COSCSMO06 SQA Unit Code H99N 04

Direct the management of design development and processes in construction management

Overview

This unit is about managing projects and the team that deliver design solutions to meet the project brief. It recognises the paramount importance of health, safety and welfare requirements and environmental sustainability issues. It is about ensuring that coherence and consistency is maintained between all aspects of the production and installation design solution and concept.

You will need to take responsibility for ensuring that risk reduction measures comply with relevant health, safety and welfare regulations and guidelines.

COSCSMO06 SQA Unit Code H99N 04

Direct the management of design development and processes in construction management

Performance criteria

You must be able to:

Identify and assess hazards, and identify risks

P1 check that **clients** are made aware of the **relevant health, safety and welfare regulations and legal framework** and their obligations in relation to them

P2 collaborate with **stakeholders** to ensure the compliance of designs with **relevant health, safety and welfare regulations and legal framework**

P3 ensure that **hazards** and their **consequences** arising from **operations and individual activities** are identified and prioritised

P4 ensure that **hazards** are **assessed** to identify the **significance of risks** on an iterative basis throughout the development process

Make design choices to reduce health and safety risks

You must be able to:

P5 ensure that identified **hazards** are eliminated and reduced whilst **developing and modifying designs** and conflicting demands are taken into account

P6 ensure that community **measures** are given equal priority over project **measures** when reducing **risks**

P7 take responsibility for ensuring that the **risk** reduction **measures** comply with **relevant health and safety regulations and guidelines**

P8 ensure that the information needed by **other people involved** is recorded in any **design documentation** so that they can comply with their duties under **relevant health and safety regulations**

P9 promote the implementation of the **risk** reduction **measures** with **other people involved**

P10 encourage a responsible culture of health, safety and welfare in design processes and decision making

Manage the design process

You must be able to:

P11 agree with the **stakeholders** the purposes which will be served by production and installation design information appropriate to the **project stage**

P12 choose a **format** for presenting the production and installation design information which meets the requirements of the **stakeholders**

P13 identify which **parts of the overall project** require production and installation design information

P14 ensure that the parts of the project design which interact with each other are identified and suitable ways to **maintain coherence and consistency** between all aspects of the production and installation design information are agreed

P15 ensure that procedures are set up which will **maintain coherence and consistency** between the production and installation design solutions

and the overall development concept

P16 ensure that **techniques** are confirmed which are suitable for investigating, calculating, testing, developing and specifying the production and installation design which are consistent with best practice and conform to relevant codes and standards

COSCSMO06 SQA Unit Code H99N 04

Direct the management of design development and processes in construction management

Knowledge and understanding

You need to know and understand:

Identify and assess hazards, and identify risks

K1 how to check that **clients** are made aware of the **relevant health, safety and welfare regulations and legal framework** and their obligations in relation to them (application)

K2 how to collaborate with **stakeholders** to ensure the compliance of designs with **relevant health, safety and welfare regulations and legal framework** (application)

K3 how to ensure that **hazards** and their **consequences** arising from **operations and individual activities** are identified and prioritised (application)

K4 how to ensure that **hazards** are **assessed** to identify the **significance of risks** on an iterative basis throughout the development process (application)

You need to know and understand:

Make design choices to reduce health and safety risks

K5 how to ensure that identified **hazards** are eliminated and reduced whilst **developing and modifying designs** and conflicting demands are taken into account (application)

K6 how to ensure that community **measures** are given equal priority over project **measures** when reducing **risks** (application)

K7 how and why to take responsibility for ensuring that the **risk** reduction **measures** comply with **relevant health and safety regulations and guidelines** (evaluation)

K8 how to ensure that information needed by **other people involved** is recorded in any **design documentation** so that they can comply with their duties under **relevant health and safety regulations** (application)

K9 how and why to promote the implementation of the risk reduction measures with **other people involved** (analysis)

K10 how to encourage a responsible culture of health, safety and welfare in design processes and decision making (application)

You need to know and understand:

Manage the design process

K11 how and why to agree with the **stakeholders** the purposes which will be served by production and installation design appropriate to the **project stage** (evaluation)

K12 how and why to choose a **format** for presenting the production and installation design which meets the requirements of the **stakeholders** (evaluation)

K13 what to identify as **parts of the overall project** which require production and installation design information (understanding)

K14 how to ensure that the parts of the project design which interact with each other are identified and suitable ways to **maintain coherency and consistency** between all aspects of the production and installation design are agreed (application)

K15 how to ensure that procedures are set up which will **maintain coherence and consistency** between the production and installation design solutions and the overall development concept (application)

K16 how to ensure that **techniques** are confirmed which are suitable for investigating, calculating, testing, developing and specifying the production and installation design which are consistent with best practice and conform to relevant codes and standards (application)

COSCSMO06 SQA Unit Code H99N 04
Direct the management of design development and processes in construction management

Scope/range

Identify and assess hazards, and identify risks

1 Clients:

- 1.1 customers
- 1.2 owners
- 1.3 users
- 1.4 occupiers

2 Relevant health, safety and welfare regulations and legal framework:

- 2.1 current health, safety and welfare regulations
- 2.2 construction and building regulations
- 2.3 international law, standards and practice
- 2.4 contract and procurement

