Safety in Design (SiD)
Standards of Competence

Manage health and safety in design

The Unit:

SID Manage health and safety in design

The Standards that are part of this Unit

SID 1 Identify and assess hazards and risks

SID 2 Make design choices to reduce health and safety risks

The Unit Commentary

This Unit covers the candidate's responsibility for designing with safety and health in mind. There is a compelling need for designers in built environment to demonstrate knowledge and ability to design with safety and health as an integral part of their design output. These responsibilities can be interpreted very widely, so that the candidate can produce evidence of competence from a broad range of construction design disciplines.

These Competence Standards are intended for designers from disciplines operating across the built environment. The Standards have been developed by practising design professionals and with reference to relevant professional institutions and employer bodies. The work has been funded through, and endorsed by, ConstructionSkills Sector Skills Council as part of a development programme led by the Construction Industry Council.

The Construction (Design and Management) Regulations 1994 ("CDM Regulations") came into effect in April 1995. The heart of these Regulations (Regulation 13) is a requirement on designers in the UK construction industry to design out hazards in order to make buildings safer to construct, clean, maintain, and demolish. Construction industry clients are required to ensure that any designer they use is competent in this regard.

There have been no detailed learning aims for construction industry designers in relation to CDM Regulation 13, nor have there been any standards or benchmarked methods by which a designer can demonstrate competence in this regard.

All those endeavouring to meet the requirements of these standards must produce evidence from the workplace and learning development to demonstrate their competence. There may be individuals who need to widen their current job roles, experience, knowledge and understanding to develop this evidence. This is consistent with the notion that industry occupational standards should be diagnostic, developmental and qualifying. The benefits of such challenges are that this award will stretch and develop built environment designers, and enhance their design health and safety performance in the workplace.

These Standards are supported by corresponding 'Safety in Design' Learning Aims (LA). These have been cross-related from the Knowledge Evidence items in these Standards.

Please note that this Unit is not intended to cover the entirety of competence that an individual designer should have. The Unit has been written to provide a benchmark level of generic competence that all involved in construction design should have to design for safety. This should improve health and safety and also bring economic benefits. Many roles will require additional specialist health and safety related competence. These Standards are not concerned with risk management on site, but with the decisions in the design process that impact on the health and safety of others.

Element 1 is about identifying and assessing hazards and identifying risks relating to designs.
Please note in relation to range 6 that economic and business benefits can be positive or negative.

Element 2 is about reducing risks by making appropriate design choices.

Notes:

For the purposes of this Unit:

- A 'hazard' is something with the potential to cause harm.
- A 'risk' is the likelihood of harm being caused by a hazard, and the degree of its severity.
- To 'iterate' means to repeat an action in order to further improve on the results that have previously been obtained.
- Reference to 'health and safety regulations' will require awareness of international law, standards and practice relevant to those designers using overseas support, or working on overseas projects.

The italicised references (*LA*…) against each knowledge item refer to the corresponding items in the 'Safety in Design' Learning Aims.

Manage health and safety in design

1 Identify and assess hazards and risks

Performance Criteria - this involves...

(a) checking that **clients** are made aware of the **relevant health and safety regulations and legal framework,** their obligations in relation to them and advantages in complying with them

(b) collaborating with **interested parties** to ensure the compliance of designs with **relevant health and safety regulations and legal framework**

(c) identifying **operations and individual activities** that may give rise to **hazards**

(d) identifying and prioritising the **hazards** arising from **operations and individual activities**

(e) obtaining accurate information on any **potential factors** resulting from the **hazards**

(f) **assessing** the **hazards** to identify **risks** on an iterative basis throughout the development process

The Range...

[1] Clients:
- customers;
- owners;
- users;
- occupiers

[2] Relevant health and safety regulations and legal framework:
- CDM regulations and Approved Code of Practice;
- Current health, safety and welfare regulations;
- Construction and Building Regulations;
- international law, standards and practice;
- civil law and criminal law;
- codes and standards;
- duty of care;
- competence and resources;
- legal enforcement;
- insurance (liability and indemnity);
- contract and procurement

[3] Interested parties:
- Planning Supervisor/ coordinator;
- other designers;
- specialist advisors;
- clients;
- construction managers;
- contractors and specialist contractors

