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Issue	01
Date	June 2006

Specification

Competence & Training in Civil Engineering

Endorsement & Authorisation

Endorsed by:



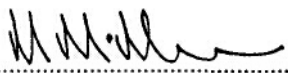
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Issue record

Issue	Date	Comments
01	June 2006	New Issue that supersedes all previous versions of: RT/CE/S/047 - Standards of Competence for Examination of Structures RT/CE/S/048 - Standards of Competence for Examination of a Bridge following a Bridge Strike The above are all withdrawn as a result of this issue.

Summary

This Specification defines the requirements for the training and assessment of persons undertaking Civil Engineering work on Network Rail controlled infrastructure.

Compliance

The provisions of this specification must be implemented from 3rd June 2006 for all Civil Engineering work that may affect the operational safety of Network Rail controlled infrastructure.

This Network Rail Specification is mandatory and must be complied with by Network Rail and Network Rail's Contractors who undertake Civil Engineering work that may affect the operational safety of on Network Rail controlled infrastructure from 3rd August 2006.

For people who examine Structures and Earthworks:

Competence profiles shall be documented by 4th November 2006.

Training plans shall be documented by 4th November 2006.

Training delivery against the Training Plans shall commence by 1st January 2007.

Assessment of people against the requirements set out in Appendices B and C shall commence by 4th November 2006, shall be complete by 1st November 2008 and shall be maintained from that date forward.

For people who examine bridges the requirements take immediate effect and a set of transitional arrangements apply as detailed in Appendix A.

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1 Purpose

This Specification sets out the minimum requirements for the training and assessment of people who undertake Civil Engineering work that may affect the operational safety of Network Rail controlled infrastructure. It defines processes that shall be implemented and the standards that shall be achieved to ensure that personnel who undertake Civil Engineering work are competent to perform the work.

2 Scope

This Specification applies to all Civil Engineering work on all existing Network Rail owned Structures; Network Rail managed Structures, shared Structures and Outside Party Structures by Network Rail employees, Contractors and suppliers. In particular it applies to the training and proof of competence of personnel managing and undertaking examinations of Structures, Earthworks and of a Bridge following a Bridge Strike. The scope of this first issue is limited; it will be expanded in subsequent issues.

3 Reference documentation

NR/SP/OHS/018 Safety requirements for Track medical & alcohol & drugs screening & certification
 NR/SP/CIV/035 Assessment of Structures
 NR/SP/CTM/005 Quality Assurance in Training Delivery

4 Definitions

Assessment

The gathering and judgement of evidence to demonstrate a person's Competence in accordance with a Competence Standard. In the context of this Specification this term shall not be confused with the determination of the safe load carrying capacity of a Bridge in accordance with Assessment of Structures ([NR/SP/CIV/035](#)).

Assessor

A person who is competent and authorised, in accordance with the organisation's Competence Management System, to assess the Competence of others.

Authority to Work

Authority to Work is a document that details the work activities that a person is authorised to complete. It includes the details of a person's competence and details of any restrictions that may apply to the way the person works, e.g. requirement for supervision.

Bridge

A Structure of one or more spans greater than or equal to 1,800mm, whose prime purpose is usually to carry traffic or services over an obstruction or gap. For the purposes of this Specification, Structures whose prime purpose is to carry services (utilities) over an obstruction or gap are excluded.

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Bridge Strike

An incident in which a road vehicle or its load, or a waterborne vessel or its load, impacts with fabric of a Bridge.

Bridge Strike Examiner (BSE)

A person who has been certificated as competent to permit the movement of trains up to Normal Speed over or under Bridges following a Bridge Strike.

Bridge Strike Nominee (BSN)

A person who has been certificated as competent to permit the movement of trains at Normal Speed over or under Bridges following a Bridge Strike when the damage is within defined limits.

Building

A permanent fixed roof Structure other than a Train shed or platform into which people can go and within which goods may be stored, or within which plant or equipment may be installed.

Candidate

A person whose Competence is to be assessed by an Assessor.

Competence

The ability to perform work to the standard expected. In the context of this Specification the term includes the practical and theoretical knowledge, experience and skill required to carry out Safety Critical Work so as to ensure the safety of any person who might be affected.

Competence Management System

A Competence Management System (CMS) describes the processes, methods, tools and procedures that are used to assure the competence of the people and organisations upon which an organisation relies.

