Bridge Owners Forum – BOF20

Tuesday 16th January 2007
King's College, Cambridge

RESEARCH IDEAS WISH LIST

Peter Hill:

1. Permanent Corrosion protection of metallic elements without the use of renewable coatings.
   Main Suspension Bridge Cables may suffer from internal corrosion, despite their fairly comprehensive outer protection and use of galvanised wire, which will reduce the load carrying capacity in an unacceptable time frame for the expected life of the bridge.
   Forced air dehumidification is the only technology currently available for mitigation of this corrosion and alternatives, or improvements in dehumidification technology could have benefits for all structures subject to corrosive environments

2. Non intrusive inspection for discrete metallic elements
   Currently the only reliable option for the inspection of multi strand parallel wire cables is by visual examination. This is a laborious, inexact, expensive and damaging operation. Electromagnetic inspection of cables up to around 300mm has been developed but its reliability is uncorroborated
   Technology developed in this respect may be developed for use in encapsulated steel structures and possibly other linear elements rods, rails, strand for which full length examination is impractical.

3. Non intrusive monitoring of discrete metal elements
   Acoustic monitoring is the only option for continuous remote monitoring of cables for breaks. Although a relatively mature technology it is still guarded quite tightly by the few companies who will offer it. Alternative or open source options may allow development as above for linear structural elements.

Bill Valentine:

1. An IT application that can assist the prioritisation of works associated with repair, maintenance and upgrade of structural defects and substandard features.

2. An accurate NDT device to determine quantity of deteriorated deck concrete below road surfacing

3. The development of an inexpensive concrete replacement/repair material that allows the application of sprayed waterproofing membrane within 3 days the

possibility of future out gassing or moisture release compromising the bond with the concrete. This allows quicker resurfacing and re-opening of the road.

4. A universal IT application for a quick assessment of a bridge's capacity to carry abnormal loads

Andy Phillips:

1. Reliable methods for monitoring ground anchors

2. Reliable methods for assessing Concrete Hinges

3. A NDT technique to measure the loss of cross-section of reinforcing bar in concrete

Awtar Jandu:

1. Development of Optimum Maintenance Strategies for Highway Structures.

2. Speeding up delivery of new and maintenance projects - Reducing traffic delays/ improving journey time reliability

3. Improving bridge inspection methods to ensure consistency of results - Use of new technologies.

Jim Moriarty:

1. Actual loads induced in bridges due to seized bearings.

2. Permissible damage/movement in monitored brick structures especially tunnels.

3. Effective and safe herbicides for vegetation control in brick and concrete structures.

4. Risk based inspection frequencies.

5. Graffitti control/remediation on structures with particular emphasis on paint types and mechanical overcoating vehicles.

David Stork:

1. We have a problem with the life of the surfaces on our bridges. Some research into long life surfacing solutions would be very useful.

2. Real time recording and indication of the loadings on a bridge, both fixed and moving.