Health & Safety by Design, Buildings & Civils Working Group. (H&SbD B&C WG)

Title: **Guidance for the use of warning symbols, to highlight significant hazards in design information.**

H&SbD
Health & Safety by Design

1.0 Guidance Summary

This guidance has been prepared to provide a consistent approach for the appearance of hazard warning symbols used by Designers on design information to highlight the presence of significant risks which remain at the conclusion of the preconstruction phase.

CDM 2015 Regulation 9(3) requires Designers to provide information on residual risks, whilst Regulation 9(4) requires Designers to provide sufficient information about the design, construction or maintenance of the structure, to assist the Client, other Designers and Contractors to comply with their CDM 2015 duties. This Guidance will help you to comply with those duties.

2.0 Scope

This guidance is intended to apply to all Network Rail infrastructure contracts that produce design information / engineering drawings which is intended to enable construction work to take place for B&C assets, and might be used for other disciplines.

3.0 Definitions / Abbreviations

Hazard Warning Symbol	A symbol or picture that is recognisable as an ISO warning of a significant or unusual hazard.
Design Information	Information relevant to the construction work, which might include models, drawings, specifications and details.
Engineering Drawings	A drawing that is intended to be used in the construction of rail infrastructure in the B&C discipline, though might be applied to other disciplines e.g. buildings, civil, electrical, mechanical, signalling, telecoms and track.
SHE Box	Safety, Health, & Environment; Boxes used on drawings to communicate information on safety, health and environmental hazards, including wellbeing.
DRA	Designers Risk Assessment.
Hazard	Anything that has the potential to cause harm. *NOTE: A hazard can be a substance, process, action, or condition that can cause injury, illness, or death. Information about hazards is essential to all project workers and managers to make sure they understand the risks involved with the work.*
Risk	The likelihood that a person may be harmed or suffer adverse health effects if exposed to a hazard. *NOTE: A risk considers how often people are exposed to the hazard and how severe the consequences could be.*

Hazard Log / Hazard Record	A structured document that systematically identifies, assesses, and manages potential hazards and risks associated with a project, for CDM and/or CSM-REA hazards, ensuring a safe and effective construction process.
CSM-REA	Common Safety Method for Risk Evaluation and Assessment; see NR/L2/RSE/100/02 and NR/L2/RSE/100/08.
ISO	International Organization for Standardization.

4.0 Hazard Warning Symbol. (To be read with section 5; further guidance)

4.1 Symbol

The symbol to be used should be the warning symbol complying with symbol reference W001, General Warning Sign, to ISO 7010. This symbol is shown below:

General warning sign; not to scale. (Taken from BS EN ISO 7010:2020+A6:2023 W001.)

4.2 Size

The symbol should be clearly visible and no more than 10mm high (perpendicular to the base) when printed at A3.

4.3 Where to use.

The symbol should only be used to indicate the presence of perceived hazards that are significant; see Section 5.1 for a definition of significant hazards.

The notification of the hazards shall be irrespective of any perceived risk associated with the hazard. It is anticipated that warning symbols would appear on General Arrangement drawings rather than detail drawings; unless the hazard was specific to the detail and the drawing was designed to be used as a construction drawing by a contractor.

4.4 Hazard Description

The nature of the hazard should be described with reference to a SHE box.

The notes/SHE box should direct the reader to further information provided in the CDM Hazard log/DRA and/or CSM-REA Hazard Record.

4.5 Positioning

The symbol and SHE box reference / description should be positioned adjacent to the location of the hazard - as close as possible; neither conflicting with other drawing information, nor being unrecognisable because of the proximity of other information.

In all cases the need for clarity outweighs the method used.

5.0 Further guidance (to support section 4.)

5.1 Use of warning symbols.

The symbol should only be used where significant hazards are not likely to be obvious to a competent contractor or designer, where a situation is difficult to manage, or where there are unusual circumstances.

Symbols should not be used for obvious or trivial hazards, **only** significant hazards.

Industry guidance published by CITB states that significant hazards to be communicated in design are those which are...

...not likely to be obvious to a competent contractor or designer	*such as:*
	• *potential asset instability*
	• *contact with materials with a health risk e.g.:*
	  ▪ *fragile roofs*
	  ▪ *asbestos*
	  ▪ *lead paint*
	  ▪ *contaminated land / substances.*

... difficult to manage	*These may be "common" hazards but be in awkward situations, such as:* • *working near electrified railway lines (now or in the future)* • *transporting or manoeuvring fabricated structural components on site (uncertainty around centre of gravity in temporary state)* • *demolition / construction sequence* • *access issues* • *working over / under water*
...occur in unusual circumstances	*These may be "common" hazards but occurring in unusual circumstances, or unusual because of the nature of the construction or site, including:* • *structural stability attained through arching action* • *obstructing signal sighting* • *temporary works restricted access* • *clearance issues such as gauging*

Below are some specific examples of significant hazards where the use of a hazard warning symbol might be expected, although this list is by no means definitive.

- Where an engineering function's General Arrangement drawing does not have other discipline(s) work information shown,
- Where a buried service is <u>believed</u> to exist but no proof is available; and therefore cannot be shown on a drawing. This should not apply where services are known to exist and are depicted on information supplied to a contractor,

- Where pollution from an adjacent site external to the railway infrastructure may affect the construction methodology. This would only be valid where the pollution was sporadic and may not be seen on site-inspections,
- Hazardous materials and environments e.g. close proximity to harmful substances, exposure to noise/vibration etc,
- Where pollution from, or interface with, an adjacent worksite or contract is expected during construction but will not be apparent until the construction phase,
- Further examples are contained within the table above.