Competence Standard

Consists of Elements, Performance Statements, Scope Statements, and evidence requirements and is a statement of:

- What a person must be able to do and how well, in order to achieve the intended outcome of work (Element);
- How this would be assessed (Performance Statements,);
- The range of circumstances in which the ability would have to be demonstrated (Scope Statements);
- The types of evidence needed to ensure that performance is consistent and can be sustained (evidence requirements).

Culvert

A Structure with a span or diameter greater than 450 mm and less than 1,800 mm whose prime purpose is usually, but not exclusively, to permit water or services to pass under or adjacent to a railway, road or other Network Rail infrastructure. The term excludes Outside Party pipelines.

Cutting

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An excavation that allows railway lines to pass through surrounding ground at an acceptable level and gradient. The term excludes track ballast, blanketing, geosynthetics directly associated with track performance and capping layers.

Cyclical Examination

A regular visual examination of an Earthwork to identify and record signs of slope instability.

Earthwork

An Embankment, Cutting (soil or rock), or Natural Slope (soil or rock). Any local support, bolting or netting of rock cuttings shall be classified as part of the rock cutting for examination purposes. Any reinforced soil wall less steep than seventy degrees shall be examined as an Earthwork. For the purposes of this Specification, generally a single Earthwork shall comprise either the Up or Down side of the railway, the two sides being separated by an imaginary line along the centre of the track or tracks.

Earthwork Condition

The categorisation of an Earthwork into 'poor', 'marginal' or 'serviceable' as a result of an Earthworks Examination.

Earthworks Examiner

The person who examines an Earthwork.

Earthworks Examining Engineer

The person who has responsibility for the delivery of the process of the examination of Earthworks.

Earthworks Manager

The person appointed by Network Rail to be responsible for the safe management of Earthworks within a defined geographical area or at specific locations.

Earthworks Remediation

Any works undertaken to make good a slope failure and/or to improve the stability of an existing Earthwork.

Embankment

An Earthwork that allows railway lines to pass over low lying ground, or ground liable to flood, at an acceptable level and gradient. The term excludes track ballast, blanketing, geosynthetics directly associated with track performance and capping layers.

Evaluation

The determination of the stability of an Earthwork taking into accounts its physical condition. The term may include the use of historic data, site investigation information and factual information.

Examiner

The person charged with being present during the examination to observe the Structure personally, to undertake, and/or to take responsibility, for the monitoring and recording of defects, and to certify that the examination has been carried out.

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Examining Engineer

The person approved by Network Rail to manage the examination process for a defined range of Structures.

Geomorphological Features

Are: slope orientation, gradient and drainage of the surrounding land, and any notable variability in these as a result of weathering, subsidence or slope movement.

Knowledge Evidence

Evidence that the Candidate can recall facts and knows how to apply principles. It may be observed during performance but is more likely to be gathered through oral questioning or written tests.

Minor retaining wall

Any retaining wall that does not support vehicular load and that retains material either to a height of 600 mm or less, or to a height of 1 metre or less provided it is less than 5 metres long.

Minor Structures

Those Structures supporting signalling assets, telecommunication assets, electrification assets, lighting assets. The term includes straight signal posts, electrification masts, equipment platforms and minor retaining walls such as those surrounding or supporting signal location cabinets. The term does not include signal gantries and cantilevers.

Natural Slope

Sloping ground that has been formed by natural processes.

Normal Speed

In the context of Bridge Strikes, Normal Speed is the maximum speed on each line that applied immediately before the Bridge Strike occurred or was reported.

Operational Use Parameters

Loading; speed of trains; frequency of trains.

Outside Party

An organisation or person other than Network Rail that is an infrastructure owner or developer, or is a user or occupier of Network Rail's infrastructure. The term includes Highway Authorities, Passenger Transport Executives, public or private developers, Train Operating Companies, etc.

Overline Bridge

A Bridge carrying non-rail vehicular traffic over one or more operational railway tracks. An Overline Bridge usually carries a road and may also be referred to as an overbridge.

Operational Capability

In the context of this Specification, the fitness for purpose and safety of an asset for continued operational use by rail traffic or members of the public.

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Performance Evidence

Objective (auditable) evidence that results from a person performing a task. Performance Evidence may arise from an Assessor's direct observation of the Candidate performing the task in question. Alternatively it may be gathered by inspection of the finished product and associated documents, or collecting witness testimony from third parties.

Rock Slope Hazard Index (RSHI)

The system used to quantify the condition of Rock Cuttings and Natural rock Slopes, based on observed features of the Earthwork.

SCMI Structures condition marking index.

