3-MILE SLOUGH BRIDGE REPAIR FACT SHEET

Project Purpose and Description

The counterweight suspender wire ropes used to lift this bridge are fatigued. These ropes are the original ones installed back in 1947. If they were to unravel and break, it could cause considerable damage to the machinery of this bridge and put it out of service. If that should happen, the bridge would have to be fixed in the upright position since United States Coast Guard regulations require that the waterway remains open to marine traffic. The existing wire ropes had been scheduled for replacement by the end of 2009, but frequent inspections of the bridge revealed that the ropes are cracking at an increasing rate. With ropes of this type, outer crown wires crack and break under stress. Strands in the rope then begin to unravel, reducing the total cross section of the rope. This increases the breakage of crown wires and rope strands until the load on the rope is too much for the few strands left and the rope eventually snaps. The two huge counterweight blocks (one up in each tower) reduce the total lifting weight of the lift span, thus limiting the horsepower requirements of the drive motor to 25 horsepower. The suspender ropes connect the counterweight blocks to the lift span so when the lift span goes up, the two blocks come down like a pulley in an elevator.

Current Status and Cost

To protect the mobility of motorists in this area, the bridge will only raise twice per day for recreational watercraft at 10:00 a.m. and 3:00 p.m. (the bridge normally opens 5 - 7 times per day). Operators are on-call for commercial and emergency openings. The bridge will be monitored closely to ensure the safety of the motoring public and to protect the navigability of this waterway.

The contractor has already ordered the new wire rope and fabricated the end sockets during January and February, with quality assurance testing completed in March. The contractor will replace the wire ropes, one at a time (one each night), and then tension it, so that the bridge can be put back into service each morning. The wire rope replacement, will begin on April 1, 2004, and run through April 30, 2004. The estimated cost of this work is $2 million.

BRIDGE FACTS

- The 3 mile slough bridge is a vertical lift movable bridge built in 1947
- 96 feet total lift for 110 feet channel vertical clearance
- 150 feet horizontal clearance
- There are 24 counterweight suspender wire ropes -- 6 per corner of bridge (sometimes called cables but that terminology is technically incorrect)
- Each rope is 140 feet,10 inches long with clevis sockets on each end
- Ropes are approximately 3000 pounds each
- Each rope is 1.75 inch in diameter, 6 x 19 fiber core (6 strands with 19 wires each, crown wires are the outer most wires that touch the sheaves)
- Ultimate breaking strength each --124 tons (248,000 pounds)
- **Project Toll-Free Hotline 1-866-88BRIDGE, Updates, Closures & Detours**
- **Caltrans Construction/Project Resident Engineer, Jeff Scott (916)263-4931**