COSCSMO06 - SQA Unit Code FM1N 04

Manage design development and processes

Overview

This Unit is about managing projects and the team that deliver design solutions to meet the project brief. This unit is based on a refined client brief and secured stakeholders' requirements. It follows that you will explore and critically analyse the constraints, risks, challenges and issues. You will manage and make design decisions and agree solutions to meet the perceived needs. You must have a deep knowledge of design processes and appreciate analysing concepts, exploring issues and aligning yourself with.

You should share the outcome with the design team and the stakeholders. Acceptable design choices will reflect the stakeholder's area of operation and future aspirations so that the design will be fit for purpose. How you make those design decisions is an important part of this unit. The empowering of the design team is dealt with in

Your skills in populating ideas, turning concepts into reality and steering and motivating the team to achieve the dream is the challenge in this element. Sharing your decision is a complicated activity that requires understanding human behaviour and motivating a disparate team of individuals as well as welding human endeavour into a corporate goal. You will need to co-ordinate the design development and recommend, justify and agree the proposal project design solution to comply with legal and statutory controls as well as the relevant authorities' requirements, current procedures and likely timescales. Securing and motivating the team allows you to focus on health, welfare, safety and environment issues. You now have to manage the design function and meet deadlines and other parameters, that are evident in

Managing and maintaining coherence of the design process requires several high level skills, but open management and declared control points have to be managed to achieve a design solution. This intervention strategy has to be communicated but dealt with sensitively to achieve the corporate goals. Challenging significant factors and testing design solutions against health and safety will allow you an insight into the functionality and buildability of the preferred design solution. Those ideas and alternative are part of the business expertise that needs to be captured and used on other design projects.

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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 and safety regulations and legal framework** their obligations in relation to them and advantages in complying with them

P2 collaborate with **interested parties** to ensure the compliance of designs with **relevant health and safety regulations and legal framework**

P3 identify **operations and individual activities** that may give rise to **hazards**

P4 identify and prioritise the **hazards** arising from **operations and individual activities**

P5 obtain accurate information on any **potential factors** resulting from the **hazards**

P6 **assess** the **hazards** to identify **risks** on an iterative basis throughout the development process

Make design choices to reduce health and safety risks

You must be able to:

P7 eliminate identified **hazards** whilst **developing and modifying designs** and take into account conflicting demands

P8 reduce identified **risks** arising from **hazards** that are not eliminated when **developing and modifying designs**

P9 give collective **measures** priority over individual **measures** when reducing **risks**

P10 verify that the **risk** reduction **measures** comply with **relevant health and safety regulations and guidelines**

P11 record in **design documentation** any information needed by **other involved people**, so that they can comply with their duties under **relevant health and safety regulations**

P12 use opportunities to promote the implementation of the **risk** reduction **measures** with **other involved people**

P13 encourage a culture of health, safety and welfare in design processes and decision making

Manage the design process

You must be able to:

P14 review the findings of investigations and identifying **significant factors** which may influence existing and anticipated development and design

P15 analyse the information available with the project team and producing realistic design parameters which recognise the **significant factors**

P16 assess the design parameters, circulating the assessment to the people responsible for project design, planning and scheduling

P17 identify the parts of the project design which interact with each other, and agree suitable ways to maintain coherence and consistency between all **significant factors** influencing the design

Performance criteria

P18 set up procedures which will maintain coherence and consistency between the design solutions and the overall development concept

P19 confirm **techniques** which are suitable for investigating, calculating, testing, developing and specifying design solutions

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Manage design development and processes

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 and safety regulations and legal framework**, their obligations in relation to them and the advantages in complying with them (application)

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

K3 what to identify as **operations and individual activities** that may give rise to **hazards** (understanding)

K4 what do identify as **hazards** arising from **operations and individual activities** (understanding)

K5 how and why to prioritise the **hazards** arising from **operations and individual activities** (analysis)

K6 how and why to obtain accurate information on any **potential factors** resulting from the **hazards** (application)

K7 how and why to **assess** the **hazards** to identify **risks** on an iterative basis (analysis)

Make design choices to reduce health and safety risks

You need to know and understand:

K8 how to eliminate identified **hazards** whilst **developing and modifying designs** and taking into account conflicting demands (application)

K9 how and why to reduce identified **risks** arising from **hazards** that are not eliminated when **developing and modifying designs** (evaluation)

K10 how and why to prioritise collective **measures** over individual **measures** when reducing **risks** (analysis)

K11 how to verify that the **risk** reduction **measures** comply with all **relevant health and safety regulations and guidelines** (analysis)

K12 how to record in **design documentation** any information needed by **other involved people** (application)

K13 how and why to promote the implementation of the **risk** reduction **measures** with **other involved people** (synthesis)

K14 how and why to encourage a culture of health, safety and welfare in design processes and decision making (synthesis)

Manage the design process

You need to know and understand:

K15 how and why to review the findings of investigations (analysis)

K16 what to identify as **significant factors** which may influence existing and anticipated development and design (understanding)

K17 how to produce realistic design parameters which recognise the **significant factors** (application)

Knowledge and understanding

K18 how and why to analyse the information available (analysis)

K19 how and why to assess the design parameters (analysis)

K20 how to circulate the assessment to the people responsible for project design, planning and scheduling (application)