Signal Box Special Instructions

A set of instructions required by a Controlling Signaller to perform his/her duties, and which in the context of management of the risk from Bridge Strikes, specifies for a particular Bridge or Bridges the criteria for rail traffic to be permitted to pass over or under the Bridge following a Bridge Strike prior to, or after an examination of the Bridge, and the specified speeds applicable.

Slope Failure

Any significant rock fall or soil slip, slide or flow in an Earthwork.

Soil Slope Hazard Index (SSHI)

The system used to quantify the condition of soil Earthworks; it is based on observed features of the Earthwork.

Special Examination

A visual examination of an Earthwork undertaken outwith the standard defined frequency.

Structure

Something built to support or retain a load. The term includes Bridges; viaducts; Tunnels; Culverts; retaining walls including Minor retaining walls; coastal and estuarial defences; gantries; posts and stanchions carrying overhead line equipment lighting or signals; Train sheds; platform canopies; platforms; Buildings and water-retaining Structures.

Structures Manager

The person with formally delegated responsibility for the safe management of a Structure.

Train shed

A station roof (including its supports) that spans across operational railway.

Tunnel

A Structure provided to allow a railway to pass under higher land and which has been excavated without disturbing the surface of that land. The term includes shafts, adits or portals. Other types of construction are included where in the opinion of the Structures manager; the Structure needs to be examined as a Tunnel.

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Underline Bridge

A Bridge carrying one or more operational railway tracks. An Underline Bridge usually carries the railway over a road or watercourse and may also be referred to as an underbridge.

Verification

Verification is a process by which the quality of assessment decisions and the supporting process are independently assured.

5 Requirements

5.1 Deployment

Employers shall not deploy any employee on any tasks associated with Civil Engineering asset examination work that may affect the operational safety of Network Rail controlled infrastructure, until that person has attended and successfully completed appropriate training or has been assessed as competent and has been authorised to complete the work. Where a person has been trained they may be deployed but subject to an appropriate level of supervision until assessed as competent. Note that different arrangements apply following the training of Bridge Strike Nominees (see Appendix A).

5.2 Training

Subject to the minimum requirement in 5.1, employers shall have systems in place to identify specific training needs. Specific training modules have been developed to address the training needs of persons who examine Structures. Details of the training requirements are contained in Appendix A of this Specification. Employers shall use this information to determine what training is appropriate for each person.

The following steps shall be used and documented to identify and satisfy specific training needs:

1. Identify deployment requirements for the person concerned.
2. Establish the Competence of the person in relation to those deployment requirements.
3. Establish what development is required and therefore what training is appropriate to match the deployment needs.
4. Agree a development plan with the person and the order in which the training should take place.
5. Arrange for the relevant training to be completed.

5.3 Mentoring

Following the successful completion of training, as detailed in Appendix A, each trainee shall undertake a period of mentored workplace experience. The requirements for mentoring shall be provided in detail in each training course. The trainee's employer shall appoint a mentor

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who shall be responsible for developing the trainee's knowledge and enabling the learning to be consolidated through practical workplace experience. Employers shall ensure that appropriate supervision is maintained during the period of mentoring.

In support of completing the mentoring effectively and the assessment of the individual, each employer shall provide a logbook to record what work the individual has performed in the workplace.

5.4 Assessment

Following successful completion of the relevant training and/or mentoring each person shall be assessed against the requirements of the relevant Competence Standard as given in Appendices C, D & E of this Specification.

5.5 Delivery of Training

Persons delivering training courses for Bridge Strike Nominees and/or Structures Examination shall be approved in accordance with NR/SP/CTM/005: Quality Assurance in Training Delivery (or other relevant Network Rail requirement): for Bridge Strike Nominee training they shall also be registered by National Competency Control Agency (NCCA).

Trainers shall only use the Network Rail approved training plans and assessments to deliver the training.

5.6 Competence Assessment and Verification

Assessors shall be approved in accordance with the employing organisation's Competence Management System prior to undertaking assessments against the Competence Standards detailed in this Specification. Assessors shall plan and complete assessments.

Employers shall have procedures in place to ensure that at least 10% of completed assessments are verified.

5.7 Work Authorisation

On completion of an Assessment, employers shall have systems in place to issue an appropriate Authority to Work. Each Authority to Work shall be signed by the person to whom it is being issued and by a person with managerial responsibility.

5.8 Assurance of continued Competence

5.8.1 Frequency of practice of the Competence

Table 1 below shows the frequency at which each Competence title should be practised to ensure that it is maintained.

