



**FACE CONSULTANTS LTD**  
Global Flooring Consultants



**Experts in the design, testing, and measurement of industrial concrete floors**

design > consultancy > Q.A > surveying > testing > G2P automation

## Global Flooring Consultants

Face Consultants are leading specialists in the design, surveying, and testing of commercial and industrial warehouse concrete flooring. With involvement in over 15 million square metres of flooring annually, we provide expert advice the world over.

## Independent Floor Testing

We are a completely independent testing organisation with a global presence throughout mainland Europe, the Middle East, Asia, Australasia, and Africa, with headquarters based in the UK.

### Creating a flatter world, one floor at a time ...

Floor flatness is essential, especially in high-density warehouses where Very Narrow Aisle (VNA) trucks operate, and in e-Commerce warehouses operating Goods to Person (G2P) robotics.

Uneven floors mean slower Materials Handling Equipment (MHE) and less cost effective warehouse operations. Poor surface regularity will also cause excessive vibration on forklift trucks, increasing both maintenance and downtime, with potential impact on driver's health and safety.



## Design & Consultancy

As a specialist civil engineering consultancy, we are devoted to the design, detailing, construction, and functionality of industrial concrete flooring.

Our wealth of knowledge and experience to Funds, Developers, Contractors, and End-Users is provided through:

**Design & Detailing** - Providing structural designs for standard floor construction, and non-standard construction requiring Finite Element Analysis software.

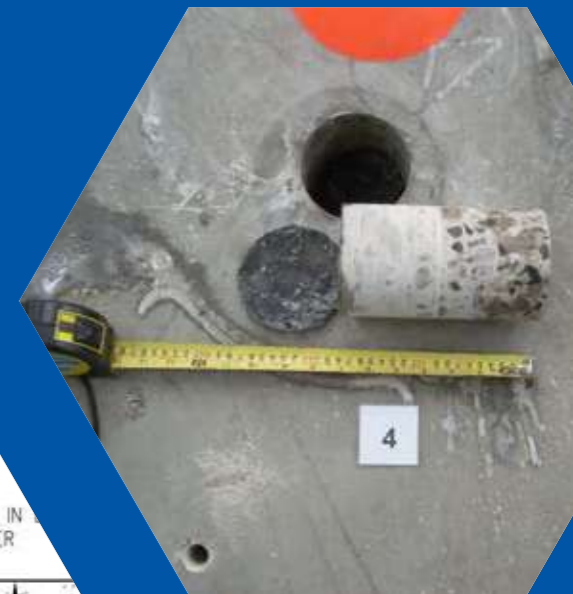
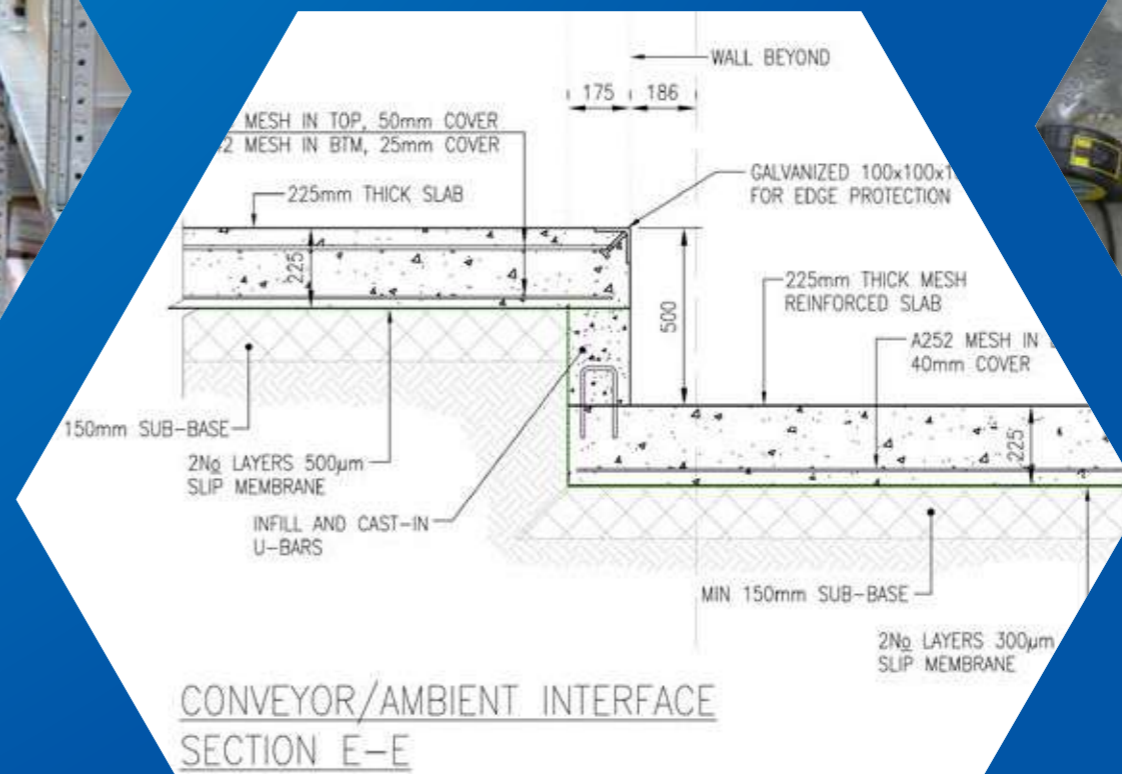
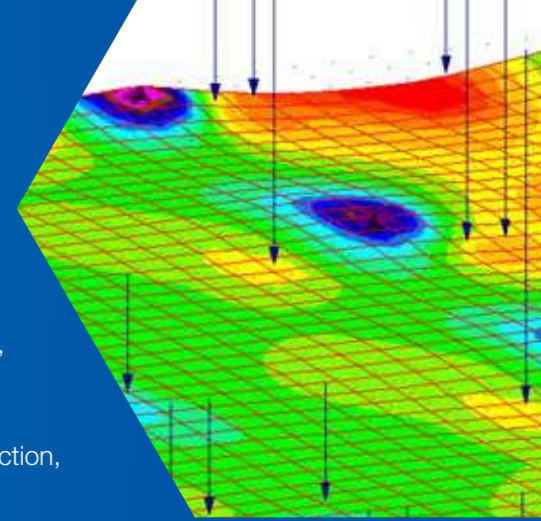
**Design Review** - We can undertake a complete critical review of the Design Engineer's flooring proposals including, but not limited to, concrete mix, structural analysis, design slab thickness and reinforcement, and a review of recommendations/findings by the Geotechnical Engineer.

