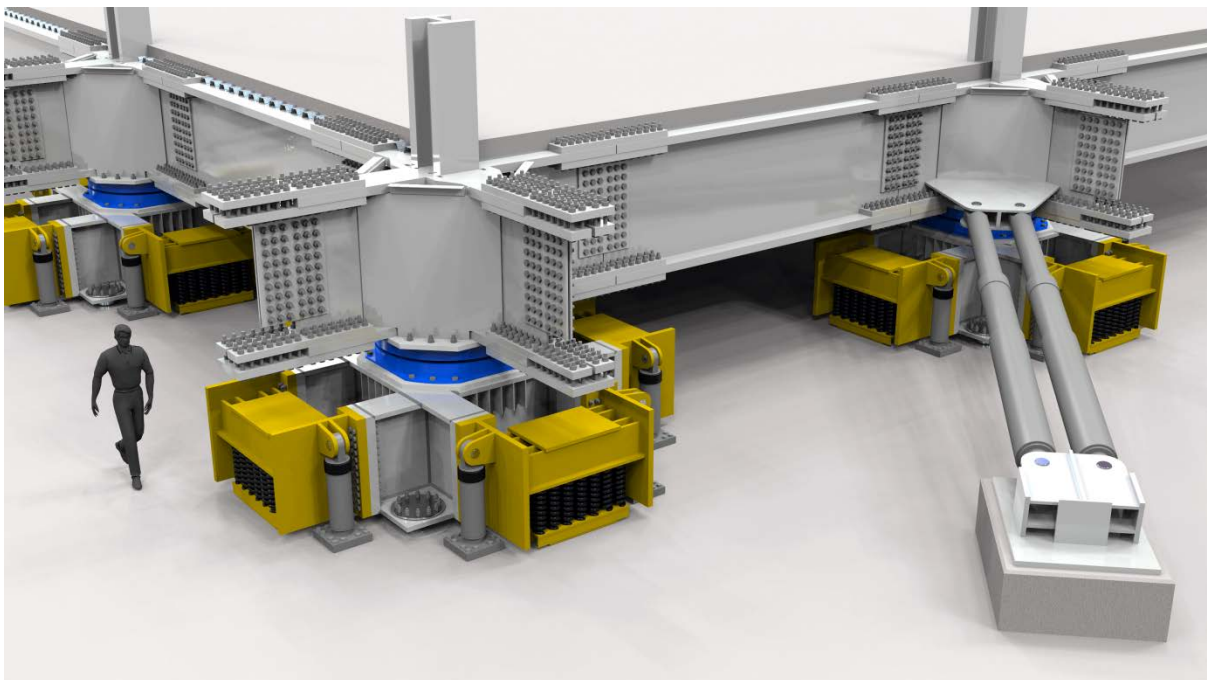


Loma Linda University Medical Center

The Loma Linda hospital is an 18 story hospital made up of 6 main podium levels before the building splits into two towers, a 10 storey Children's hospital and an 18 storey Adult's hospital. This new structure is an extension to an existing hospital which has been built in a seismic active area. Due to the seismic activity, the building incorporates a number of seismic resistant design concepts such as Sideplate technology and Buckling-Restrained Braces as well as an extremely complex base level that has a grand total of zero traditional anchor/holding down bolts to the foundation.

The Below image is of the base level and consists of (from the foundation up):

1. Steel plated pedestals. These pedestals do not directly fix to the foundations. There are four pins, one in each corner, the pins range from 6" to 12" diameters and are guided by post grouted sleeves that contain Nyloil guide bushings. Additional to the pins there are seismic spring mounts (shaded yellow in image) bolted to each side of the pedestals.
2. Secured to the top of the steel pedestals are triple pendulum bearing isolators (shaded blue in image). These bearings provide approximately 3'-6" of movement in all directions.
3. Fixing atop of the bearings is the first level of steel framing which consist of 60" deep plate girders with flange material up to 4" thick and web material up to 3 1/2" thickness. Typically, the plate girders are spliced together with bolted splice plates; however there are a few splices that require field welding. Where the plate girders intersect, a plated box section filled with concrete house the building column profiles which extend through to the base of the plate girders.
4. Finally, to complete the seismic design there are fluid viscous damper braces which fix the plate girders back to the foundations via an embedded plate bracket.



The project consisted of approx. 21500 tons of steel.

The base level plate girders required 42,000 1 1/2"Ø bolts in the plate girder splices alone.

BIM Coordination aspects;

- Structural support framing for imaging equipment pads which support the concrete slab
- Modelling of "Protected zones" for both the BRB bracing and Sideplate seismic system which was required for trace coordination and fabrication
- Positioning of MEQ (mechanical equipment) support beams.

- MEP support beams and penetrations (See below beam penetrations at the base level).
- Electronic model review of early sequences to support the aggressive construction schedule