Reference	Competence title	Frequency of practice
STE 1	Ensure that Structures remain fit and safe for use	4 times in 12 months
STE 2	Review results of Structures examination and recommend actions where necessary	4 times in 12 months
STE 3	Visually examine Minor Structures	Twice in 12 months
STE 4	Examine the condition of Structures	4 times in 12 months
STE 5	Examine the condition of station Structures and Buildings	4 times in 12 months
STE 6	Examine the condition of Tunnels and shafts	Twice in 12 months
STE 7	Examine the condition of underwater Structures	4 times in 12 months
BSE	Evaluate the Operational Capability of Bridges following a Bridge Strike	4 times in 12 months or practice in STE 4
BSN	Check Bridges meet defined criteria for operation at Normal Speed	No practice requirement
EWE 1	Ensure that Earthworks remain fit and safe for use	4 times in 12 months
EWE 2	Review results of Earthworks examination and recommend actions where necessary	4 times in 12 months
EWE 3	Examine the condition of Earthworks	4 times in 12 months

Table 1 Frequency of practice of Competence

5.8.2 Methods to assure continued Competence

Employers shall have systems in place to assure the continued Competence of their employees. These systems shall consist as a minimum:

1. The use of a log book to record work experience.
2. A documented annual review by the persons' line manager or other responsible person to confirm that:
 - The person has practised the Competence at the frequency defined in Table 1.
 - The work completed by the person meets the requirements for examining the relevant asset(s).
 - Decisions regarding the condition of the asset(s) are accurate.

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- Actions taken are appropriate to the findings from the examination of the asset(s).
 - Reports are complete and processed in accordance with the relevant requirements.
 - There have been no incidents, safety related events, accidents or near misses as a result of the person completing their work.
3. Successful completion of a exercise to confirm the person has the required knowledge to complete the work as follows:
- For STE 3 a documented test or review to confirm that the person has the knowledge described in element 3.1 of the Competence Standard.
 - For STE 4 to 7 a documented test or review to confirm that the person has the knowledge described in element 2 of the relevant Competence Standard.
 - For Bridge Strike Nominee completion of the Network Rail approved PC based knowledge test to confirm that the person has the required knowledge.
 - For EWE 3 a documented test or review to confirm that the person has the knowledge described in element 2 of the relevant Competence Standard.

Where continued Competence cannot be confirmed through an annual review, that Competence shall be withdrawn. The line manager shall develop a plan to restore the person's Competence which may include retraining, further mentoring and re-assessment.

6 Application

6.1 Work on or near the line

Where a person is required to work on or near the line they shall be assessed and certificated competent in all competences relevant to the work activity.

In addition, persons shall be able to demonstrate medical fitness and be screened for alcohol and drugs in accordance with Network Rail Specification [NR/SP/OHS/018](#): Safety requirements for Track medical & alcohol & drugs screening & certification.

6.2 Management and Examination of Structures

6.2.1 Competence Standards

Competence Standards applicable to the work activities associated with the Management and Examination of Structures

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are defined in Appendix C. The Competence Standards are applicable to the following job roles:

Structures Manager

STE 1 Ensure that Structures remain fit and safe for use

Examining Engineers

STE 2 Review results of Structures examination and recommend actions where necessary

Examiners

STE 3 Visually examine Minor Structures

STE 4 Examine the condition of Structures

STE 5 Examine the condition of station Structures and Buildings

STE 6 Examine the condition of Tunnels and shafts

STE 7 Examine the condition of underwater Structures

6.3 Examination of Bridges following a Bridge Strike

6.3.1 Competence Standards

Competence Standards applicable to the work activities associated with responding to a reported Bridge Strike are defined in Appendix D. The Competence Standards are applicable to the following job roles:

Bridge Strike Examiner

BSE Evaluate the Operational Capability of Bridges following a Bridge Strike

Bridge Strike Nominee

BSN Check Bridges meet defined criteria for operation at Normal Speed

6.4 Examination of Earthworks

6.4.1 Competence Standards

Competence Standards applicable to the work activities associated with the examination of Earthworks are defined in Appendix E. The Standards of Competence are applicable to the following job roles:

Earthworks Manager

EWE 1 Ensure that Earthworks remain fit and safe for use

Earthworks Examining Engineer

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EWE 2 Review results of Earthworks examination and
recommend actions where necessary

Earthworks Examiner

EWE 3 Examine the condition of Earthworks

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Appendix A Training and Assessment

1 Examination of Structures

Where a person requires training to develop their competence to examine Minor Structures (STE 3) or examine the condition of Structures (STE 4) they shall attend and successfully complete the Network Rail approved Structures Examination training course.

