
Overview

This standard is about supervising the installation, commissioning and handover of retrofit works in accordance with organisational requirements which are equal to or exceed current statutory and legislative requirements

This standard is for people working in the occupational area of construction site supervision which is defined as the supervision of multiple construction trades and disciplines and can be used by operatives, supervisors and managers

Performance criteria

You must be able to:

P1 observe and apply organisational requirements appropriate for the protection of the workforce, sub-contractors, suppliers, consultants, occupants, visitors, the general public, and the environment by the application of information relating to:

1.1 methods of work	1.2 risk assessments	1.3
safe use and storage of tools	1.4 safe use and storage of materials and components	1.5
1.6 traffic management	1.7 emergency plans	1.8
1.9 fire safety	1.10 acoustic and sound insulation	1.11
1.12 thermal insulation	1.13 workforce competency	1.14
1.15 site constraints		

P2 supervise implementation of the retrofit plan ensuring effective and efficient working practices compliant with design and quality standards, for a given occupational area

P3 review and record works progress against the project programme, resources and planned sequencing of works, and recommend and take corrective action when required

P4 recognise and report defects in installation with specific reference to five of the following:

4.1 gaps in installation	4.2 missing and inappropriate fixings	4.3
4.4 detailing at corners, edges, junctions and openings	4.5 interaction with building services	4.6
4.7 combustion appliances, flues and ventilation	4.8 fire safety	4.9
4.10 acoustic and sound insulation	4.11 thermal bypass and thermal bridges	4.12
4.13 loading		

P5 check, record and report that ventilation is not compromised and complies with all relevant standards for the following:

5.1 gas and other combustion appliances	5.2	5.3
flues	general ventilation	

P6 Carry out specified checks of the retrofit works and record that the works conform to quality, standards and compliance with the retrofit design, and manufacturers' instructions, throughout the installation process, for at least eight of the following:

6.1 alterations to the structure	6.2	6.3
loadings	6.4	6.5
fixings	corners, junctions and edges of building elements	6.6
6.7 interfaces between the building fabric, services and the occupants	6.8 windows and doors including reveals, sills and soffits	6.9
6.10 thermal bypass	6.11 thermal bridges	6.12
6.13 air tightness	6.14 vapour barriers	6.15
6.16 moisture movement	6.17 moisture ingress	
6.18 condensation risks	6.19 rainwater goods	6.20
6.21 mechanical, electrical and plumbing (MEP)	6.22 fire safety	6.23
6.24 acoustic and sound insulation		

P7 identify, record and implement agreed corrective actions when required for

at least nine of the following:

7.1 alterations to the structure	7.2
7.3 loadings	7.4 corners, junctions and edges of building elements
7.5 interfaces between the building fabric, services and the occupants	7.6 windows and doors including reveals, sills and soffits
7.7 thermal bypass	7.8 thermal bridges
7.9 air tightness	7.10 vapour barriers
7.11 moisture movement	7.12 moisture ingress
7.13 condensation risks	7.14 rainwater goods
7.15 mechanical, electrical and plumbing (MEP)	7.16 combustion appliances, flues and ventilation
7.17 fire safety	7.18 acoustic and sound insulation

P8 schedule and coordinate the inspection testing and commissioning, and communicate the outcomes for retrofit works

P9 identify, implement and record agreed corrective actions for retrofit works following commissioning including but not limited to two of the following:

9.1 ventilation devices	9.2 combustion appliances	9.3 heat recovery devices
9.4 heating systems	9.5 hot water systems	9.6 lighting fittings
9.7 systems and controls	9.8 insulation	9.9 draught proofing
9.10 windows and doors	9.11 solar blinds, shutter and shading devices	9.12 renewable energy installations
9.13 fire safety	9.14 acoustic and sound insulation	

P10 contribute to the project handover on completion of the installation of retrofit works

Knowledge and understanding

You need to know and understand:

Performance Criteria 1 Observe and apply organisational requirements K1 what organisational requirements apply to the protection of the workforce, sub-contractors, suppliers, consultants, occupants, visitors, the general public, and the environment in relation to the following:

- K1.1 methods of work
- K1.2 risk assessments
- K1.3 safe use and storage of tools
- K1.4 safe use and storage of materials and components
- K1.5 traffic management
- K1.6 emergency plans
- K1.7 fire safety
- K1.8 acoustic and sound insulation
- K1.9 thermal insulation
- K1.10 workforce competency
- K1.11 site constraints

Performance Criteria 2 Supervise implementation of the retrofit plan K2 why it is required, and how to supervise the implementation of the retrofit plan ensuring effective and efficient working practices compliant with design and quality standards for a given occupational area

K3 why it is required, and how to ensure operatives undertaking the installation, commissioning and handover are qualified to do so for a given occupational area

K4 why it is required, and how to ensure operatives have access to adequate knowledge of the retrofit works and the behaviours required for their safe, efficient and effective operation and maintenance

Performance Criteria 3 Review and record on works progress K5 why reviewing and recording works progress against the project programme, resources and planned sequencing of works is required

K6 how to review, record and report works progress against the project programme, resources and planned sequencing of work

K7 when and how to recommend and take corrective action

K8 how the following increase the risk of failure of the installation works:

- K8.1 technical and performance issues:
- heating
 - ventilation
 - thermal bridges
 - thermal bypass
 - condensation and interstitial condensation
 - moisture movement
 - fire alterations in structure
 - acoustic and sound insulation
- K8.2 inefficiencies
- K8.3 additional costs
- K8.4 delays to programme
- K8.5 abortive works
- K8.6 duplication
- K8.7 damage
- K8.8 latent defects

Performance Criteria 4 **Recognise and report defects in installation** K9 how to recognise and report defects in installation with specific reference to:

K9.1 gaps in installation K9.2 missing and inappropriate fixings
K9.3 detailing at corners, edges, junctions and openings K9.4 interaction with building services
K9.5 combustion appliances, flues and ventilation
K9.6 fire safety K9.7 acoustic and sound insulation K9.8 thermal bypass and thermal bridges
K9.9 loading

K10 how and when to propose suitable corrective action for any defects in installation

Performance Criteria 5 **Check, record and report that ventilation is not compromised** K11 why it is required, and how to check, record and report that ventilation is not compromised and complies with all relevant standards for the following:
K11.1 gas and other combustion appliances K11.2 flues
K11.3 general ventilation

Performance Criteria 6 **Carry out checks and record installation of works** K12 why it is important to carry out specified checks of the retrofit works during installation and record the works conform to:
K12.1 quality K12.2 standards
K12.3 manufacturers' instructions, technical information and
K12.4 retrofit design
product data sheets

K13 how to carry out checks and record installation of works for quality, standards and compliance with the retrofit design, and manufacturers' instructions, for the following:
K13.1 alterations to the structure K13.2 loadings
K13.3 fixings K13.4 corners, junctions and edges of building elements
K13.5 interfaces between the building fabric, services and the occupants
K13.6 windows and doors including reveals, sills and soffits
K13.7 thermal bypass K13.8 thermal bridges
K13.9 air tightness K13.10 vapour barriers K13.11 moisture movement
K13.12 moisture ingress K13.13 condensation and interstitial condensation risks
K13.14 rainwater goods K13.15 mechanical, electrical and plumbing (MEP)
K13.16 fire safety K13.17 acoustic and sound insulation

K14 the potential risks and implications of non-compliance and poor quality installations over time, for active and passive fire safety measures

K15 the potential risks and implications of non-compliance and poor quality installations over time, including but not limited to:
K15.1 occupant health and safety
K15.2 indoor air quality K15.3 mould K15.4 performance gaps
K15.5 rot K15.6 building fabric decay K15.7 overheating

K16 the importance of maintaining ventilation

K17 why it is important to recognise ventilation and air movement pathways through buildings and ensure that these are maintained, whilst balancing the need for airtightness

