



MODULE SHEET B

PH1: Fire Suppression Systems

OBJECTIVE:

Demonstrate the ability to provide guidance on fire suppression systems, including:

- i. An understanding of various types of suppression systems, including sprinklers
- ii. Specific uses and benefits to project
- iii. Design implications
- iv. Legislative requirements
- v. Calculation methodology for supply and demand

Demonstrate the ability to explain and advise members of the team, on the different types of fire suppression systems, for a variety of applications, and in relation to the project's fire strategy.

Acquire a working knowledge of the project and the scope when considering the use of the different systems available.

Understanding and researching the different types of gaseous fire suppression systems, ie 'chemical' or 'inert'

For sprinkler systems, demonstrate an understanding of the relationship between the consulting engineer's performance design and the licensed sprinkler contractor's detail design; and create design material accordingly.

TYPICAL ACTIVITIES:

- On-the-job training in a project design team
- Self-study of British Standards, other standards, design guides, manufacturers' technical literature, journals and publications
- Demonstrate a good understanding of both fire sprinkler systems and water misting systems, with consideration taken to high and low pressure water misting for commercial and residential purposes
- Project design work for concept, scheme and performance specification of the system
- Demonstrate a good understanding of gas-based systems and their limitations

TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.

TYPICAL COMPETENCE ASSESSMENT:

None specific, refer to the competence module sheet.



MODULE SHEET B

PH2: Waste Management Systems

OBJECTIVE:

Demonstrate an ability to provide a waste handling and disposal infrastructure serving buildings and sites, to allow the client to meet their “duty of care” with regard to the management of waste, including:

- i. Refuse Disposal
- ii. Recycling
- iii. Responsible Storage of Chemicals and Toxic Substances
- iv. Prevention of Pollution

Demonstrate full cognisance of the health and safety risks involved with the handling of waste, and the ability to develop a waste management plan to mitigate those risks.

Demonstrate the ability to provide a sustainable waste management plan, either independently, or as part of a sustainability benchmarking system such as BREEAM, Estidama, LEED or GSAS. This should include strategies to minimise waste, if appropriate.

Understand the requirements of the EU Waste Framework Directive and ISO 14001 Environmental

Management. In particular, communicate the requirement for the building owner/operator to provide a ‘duty of care’, and the implications of not meeting that requirement.

Correlate the waste management plans for the project with the client’s plans.

Understand the interfaces with other disciplines, in order to develop a design which provides the facilities to enable the waste management plan to be implemented, eg. ensuring adequate vehicular access where required.

The ability to classify waste and recognise those waste streams that are hazardous and require specialist disposal (Using List of Waste (LoW) or European Waste Catalogue (EWC))

Understand “clean routes” in and “dirty routes” out, in relation to food preparation, healthcare, retail, etc.

TYPICAL ACTIVITIES:

- Chartered Institute of Waste Management E-Learning Short Courses
 - Chartered Institute of Waste Management/BSI Short Courses
 - Self-study of standards and guidance documents (Environment Agency PPGs, CIWM Documents, British Standards and Sustainability Benchmarking Guides (BREEAM, Estidama, LEED or GSAS))
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- Attendance at manufacturers' CPD courses and acquiring awareness of solutions available through online courses and research. (Envac Vacuum Waste Systems, Smart Refuse Chutes, Source Recycling Sorting, Compaction, Garchey systems, etc.)
- Researching waste-related industries such as waste-to-energy plants, water recovery, sludge recovery, etc.
- Development of briefing documents with the client, integrating their waste management plans with those of the development, local authority and statutory authorities.
- Development of waste management plans for projects.

TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.

TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.



MODULE SHEET B

PH3: Gaseous Piped Services

OBJECTIVE:

Demonstrate the ability to follow and apply guidance on gaseous pipework systems, including:-

- i. An understanding of gaseous fuel systems - i.e. Natural Gas & Liquid Petroleum Gas (LPG)
- ii. An understanding of non-medical compressed air systems
- iii. An understanding of medical and non-medical vacuum systems
- iv. An understanding of medical gas systems

TYPICAL ACTIVITIES:

- Attend any relevant seminars on gaseous pipework systems, either internal or external.
- Self-study the applicable industry guidance for gaseous piped services including (but not limited to) the Gas Act, relevant British standards, relevant HSE Approved codes of practice, TC Group information, etc.
 - For gaseous fuels - Institute of Gas Engineers publications.
 - For non-medical compressed air - British Compressed Air Society code of practice
 - For medical vacuum - department of health publications HTM 02-01 & HTM 08-06
 - For medical gases - department of health publications HTM 02-01 & HTM 08-06
- Completion of design calculations, schematics and system design for various gaseous pipework systems.
- On-the-job training in a project design team.
- Project design work for concept, scheme and performance specification of the system.

TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.

TYPICAL COMPETENCE ASSESSMENT:

None specific, refer to the competence module sheet.



MODULE SHEET B

PH4: Water Abstraction from Boreholes

OBJECTIVE:

Demonstrate an understanding of the different types of aquifer (in particular confined and unconfined types) and how the mineral “make up” of the aquifer can impact on the water quality at the bore hole. Demonstrate methods of mitigation through the management of abstraction and treatment of the water.

Demonstrate an understanding of how certain land use over unconfined aquifers can impact on the chemical and bacterial quality of the water abstracted. Describe the risks that result and how these can be managed.

