Tencon
SUSPENDED FLOOR SYSTEM

• **TENSILE** STRENGTH

>> VERSATILE IN HOUSE **CONSTRUCTION**

>> **COST** EFFECTIVE

TENCON

• **HOMOGENEOUS** MATERIAL

>> **REDUCED** ENVIRONMENTAL DAMAGE

NEW SUSPENDED **GROUND FLOOR SYSTEM**

CEMEX READYMIX

Tencon Suspended Ground Floor System

The patented Tencon Suspended Ground Floor System is a revolutionary new system, offering housebuilders the opportunity to construct ground floor slabs more quickly, more economically and with less waste.

The Tencon System has been designed for ground floors in housing and uses a new form of concrete called Tencon Concrete. This is an innovative concrete incorporating structural synthetic fibre reinforcement.

Tencon Concrete can safely carry the tensile stresses developed by the bending moment forces from floor loads which are self weight, live load, partition walls and load-bearing partition walls. The Tencon System is an economical and versatile solution to floor construction and is suitable for a wide range of site and architectural demands.

Features Of The Tencon Floor System

- NEW - a unique system for on site construction of house suspended ground floor slabs
- COST EFFECTIVE – it provides an economical solution allowing quick, reduced-risk installation of ground floor slabs in one pour
- PROVIDES VERSATILITY – simple slab design allows total flexibility for internal walls across broad 5 metre plus spans
- REDUCED ENVIRONMENTAL IMPACT – less ground excavation required for footings and beneath floor – reduced waste material
- BBA CERTIFICATE – The Tencon System is independently technically certified by the British Board of Agrément
- APPROVED INSTALLATION – The Tencon System is only constructed by approved contractors, trained by Tencon Ltd using Tencon Concrete

Tencon Concrete

Tencon Concrete is a proprietary, synthetic fibre-reinforced concrete designed for the Tencon Floor System. It does not require steel reinforcement and therefore offers advantages in work practices and cost reduction. It is a homogeneous, structural material with tensile strength verified in tests by independent laboratories.

Tencon Concrete is produced by CEMEX, one of the leading manufacturers of concrete in the UK. CEMEX's reputation for technical expertise in concrete is the envy of the industry and offers guarantees of reliability and high quality products. CEMEX's manufacturing processes and products fully comply with accredited quality assurance schemes.

Benefits of the Tencon Floor System

It's Cost Effective

The Tencon Floor System is one of the most cost-competitive solutions for housebuilders' ground floor construction needs. This value-engineered solution to house ground floor construction provides the housebuilder with key savings in materials and labour.

It Provides Increased Design Versatility

Foundation layouts do not need to mirror internal wall layouts with Tencon Floors. This often allows for very simple, straight run foundation layouts to be used. Foundation excavation volumes can also be reduced, cutting both time and labour costs. Tencon Floor design flexibility also allows internal partition wall layouts to be redesigned *after* completion of the house build, subject to structural analysis check. The Tencon Floor System is able to accommodate a range of architectural plans in both single storey and multi-storey homes.

It's Quicker And Safer To Install

The Tencon Floor System reduces complexity in laying the floor slab. Conventional steel reinforcement is not needed, giving significant time savings, and improved on-site Health and Safety – no awkward handling of steel wire mesh.

