INTERIM ADVICE NOTE 136/10

STRUCTURAL SAFETY REPORTING

Summary
This Interim Advise Note provides guidance on structural safety reporting.

Instructions for Use
This IAN takes immediate effect.

Structural Safety Reporting

1. Background

Interim Advice Note 136/10 provides guidance on structural safety reporting relating to highways structures on the Highways Agency Motorways and Trunk Road Network.

The collation and dissemination of information relating to matters of structural concern is a vital element of achieving safe structures. The Highways Agency, therefore, in partnership with the Standing Committee on Structural Safety (SCOSS) and their Confidential Reporting on Structural Safety scheme (CROSS), is interested in events where there have been failures, collapses or any concerns about any part of the construction process, on all of the Agency's construction sites. The Agency is also interested in reports relating to near misses, or observations relating to collapses where these have not been uncovered through formal investigation.

Reports are treated in complete confidence and all identifying features and names are removed before the data is reviewed by an independent panel of experts and comments are added. Comments are non-judgmental, and aim to help others learn from the reported event. CROSS will analyse the data and SCOSS will then use its influence with Industry, Institutions, and Government to effect changes where this is seen to bring sustainable benefit by improving structural safety. CROSS publishes quarterly Newsletters and maintains a data base of reports on www.cross-structural-safety.org, whilst SCOSS publishes a range of reports, topic papers and alerts on matters of concern. Further information about SCOSS/CROSS is provided in Annex B.

2. Action

Structural Safety events related to any Highways Agency schemes or contracts must be reported via the Agency's www.standardsforhighways.co.uk website, using the "Feedback" button. Guidance on what and how to report is provided in Annex A; the reporting procedure is described in Annex D.

Reports do not have to be about current activities so long as they are relevant. Whenever an incident occurs, or a concern is felt, then it can be reported. Structural Safety Reporting is not a substitute for internal (Health & Safety, or other) reporting processes, though can be used in parallel. This scheme does not apply to Occupational Health and Safety issues.

The reports can be submitted by anyone within the Highways Agency and its Supply Chain, involved in the building and civil engineering professions, including Structural and Civil Engineers. Reports will also be welcome from others, who have an interest in structural safety.

3. Implementation

This IAN should be disseminated across all of the HA Supply Chain. It should be used with immediate effect on all HA schemes and contracts.

4. Contact details

If you have questions regarding this document, please contact :

Vladislava Flanagan Palan
Standards_Feedback&Enquiries@highways.gsi.gov.uk

Annex A: Guidance on reporting

1. GENERAL GUIDANCE ON REPORTING

Reports should draw attention to:

- Description of incident or near miss;
- Lessons learned (or identified) which will help others to contribute to a safer industry;
- Concerns which may require industry or regulatory action.

Safety-related concerns may involve:

- The person reporting;
- Other people;
- Their organisation;
- Other organisations that they deal with.

Reports should not be submitted on:

- Criminal activities (which should be reported to the police or the Health & Safety Executive);
- Issues involving personality conflicts;
- Industrial relations and/or terms and conditions of employment problems;
- Occupational health or safety issues.

Urgent safety concerns

Structural safety reporting is not intended for dealing with urgent Health & Safety matters, which should be raised within the reporter's organisation.

2. SPECIFIC GUIDANCE ON WHAT TO REPORT

Appointment of consultants or contractors

- Inappropriate appointment, for example not enough experience or relevant experience;
- Inadequate brief;
- Insufficient fees to do the job properly;
- Insufficient resources to do the job;
- CDM issues
- Complexity of project not sufficiently appreciated.

Design process

- Investigations not thorough enough;
- Analysis or design not sufficiently rigorous;
- Inappropriate use of software;
- Computer results that are ambiguous or unusual;
- Use of unproven materials or techniques;
- Conflicts with regulations or codes of practice;
- Inadequate checking, reviewing, or Quality Assurance;
- Taking disproportionate risks;
- Designs not sufficiently robust;
- Design responsibilities passed too far down the line, e.g. fixings.

Construction process

- Design intent not clear from Documentation;
- Inadequate or insufficient drawings;
- Inadequate method statements;
- Inadequate training and experience levels of staff;
- Lack of involvement and authority for resident engineers;
- Divided responsibilities leading to confusion;
- Unsafe temporary works and falsework;
- Workmanship that could lead to premature failure;
- Use of materials that are unsuitable;
- Not using products in accordance with the manufacturer's instructions;
- Supervision levels inadequate;
- Dangerous construction conditions;
- Budget inadequate for the job;
- Near misses and near hits.

Operation and maintenance

- Lack of guidance from original designers;
- No information available on design or construction;
- Refurbishments and alterations made without proper consideration;
- Frequency and scope of inspections;
- Insufficient budget to address structural concerns;
- Dangerous techniques employed;
- Unusual dynamic behaviour;
- Severe climate change effects;
- Premature deterioration or undue corrosion;
- Indications of instability;
- Unexpected deflections or deformations;
- Component failures;
- Components that cannot be inspected;
- Near misses and near hits.

