Infrastructure Workshop 13-15 March 2001

Committee Report: Group 2

Flood and Coastal Storm Damage Reduction

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Identify types of infrastructure:

- Levees
- Dams & appurtenant structures
- Channels
- Pumping stations
- Drainage structures
- Flood gates and walls
- Sea walls
- Break waters and groins

Non-structural components

Supporting tools

Needs - Ongoing R&D With High Priority

R • Spillway erosion tools

R • Liquefaction at depth

R • Seismic design for retaining walls

R • Systematic procedure for risk based analysis of stability for dams and levees

• Levees and piping mechanisms

• Flood fighting and integration of GIS

• Guidance for determination of any extreme event frequency (hydrologic and seismic)

R - regulation requirement

Needs - Ongoing R&D With High Priority (cont.)

- Breaching analysis
- Training and technology transfer (EQAS manual)
- Flood fighting manual
- CASE, GCASE, CSLIP, STUBBS, SOILSTRUT
- Capability for non-destructive investigation of cavities or seepage paths in embankments or foundation
- Guidance on performance of innovative ways of raising levees, dams, spillways, etc for flood protection

Needs - New

HIGH RANKING

- Simplify evaluation process for seismic safety of dams
- Determine the best tool to analyze magnitude of embankment displacements and stability due to EQ
- Seismic analysis tool for restrained retaining walls/hard bottom channels
- Early detection and minimization of critical component failure
- Seismic evaluation procedure manual and analysis tools for dams (embankment and concrete)
- Unify COE standard of priority ranking system for funding purposes, i.e. DSA and major rehab
- Integrate R&D projects with advanced degrees (LTT, etc) at field office

Needs - New (continued)

- Innovative methods for cleaning & restoring relief wells
- Staged analysis of multiple anchored sheet pile walls and determination of transverse stresses
- Guidance for the use of composites to rehab (structural applications)
- Improve tools for determination of sedimentation (geospatial apps)
- Development of optimization tools for mechanical and H&H analysis for small interior drainage projects (< 1000 cfs)
- Fully integrated database management tools with specs, design, inspection reports, etc

Needs - New (continued)

- Investigation and criteria of durability for large stones (riprap, armor stone, etc.) for breakwater and groins
- Re-evaluate structural integrity of CORE-LOC units
- Expand risk assessment guidance to cover flood control channels
- Seismic evaluation procedure manual and analysis tools for electrical and mechanical systems (guidance doc)
- Soil pile structure interaction model for numerical codes
- High performance materials technology transfer
- Remote (real time) evaluation of structure
- Decision making tools for non-structural components (GIS, CWMS)