



Product

Custom Gear Drives

Application

Vertical Lift Bridge

Highlights

- Custom-designed enclosed reducers
- Two duplicate sets of drives were required. Each set featured a primary, offsetting and right angle reducer
- Fabricated steel housings

The World War Memorial bridge, built in 1922, spans the Piscataqua River between Portsmouth, NH and Badger's Island in Kittery, ME. The through-truss lift bridge features a center vertical lift span that can be fully opened (providing a clearance of 130 ft.) to allow large commercial vessels to pass or partially raised for smaller recreational boat traffic. The original 1200 ft. long bridge was permanently closed in 2011 after an inspection revealed significant structural and mechanical problems. Since the bridge was deemed too degraded for rehabilitation, a completely new replacement bridge was built. The new bridge was dedicated in 2013.

Nuttall Gear worked closely with the bridge engineering team at HNTB Engineering to design and manufacture all the various enclosed drives required for the new bridge. Equipment rooms, containing matching drivetrains (each house a primary, offsetting and right angle speed reducer), are located on both sides of the center lift section. The project had a "Buy USA" requirement (including country of origin for the steel). All units feature fabricated steel housings and all welds were inspected by an Independent Certified Weld Inspector (CWI).

- Primary Reducers: Input rating: 250 HP @ 900 RPM, Reduction ratio: 60:1, Output torque rating: 819,230 lb.in.
- Offsetting Reducers: Input rating: 125 HP @ 900 RPM, Reduction ratio: 2:1, Output torque rating: 27,000 lb.in.
- Right Angle Reducers: Input rating: 125 HP @ 450 RPM, Reduction ratio: 1:1, Output torque rating: 27,000 lb.in.
- Auxiliary Reducer: Input rating: 40/20 HP @ 1200/600 RPM, Reduction ratio: 6.2:1, Output torque rating: 20,566 lb.in.

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