3 Stakeholders:

- 3.1 CDM co-ordinator (or recognised body under the CDM code of practice)
- 3.2 other designers
- 3.3 advisors
- 3.4 clients
- 3.5 construction managers
- 3.6 contractors and specialist contractors

4 Hazards:

- 4.1 working at height
- 4.2 slips, trips and falls (same height)
- 4.3 debris
- 4.4 falling or moving objects
- 4.5 incorrect manual handling
- 4.6 health issues
- 4.7 power sources
- 4.8 hazardous substances
- 4.9 trapped by something collapsing or overturning
- 4.10 confined spaces

4.11 fire

4.12 obstructions

4.13 moving vehicles

4.14 water

4.15 lack of security/breaches

4.16 sector or context specific

5 Consequences:

5.1 injuring people

5.2 causing ill health

5.3 damaging property

5.4 adversely affecting the natural and built environment

5.5 contravening legislative requirements

5.6 litigation and prosecution

5.7 causing adverse publicity/perception

5.8 working conditions and circumstances, buildability

5.9 alienating workforce/team members

5.10 economic and business factors (positive or negative)

5.11 language barriers

6 Operations and individual activities during:

6.1 site establishment

6.2 constructing (infrastructure, structure, building fabric, prefabrication, finishes, services and equipment, landscape, temporary works)

6.3 using and operating plant and machinery

6.4 cleaning

6.5 maintaining

6.6 altering

6.7 demolition

6.8 commissioning and decommissioning

6.9 refurbishing

6.10 proximity to existing services and obstructions

7 Assess:

7.1 likelihood of occurrence

7.2 severity of harm incurred

8 Significance of risks:

8.1 common

8.2 generic

8.3 not obvious to a competent contractor or designer

8.4 likely to be difficult to manage effectively

Make design choices to reduce health and safety risks

9 Hazards:

9.1 working at height

9.2 slips, trips and falls (same height)

9.3 debris

9.4 falling or moving objects

9.5 incorrect manual handling

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9.7 power sources

9.8 hazardous substances

9.9 trapped by something collapsing or overturning

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9.11 fire

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9.13 moving vehicles

9.14 water

9.15 lack of security/breaches

9.16 sector or context specific

10 Developing and modifying design:

10.1 identifying project requirements

10.2 planning

10.3 investigation

10.4 verifying competence and resources

10.5 analysis

10.6 identifying interactions

10.7 calculation

10.8 testing

10.9 selecting materials, components and systems

10.10 assessing costs & benefits (including life cycle)

10.11 detailing and specifying

10.12 assessing buildability

11 Measures:

11.1 control at sources

11.2 cumulative protection

11.3 manage residual risks

12 Risks:

12.1 common

12.2 generic

12.3 not obvious to a competent contractor or designer

12.4 likely to be difficult to manage effectively

13 Relevant health and safety regulations and guidelines:

13.1 current health, safety and welfare regulations

13.2 construction and building regulations

13.3 international law, standards and practice

13.4 codes of practice

13.5 industry guides

14 Other people involved:

14.1 contractors

14.2 cleaners

14.3 maintainers

14.4 owners

14.5 users

15 Design documentation:

15.1 drawings

15.2 specifications

15.3 models

15.4 calculations

15.5 health and safety plans and files

Manage the design process

16 Stakeholders:

16.1 the client

16.2 CDM Coordinator (or recognised body under the CDM code of practice)

16.3 consultants

16.4 potential contractors

16.5 potential subcontractors and suppliers

16.6 regulatory authorities

16.7 facilities/asset maintenance managers

16.8 users

16.9 general public

16.10 site visitors

17 Project Stages:

17.1 Stage 4 (Design)

17.2 Stage 5 (Build and Commission)

18 Format:

18.1 in writing

18.2 graphically

18.3 electronically

19 Parts of the overall project design:

19.1 location and size

19.2 assembly and construction/installation

19.3 components and systems

19.4 specification

19.5 environmental assessment objectives

20 Maintain coherence and consistency:

20.1 visual and spatial

20.2 functional performance

20.3 technical performance

20.4 quality

20.5 requirements of relevant legislation and codes

20.6 obsolescence/design life

20.7 cost

20.8 health and safety

20.9 environmental factors

20.10 sustainability

20.11 buildability/disassembly

20.12 maintenance/operation and use

20.13 value management

20.14 concurrent design and construction

20.15 minimise emissions and waste

20.16 energy use (U value calculations, Building Energy Assessment. carbon rating)

20.17 protect archaeological and historically valuable resources

20.18 carbon footprint

20.19 grey water usage

20.20 risk/confidence in information

21 Techniques:

21.1 data research

21.2 comparison with regulations

21.3 specialist guidance and best practice

21.4 relevant previous solutions and feedback

21.5 computer modelling

21.6 Building Information Modelling

21.7 calculation

21.8 lifetime impact modelling

21.9 maintain risk register

21.10 performance dynamic modelling

21.11 comparison of costs of new and renewable energy

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