ASTATT10

Carry out air tightness testing on large and complex, high rise and phased hand over zonal buildings

Overview

This standard is for those who carry out air tightness testing and inspection of large and complex buildings, high rise buildings and phased hand over and zonal buildings. These building types are defined more fully in the current approved procedure.

You are required to develop a proposal for the review of design, inspection and sample testing regime that is required to fulfil the needs of this National Occupational Standard, and the detail in the current approved procedure, for submission to the relevant authority for approval. This generally should cover the following, the type of building, its construction type, its internal layout, the timescales for the envelope construction and the air tightness target for the building. This applies to all 3 types of buildings listed in this standard: large and complex buildings; high rise buildings; phased or zonal handover buildings.

Performance criteria

You must be able to:

Identify special requirements for large and complex buildings, high rise and phased handover / zonal buildings

P1 determine why the building is either large and complex, high rise or zonal and phased hand over.
P2 obtain acceptance from the approving body for the building that a whole building single air test is not practical and that the proposed route meets the regulatory requirements
P3 interrogate large scale drawings supplied to understand the areas that should and can be tested of all these types of buildings to cover different air line elements, floors or levels needed, joints and interfaces of various elements
P4 identify obtain and review relevant detail 1:5 / 1-10 scale drawings showing the air line seals and interfaces of the building
P5 set out a timetable of inspection from the supplied information to ensure that all elements will be inspected during the build and as completed
P6 produce site inspection reports that highlight all the air tightness details seen, commenting on the satisfactory and non-satisfactory elements
P7 identify the sample areas to be air tested and get agreement on them from all parties (floors or areas) as set out in the relevant section of the current approved standard
P8 maintain an accurate list of comments that require action and a record of any action taken to clear an issue with supporting evidence
P9 compile a summary report and sign off letter showing clearly stating the reasons and evidence that the building complies with the air tightness specification for the building
P10 identify health and safety and specific fire safety requirements when conducting air tightness tests on large and complex, high rise and zonal buildings
P11 identify the additional requirements on the contractor of providing temporary seals to internal areas of the building to prevent air leakage into them

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P12 establish the envelope area/volume of the sample space to be tested
P13 ensure that the calibration of all air testing equipment has not expired and that it is fully operational prior to arriving on site
P14 establish the ventilation systems in use and requirements for temporary sealing
P15 establish the number and location of internal openings and fans to create equalisation of air pressure
P16 ensure that all relevant external windows and doors remain closed for the duration of the test
P17 check and list temporary seals
P18 check and record building details
P19 check and record meteorological conditions including barometric pressure and temperatures
P20 record pre-test information
P21 conduct pre-test checks
P22 carry out the testing process following relevant test Standard
P23 ensure that all temporary seals remain in place and external doors have remained closed for the duration of the test
P24 gather and record test data
P25 validate and assess test data against pre-test checks
P26 gather and record post-test information
P27 confirm that all building test preparation conditions have remained stable during the test
P28 ensure that test data are accurately recorded
P29 with reference to the test strategy compare the result of the test with the target air permeability as defined in the associated energy calculation at a test pressure of 50 Pascals to determine a pass or fail
P30 remove all temporary seals, if any, and return the building to its previous state
P31 remove or safely dispose of all waste
P32 take all equipment supplied for the test away from the site
P33 arrange re-tests where appropriate

Knowledge and understanding

You need to know and understand:

Identify special requirements for air tightness testing of non-simple buildings

K1 the relevant and current test Standards and regulations to be applied
K2 how to identify which components of the building require/are amenable to separate pressurisation tests
K3 the criteria for establishing how a building can be divided into separate self-contained compartments to allow valid air tightness testing
K4 the specific regulatory requirements for the air tightness testing of multi-storey buildings based on area, number of storeys and number of stairwells
K5 the health, safety and specific fire safety requirements to be complied with when compartmentalising buildings for air tightness testing
K6 how to compartmentalise buildings into discrete envelopes to achieve measurable areas of equal pressure
K7 how to minimise air pressure loss through stairwells
K8 how to calculate envelope areas for separate components of multi-storey or large buildings
K9 the impact of differences in area footprint/cross-sectional area of different parts/floors of buildings and how they are measured and
factored into the testing procedure
K10 the appropriate types and numbers of fans to achieve required air pressure stabilisation in separate compartments of a building
K11 sample testing procedures for different floors of multi-storey building to achieve an accurate assessment of the airflow rates and air permeability of the whole building
K12 how to identify a representative sample of the building envelope area to conduct air tightness testing
K13 how to construct temporary screen to isolate test zones to ensure that they act as air barriers during testing
K14 how to ensure that the calibration of all air testing equipment has not expired and that it is fully operational prior to arriving on site
K15 how to use relevant instrumentation
K16 how to measure and record all outside and inside temperatures
K17 understand the effects of the various corrections required in the relevant test Standard
K18 limiting factors to be taken into account when evaluating results
K19 the required measurements and tolerances as defined in the relevant test

Standard
K20 ways of calculating Equivalent Leakage Areas
K21 requirements for the calibration of equipment and calibration periods in accordance with traceable Standards, by UKAS accredited organisations
K22 how to identify all results outside accepted tolerances and their effect on test results and reporting
K23 the relationship between air flow rate measurements and the required range of fan flows
K24 the technical requirements of the test Standard in relation to pressure measurement
K25 how to ensure stabilisation of induced pressures throughout the building envelope
K26 the importance of recording the average of positive and negative values over minimum periods of 30 seconds and the average of all values over 30 second periods
K27 positive, negative and average values tolerance which prevent a valid test from being undertaken and how to explain this to the client
K28 how to qualify results where static pressures before or after the test are in excess of plus or minus 5 Pascals
K29 how to complete all data sheets accurately with the required results to permit the production of a test report
K30 how to calculate the total airflow required to achieve a pressure differentiation of 50 Pascals for the required air tightness target identified within the energy calculations for the building
K31 how to establish the test result
K32 procedures for the safe removal of all temporary seals and returning the building to its previous state
K33 procedures for the safe removal and disposal of waste materials
K34 equipment checks required to ensure that all supplied equipment has been collected from site
K35 the importance of following site sign out procedures and/or making appropriate people aware that you have completed the test and are leaving the site
K36 methods for identifying air leakage paths such as smoke pens
K37 how to handle re-tests

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