It's Lower Risk And Simpler To Install

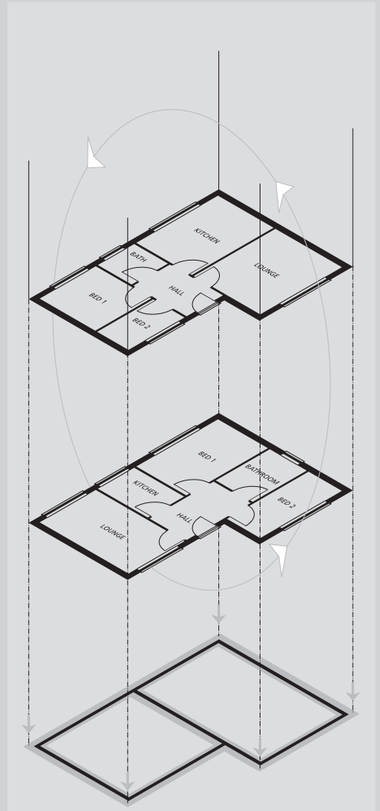
The Tencon Floor System requires just a single pour of Tencon Concrete -this means significantly fewer processes during installation and less reliance on other suppliers, as experienced when using other floor systems. When laying beam and block floors, for example, coordinating the delivery of beams, blocks, bricklayers and crane equipment is often difficult. Time delays caused by failures in the supply chain can mean extra cost for the client and builder.

These requirements are eliminated by the use of the Tencon Floor System, which only requires approved contractors to lay the system and delivery of the concrete, which can normally be supplied by CEMEX the next day.

It's Supported By Approved Tencon Installers

The sub-structure and Tencon floor slab can be completed by a single gang from a Tencon approved installer. Where brick and block laying skills are not available, the Tencon System offers a formwork alternative to take the construction to slab level.

The reduced number of processes with the Tencon System allows speed in construction without compromising quality.



Tencon floor construction accommodates a versatile choice of architectural internal plan, built off an economic foundation layout.

Tencon Floor System Features

Environmental Impact

The Tencon Floor System provides environmental advantages in site construction through reductions in excavation, tipping, infill and transport. Simpler site excavations encourage improved health and safety on site as well as reducing build time leading to savings in cost and labour. The reduced tipping requirements also mean fewer trucks on the roads, which offers wider environmental benefits.

Foundations

The Tencon Floor System is suitable for use with a full range of foundation types:

- Strip footings
- Trench fill
- Pile and Beam
- And most innovative foundation systems

The load distribution achieved by the Tencon Floor System offers a reduced risk of differential settlement for the building compared to other existing floor systems. The design of the system also allows for simplified foundation layouts because the load is spread evenly across the Tencon floor slab.

Superstructures

The Tencon Floor System is suited to a wide range of conventional and innovative superstructure types:

- Traditional masonry
- Timber frame
- Steel frame
- On site moulded
- Prefabricated modules

The Tencon Floor System provides an accurate slab platform to receive superstructures. This accuracy is particularly useful for superstructures of frames and pre-cast modular units from the factories.

Floor Plans

The Tencon Floor System offers an economical and quick, one-pour solution for house floors spanning up to 5.5 metres and a slab thickness of between 150 and 225mm.

Flood Protection

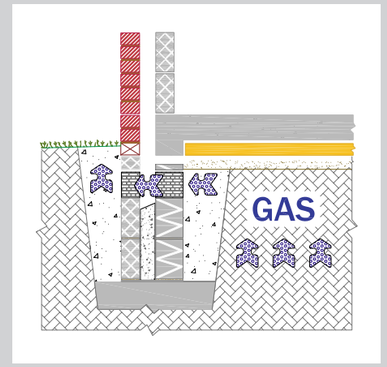
In many areas of the UK there are increased concerns about properties becoming more at risk from infrequent flooding. This is due to both long term climate change and the granting of planning permission for housing closer to flood plains. As part of the design of the Tencon Floor System, damp proof membrane installation may provide additional waterproofing to the house, offering a greater level of flood protection.

Membranes can very easily be installed to greater than traditional heights and incorporated into the masonry as building progresses. With less sharp edges and spikes associated with steel reinforcement, the chance of a membrane puncture is greatly reduced.

