



## PROFESSIONAL CAPABILITIES

The multi-disciplinary scour evaluation team at Collins includes specialists in hydraulic, structural, and geotechnical engineering. With just over 6,600 bridges inspected underwater, and over 2,000 evaluated for scour, Collins understands the problems of scour firsthand. In addition, Collins has a solid record of successfully assisting public and private sector efforts to inventory and evaluate the scour susceptibility of the nation's bridges in compliance with FHWA mandates.

### TYPICAL SCOUR ANALYSIS PROCEDURE

#### DATA COLLECTION & INTERPRETATION

- Design Plans
- Geotechnical Testing Data
- Geologic Site History
- Sediment Discharge Station Data
- Watershed Development History
- Flood Flow Frequency Curves
- Flood Plain Cross-Section Surveys
- Flood Insurance Studies
- Calibrated Backwater Models
- Geomorphology Floodplain Reports
- Historical Flooding
- Soil Samples / Boring Logs
- Topographic Maps
- Aerial Photos
- Stream Flow Data
- Daily Discharge Records
- Discharge Rating Curves
- Flood Control Studies
- High Water Marks
- Land Use Zoning
- Soil Type Mapping
- Site Erosion History
- Pile Integrity Testing

#### STREAM STABILITY & SCOUR ANALYSIS

- Evaluation of Stream Stability and Scour Susceptibility Using: *HEC-18, Evaluating Scour at Bridges, FHWA; HEC-20, Stream Stability at Highway Structures, FHWA; HY9 Version 4.0, Scour at Bridges Software; Critical Shear and Velocity Equations*
- Evaluation of Bedform Mechanics and River / Stream Regions

#### STRUCTURAL & GEOTECHNICAL ANALYSIS

- Analysis for Effect of Reduced Streambed Embedment
- Overall Structural Stability Analysis
- Geotechnical and Structural Analysis of Substructure Integrity

#### HYDROLOGIC & HYDRAULIC ANALYSIS

- Development of Flood Frequency, Flow Duration Estimates, and Water Surface Profiles Using Such Software as: *HEC-1, HEC-2, HEC-UNET, BOSS-SMS, HECRAS, WSPRO, and WSP-2*

#### COUNTERMEASURES DESIGN

- Development of Monitoring Programs
- Riprap Placement Design
- Grout Placement Design
- Sediment Check-Dam Design
- Guide Bank / Spur Dike Design
- Channel Improvements
- Rehabilitation Analysis / Design for Bridge Structures
- Development of Specifications and Contract Documents

# COLLINS ENGINEERS INC.