



With over 30 years experience in the Composite Decking industry and a newly purpose built production facility, we are bringing the technical, construction and commercial benefits of composite construction to the Indian market.

JSW
structural metal decking ltd
Engineers in Steel Decking Systems

Building for the future

Who are JSW Structural Metal Decking?

Having been involved in large construction projects since the early 1980's, we understand the importance of reliability, quality and excellent service. As well as continually investing in the technical elements of the service we provide, JSWSMD is also committed to its client-centric approach – which means we put the needs of our client and their project first at all times.

The JSWSMD approach encompasses four important elements:

Quality

It is easy for us to feel confident in the high quality of our steel decking products, as all of our profiles are manufactured at our own, in-house production plant. The computerised production facilities ensure the manufacturing process is tightly controlled, and product output and production processes are continuously monitored via our Quality Assurance System.

Safety

Our many years of construction experience has shown us what a hazardous industry it can be. This is why we ensure maximum effort is put into developing and maintaining our approach to site Health & Safety. JSWSMD recognises the importance of the health and safety of other people who may be affected by our works, as well as our own employees.

The Profiles

We offer a range of profiles in gauges varying from 0.9mm to 1.2mm; all profiles are manufactured from steel strip to BSEN 10143 and BSEN 10346 with guaranteed minimum yield strength of 350 N/mm² and a minimum coating mass of 275g/m². The differing advantages of each profile gives the flexibility to meet specific projects requirements.

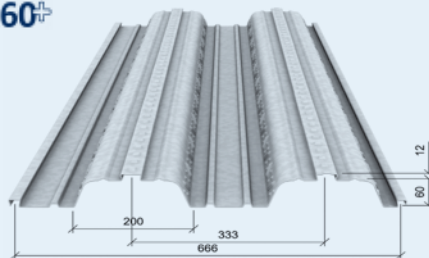
Service

Delivering excellent customer service is important to us and one reason why we enjoy such a high level of repeat business. For JSWSMD, 'excellent service' means being adaptable to change throughout all stages of a project as well as ensuring that sufficient resources are in place to provide flexible support.

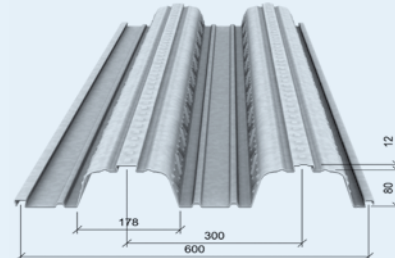
Sustainability

Working in environmentally responsible and sustainable ways is an important consideration for today's construction industry. Composite steel deck flooring systems offer a number of benefits that address today's social, environmental and economic considerations for sustainable construction.

TR60+

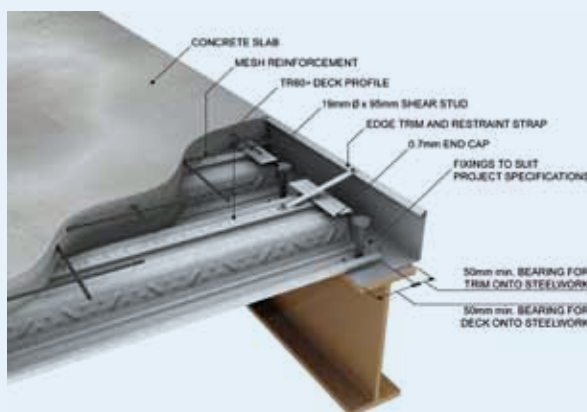


TR80+

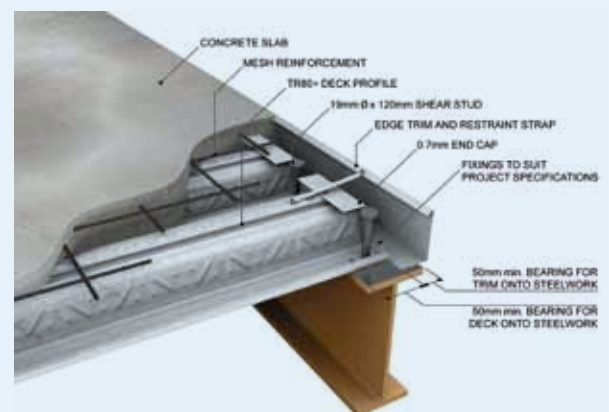


	TR60+			TR80+		
Nominal Thickness mm	0.9	1.0	1.2	0.9	1.0	1.2
Weight of Profile kg/m ²	10.25	11.34	13.61	11.37	12.59	15.10
Height of Neutral Axis mm	33.6	33.6	33.7	42.3	42.4	42.5
Area of Steel mm ² /m	1216	1355	1633	1385	1539	1860