Successful completion of training needed to permit the Candidate to undertake the following activities under supervision/mentorship.

1. Visually examine Minor Structures
2. Examine the condition of Structures.

Following training the Candidate shall make logbook entries of all the completed examinations. In addition, the Candidate shall retain copies of completed work documentation from examinations.

An Assessment of Competence shall occur within 12 months of the completion of the training.

In addition the person shall be subject to annual review in accordance with Clause 5.8.2 of this Specification.

Where a person has been assessed as competent and continues to practice the competence at least four times in a 12 month period, that person shall not be required to be re-trained or re-assessed providing that they continue to meet the annual review requirements in accordance with Clause 5.8.2 of this Specification.

2 Examination of Bridges following a Bridge Strike

2.1 People New to Role

Where a person is required to undertake the duties of a Bridge Strike Nominee they shall attend and successfully complete the Network Rail approved Bridge Strike Nominee training course.

Successful completion of the training course assessments permits the person to undertake the activity of Checking Bridges that meet defined criteria for operation at Normal Speed for a maximum period of 12 months from the date of the successful completion of training.

Following training the person shall make and retain log book entries relating all Bridge Strikes they attend. These log book entries shall describe responses, damage, criteria selected and decisions made.

2.2 Transitional Arrangements for existing BSNs

Where a person holds a current BSN they shall, prior to expiry of the competence, either:

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- a. Satisfactorily complete the Network Rail PC-based knowledge test, or
- b. Attend and satisfactorily complete a Bridge Strike Nominee training course.

Where the person successfully completes the Network Rail PC-based knowledge test their competence shall be extended for a 12 month period from the date of that test. Where the person is not successful in knowledge test they shall attend the Bridge Strike Nominee training course. These arrangements shall apply until 28th July 2007.

Where a persons competence expires after 28th July 2007 they shall complete either 'a' or 'b' above prior to 28th July 2007.

Following training or completion of the PC-based knowledge test the person shall make and retain log book entries for all Bridge Strikes they attend. These log book entries shall describe responses, damage, criteria selected and the decisions made.

2.3 Assurance of continued BSN Competence

From 3rd June 2006, anyone who satisfactorily completes a Bridge Strike Nominee training course or the PC-based knowledge test shall have their Competence confirmed annually by their line manager using the PC-based knowledge test.

Where the person successfully completes the PC based knowledge test their Competence shall be extended for a 12 month period from the date of that test. Where the person is not successful in the knowledge test they shall attend the Bridge Strike Nominee training course.

3 Development for other Competences

Where a person is required to develop their competence for any other competences detailed in the Specification their line manager shall agree a development action plan with the individual. Such a plan will involve a period of mentored workplace experience. In addition, the person shall be subject to annual review in accordance with Clause 5.8.2 of this Specification.

Appendix B Assessor Guidance

1 Safety

The Assessor shall ensure that both his/her own safety and the safety of the Candidate are maintained at all times.

2 Types and sources of evidence

2.1 Performance Evidence

Performance Evidence shows that the Candidate can complete the work activity. This type of evidence can be provided from:

- Observation of the Candidate completing the work activity in the workplace.
- Observation of the Candidate completing the work activity in a simulated environment. This may include staged activities in the working environment or simulated activities away from the working environment.
- Review of products that have been produced from the work activity. e.g. reports

2.2 Naturally occurring work

Naturally occurring work activities in the normal work environment provide the best Performance Evidence.

2.3 Staged activities in the working environment

Staged activities in the working environment provide a good source of Performance Evidence.

An example is a Candidate taken to a Bridge, Structure or Earthwork, and the Candidate is assessed as if the damage or defect had occurred. This generates differing amounts of evidence depending upon the scenario given to the Candidate.

At one extreme the Candidate is asked to confine activities to decisions about whether the damage or defect is within or exceeding pre-defined criteria or to using visual or perhaps tactile examination methods. In this way the Candidate could be taken to several different types of Bridge, Structure or Earthwork with differing types and extremes of damage or defect, providing breadth to the evidence relating to a particular aspect of the Competence Standards.

At the other extreme a fictional scenario could be given to the Candidate where the Candidate treats the Bridge, Structure or Earthwork as if it had damage or defects with the Assessor engaging in some role play whereby he/she takes on the roles of the signaller or Highway Authority.

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In this situation evidence could be generated across the whole of a Competence Standard leaving only Scope Statements and consistency to be covered.

