



Product

Custom Gear Drives

Application

Vertical Lift Bridge

Highlights

- Custom-designed, enclosed differential reducers
- Through-hardened gearing
- 143,000 in.lb. torque rating
- Fabricated steel housings
- In-house load testing

Built in 1960, the Rio Vista (Helen Madere Memorial) bridge carries approximately 23,000 vehicles daily across the Sacramento River in Rio Vista, California. The 2,890 ft. long bridge features a 306 ft. long vertical lift span that raises to allow for passage of large freighter traffic. The bridge recently underwent a major renovation, including the replacement of the gearboxes.

One gearbox is installed in the mechanical room at the top of both lifting towers. The drives in both towers are synchronized for smooth, level deck lifting and lowering. Each gearbox has two input shafts that connect to the primary electric drive motor and an inching drive motor. Two large-diameter output shafts connect to twin cable pulley winches.

Based on a bridge site inspection and drawings from the original 60-year old competitor drives, Nuttall engineers worked with Caltrans, the bridge owner, and the bridge's mechanical contractor to design new custom replacement gearboxes utilizing the latest gear technology.

Two identical enclosed parallel-shaft primary reducers (plus two backups) with differentials, featuring a 60.5:1 ratio, an input of 30 HP @ 1200 RPM, an output of 19.8 RPM, and a service factor of 1.5 were supplied.

All drives featured fabricated steel housings and all welds were inspected by an Independent Certified Weld Inspector (CWI). Drives met a "Buy USA" requirement and were subjected to 150% load tests performed in-house.

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