5.2 Presentation of warning symbols on drawings.

5.2.1 Warning Symbol with reference to SHE Box.

Reference should be given in the form of a letter (or a number) as shown below.

The assignment of a reference assists the viewer with locating further information about the hazard and control measures and provides an auditable trail. Numbering on Hazard logs and Design Information must align.

The SHE Box should be in the relevant place so that it is available for use. It should contain the hazard with location, the stage (e.g. construction, or as constructed,) and mitigation measures, where appropriate.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

THE FOLLOWING NOTES HIGHLIGHT SIGNFICANT RESIDUAL HAZARDS IDENTIFIED BY THE DESIGNER. TYPICAL HAZARDS THAT SHOULD BE IDENTIFIED BY A COMPETENT CONTRACTOR ARE NOT INCLUDED.

FURTHER INFORMATION ON HAZARDS CAN BE FOUND IN THE CDM HAZARD LOG/DRA AND / OR CSM-REA HAZARD RECORD.

A REFERENCE TO THE CDM HAZARD LOG/DRA AND/OR CSM-REA HAZARD RECORD SHOULD BE PROVIDED HERE.

THE CONTRACTOR SHOULD CARRY OUT THE WORKS USING AN APPROVED SAFE SYSTEM OF WORK, ACCOUNTING FOR THIS INFORMATION.

REF.	HAZARD	STAGE	SUGGESTED MITIGATING MEASURE
A	*FRAGILE ROOF LIGHTS ARE PRESENT ON THE ROOF OF THE WAREHOUSE*	*Construction*	*CRAWLING BOARDS OR OTHER METHOD REQUIRED TO BE IN PLACE WHEN CARRYING OUT WORKS*
B	*…*		

The hazard description may be by means of a numbered symbol with the hazard description in the SHE box as above, or with the description adjacent to the symbol as 5.2.2 below:

5.2.2 Guidance on hazards.

“Hazard” and “risk” are sometimes confused. See definitions in Section 3.0 of this guidance, the HSE site listed below and further guidance in section 6.

Managing risks and risk assessment at work – Overview -HSE

Hazards should be clearly stated so they can be managed, and the risks associated with these hazards should be eliminated, or mitigated so far as is reasonably practicable

The text for the hazard in the SHE Box should identify the hazard and location, as shown below examples of hazard information:

Fragile roof lights are present on the roof of the warehouse	This note identifies the hazard and location.	✓
Fragile roof lights are present on the roof of the warehouse and the contractor will need to provide crawling boards	This note goes further and offers a method of working with the hazard.	✗
Fragile roof lights are present	This note does not identify the specific hazard area	✗

5.3 Depiction.

The symbol should be depicted as above, with reference to SHE box or a description of the hazard adjacent to the symbol. The designer should review a draft print or plot of their drawing to determine the effect of the warning notification and ensure that it stands out from the general information but does not suppress it.

5.4 Symbol(s) relevance to drawing status.

The status of the symbols should be reviewed during all stages of the project. Where hazards are deemed to no longer exist or have diminished significance to warrant a symbol being removed, they should be removed. A review must be undertaken prior to design information being deemed complete, and being used for construction, and prior to preparation of the health and safety file information.

Hazards relating to spent construction activities should be removed when as-built models or drawings are prepared. They should be retained where residual risks remain for future use.

5.5 Use of digital information modelling.

BS EN ISO 19650-6:2025, Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling, Part 6: Health and safety information, was published in early 2025. It replaces PAS 1192-6.

The NR supply chain may wish to incorporate the use of warning symbol in digital systems to the above standard, which intends to support the use of health and safety and related information to:

- provide a safer and healthier environment for end users as well as for design, construction, operation and maintenance personnel;
- mitigate the inherent health and safety risks and hazards across the asset life cycle;
- result in improved health and safety performance, fewer incidents and associated impacts;
- provide for clearer, more assured and relevant health and safety information to the 'right people' at the 'right time';
- increase construction and operational value;
- provide references and useful documents;
- improve quality.

ISO 19650-6-2025 enables standard structured information about risks; not only health and safety risks, but also mitigations, so that everyone in a project can access that information (not just the principal designer, principal contractor and client).

Digital H&S information protocols should be followed to NR standards and project requirements.

6.0 References and useful documents

The below references provide further guidance.

Other H&SbD B&C WG guidance on the NR Safety Central site below:
https://safety.networkrail.co.uk/safety/prevention-through-engineering-and-design/safe-by-design-groups/building-and-civils/

CITB industry guidance on CDM 2015, for all dutyholders; see site below
Construction (Design and Management) Regulations - CITB

Construction (Design and Management) Regulations 2015. Guidance on Regulations, L153, (ISBN: 9780717666263)
https://www.hse.gov.uk/pubns/books/l153.htm

The Construction (Design and Management) Regulations 2015 – HSE guidance on designers; roles and responsibilities.

https://www.hse.gov.uk/construction/cdm/2015/designers.htm

ISO 19650 – Managing Information with Building Information Modelling (BIM)
https://www.bsigroup.com/en-GB/products-and-services/standards/iso-19650-building-information-modelling-bim/

Footnote:
This is a H&SbD B&C Working Group proposal, for guidance.