

# MEMORANDUM

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**DATE:** October 29, 1999

**TO:** All CDOT & Consultant Design and Construction Personnel

**FROM:** S. W. Horton, CDOT Design/Construction Engineer

**SUBJECT:** TECHNICAL MEMORANDUM #27 - REPLACABLE BRIDGE DECKS

Replaceable decks are always desirable and should be considered in the selection process. This is due to the uncertainty of the very long-term life of concrete decks in an environment that includes chloride exposure and uncertain monitoring and maintenance for the next 50 to 100 years.

Most structure types can be designed with a replaceable deck. For post-tensioned bridges this may involve some extra cost and structure depth. Design time may also increase due to the lack of simple design programs for composite post-tensioned structures.

If a replaceable deck is impractical for the structure type desired, and the location is such that future shoring for deck or superstructure replacement would be difficult or expensive due to traffic, environmental concerns, cost, or other reasons, a sacrificial asphalt overlay with an impermeable membrane should be used. If a concrete wearing surface is desired, a silica fume concrete overlay or a concrete deck with silica fume can be used in lieu of the asphalt and membrane.

The membrane with asphalt, or the silica fume overlay, should also be considered for all rehabilitation projects. However, at this time, the best price/performance ratio that we can be sure of for silica fume overlays will not normally justify their use on easily replaceable decks. They may still be justified if they serve as a rehabilitation measure, or have some other benefit such as abrasion resistance, or as part of a scheme to eliminate or reduce joints in a deck. Asphalt should not be used without a waterproofing membrane due to the tendency to hold water (poultice effect).

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