

Signal box prior to commencement of work.



## Historic Move of Historic Structure

**IASM members partner to relocate historic railway structure in Sydney**

When Mammoth Movers of Adelaide, Australia contracted to relocate a historic railway structure in Sydney, the company turned to Flint and Doyle Structural Movers (FDSM) of Ft. Myers, Florida as its partner for the complex and historic move: the first of a masonry building on rubber tires in Australia.

The Hornsby Railway Signal Box, located in Hornsby, Sydney, Australia is an important piece of Australian rail history. Built by the New South Wales Railways (NSWR) the building was constructed as part of the Sydney Electrification Scheme in the 1920's and 30's. The "type J" electro-mechanical interlocking Signal Box, was one of the most elaborate ever designed and built by the NSWR Signal & Telegraph Branch. The interlocking machine was a great advance in rail safety. It was configured in such a way as to prevent conflicting point and signal operations being performed, essentially preventing collisions, derailments and other accidents. The Signal Box remained in service until the late 90' The New South Wales government required the relocation of the Signal Box as part of a major infrastructure "Clearways" project. This project was designed to reduce rail congestion in the Sydney metropolitan rail system.

Listed on the State Rail Authority's Section 170 Heritage and Conservation Register, the building was relocated approximately 390 feet to make way for a new train line. The primary heritage aspect of the building is the signaling and control equipment located within the building. Relocation of the building with the equipment intact ensured the preservation of all equipment in an "as is" state.



During relocation.

By **MATTHEW MANIFOLD**, Mammoth Movers Pty, Ltd, Adelaide, Australia

The two-story structure is 58 feet long by 20.5 feet wide and was built in 1928. It weighed in at 300 tons including approximately 20 tons of steel. The lower section of the box is constructed of solid brick--three-bricks thick--incorporating buttress supports on all four external walls and a poured floating slab floor. The building was constructed on concrete footings with the first story consisting predominantly of glass on three sides, with a fibro rear wall and asbestos shingle roof.

Almost the entire ground floor of the structure is occupied by signaling relay equipment located on three longitudinal racks, with an extensive cable tough system integrated into the slab. Internal brick partition walls exist at either end of the building.

A first story slab was poured on formwork during construction. The weight of the slab is transferred to the ground through the outer walls and via 16-point loads applied by the relay rack columns.

### Challenges not new to IASM members

The relocation of the Signal Box presented a number of challenges all too familiar to IASM members. However, like all projects it also highlighted a few unique issues.

Moves of this nature had not been undertaken in Australia before. Mammoth Movers was not aware of any previous move of masonry building on rubber tires in Australia.

The Australian construction industry is highly regulated and even more so when working in a rail corridor. The associated legalities, combined with the virgin nature of the move resulted in a heightened focus on the works by the principal contractor and Government client, in addition to other practical complexities.

Extensive preplanning was required to ensure that the correct equipment was on site, as there was no "corner store" or local movers available to buy or hire specialized house moving equipment required for the job.

Preparation for the move took six months from signing of the contract. It required sourcing house moving equipment from the USA by FDSM and general construction equipment in Australia by Mammoth Movers. Strict Australian customs requirements necessitated that all imported second-hand equipment be stripped and meticulously cleaned by FDSM prior to packaging in "customs approved" materials.

The absence of an established masonry moving industry in Australia also meant a lack of local skilled labor familiar with the process. Mammoth Movers turned to FDSM's Larry Cline, Tom Doyle and Kenny Zdrojewski to provide that expertise and lauded FDSM's work in both the sourcing of equipment and its invaluable input into the move itself.



Halfway along its relocation path showing adjacent rail lines.

### Other Challenges

Delays in completion of site preparation "work by others" made coordination of resources difficult. This included relocation of high voltage lines from above the building, termination of cabling interfacing with the building and within the excavation zone and removal of surrounding obstacles such as transformers and railway equipment.

Perhaps the biggest single issue in this respect was....

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Installation of cross beams showing excavation limit due to underground cables.



Partition wall footers and windows cut in perimeter wall.