2.4 Simulated activities away from the working environment

Simulated activities away from the working environment may be used to generate valid evidence for specific aspects of the standards.

Simulation is the most likely source of evidence for work activities and circumstances which occur infrequently in the workplace, or which if set up in the workplace would cause a safety hazard or incur delays in operations.

Evidence generated in this manner always requires additional supporting evidence from the workplace as described previously. In the context of the Competence Standards given in the following Appendixes the following examples are applicable:

1. Presentation of a photograph or drawing of damage or defects to a Bridge, Structure or Earthwork together with scale representation used to check the Candidate's ability to:
 - Identify the type and structure of the asset,
 - Select the appropriate criteria and limits for checking the damage,
 - Decide whether damage is within or exceeding the criteria for authorising train movements,
 - Decide whether there is any threat posed to other parties.
2. Use of skills tests to confirm a Candidate's ability to use measuring equipment or to identify locations and access points.
3. Role play to confirm a Candidate's ability to select and use appropriate communications protocols.
4. Completion of documentation.

2.5 Product Evidence

This type of Performance Evidence is the provision of pieces of work or authenticated copies of work that the Candidate has completed. For example, copies of the recording documents produced by the Candidate authenticated in some way, preferably by a line manager or supervisor.

Product evidence should be used in support of other types of evidence, rather than in isolation. Due to the nature of the activities the value of this evidence may be greatly enhanced by the Candidate explaining his/her activities and decisions to the Assessor throughout the activities. In addition the Candidate's narrative may provide some Knowledge Evidence.

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2.6 Candidate testimonies/statements

The Candidate may submit evidence through the use of a written report. The report is considered to be Performance Evidence if it is based on work which occurred. Alternatively the report generates Knowledge Evidence if it is based upon a fictional scenario given to the Candidate.

The testimony/statement should describe events and actions such as: the circumstances; where the Bridge, Structure or Earthwork was located; the type of asset; where on the asset the damage or defect was located; what access equipment if any was required and why; the extent of the damage (perhaps exemplified by drawings, sketches or photographs); examination techniques/methods used; decisions made and why; potential consequences of the damage; actions taken to either authorise train movements or block the line; and with whom the Candidate communicated and why.

These are useful supplementary evidence when seeking evidence to demonstrate consistency, or in situations where unplanned work activities occur which are in the context of the standards.

These may also be used as Knowledge Evidence to supplement areas of performance, such as for contingencies or to cover different types of asset. When judging this type of evidence the Assessor shall assure himself that it is valid and attributable to the Candidate.

3 Evidence Transfer

Evidence opportunities should not be disregarded because they do not occur as a result of a particular competence. For example, a Candidate who has to “block the line” for any reason has generated evidence that can be used for all instances where the competence is required.

Candidates who assess damage to a Bridge and determine its current Operational Capabilities in any situation may be generating evidence towards BSE and STE 4.

STE 3 and 4 define a similar competence at two levels, but the competence defined by STE 4 is of a more complex nature and of a greater depth and breadth than that of Unit 3. Evidence transfer or accreditation of prior achievement/learning will be as follows:

- Achievement of STE 4 negates the necessity to separately demonstrate competence in STE 3.
- Prior achievement of STE 3 will provide evidence towards the Performance Statements and some scope and knowledge statements of Unit 4.

3.1 Historical evidence

This involves finding documentary evidence that establishes that the Candidate has been performing to the level required by the Competence Standards. Sources of this type of evidence may be:

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- Copies of past work records;
- Products;
- Log books; and
- Reports.

The Assessor shall ensure that the evidence presented is authentic, that it is reliable and that the Competence is still current.

4 Provision of Evidence

4.1 Performance Evidence

Performance Evidence should be provided to meet all the scope items and all the Performance Statements as described in each element. However, where this is not possible, Knowledge Evidence may be used to assess remaining Performance Statements and Scope Statements providing the questions and responses are documented.

4.2 Knowledge Evidence

Candidate's answers to written (short answer or multiple choice) or oral questions are the most likely source of evidence for the knowledge and understanding.

Questions used together with an indication of the Candidate's answers should be documented to be acceptable as evidence. Questions are most useful if they are scenario setting designed to demonstrate the Candidate's performance. All questions must be relevant and readily referenced to the Performance Statements and associated Knowledge Evidence. The questions should not be leading or imply more knowledge than is required by the applicable Competence Standards.

