[Çağrılı Tema Sunumu]

RECENT ADVANCES IN SEISMIC BEHAVIOR AND DESIGN OF STEEL LATERAL FORCE RESISTING SYSTEMS

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ABSTRACT:

This presentation discusses recent developments in seismic design of four major steel building lateral load resisting systems which are Concentrically Braced Frames; Moment Frames; Steel Shear Walls, and (4) Eccentrically Braced Frames. In concentrically braced frames, a recent development has been the recognition of relatively low ductility of "Hollow Steel Sections (HSS)" commonly used as bracing members in this system. The solution has been the use of "Buckling Restrained Braces". For tall buildings with moment frames, the effects of "long distance earthquakes" on these structures will be discussed and it will be shown that in many cases, long distance earthquakes, with relatively small MPGA but long period, can cause more damage than the near fault earthquakes with short period but quite large MPGA. In steel shear walls, the new and innovative "Buckling Restrained Steel Shear Wall" developed by the SOM, with contributions by the author, will be discussed. Finally, the presentation will discuss, the case of seismic retrofit of an existing building where the existing elements of the structure could not be used as inelastic elements of the lateral load resisting system. A new *vertical shear link* was developed and used as part of an eccentrically braced frame system, where during major earthquakes, the special shear links will be the only inelastic elements of the system while all existing elements remain elastic.

KEYWORDS: Steel structures, seismic design, braced frames, moment frames, steel shear walls.