

Buildings and Structures

Civil/structural engineering and building surveying expertise
Specialist structural investigation and assessment skills
UKAS accredited testing services
A complete professional evaluation and advice service



"We are committed to providing our clients with tailored, pragmatic and environmentally sound engineering and scientific services and solutions, which are delivered both effectively and efficiently."

www.stats.co.uk

STATS

Specialist Engineering, Materials
and Environmental Consultants

A member of the RSK Group plc

Consultancy with allied technical services

STATS provides professional evaluative consultancy with allied technical services that are relevant to all stages in the lifecycle of buildings and civil engineering structures worldwide.

STATS' engineers, surveyors, technicians and materials scientists operate in partnership with our clients to deliver comprehensive cost efficient solutions to the everyday needs associated with initial design, inspection, maintenance, repair, and redevelopment of the built environment.

Our strengths lie in a combination of:

- Consultancy led integrated professional and technical services utilising a wide range of in-house skills, expertise and specialist training.
- Extensive project experience built up during STATS' 30 years of work in structural investigations and related fields.
- A responsive nationwide service, extending globally when required.
- An ability to perform both consultancy and contracting roles to give a one-stop shop for physical investigation, inspection, testing, assessment and interpretative reporting.
- ISO 9001/14001 accreditation for quality and environmental management and UKAS accredited laboratories.



We undertake commissions from a wide variety of clients including; architects, institutional investors, consulting engineers, building surveyors, housebuilders, property owners/agents, contractors, manufacturers and government bodies. Staff are trained to work on the railway network, in confined spaces, at height from elevating work platforms, from scaffolds and by rope-access.

With each of our clients we agree an investigation outline and fee structure at the outset, which will provide the information required within set timescales at a competitive cost.

STATS prides itself on providing authoritative impartial information, opinions and advice.

In summary, STATS has the capability to design, manage and undertake routine and innovative specialist inspections, testing and monitoring of buildings, structures and structural components and to arrange any necessary repair and remedial works.

Building envelopes



A building envelope is the separation between the interior and the exterior environments of a building. It serves as the outer shell to protect the indoor environment as well as to facilitate its climate control.

Building envelope design includes four major performance objectives:

- Structural integrity
- Moisture control
- Temperature control
- Control of air pressure boundaries

The physical components of the envelope include the foundation, roof, walls, cladding systems, doors and windows.



STATS has extensive experience in the investigation of these elements of a building using our qualified in-house engineering and rope-access inspectors. Our services include:

- Inspection and testing of cladding, glazing and roofing systems
- Inspection of fixing systems by endoscope
- Wall tie detection and inspection by endoscope
- Water leak detection of roofs, walls, cladding and windows using dye testing and electronic methods
- Humidity and moisture level measurement in walls
- Double glazing integrity testing
- Stone durability and characteristic strength of masonry
- Movement monitoring using crack/tilt meters and strain gauges
- Durability of concrete cladding panels
- Adhesion testing of finishes
- Assessment of foundation type and durability of concrete

Structures

Since the early 1970's STATS has built a strong reputation in the specialist field of construction materials testing with a particular emphasis on concrete technology. This reputation has led to a wide involvement in bridges and highways, where we verify the quality of materials for construction and, later in the life cycle, undertake periodic inspections and investigation of failures.

This fine Civil Engineering tradition continues within the company and we are able to offer expert inspection and advice on most constructional aspects of bridges, culverts, shafts, tunnels, dams, water supply and waste water infrastructure, docks, harbours, river and coastal defences, retaining structures, silos, tanks, multi-storey car parks, road and rail infrastructure.



STATS' wide capability with regard to building structures includes areas such as:

- Pre-acquisition surveys for deleterious materials including High Alumina Cement, excess chloride, lead paint, calcium silicate bricks and woodwool formwork.
- Inspection and testing for concrete "cancers" including sulfate attack and Alkali-Silica Reaction.
- Structural frame investigation of beams, slabs, columns and walls using intrusive and non-destructive methods to determine form of construction, strength of materials, defects and load capacity.
- Floor screed testing.
- Design and supervision of repair works.
- Assessment of fire and blast damaged buildings.
- Load capacity of ground-bearing slabs.