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Appendix C Competence Standards for Examination of Structures

Competence Standards applicable to the work activities associated with the Examination of Structures have been developed and are in this Appendix. The Competence Standards are applicable to the job roles as follows:

Structures Manager

STE 1 Ensure that Structures remain fit and safe for use

Examining Engineers

STE 2 Review the results of Structures examination and recommend actions where necessary

Examiners

STE 3 Visually examine Minor Structures

STE 4 Examine the condition of Structures

STE 5 Examine the condition of station Structures and Buildings

STE 6 Examine the condition of Tunnels and shafts

STE 7 Examine the condition of underwater Structures

STE 1 - Ensure that Structures remain fit and safe for use

Scope

This Unit specifies the requirements against which evidence is assessed in order to determine an individual's competence to initiate the actions necessary to ensure that existing Structures are fit for purpose and are safe for continued operational use.

The Candidate is expected to evaluate the actions recommended as part of examination reports, but to also take account of current and projected business, contractual and operational changes and influences to prioritise and plan actions. The responsibility for decision making lies wholly with the Candidate, though he/she may be expected to refer to others for specific technical expertise.

This unit contains three elements:

- 1.1 Evaluate factors which affect fitness for purpose or operational safety.
- 1.2 Define the actions necessary to ensure continued fitness for purpose and operational safety.
- 1.3 Record and process actions.

Assessment Strategy

Where the person has been previously trained and has been satisfactory completing the work for more than 1 year the evidence requirements detailed in each element do not apply. The person shall be assessed using performance reports completed by their line manager or other competent person. Network Rail shall make standard performance reports available for this purpose that confirm satisfactory and safe performance across the range of work detailed in this Competence Standard. In addition the person's knowledge shall be confirmed, as detailed in this Competence Standard.

- If the person is competent the Assessor (which maybe the line manager) shall arrange for a certificate of competence to be issued. If the person is competent they shall have their competence reviewed annually in accordance with 5.8.2.
- If the person is not yet competent the line manager shall be produce suitable development/mentoring plan.

Where the person is new to the role they shall be mentored by a competent person and shall provide evidence as detailed in each element.

STE 1 Ensure Structures remain fit and safe for use	
Element 1.1: Evaluate factors which affect fitness for purpose or operational safety.	
Performance statements - Information obtained is sufficient to identify the current and future/planned performance requirements of the Structure. - Information sources are evaluated for their suitability and used to determine current and projected operational purpose. - The current condition of the Structure is confirmed using all relevant data. - Variations between actual structural integrity and known requirements are accurately established. - The reasons and causes of the variations are clearly and accurately specified. - Evaluation of all information clearly identifies whether the existing Structure is fit for purpose and safe for continued use. - Where insufficient information is available further information is sought according to the nature of the clarification required. - Communication is clear, unambiguous and in accordance with relevant current instructions. Scope Statements - Initiating circumstances are: - New examination report relating to the Structure - Planned changes in operational use - Notification of problems in other similar Structures - Variations are due to: - Gradually deteriorating condition - Unforeseen degradation in condition - Changes in operational use (including loading changes) - Changes to the situations surrounding the use of the Structure - Changes to legislation or contractual requirements - Information sources: - Current examination report - Previous examination reports - Change of use information - Legal, health and safety, and other regulatory requirements - Existing assessments - Structures are: - Those types for which the Candidate is given responsibility	Knowledge statements <i>You must have knowledge and understanding of:</i> - Where to source information relating to current performance/specifications for the Structure; - Where to source information relating to planned changes to use, legal, health and safety issues and performance requirements of the Structure; - Where specialist technical advice and information may be obtained and under what circumstances; - Typical instances of change in use of a Structure and change in the situations surrounding the use of Structures, and how they affect the fitness for purpose and safety; - What specific types and formats of information are provided as part of the examination report and how they relate to the actual condition; - What standard indicators of condition signify (SCMI or others) and what other guidelines are available to provide consistency of reported information; - Why it important to check current against previous reports and what level of change would be taken as significant; - Where and from whom initial and additional information relating to the causes of variations can be obtained; - How further monitoring of condition may provide further information needed for evaluation and in what situations it should be initiated; Evidence Requirements Performance evidence must be provided from at least three different evaluations. The performance evidence taken as a whole must prove that the Candidate can consistently meet all Performance Statements when varied by the Scope Statements 1, 2 and 4.