TR60+



TR80+



Applications Using Composite Decking



1. GLA Building, London, UK
2. Queens Street, London, UK
3. Botanix Resort, Haryana, India

Multi-Storey Buildings

The shallower beams and relatively thin slab required for Composite Construction means reduced structural zones and storey heights. This lends itself to multi-storey buildings due to the greater floor per metre height ratio.

Refurbishment

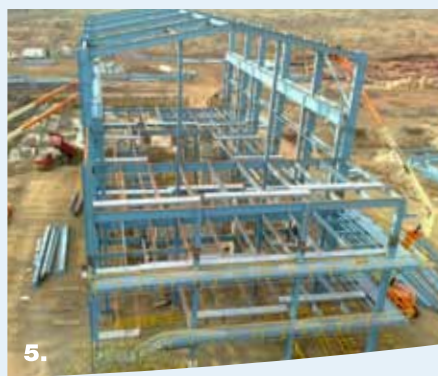
Composite decking can be used in areas where access is limited; it can be cut to suit on site and passed through voids in the structure (such as windows and doors) with relative ease. Relatively lightweight, it can be offloaded manually without the need for craneage making it a practical choice when looking to strengthen existing floors or creating additional floors to a building.

Residential

Composite slabs can provide good acoustic and thermal insulation. Used in conjunction with masonry, light steel or concrete walls they are an appropriate solution for residential multi-occupancy buildings. Suspended ground floors are a common feature in residential buildings, composite decking can be used to form composite suspended ground floor slabs as required.

The long spans achievable with composite construction make it a practical choice for the following types of buildings where layout flexibility and large open spaces are required...

Hospitals • Airports • Retail Developments • Leisure • Schools
Industrial Buildings and Warehouses
Stadia • Multi-storey office and mixed use buildings • Residential



4. The Oval Cricket Ground, UK
5. Greensol Power Project, India
6. Offices, London, UK

Leisure and Retail

The large open spaces required for cinemas, sports halls and other leisure facilities make composite construction an ideal solution due to its long spanning capabilities. Dynamic effects can be minimised by designing the composite floors to achieve high stiffness.

Industrial and Power

Composite construction is ideally suited to the high imposed load capacity, long span criteria often required in large Industrial type buildings and those utilised in the power sector.

Concrete Frames

Composite metal decking is not only for use on steel frames. It can also be used as permanent formwork, in place of timber formwork on concrete framed structures, helping to speed up the erection process.

Technical Benefits



Larsen & Toubro, P & G Bhopal Project, India

Load Capacity

The performance of composite decked slabs is assessed from dynamic load tests carried out in accordance with BS5950 Part 4 and Eurocode 1994-1-1. Excellent load capacities up to, and in some cases exceeding 15kN/m² can be achieved due to the shear bond developed between the concrete and the embossed steel decking. The relatively shallow slabs are typically between 130-200mm deep with light steel mesh reinforcement for crack control and fire. Additional reinforcement may be required in some areas to enhance load capacity or due to exposure conditions.

Fire Resistance

Outstanding fire performance can be achieved with metal decked slabs, in many cases up to 2 hours resistance can be achieved with only a light steel mesh reinforcement in the top of the slab (A142 to A393). Where greater than 2 hours resistance is required, this can be achieved with the addition of bottom reinforcement. The achievable fire resistance period is governed by the following design criteria: deck profile, slab depth, reinforcement, concrete density, concrete grade and loadings.

Useful UK Technical References Published by The Steel Construction Institute

P056 Fire Resistance of Composite Floors with Steel Decking (2nd Edition)

P076 Design Guide on the vibration of floors

P078 Commentary on BS5950: Part 3: Section 3.1 'Composite Beams'

P300 Composite Slabs and Beams Using Steel Decking: Best Practice for Design and Construction

P331 Design Guide on the Vibration of Floors in Hospitals

P322 Acoustic Performance of Composite Floors

P336 Acoustic Detailing for Multi-Storey Residential Buildings

P372 Acoustic Detailing for Steel Construction

Acoustic Performance

Composite decked slabs with typical floor coverings provide good acoustic performance usually sufficient for office type applications. The floor build up can be detailed to include a resilient layer or concrete screed to increase the acoustic insulation where required in applications such as residential blocks, hotels and hospitals.

