SELECTION OF COUNTERMEASURES

LESSON 4
LEARNING OUTCOMES

• Given a stream stability and/or bridge scour problem, select appropriate countermeasures to correct the problem(s) considering functional applications and river characteristics
PURPOSE

• Identify stream instability and scour countermeasures implemented by various DOTs

• Provide a matrix which summarizes countermeasure application throughout the US.

• Provide guidance for selecting countermeasures for a Plan of Action
THE COUNTERMEASURES MATRIX

- Countermeasure Groups
- Functional Applications
- Suitable River Environment
- Maintenance
- Installation Experience by State
- Design Guideline References
THE COUNTERMEASURES MATRIX

COUNTERMEASURE GROUPS

Group 1 - Hydraulic Countermeasures

• Group 1.A. River Training Structures
• Group 1.B. Armoring Countermeasures
COUNTERMEASURE GROUPS

Group 2 - Structural Countermeasures

- Foundation Strengthening
- Pier Geometry Modification
THE COUNTERMEASURES MATRIX

COUNTERMEASURE GROUPS

Group 3 - Monitoring

• Fixed Instrumentation
• Portable Instrumentation
• Visual Monitoring
THE COUNTERMEASURES MATRIX

FUNCTIONAL APPLICATIONS

- Well Suited/Primary Use
- Possible Application/Secondary Use
- Unsuitable/Rarely Used

N/A Not Applicable
THE COUNTERMEASURES MATRIX

SUITABLE RIVER ENVIRONMENT

- River Type
- Stream Size (Width)
- Bend Radius
- Flow Velocity
- Bed Material
- Ice/Debris Load
- Bank Condition
- Floodplain (Width)
MAINTENANCE

- Estimated level of maintenance required
- Comparison to other countermeasures in matrix
- Subjective rating
INSTALLATION EXPERIENCE

• Identifies DOTs that have used a given countermeasure

• Widely used means more than 8 states have used the countermeasure
References appear by number in Chapter 8 in HEC-23

DG means HEC-23 has Design Guidelines for the countermeasure
LEARNING OUTCOMES

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