Demonstrate an understanding of piezometric plane, drawdown, yield and hydraulic conductivity. Understand the responsibilities the client will have in maintaining quality of the water from the bore hole and in preventing pollution of the bore hole and aquifer. This includes the importance of engaging the Environment Agency early in the process and obtaining a formal abstraction licence and the penalties associated with not meeting these responsibilities.

Demonstrate the importance of engaging a specialist to test the aquifer and to provide proposals for yield, conductivity and draw down based on a combination of testing and calculation. Understand the limitations of this process and the importance of applying risk factors.

Demonstrate an understanding of why a number of companies moved from abstracting water from boreholes to water supplied by water companies.

Understand the results of water sampling and laboratory analysis, including the presence of trace elements to establish contamination of aquifers and bore holes.

Demonstrate ability to plan pumping arrangements, pumping equipment, well stabilisation, regular maintenance and reformation after a given life expectancy

TYPICAL ACTIVITIES:

- Attend accredited CPD courses.
 - Produce typical pumping arrangements for a bore hole and well construction.
 - Produce typical planned maintenance regimes for a bore hole.
 - Produce a scope of works for a specialist to test a bore hole and the verification required for acceptance.
 - Review different methods of estimation using calculation and the pros and cons of each approach.
 - Review relevant standards.
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PUBLIC HEALTH COMPETENCE MODULES



TYPICAL EVIDENCE RECORD:

Record of dates indicating key activities, information produced, workshops, meetings, etc

TYPICAL EVIDENCE RECORD:

Assessment of technical and applied knowledge through Q & A. Review of relevant projects.



MODULE SHEET B

PH5: Swimming Pool Water Treatment

OBJECTIVE:

Demonstrate capability in the planning, execution and management of the design process for swimming pool water treatment solutions, including:

- i. Understand what disinfection is, and the types available.
 - ii. Demonstrate how you would choose a disinfectant for your particular application (project related)
 - iii. Acquire a comprehensive understanding of the water treatments available for the different types of swimming pools in relation to the loads to which they are subjected
 - iv. Demonstrate understanding of the factors related to chemical delivery and storage
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TYPICAL ACTIVITIES:

- Completion of scheme design calculations, schematics and system design
 - On-the-job training in a project design team
 - Self-study of British Standards, other standards, design guides, manufacturers' technical literature, journals and publications
 - Project design work for concept, scheme and performance specification of the system
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TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.

TYPICAL COMPETENCE ASSESSMENT:

None specific, refer to the competence module sheet.



MODULE SHEET B

PH6: Designing for the Middle East and North Africa (MENA)

OBJECTIVE:

Demonstrate an understanding of the key differences in designing for the Middle East and North Africa, in relation to:

- i. Standards
- ii. Regulations
- iii. Climate
- iv. Culture

Standards

Understand the importance of clarifying the brief prior to commencing works, due to the differing cultures and approaches. This should include the standards to be utilised, prior to starting work.

Demonstrate an understanding of the hierarchy of standards and which are statutory (Local standards, national specifications, and international standards). Use of American and European standards by certain clients.

Understand the limitations of the International Plumbing Code.

Regulations

Understand the legal requirement to licence engineers in MENA and the activities to which this relates.

Understand the role of the “Engineer of Record”.

Demonstrate an understanding of the local regulations and in particular those introduced due to the local climate and culture.

Climate

Understand the impacts of the climate on the design of installations.

Understand the importance of designing in order to provide resilience. Demonstrate ways in which this can be managed/mitigated, including explaining the client responsibilities.

Understand water quality and chemistry as a result of the climate. Provide details of typical water treatment plant provided as the water enters the building.

Investigate typical water storage volumes in terms of daily usage, and the challenges this presents. Understand the challenges of managing and mitigating the risk related to water entering a building at temperatures up to 40C.



Culture

Understand the cultural limitations in the siting and orientation of sanitary ware.

Demonstrate an understanding of the sensitivity in the routing of drainage and other pipework over or near prayer rooms, masalas and mosques. Understand the separate standards and approvals process.

The provision of hand sprays and religious ablutions are required within buildings. Understand the challenges that this presents to the water supply systems and the protection of other areas of the building.

Understand the importance in the location and draining of sand filters to prevent water entering the building.

Develop a plan for the management of water infected with blood. Show how typical morgues and other healthcare facilities are drained.

Demonstrate how radioactive waste from laboratories and healthcare facilities is dealt with.

Methods of treating chemical waste, demonstrate a key understanding of both “neutralisation” and “dilute and disperse methods”. What are the strengths and weaknesses of each approach?

Compare the approach to water in local sustainability management/benchmarking systems to those used in Europe and America. Demonstrate a full understanding of the differences.

TYPICAL ACTIVITIES:

- Review International Plumbing Code and international Building Code (Below Ground Drainage)
- Review Abu Dhabi Code, Dubai Code and Qatar Construction Standards
- Review the embryonic Unified Gulf Code website
- Design a project in the MENA
- Secondment to MENA
- Produce a short design note, clarifying the standards to be used on a project
- Experience of working in MENA

TYPICAL EVIDENCE RECORD:

None specific, refer to the competence module sheet.

TYPICAL COMPETENCE ASSESSMENT:

None specific, refer to the competence module sheet.
