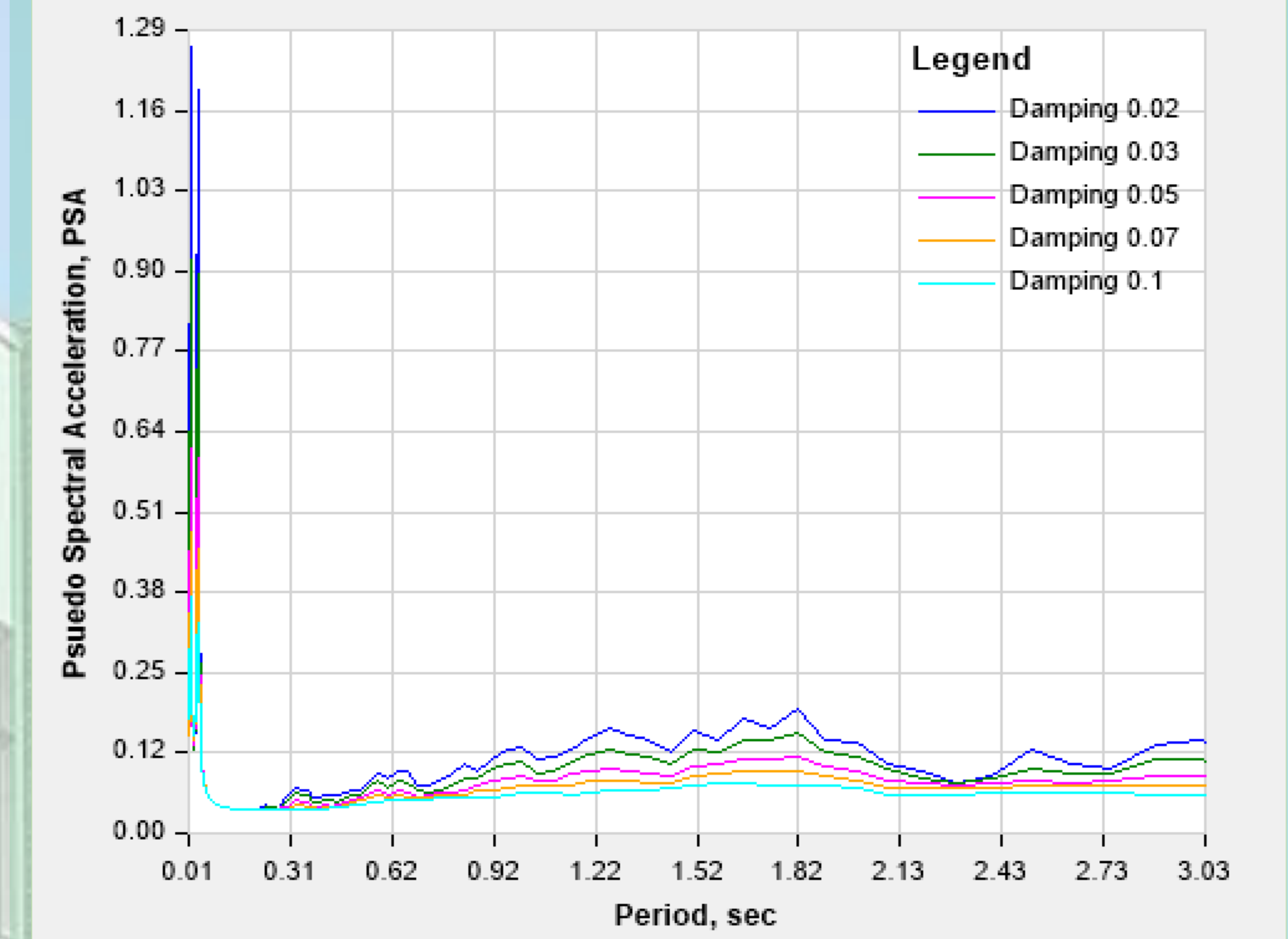
EIB Seismic Analysis & Design

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Justin Lobdell, EIT – Project Engineer
Evan Sharp - Project Engineer

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April 26, 2019



Conclusions Based upon findings from ETAB's analysis of the EIB, it is recommended that the phase II addition be tuned to a period between 0.5 and 1.8 seconds. Furthermore it suggested that open stairwells and asymmetrical openings in the slabs be avoided in final design as those areas of the EIB experienced the largest torsional stresses. It was concluded that the use of semi-rigid diaphragms be continued in the second phase. 35% design consists of a moment frame with appropriately sized beams and columns framed to meet square footage requirements.



November 2018 EIB Response Spectrum



Proposed Phase II Rendering



PL&S Engineering
Firm Members
(Left to Right)
Evan Sharp
Charles Pappas
Justin Lobdell