Annex B: SCOSS/CROSS – Further Information

The Standing Committee on Structural Safety (SCOSS) is an independent body which has operated since 1976 by gathering information from general sources about structural failures and incidents, considering the reasons underlying these, and publishing sixteen biennial reports containing the findings. SCOSS is supported by the Institution of Civil Engineers, the Institution of Structural Engineers and Health & Safety Executive, to maintain a continuing review of building and civil engineering matters affecting the safety of structures.

The Confidential Reporting on Structural Safety (CROSS) was launched by SCOSS in 2005. It is a programme for collecting, analysing, and publishing concerns about the safety of structures. The purpose is to learn from the experiences of engineers and others, disseminate information from these experiences for the benefit of the public and those throughout the construction industry, influencing change in behaviour to prevent the same type of events happening again. CROSS Newsletters are sent to those who register on their web site; they will also be posted on the HA site.

Key features of the scheme are to be non-judgmental, to promote a positive attitude to learning from experience, to be seen by all sides of industry as impartial, to analyse and evaluate reports, to provide advice and guidance in Newsletters, to give feedback to industry and regulators, and to provide complete confidentiality for reporters.

The prime function of SCOSS is to identify in advance those trends and developments which might contribute to an increasing risk to structural safety. To that end, SCOSS interacts with the professions, industry and government on all matters concerned with design, construction and use of building and civil engineering structures.

An example of how the system operates is its handling of fixings' failures. A number of reports were received about collapses of heavy ceilings and other installations due to inadequate fixings. This has resulted in the Construction Fixings Association promoting a new BS *Code of Practice for the use of anchors in safety critical applications*. The drafting is due to commence in 2010. In addition, the fixings industry, in conjunction with SCOSS, is drafting a guide to ceiling fixings.

Report Form
There is an online report form (http://www.cross-structural-safety.org/submit-report/) that can be used or there is a postal system for those who do not wish to use emails.

A report should give;

- a description of the event or concern
- if there was a failure than the cause of the failure if known
- lessons that could be learnt.

An example showing how an important message can be conveyed in a few paragraphs is given in Appendix C.

Further information about SCOSS/CROSS can be found at:

www.scoss.org.uk
www.cross-structural-safety.org

Annex C: Example Report, including CROSS Comments

Bridge Counterweight failure

A component failure on a lift bridge has resulted in a 22 tonne counterweight falling some 5.0m onto a public highway. The road was not open to traffic at the time and there were no injuries. The lift bridge is of the Dutch style with an overhead counterweighted frame and carries an unclassified road over a canal. The failed component was the connection between the counterweight and one of the longitudinal arms of the overhead frame. This had eight bolts passing through the arms of the frame into threaded holes in each endplate of the counterweight. Only the bolt heads were visible and it was not possible to ascertain the bolt condition through normal inspection procedures.

One of the principal connections failed as the bridge deck was going through its normal closing cycle. Investigations indicate that the bolts in this connection yielded in shear probably due to uneven distribution of load between bolts and fatigue due to cyclic loading. Once this connection gave way the other principal connection followed suit in a twisting manner as a number of its bolts yielded in tension. The secondary cross bracing connections also failed and the counterweight fell to the ground. Subsequent actions by the owner were to close all of its structures of a similar type and check them for hidden and inaccessible connections. Where these were found further investigations followed to ascertain the condition of the connections. In a couple of cases, where connections could not be immediately exposed, the bridges were kept out of service or alternative supports provided until the condition of the structures was assured.

CROSS Comments

The issue is the importance of inspection to enable maintenance to be carried out. Accessibility for in service inspection is a basic requirement on any structure with moving parts. There is a fundamental difference between static structural engineering and cases where wear, vibration and fatigue are caused by mechanical movements. An ongoing theme at SCOSS is robustness and the possibility of the failure of one component leading to failure without warning. The issue is also addressed in the Institution of Structural Engineers report ‘Practical guide to structural robustness and disproportionate collapse in buildings’.

[The original report also included photographs.]

Annex D: Details of the Reporting Procedure

Step 1 – at the Highways Agency

Each report submitted via the Highways Agency website will be read by a dedicated Structures Specialist, in confidence, before being forwarded to CROSS.

Step 2 – at SCOSS/CROSS

The report will be copied and the copied version will be de-identified, by removing the reporter's name, and any information that could be used to identify the name of the reporter's employer, the location of the project, or the names of any individuals or products mentioned by the reporter. The SCOSS/CROSS director may telephone the reporter (at the reporter's contact number) to ask for more data on technical aspects.

The de-identified reports will be categorised and kept on a database for review by a CROSS panel of experts to detect trends, and to provide commentary for the Newsletters. These are published quarterly and links are sent to subscribers on the date that each one is released. The information in the Newsletters can be used by individuals, firms and organisations, to avoid future problems of the same kind and improve the quality of their engineering.