[4] Operations and individual activities:
- site establishment;
- constructing and installing (infrastructure, structure, building fabric, prefabrication, finishes, services and equipment, landscape, temporary works);
- using and operating;
- cleaning;
- maintaining;
- altering;
- refurbishing;
- demolition;
- commissioning and decommissioning

[5] Hazards:
- falls from height;
- slips, trips and falls (same level);
- hit by falling or moving objects;
- manual handling;
- health issues;
- power sources;
- hazardous substances;
- trapped by something collapsing or overturning;
- confined spaces;
- fire;
- obstructions;
- moving vehicles;
- sector or context specific

[6] Potential factors:
- injuring people;
- causing ill health;
- damaging property;
- adversely affecting the natural and built environment;
- contravening legislative requirements;
- litigation and prosecution;
- causing adverse publicity/perception;
- working conditions and circumstances, buildability;
- alienating workforce/team members;
- economic or business factors (positive or negative)

[7] Assessing:
- likelihood of occurrence;
- severity of harm incurred

[8] Risks:
- high;
- medium;
- low

1 Identify and assess hazards and risks

The Evidence - performance and process

Taken as a whole, the evidence must show that the candidate consistently meets all the performance criteria, across the ranges for the element.

References in brackets after items in the Evidence specification refer to the corresponding performance criteria, eg. (a), and range, eg. [1], to which they apply.

Product Evidence:

There must be workplace evidence against each performance criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant performance criteria.

The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

(1) Records of client checks (a) [1,2]

(2) Iterative hazard assessments, that include collaboration with interested parties and identified risks (b,c,d,e,f) [2,3,4,5,6,7,8]

Simulations are not considered to be acceptable for producing evidence for this element.

Process Evidence:

None applicable

Evidence: knowledge and understanding

Established from questioning the candidate or from industry recognised education and training course assessment which is matched to the Element. A candidate's knowledge and understanding can also be demonstrated through presented performance evidence.

(1) How do you check that **clients** are made aware of the **relevant health and safety regulations and legal framework**, their obligations in relation to them and advantages in complying with them? (application) (a) [1,2]
(LA 1.1-1.18; 1.1.21-1.23; 1.25; 2.4; 2.6-2.8; 3.3; 3.6-3.7; 3.11-3.12; 3.18)

(2) How do you collaborate with **interested parties** to ensure the compliance of designs with **relevant health and safety regulations and legal framework**? (application) (b) [2,3]
(LA 1.1-1.18; 1.21-1.23; 1.25; 2.1; 2.3-2.4; 2.6-2.8; 3.1-3.3; 3.5; 3.7; 3.11-3.12; 3.17-3.18)

(3) What do you identify as **operations and individual activities** that may give rise to **hazards**? (understanding) (c) [4,5]
(LA 1.20; 2.1; 2.8; 2.10; 2.12-2.17)

(4) What do you identify as **hazards** arising from **operations and individual activities**? (understanding) (d) [4,5]
(LA 1.20; 2.1; 2.8; 2.10; 2.12-2.17)

(5) How and why do you prioritise the **hazards** arising from **operations and individual activities**? (analysis) (d) [4,5]
(LA 2.1; 2.8; 2.10; 2.12-2.17; 3.8; 3.11)

(6) How do you obtain accurate information on any **potential factors** resulting from the **hazards**? (application) (e) [5,6]
(LA 1.1-1.2; 1.5-1.10; 1.12-1.15; 1.17-1.18; 1.20; 1.24; 2.4-2.5; 2.8-2.10; 3.9; 3.13)

(7) How and why do you assess the hazards to identify risks on an iterative basis? (analysis) (f) [6,7,8]
(LA 1.20; 2.4; 2.8-2.10; 3.3-3.4; 3.9)

2 Make design choices to reduce health and safety risks

Performance Criteria – this involves...

(a) eliminating identified **hazards** whilst **developing and modifying designs** and taking into account conflicting demands

(b) reducing identified **risks** arising from **hazards** that are not eliminated when **developing and modifying designs**

(c) giving collective **measures** priority over individual **measures** when reducing **risks**

(d) verifying that the **risk** reduction **measures** comply with **relevant health and safety regulations and guidelines**

(e) recording in **design documentation** any information needed by **other people involved**, so that they can comply with their duties under **relevant health and safety regulations**

(f) using opportunities to promote the implementation of the **risk** reduction **measures** with **other people involved**

The Range...

