MSE Walls
Problems and Solutions

Peter Narsavage, P.E.
Foundation Engineering Coordinator
Ohio Department of Transportation
Office of Structural Engineering

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Problems

- Sand leaking from joints
- Settlement of panels
- Uncontrolled drainage
- Deteriorating panels
Sand pile under vertical joint
Settlement of panels
Erosion along MSE wall
Final resting place of MSE wall fill
Another bridge with erosion along MSE wall
Water probably flowed through horizontal joint
Deteriorating panel
Another deteriorating panel
Preliminary inspection program

- Districts inspected each MSE wall
- Completed inspections by Jan 20, 2006
- 339 Walls
- 30 percent have sand leaking from joints
- 32 percent have vegetation in joints
- 19 percent have cracked panels
- 11 percent have bowed or bulging walls
- 13 percent have some erosion
- 9 percent have problems with drainage system
MSE wall inspection program

- OSE will use the information from the preliminary inspections to develop an inspection program.
- The program will be similar to the bridge inspection program, in that it will include:
  - An inventory
  - An inspection cycle
  - An inspection manual
  - Training and inspector qualification
Design changes for MSE walls

- Preference for certain MSE wall types
- Abutments supported on spread footings only under certain conditions
- Consider drainage around MSE walls
Preference of wall geometry at bridges

1. Straight walls
2a. Walls turned back up to 45 degrees (change of wall alignment = 135° to 179°)
2b. Walls turned back with large radius
3. Walls turned back at 46 to 90 degrees

Avoid acute corners!
Straight MSE wall
MSE wall turned back 45 degrees
MSE wall turned back with curve
MSE wall turned back 90 degrees
Avoid acute corners!
Bridge abutments at MSE walls

- In MSE wall plans, include a plan view of the abutment showing all obstructions within the reinforcing zone, such as piling.
- Support the bridge on piling unless bedrock is near the base of the MSE wall
- If the bridge is a single span, it may be supported on spread footings or piling.
- For piling – minimum of 3’-6” from the back face of the facing panels to centerline of the front row pile
- For spread footing – minimum of 3’ from the back face of the facing panels to the front face of the footing
Drainage around MSE walls

- Control of roadway drainage is critical around MSE walls.
- The major problems with MSE walls have been related to the loss of drainage control.
- Extend barrier or curb past the MSE wall.
- Place catch basins beyond the MSE wall, if possible.
Supplemental Spec 840

- One specification that covers all approved MSE wall systems
- Added definitions
- Material specifications for joint cover
- Greatly expanded construction section
Construction of MSE walls

- Preconstruction meeting
- Compaction testing of foundation
- Geotextile with 1 foot of granular at base of MSE wall
- Detailed description of construction procedure
- On-site assistance from supplier
- Do not damage joint cover when applying epoxy sealant.
Geotechnical Consultant

- Geotechnical consultant will inspect the foundation excavation to confirm the recommended allowable bearing capacity (like a footing inspection).
- Inspection will be paid for through the prime consultant under consultant services.