SCOSS/CROSS is the only independent organisation for collecting and publishing safety related reports.

Whilst complete confidentiality will be maintained, anonymous reports will not be accepted because the contents cannot be verified.

SCOSS/CROSS cannot provide advice on urgent matters, which should be raised within the reporter's organisation.

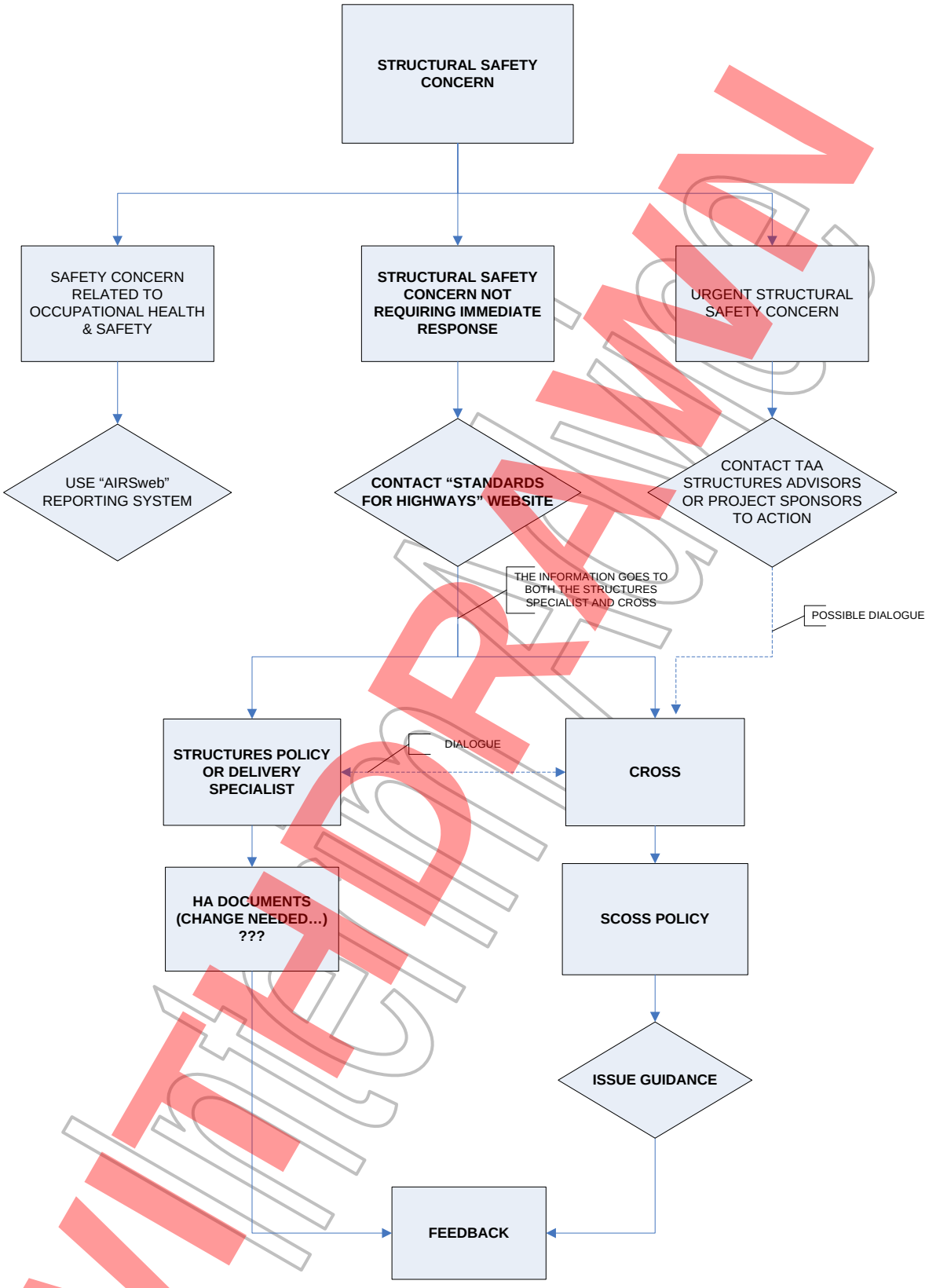

Figure 1 – Structural Safety Reporting Process Flowchart

Annex E: IAN 136/10 STRUCTURAL SAFETY REPORTING in English DBFO schemes.

When used on the M25 DBFO Schemes, this IAN is to be amended as follows:

Para No.	Description
Background second paragraph	Delete “Agency’s” and insert “DBFO Co’s”
Action third paragraph	Delete “Highways Agency” and insert “Highways Agency or DBFO Co”

When used on all other English DBFO Schemes, this IAN is to be amended as follows:

Para No.	Description
Background second paragraph	Delete “Agency’s” and insert “DBFO Co’s”
Action third paragraph	Delete “Highways Agency” and insert “Highways Agency or DBFO Co”
Implementation	Delete the heading and paragraph