**On-site Supervision** - Face Consultants offer pre-construction, during construction, and post-construction services, ensuring the floor constructed is fully compliant with the final design.

**Consultancy Services** - We deliver many consultancy services, including forensic problem analysis of existing floors and review & critique of existing base specifications. We also provide due diligence and structural appraisal, as well as crack mapping, dilapidation, and delamination surveys.

**GPR Surveying** - We offer Ground Penetrating Radar (GPR) surveying on existing slabs. This is a non-destructive test method for preliminary evaluation of the floor slab make-up (depth and reinforcement). The data can be used to aid feasibility studies of the loading potential of a floor as part of a change of use/due diligence.

**Automated Warehouse Floors** - Face Consultants assess how warehouse floors may react to the operational loading from the use of automated technology. We ensure the design of ground floor slabs are fit for purpose and bespoke to your requirements.



## Floor Flatness Surveying & Testing

**Surface Regularity** - using the latest digital equipment in accordance with the most recent measurement standards, Face Consultants provide surveying and testing of Free Movement and Defined Movement floors to ensure MHE operates to its full capacity.

In the UK and countries of UK influence, surface regularity can be checked to 'Concrete Society TR34' (Technical Report No. 34, Fourth Edition) free movement specifications FM1, FM2, FM3, and FM4 as well as defined movement specifications DM1, DM2, and DM3. Straight edge classifications SR1, SR2, and SR3, can also be checked for compliance with BS 8204-2.

We can also carry out testing to check compliance with the European EN 15620: 2008, the American F-Number and F-min systems or the German DIN 18202, DIN 15185, or VDMA Guidelines.

**3D Scanning** - 3D scanning services are available for surveying the surface regularity of automated warehouse floors using robotics, including Autonomous Mobile Robots (AMR), Automatic Storage and Retrieval Systems (ASRS), Collaborative Robots (Cabots), and Automated Guided Vehicles (AGV).

**Abrasion Resistance Testing** - used to check the accelerated abrasion resistance of a floor or screed, as described in BS 13892-4:2002 and checking against the limits found in BS 8204.

