OVERVIEW OF COUNTERMEASURE PERFORMANCE

LESSON 3
LEARNING OUTCOMES

Describe countermeasures for

• Stream instability
• Scour at bridges
A countermeasure controls, inhibits, changes, delays, or minimizes stream instability and scour problems.

Monitoring is also considered a countermeasure.
CONSIDERATIONS

- Stream characteristics
- Construction and maintenance requirements
- Costs
SPUR USES

• Arrest meander migration in bends

• Consolidate poorly defined channels

• Protect banks from erosive forces
(a) Resting on original channel bed

(b) After drop in channel bed level
(a) Before launching at low flow

(b) During launching at high flow

(c) After scour subsides
COUNTERMEASURES FOR BRAIDING\ ANABRANCHING

- Confine multiple channels
- Provide multiple-channel crossings
BRIDGE SCOUR

- Long-term degradation
- General scour
- Local scour
COUNTERMEASURES FOR DEGRADATION

- Check dams
- Drop Structures
COUNTERMEASURES FOR CONTRACTION SCOUR

• Increase bridge opening
• Decrease discharge through bridge opening
• Improve alignment of flow
ABUTMENT SCOUR COUNTERMEASURES

• Guide banks
• Revetments
• Retards
• Riprap
GROUT FILLED MATTRESS
COUNTERMEASURES FOR SCOUR AT PIERS

• Streamline and align piers to flow

• Increase spacing of piers and columns

• Riprap is not recommended as a countermeasure for pier scour at new bridges

• Riprap can be considered as a countermeasure to reduce the risk at existing bridges, but only with monitoring after high flows
MONITORING

- Fixed instruments
- Portable instruments
- Inspection
Describe countermeasures for

- Stream instability
- Scour at bridges