Gas Emission Protection

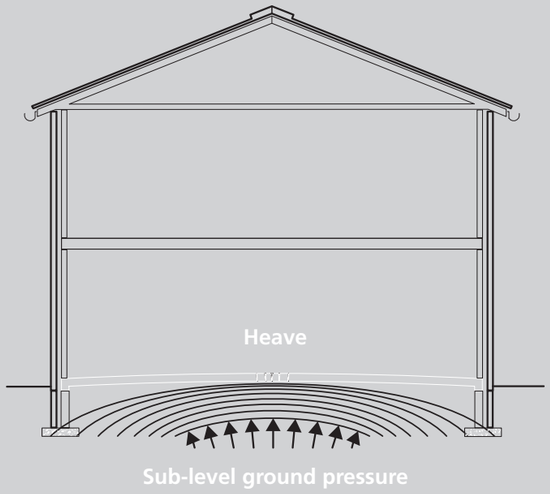
The independently-approved Tencon Floor System is designed to cope with the adverse ground conditions of emissions of radon or methane gases. The system incorporates features allowing gas emissions to be vented under the external walls of the house and emitted externally.

In addition, accredited protective membranes and construction features can be included within the Tencon System. This means houses using the Tencon Floor System can be constructed where radon gas and methane gas emissions are recognised at levels requiring protective features.



Ground Heave Protection

The Tencon Concrete's homogeneous properties provide three-dimensional strength against movement. If site investigations indicate risk of ground heave movement, with the associated need for upgraded foundation or floor specifications, the necessary specialist products typically available can also be included within the Tencon Floor System.



Sub-level ground pressure

Professional Installation

Providing confidence and quality assurance to the housebuilder, client and home-buyer, the Tencon Floor System is only constructed by experienced contractors who are trained and approved by Tencon Ltd.

Quality Assurance

Tencon Concrete is produced by CEMEX, the leading producer of ready-mixed concrete in the UK. All manufacturing processes and products comply fully with accredited quality assurance systems.

Insurance

The design and installation of the Tencon Floor System are supported by appropriate insurance cover.

Certification

The Tencon Floor System and Tencon Concrete are approved by the British Board of Agrément, following full scale laboratory tests.

Case Study: Tencon Floor Slab Installation

This case study highlights the economic and practical benefits to housebuilders from using the Tencon Floor System. Here, a two storey, four bedroom detached house with integral garage is built using a Tencon Floor Slab. This client chose Tencon due to their need for a low cost and low risk solution.

Site Preparation: Foundations

The site was prepared for the floor slab installation. Foundation layouts do not need to mirror internal wall layouts with Tencon Floors. This allowed a simpler, straight run foundation layout to be used, with less chance of trench collapse. Overall, this site required 10% less excavation than needed for alternative floor systems, reducing both time and labour costs.

Tencon Slab Installation

The Tencon floor slab was efficiently installed by an Approved Tencon Floor Installer (Acorn Foundation Engineering). 24m³ of Tencon Concrete were delivered from CEMEX and poured in-situ. With Tencon Concrete's good workability, the slab was poured in less than two hours from start to finish.

Tencon Slab Completion

The Tencon Floor was installed to a finished state. The finished slab could be walked on by labourers after 3 hours and needed no screed or further surface works. This meant minimal disruption to the house build process.

Summary Comparison With Alternative Floor Systems

Description	Tencon Floor	Steel Reinforced Slab	Beam & Block	Tencon Floor System Savings & Advantages
Trench Excavations	82m³	91m³	91m³	Reduced excavation and simple foundation layouts (foundations do not need to mirror internal walls)
Soil Disposal	105m³ on site	114m³ off site	114m³ off site	Reduced waste materials giving environmental
Tencon Concrete	24m³			Supplied nationally by CEMEX with reliability and quality
Steel Reinforcement		137m²		No steel required: time and cost savings and reduced on-site health and safety risks
T-Beams & Blocks			137m²	Time, efficiency and cost savings with greater control over material and delivery
Relative Cost	**Lowest**			**Tencon best on cost, time and environmental advantages**
Relative Time	**Lowest**			

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CEMEX READYMIX

premier guarantee

LABC

BBA BRITISH BOARD OF AGRÉMENT TECHNICAL APPROVALS FOR CONSTRUCTION

ZURICH