



Background

Interstate Bridge Trunnion Timeline



A *trunnion* is the axle of the lift span's pulley.

The 20-inch diameter trunnion and pulley wheel weigh about 21 tons.



- **1917:** I-5 northbound bridge built
- **1958:** When the I-5 southbound bridge was built, the trunnion assembly on the northbound bridge was modified; state-of-the-art at the time, this introduced the possibility of long-term fatigue cracking
- **1988:** Ultrasonic tests on all trunnions at stress points revealed microscopic defects in one
- **1997:** ODOT replaced the two trunnions on the north tower of I-5 northbound; only one had a crack. Independent expert Dr. John Fisher of Lehigh University began studying the cracked trunnion
- **1999, 2004, 2011:** Ultrasonic tests performed on the two trunnions on the south tower of northbound bridge
- **2011:** Crack about 1/2-inch deep found in southeast tower trunnion; not visible to the naked eye
- **4/2012:** Dr. Fisher concluded this crack is growing at the predicted rate; he also concluded that the trunnion could stay in service safely until the year **2045**. An OSU expert reviewed and concurred
- **Future:** As an extra margin of safety, ODOT recommends trunnions be left in service until the crack reaches about half the size recommended by Dr. Fisher, which at the current growth rate would be in the year **2026**. ODOT will perform detailed ultrasonic inspections in the summer of 2012, 2013 and 2014

5/2012