Instrumented testing



Whether it be load, movement, temperature or humidity that requires accurate measurement, STATS can achieve this using our standard dedicated instrumentation, with bespoke designs custom-built when necessary.

We undertake full-scale load testing on buildings and bridges where theoretical assessments fail, are inappropriate or impracticable. At a more detailed level we are experts in pull-out tests on fixings and adhesion tests of coatings and repair systems. We also routinely undertake car park barrier testing to BS 6180 and personnel safety barrier testing.

Utilising our comprehensive physical and chemical laboratory facilities, we are able to undertake performance testing of many types of structural components and construct purpose built mock-ups to simulate proposed site installation and fixing conditions. For example:

- Building cladding panel systems
- Specialist structural components
- Pre-production development testing



STATS monitors long term movement of buildings and bridges due to cracking, settlement or vibration using devices such as strain gauges, crack meters, electro-levels and accelerometers, collecting results by data loggers, to allow remote access to the data.

STATS' Key Skills and Services in Structures

Structural investigations

- Covermeter surveys of steel reinforcement
- Steel reinforcement corrosion monitoring using half cell and resistivity measurement
- Measurement of depth of carbonation in concrete
- Hardened concrete dust, lump and core sampling
- Rebound (Schmidt) hammer testing
- Ultrasonic Pulse Velocity testing (UPV)
- Principal inspection of highway structures
- Special inspection of post-tensioned structures
- Inspection and testing for Alkali-Silica Reaction (ASR) in concrete
- Assessment of Thaumassite and other forms of sulfate attack on concrete sub-structures
- Steel, cast/wrought iron inspection and testing
- Structural frame inspection to determine structural form and defect appraisal
- Load assessment by calculation
- Movement monitoring using vibrating wire strain gauges and demec gauges
- Pre-acquisition surveys for deleterious materials

Building envelope investigations

- Inspection of cladding panels and endoscopic inspection of fixing systems
- Wall tie detection and inspection
- Leak detection for roofs, walls and windows
- Humidity and moisture level measurement
- Brickwork investigation for compressive strength, mortar designation and chemical attack
- Double glazing integrity testing
- Testing to determine In Situ Crushing Resistance of floor screeds
- Movement monitoring using tell-tales and electro-levels
- Investigations into failing building elements
- Inspection and testing of cladding, glazing and roofing systems
- Investigation of fire and blast damage
- Adhesion testing (bonding of repair material, render and paint coatings to substrate)

Instrumented testing

- Load testing on floor slabs and walls including in situ deflection and strain measurement
- Pull-out tests for strength of fixings in concrete, stone and masonry
- Horizontal load testing on barriers/parapets
- Strain gauge installation and monitoring
- Precast concrete cladding panel load testing
- Adhesion testing for bonding of repair material, render and paint coatings to substrate
- Bespoke site and laboratory investigations

Project Profiles

Civil Engineering

- Highway structures
- Railway infrastructure
- Tunnels and shafts
- Water and waste water treatment works
- Docks, harbours and coastal defences
- Retaining structures
- Pavements for highways, ports and airports
- Buried structures
- Nuclear, thermal and renewable power plants

Buildings

- Reinforced in situ or precast concrete elements
- Post-tensioned or prestressed concrete members
- Steel frame and roof members
- Masonry in stone, brick and blockwork
- Timber components
- Glazing and façades
- Pitched, flat and barreled roof coverings
- Foundations, basements and retaining walls

Specialist Capabilities

Certified operation techniques

- Confined space working
- Inspection/testing using rope-access (IRATA)
- Working on railway property (PTS)
- Mobile elevated working platforms (IPAF)
- Working on construction sites (CSCS)
- Working on highways and trafficked areas
- Scaffold erection (PASMA)

Laboratory testing

- UKAS accredited testing on a range of construction materials including concrete, steel, paint, masonry, screed, grout, mortar, timber, asphalt and others.

Building acoustics

- Sound insulation testing
- Noise and vibration monitoring and advice
- Plant installations to BS 4142

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