K21 what to identify as the parts of the project design which interact with each other (understanding)

K22 how and why to agree suitable ways to maintain coherence and consistency between all **significant factors** influencing the design (synthesis)

K23 how to set up procedures which will maintain coherence and consistency between the design solutions and the overall development concept (application)

K24 how to confirm **techniques** which are suitable for investigating, calculating, testing, developing and specifying design solutions (application)

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Manage design development and processes

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 and safety regulations and legal framework:
- 2.1 CDM regulations and Approved Codes of Practice
- 2.2 current health, safety and welfare regulations
- 2.3 Construction and Building Regulations
- 2.4 international law, standards and practice
- 2.5 civil law and criminal law
- 2.6 code and standards
- 2.7 duty of care
- 2.8 competence and resources
- 2.9 legal enforcement
- 2.10 contract and procurement

3 Interested parties:
- 3.1 Planning Supervisor/Co-ordinator
- 3.2 other designers
- 3.3 specialist advisors
- 3.4 clients
- 3.5 construction managers
- 3.6 contractors and specialist contractors

4 Operations and individual activities:
- 4.1 site establishment
- 4.2 constructing (infrastructure, structure, building fabric, prefabrication, finishes, services and equipment, landscape, temporary works)
- 4.3 temporary works
- 4.4 using and operating
- 4.5 cleaning
- 4.6 maintaining
- 4.7 altering

Scope/range

4.8 demolition
4.9 commissioning and decommissioning
4.10 refurbishing
4.11 existing services and obstructions

5 Hazards:
5.1 falls from height
5.2 slips, trips and falls (same height)
5.3 hit by falling or moving objects
5.4 manual handling
5.5 health issues
5.6 power sources
5.7 hazardous substances
5.8 trapped by something collapsing or overturning
5.9 confined spaces
5.10 fire
5.11 obstructions
5.12 moving vehicles
5.13 water
5.14 lack of security/ breaches
5.15 sector or context specific

6 Potential factors:
6.1 injuring people
6.2 causing ill health
6.3 damaging property
6.4 adversely affecting the natural and built environment
6.5 contravening legislative requirements
6.6 litigation and prosecution
6.7 causing adverse publicity/perception
6.8 working conditions and circumstances, buildability
6.9 alienating workforce/team members
6.10 economic and business factors (positive or negative)

7 Assessing:
7.1 likelihood of occurrence

Scope/range

7.2 severity of harm incurred

8 Risks:

8.1 high

8.2 medium

8.3 low

Make design choices to reduce health and safety risks

9 Hazards:

9.1 falls from height

9.2 slips, trips and falls (same height)

9.3 hit by falling or moving objects

9.4 manual handling

9.5 health issues

9.6 power sources

9.7 hazardous substances

9.8 trapped by something collapsing or overturning

9.9 confined spaces

9.10 fire

9.11 obstructions

9.12 moving vehicles

10 Developing and modifying

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 (including life cycle)

10.11 detailing and specifying

10.12 consideration of costs and benefits (including lifestyle costing)

Scope/range

10.13 assessing buildability

11 Designs:

- 11.1 infrastructure
- 11.2 structure
- 11.3 building fabric
- 11.4 prefabrication
- 11.5 finishes
- 11.6 services and equipment
- 11.7 landscape
- 11.8 temporary works

12 Risks:

- 12.1 high
- 12.2 medium
- 12.3 low

13 Measures:

- 13.1 control at sources
- 13.2 cumulative protection
- 13.3 manage residual risks

14 Relevant health and safety regulations and guidelines:

- 14.1 CDM regulations and Approved Code of Practice
- 14.2 current health, safety and welfare regulations
- 14.3 construction and Building Regulations
- 14.4 international law, standards and practice
- 14.5 codes of practice
- 14.6 industry guides

15 Design documentation:

- 15.1 drawings
- 15.2 specifications
- 15.3 models
- 15.4 calculations
- 15.5 health and safety plans and files

16 Other involved people:

- 16.1 contractors

Scope/range

16.2 cleaners
16.3 maintainers
16.4 owners
16.5 users

Manage the design process

17 Significant factors:
17.1 project type, purpose, location
17.2 occupancy and use
17.3 design quality
17.4 adaptability/flexibility
17.5 community
17.6 legal and regulatory constraints
17.7 health, safety and welfare
17.8 physical and technical constraints
17.9 anticipated development timetable
17.10 cost (including whole life)
17.11 environmental quality and sustainability
17.12 reduction of emissions and waste
17.13 energy use
17.14 protection of archaeological and historically valuable resources
17.15 security
17.16 procurement
17.17 resources
17.18 construction, installation and buildability
17.19 standardisation
17.20 new materials and technologies
17.21 transport and infrastructure
17.22 skills available
17.23 risk assessment and mitigation

18 Techniques:
18.1 data research
18.2 comparison with regulations

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Scope/range

18.3 specialist guidance and good practice

18.4 relevant previous solutions and feedback

18.5 computer modelling

18.6 calculation

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Developed by	ConstructionSkills
Version number	
Date Approved	December 2008
Indicative review date	November 2019
Validity	Current
Status	Original
Originating organisation	ConstructionSkills
Original URN	COSCSMO06
Relevant occupations	Managers in construction
Suite	Construction Senior Management
Keywords	Design; solutions; constraints; risks