STE 1 Ensure Structures remain fit and safe for use	
Element 1.2: Define actions necessary to ensure continued fitness for purpose and operational safety	
Performance statements - The significance and implications of the identified variation in condition and performance is accurately determined. - Actions recommended in the examination report are evaluated for suitability in light of other influencing factors. - The actions selected are capable of realising the fitness for purpose and operational/public safety of the Structure. - Actions are capable of being implemented within the constraints and requirements of Network Rail and other third parties. - The strengths and weaknesses of possible actions are identified and used as part of the decision making process. - Consideration is given to the implications of legal, health and safety and other regulatory requirements. - Priorities set for the remedial actions are consistent with current and future business and industry requirements.	Knowledge statements <i>You must have knowledge and understanding of:</i> - What the structural behaviour is for the different types of Structure for which Candidate is responsible, and the significance of the material type on this; - What factors to take into account when assessing the significance of actual defects, projected deterioration, change in circumstances and situation of use on the fitness for purpose and operational and public safety; - Which reference documentation and sources of information can be used to assist and guide the decision making process; - Typical instances of change in use of a Structure and change in the situations surrounding the use of Structures, and how they affect the fitness for purpose and safety; - How to identify any contractual and legal requirements to maintain either by Network Rail or third parties and how this will effect the decision making process; - What types of remedial action can be undertaken to deal with defects, failures, change in use, and change in circumstances surrounding the use of the Structures where the variations are actual and predicted; - What types of further investigation, special examination or monitoring regimes are available to give further information or provide continuing assurance of fitness for purpose and safety; - What types of legislation, health and safety or other regulatory requirements might vary and/or affect the performance parameters of the Structure; - Why it is important to identify and take account of other planned work, and where to find relevant information; - What the company procedures and guidelines are on methods of prioritisation of work.
Scope Statements - Variations relate to: - Current condition of the Structure outside required performance specification - Changes to operational use requirements - Projected rate of deterioration - Changes in the situations surrounding the use of the Structure - Third parties include: - Highways authorities - Waterways authorities - Private land owners - Statutory undertakers - Other rail operators - Constraints are: - Network Rail obligations to third parties - Third parties obligations to Network Rail - Work already planned - Identified implications relate to: - Safety of the operational railway - Safety of the public - Contractual/legal obligations	Evidence Requirements Performance evidence must be provided from at least three different situations. The performance evidence taken as a whole must prove that the Candidate can consistently meet all Performance Statements when varied by the Scope Statements 1 and 4. Note Statutory undertakers includes; Telecommunication companies Utility companies, the Environment Agency

STE 1 Ensure Structures remain fit and safe for use

Element 1.3: Record and process actions

Performance statements

- Specific tasks are clearly identified and are achievable.
- Methods comply with legal, health and safety, and other regulatory requirements.
- The parties implicated by the necessary actions are all identified.
- Timescales and frequencies are realistic and achievable, and take account of constraints.
- Items for action are presented precisely, clearly and in a manner which supports their implementation.
- Relevant people are informed of the planned actions necessary to ensure continued fitness for purpose and operational safety of the Structure.
- Operational and procedural changes specified are accurately recorded and promptly relayed according to defined procedures.
- Records completed are legible, unambiguous and as required for the type of actions and parties implicated.
- Implications of changes are given widest possible publicity, commensurate with security and company confidentiality

Scope Statements

- Actions relate to:
 - Increased examination frequency
 - Logging of future repair requirements
 - No actions
 - Further or special examination
 - Repair/remedial work
 - Assessment of load capacity
- Immediate actions are:
 - As recommended in the examination report
 - Modified from original recommended actions
 - Generated due to external influences
- Implicated parties are:
 - Those internal to the organisation
 - Examination contractors
 - Other third parties

Knowledge statements

You must have knowledge and understanding of:

- What tasks and methods are required to achieve each of the types of actions in Scope Statement 1;
- What legal, health and safety and other regulatory requirements apply when specifying methods to be used to achieve actions;
- How and where the recommended actions should be recorded;
- Which other third parties might be implicated by the different types of action and what the reporting and recording requirements are;
- What the recording and processing requirements are for those actions internal to the organisation, for examination contractors;
- What additional documentation is required where actions are as recommended in the examination report, modified from the original recommended actions and are generated due to external influences;
- To whom and how the report should be submitted;
- Circumstances and situations arising which might necessitate publicity, and the procedures and constraints surrounding this.

Evidence Requirements

Performance evidence must be provided from at least three different situations.

The performance evidence taken as a whole must prove that the Candidate can consistently meet the Performance Statements when varied by the Scope Statements:

- Implicated parties are: internal to the organisation, examination contractors;
- Actions relate to: increased examination frequency, repair/remedial work, assessment of load capacity; and where
- Actions are: as recommended in the examination report, modified from the original recommended actions.