**Bespoke Surveys** - Face Consultants can offer Level Surveys, Screw Levelling etc., to 0.1mm level reading accuracy, using an Engineers Precise Level, Parallel Plate Micrometer, and taking readings from an Invar Staff. We can also carry out digital surveys using laser scanners and total stations.

**Slip / Skid Testing** - Face Consultants test floors to assess slip potential for workplace and public areas using the pendulum test method. Floors can be tested in-situ, or flooring materials can be tested in our laboratory. Testing is in accordance with BS 7976-2+A1:2013 and UK Slip Resistance Group (UKSRG) guidelines.

**Surface Micro Roughness Assessment** - research has shown that measurement of the RZ parameter allows slipperiness to be predicted for a range of common materials. A roughness reading can be used as supporting evidence with the results of a pendulum test. Other parameters of roughness such as Ra can also be checked, and it is often specified to be tested on floors that will be serviced by AMRs.



**Relative Humidity Testing** - checks whether the moisture level of the concrete has reduced to a value where resilient flooring can be safely laid.

**Surface Gloss Testing** - the surface gloss of a floor using mobile robots can cause interference when navigating computerised barcode stickers. We assess surface gloss using a gloss meter to provide quantifiable elements such as haze, reflectance, and gloss.

Face Consultants also undertake surveys where a high gloss or shiny surface is required, such as inside car showrooms and retail premises.

**Drop Testing (BRE Screed Test)** - Face Consultants can assess the in-situ crushing resistance (ISCR) of your screed and determine the probable performance in use.

**Adhesion Testing** - used to test the bond strength of screeds to a substrate.

**Crack Surveys / Crack Monitoring** - we perform crack surveys, which can be used as part of an investigation into the reasons for the formation of cracks in a floor. Cracks can be surveyed, measured, and then mapped in AutoCAD for monitoring purposes.

**Surface Resistivity / Anti-static Testing** - the prevention of static electricity build-up (transference of electrons due to sliding, rubbing, or separation of material) can be essential for warehouses using AGVs or AMRs. Electro Static Discharge (ESD) as low as 20 volts can cause damage to micro-electrical parts. Face Consultants provide surface resistivity testing, measuring the floor's ability to dissipate static charges.



## Floor Design & Testing for G2P

Face Consultants design ground floor slabs for automated warehouses, combining our precision equipment with many years of expertise working with robotic manufacturers and end-users. Floor slab designs are bespoke to your requirements, taking into account the automated systems used and how they will operate upon the warehouse floor.

We also provide independent design reviews, evaluating Design Engineers' floor proposals for automated warehouses.

Face Consultants offer floor flatness testing for G2P automation and compliance with floor surface requirements such as specified gloss, surface micro-roughness, and friction. We not only understand the working parameters of robotic equipment but our expert knowledge of the construction industry's capabilities allows us to work with manufacturers, delivering achievable flooring specifications.

## Flatness Testing Equipment

Designed and built in our UK Head Office, our digital flatness testing floor profilers check Defined and Free Movement floors to either TR34, DIN, VDMA, or the American F-Number specifications.

### Face Robotics Profileograph

Laser-guided profileograph used to assess the floor against multiple properties of floor flatness and levelness for robotic systems such as AMR, AGV, and ASRS.

### Face AIO Profileograph

These self-propelled All in One (AIO) profileographs are true simulators of materials handling equipment in very narrow aisles, measuring continuous profiles of a forklift's defined wheel paths. This allows us to recommend where corrective grinding should be used to achieve superflat floors.

The Face DM AIO Profileograph determines a floor's compliance with DM1, DM2, or DM3 of TR34, and/or EN 15620 (2008), as well as the American F-min number system, DIN 15185, and VDMA for defined traffic floors.

### The Face Property II Meter

Tests the floor against the Property F limits found in TR34, replacing old-fashioned manual methods which could be slow, laborious, and error prone.

### Face DINmeter

A quick and easy way to test floors against the limits of the DIN 18202 specification.

### Face F-Speed Reader

The F-Speed Reader checks a floor's surface regularity to the ASTM E 1155 standard, producing accurate F-Numbers at incredible speeds.

### Transbar Meter XR

The new Transbar XR (eXtended Range) Meter is an invaluable tool to those who wish to save on the cost of grinding transverse errors in VNA aisles and G2P robotics floors.



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Proving the world is flat, one floor at a time.



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