[1] Hazards:
- falls from height;
- slips, trips and falls (same level);
- hit by falling from of moving objects;
- manual handling;
- health issues;
- power sources;
- hazardous substances;
- trapped by something
- collapsing or overturning;
- confined spaces;
- fire;
- obstructions;
- moving vehicles

[2] Developing and modifying:
- identifying project requirements;
- planning;
- investigation;
- verifying competence and resources;
- analysis;
- identifying interactions;
- assessing costs (including life cycle);
- calculation;
- testing;
- selecting materials,
- components and systems;
- detailing and specifying;
- assessing buildability

[3] Designs:
- infrastructure;
- structure;
- building fabric;
- prefabrication;
- finishes;
- services and equipment;
- landscape;
- temporary works

[4] Risks:
- high;
- medium;
- low

[5] Measures:
- control at source;
- cumulative protection;
- manage residual risks

[6] Relevant health and safety regulations:
- CDM regulations and
- Approved Code of Practice; current health, safety and
- welfare regulations;
- Construction and Building Regulations;
- international law, standards and practice;
- codes of practice;
- industry guides

[7] Design documentation:
- drawings;
- specifications;
- models;
- calculations;
- Health and Safety Plans and Files

[8] Other involved people:
- contractors;
- cleaners;
- maintainers;
- owners;
- users

2 Make design choices to reduce health and safety risks

The Evidence - performance and process

Taken as a whole, the evidence must show that the candidate consistently meets all the performance criteria, across the ranges for the element.

References in brackets after items in the Evidence specification refer to the corresponding performance criteria, eg. (a), and range, eg. [1], to which they apply.

Product Evidence:

There must be workplace evidence against each performance criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant performance criteria.

The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

(1) Records of eliminated hazards (a) [1,2]

(2) Records of risk reduction measures (b,c,d) [1,2,4,5,6]

(3) Design information needed by others (e) [6,7,8]

(4) Records of the implementation of risk reduction measures and their promotion (f) [4,5]

Simulations are not considered to be acceptable for producing evidence for this element.

Process Evidence:

None applicable

Evidence: knowledge and understanding

Established from questioning the candidate or from industry recognised education and training course assessment which is matched to the Element. A candidate's knowledge and understanding can also be demonstrated through presented performance evidence.

(1) How do you eliminate identified **hazards** whilst **developing and modifying designs** and taking into account conflicting demands? (application) (a) [1,2,3]
(LA 1.16; 1.20; 1.23; 2.1; 2.8; 2.10; 2.13; 2.15-2.17; 3.1; 3.3-3.4; 3.8-3.10; 3.15-3.16; 3.18)

(2) How and why do you reduce identified **risks** arising from **hazards** that are not eliminated when **developing and modifying designs**? (evaluation) (b) [1,2,3,4]
(LA 1.16; 1.20; 1.23; 2.1; 2.8; 2.10; 2.13; 2.15-2.17; 3.1; 3.3-3.4; 3.9-3.10; 3.15-3.16; 3.18-3.19)

(3) How and why do you prioritise collective **measures** over individual **measures** when reducing **risks**? (analysis) (c) [4,5]
(LA 1.20; 2.8; 2.11; 3.9; 3.19)

(4) How do you verify that the **risk** reduction **measures** comply with all r**elevant health and safety regulations and guidelines**? (analysis) (d) [4,5,6]
(LA 1.1-1.2; 1.5-1.7; 1.12-1.15; 1.18; 1.20; 1.22; 2.8; 2.11; 3.8-3.9)

(5) How do you record in **design documentation** any information needed by **other people involved**? (application) (e) [6,7,8]
(LA 1.1-1.2; 1.5-1.7; 1.12-1.15; 1.18; 1.21- 1.22; 1.24; 2.1; 2.3-2.5; 2.11; 3.5; 3.8; 3.11; 3.13-3.14; 3.17; 3.19)

(6) How and why do you promote the implementation of the **risk** reduction **measures** with **other people involved**? (synthesis) (f) [4,5]
(LA 1.17; 1.20-1.21; 2.6; 2.8; 2.11; 3.5; 3.14; 3.17; 3.19)

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ConstructionSkills is a partnership between CIC, CITB-ConstructionSkills and CITB (NI) as the Sector Skills Council for Construction