Durability

All our products come with a standard Z275 coating (275g/m² inc. both sides). This coating provides adequate protection for internal, dry and unpolluted exposure conditions applicable to most common applications such as offices, apartments, commercial, hospitals etc. Where composite decked slabs are exposed to direct weathering or damp conditions the decking should either be considered as permanent formwork only, or additional protection should be site applied to the soffit of the decking.

Construction Benefits



1. Decking manufacturing facility, India
2. Air Traffic Control Tower, Chhatrapati Shivaji International Airport, Mumbai, India

Structural Performance

The design of composite beams and slabs using decking can lead to a 30-40% saving in steel weight compared to non-composite construction due to the shallower beam sizes required. A wide range of steel beam and column sections are readily available.

When compared to alternative methods of construction, composite decked slabs are significantly stronger and stiffer than timber and approximately half the weight of an equivalent precast or reinforced concrete solution.

Structural Stability

In addition to its primary design function, composite steel decking can also contribute to other structural functions. Provided the fixings are designed to carry the necessary loads the decking can act as an effective lateral restraint to the beams during construction.

Due to the continuity between the decking, reinforcement, concrete and primary structure the floor construction is robust. During construction the decking may be designed to act as a large floor diaphragm to redistribute wind loads. In addition, the composite slab can act as a diaphragm in the completed structure.

Speed of Construction

Decking is delivered to site on loads of up to 1000m² per load and can be fixed at a rate in excess of 400m² per day. The decking is loaded out in the area it is to be installed and fixed to the supporting beams with self-drilling/self-tapping screws using hand tools. The concrete topping requires minimal

reinforcement and large areas of slab can be poured quickly in relation to other forms of construction. These advantages added to the minimal requirement for temporary propping (which can be eliminated entirely dependent on design) results in erection periods on average 50% quicker than equivalent in-situ concrete construction.

Working Platform

Due to the speed of erection, large areas of decking can be installed quickly. This provides a working platform capable of supporting typical construction loads and controlled storage of materials for following trades. The working platform created will also provide a safety net to floors below from objects falling from above.

Concrete

The installation of composite decking removes the concreting process from the critical path of the project, therefore enabling large areas (only limited by practicality) to be poured at once. Typically a concrete pump is used to place the concrete; this is both fast and requires no craneage. Depending on the floor finish/build up required, slabs can be either floated level or 'power trowelled'.

Commercial Benefits

Time

The speed of construction using composite metal decking can reduce construction programmes by up to 50%, resulting in cost savings on site preliminaries and interest charges. The earlier building completion also enables lettable area to be rented out sooner (where applicable)!

Foundations

Due to the lightweight nature of composite construction, foundation costs can be reduced by in excess of 20% when compared to other methods of construction.

Services

Services can be accommodated within the structural zone, running through and between the steel beams, and where necessary voids can be provided in the slab. Our products can accommodate a service 'wedge nut' type fixing from which suspended services and ceilings can be hung, therefore avoiding labour intensive drilling to the decking soffit.

Cladding

The shallower floor and structural zones achievable with composite construction can lead to a typical 5% reduction in building height. This height saving reduces the cladding area and related costs. Special trims and channels are available (where necessary) to enable cladding to be easily attached to the slab.

Flexible Area

Composite Construction can achieve long spans and therefore a reduced number of columns. This not only increases the rentable floor area, but also provides greater flexibility for the internal layout both upon first use and should a change of use be required to the building in the future.

Building Life

Composite slabs provide a robust solution capable of supporting high loadings for most applications. The thermal and acoustic performance, fire resistance and durability provide benefits that add value by helping to extend the life of the building.



Sahara Star, Mumbai, India

Sustainability and Environmental Benefits

A number of key factors should be considered when looking at the sustainability credentials of composite construction and its effect on the environment compared to alternative methods of construction...

Lightweight construction – reduction in raw materials used.

Recycled content – steel is 100% recyclable and can be recycled numerous times without loss of quality.

Reduced wastage – the 'off site' nature of steel construction naturally means less site wastage.

Extended Life – long spans and large open spaces mean buildings can be easily adapted for a change of use, therefore extending the life of the building.

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The information contained in this document is taken from reference to various SCI and BCSA publications and is subject to change without notice.