K18 the different properties of insulation materials and how these relate to thermal, moisture, condensation, acoustic and sound, and fire safety

K19 the different types of air and vapour control layers and breather membranes, where and how they should be used, and why it is important to install them correctly

K20 the importance of ensuring the integrity of air and vapour control layers and breather membranes following installation and the need to ensure continuity

K21 how condensation forms in buildings, how this relates to moisture and moisture movement and what steps can be taken to mitigate potential risks

K22 why a *Whole Building* approach is taken to retrofit works and how this relates to building performance and building use

Performance Criteria 7 Identify, implement and record agreed corrective actions

K23 how and when to identify, implement and record agreed corrective actions for the following:

- K23.1 alterations to the structure
- K23.2 loadings
- K23.3 fixings
- K23.4 corners, junctions and edges of building elements
- K23.5 interfaces between the building fabric, services and the occupants
- K23.6 windows and doors including reveals, sills and soffits
- K23.7 thermal bypass
- K23.8 thermal bridges
- K23.9 air tightness
- K23.10 vapour barriers
- K23.11 moisture movement
- K23.12 moisture ingress
- K23.13 condensation and interstitial condensation risks
- K23.14 rainwater goods
- K23.15 mechanical, electrical and plumbing (MEP)
- K23.16 combustion appliances, flues and ventilation
- K23.17 fire safety
- K23.18 acoustic and sound insulation

Performance Criteria 8 Schedule and coordinate, and communicate the outcomes

K24 why the scheduling and coordination of the inspection testing and commissioning for retrofit works is required

K25 how to schedule and coordinate the inspection testing and commissioning of retrofit works

K26 why it is required, and how to record outcomes for retrofit works, services and fabric

K27 the range of non-destructive testing and investigation methods including but not limited to:

- K27.1 thermal imaging
- K27.2 moisture content of

building fabric K27.3 air tightness for building envelope and identifying
 air filtration and air leakage points K27.4 energy use of buildings
 from meters and sub-meters for individual systems K27.5 sound
 insulation testing K27.6 borescope testing

K28 why the final commissioning of all building services is done together,
 rather than separately

K29 the stages of commissioning including but not limited to: K29.1 setting-to-
 work K29.2 regulation K29.3 performance optimisation K29.4
 recording K29.5 post-commissioning checks K29.6 fine tuning during
 occupancy

Performance Criteria 9 Identify, record and implement agreed corrective actions following commissioning
 K30 why identifying, recording and implementing agreed
 corrective actions is required following commissioning

K31 how to identify, record and implement agreed corrective actions following
 commissioning

Performance Criteria 10 Contribute to the project handover
 K32 why it is required,
 and how to contribute to the project handover on completion of the installation of
 retrofit works

K33 how to supply the relevant information in relation to the project handover in
 accordance with the 'handover strategy' and requirements of relevant certification
 schemes

K34 how to gather and record information

K35 how to convey the following information about the installed
 measures: K35.1 physical inspection and explanation of function
 and operation K35.2 demonstrate the safe operation of any
 components, devices and controls K35.3 visual checks to ensure
 the recipient is able to operate the components, devices and
 controls K35.4 care needed to avoid detrimental effects K35.5
 maintenance, including requirements to comply with guarantees and
 warranties K35.6 efficient operation to facilitate the delivery of
 intended reduction in energy use K35.7 importance of
 ventilation K35.8 post completion services K35.9 provision of
 documentation including end-user advice information

K36 how to present information and recommendations for any remedial actions
 or changes to the retrofit process required, to relevant stakeholders including, but
 not limited to: K36.1 clients K36.2 designers and contract

administrators K36.3 installers and contractors K36.4 end-users
K36.5 external enforcement and quality assurance bodies K36.6 funding
organisations K36.7 guarantee or warranty providers

K37 who the recipients of the handover process are

K38 why is it important to supply copies of the following documentation:
K38.1 test certificates and commissioning records K38.2 operation and
maintenance instructions and manuals K38.3 warranty and guarantee
certificates K38.4 *As Constructed* plans

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