U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: **INFORMATION**: FHWA Study "Design for Fish Passage at Roadway-Stream Crossing: Synthesis Report"

Date: December 19, 2007

In Reply Refer To: HIBT-20

/s/ Original Signed by
From: M. Myint Lwin, P.E., S.E.
Director, Office of Bridge Technology

To: Associate Administrator for RD&T
Associate Administrator for FLH
Directors of Field Services
Federal Lands Highway Division Engineers
Resource Center Director
Division Administrators

The purpose of this memorandum is to inform you of the recently completed FHWA study entitled "Design for Fish Passage at Roadway-Stream Crossings: Synthesis Report." The study focused on identifying state-of-the-practice methods being used by different institutions to design culverts for fish passage. The methods have been summarized into four categories based on design approach, premise, and objectives. The categories are as follows:

- No Impedance – simply spans the entire stream channel and floodplain;
- Geomorphic Simulation – creates fish passage by matching natural channel dimensional characteristics and conditions within the culvert crossing;
- Bed Stability – replicates hydraulic diversity found in the natural channel through the use of natural and oversized substrate; and
- Hydraulic Design – utilizes roughness elements, such as baffles and weirs, to meet species-specific passage criteria during periods of fish movement.

In addition to the four categories, the synthesis includes chapters covering fish biology and capabilities; culverts as barriers; fish passage hydrology; and hydraulic, biologic, and geomorphic design considerations. Design examples and case histories are presented, followed by a discussion on construction, maintenance, monitoring, and future research needs.

The synthesis report is now available for free downloading from the FHWA hydraulics engineering Web site at: http://www.fhwa.dot.gov/engineering/hydraulics/pubs/07033/. Please inform the appropriate department of transportation management official within your State or region of the availability of this synthesis report, which completes Phase 1 of a two-

phase effort. Completion of Phase 1 was made possible, thanks to a partnership between FHWA, Washington State University and Brigham Young University. Phase 2, which is already initiated, seeks to develop a robust, engineering-based procedure for designing culverts for fish passage. We anticipate completion of the Phase 2 study in Spring 2009.

For additional information on the synthesis report or Phase 2, please do not hesitate to contact Bart Bergendahl at (720) 963-3754, bart.bergendahl@dot.gov; or Jorge E. Pagán-Ortiz at (202) 366-4604, jorge.pagan@dot.gov.

cc:
Bridge Hydraulics