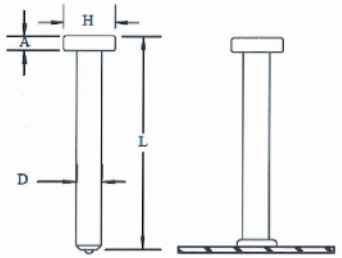
SHEAR CONNECTORS

Shear Connector and Reinforcement Installation

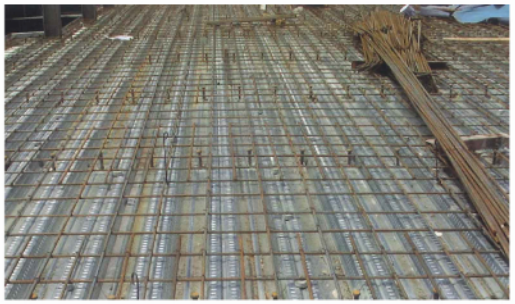
If all the edges of STRUCDEK have been welded properly, we continue by installing the shear connectors, diameter 19mm. Install the shear connector to the steel beam using special welding equipment base on AWS D1.1 (stud gun), however make sure the electric current is min 1750 amperes. The spacing of shear connector is based on design, every beam will have shear connectors, this is shown on construction drawings. After the shear connectors have been installed properly we must check the welding quality, whether it complies with our specifications by using visual inspection followed by site bending test (mentioned on check list) and approved by engineers. Install the top wire mesh and bottom reinforcement as per indicated in the shop drawings.



3/4" Diameter Shear Connectors								
Stud			Ferrule Specifications					
D	H	A	Type	No.	D	B	G	M
3/4	1 1/4	3/8	Flat Surface	FF-075	1.215	1.03	0.469	0.656
			Weld Through Deck	FW-075	1.325	1.21	0.406	0.6

Installation of Edge Form and Their Accessories

Now there are two stages left to finish the work. Since all decking have been installed and checked properly we can proceed by installing the edge form, bonfill and ceiling suspension as per M&E drawings and tighten them properly. We can inspect and do visual checks to make sure everything has been installed and tightened properly. Before pouring slab, we do site cleaning to make sure all dust and debris have been removed from pouring area by using air compressors. Flush the surface of decking and all the reinforcement on the slab with water and start pouring the slab.



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STRUCDEK

STRUCTURAL FORMWORK

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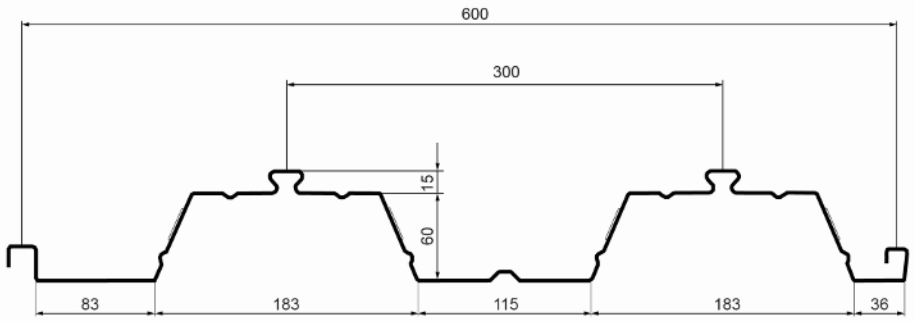
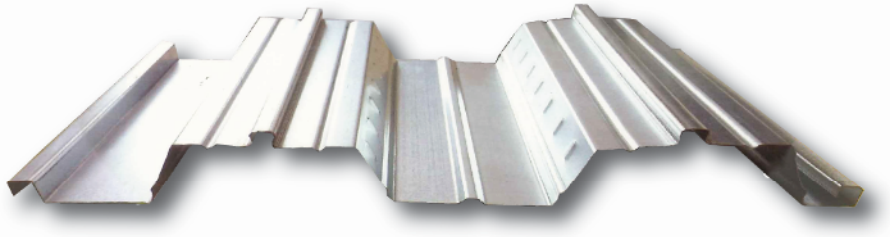
PROFILE DIMENSION





PROFILE SPECIFICATION

STRUCDEK, the state-of-the art profile in steel floor decking that is engineered to provide confidence and convenience with excellent performance in spanning capabilities, acoustics properties, fire protection and optimal concrete consumption for both steel and concrete framing construction.

STRUCDEK offers greater spanning capacities than similar decks in positive bending and end shear due to the high ribs which resist lateral deflection. STRUCDEK also offers stronger composite strength due to its high ribs which develops a strong mechanical interlocking with concrete slab.

FEATURES

STRUCDEK can deliver cost savings when used in the following types of construction:

a) Concrete frame building
b) Residential Construction
c) Multi-level carparks & multi-storey buildings
d) Commercial Buildings
e) Shopping centres

BENEFITS

a) Permanent formwork
b) Tensile reinforcement, i.e replace all positive reinforcement
c) Composite construction, i.e composite beam design reduces steel frame weight
d) Lower dead load reduces frame and foundation loading
e) Design up to four (4) fire resistance with exposed soffit
f) Quick and easy construction
g) Safe working platform
h) Simple construction with no specialized skills needed
i) No or minimal propping requirements
j) High structural efficiency due to high strength steel used
k) Stiffens supporting frame in tall steel buildings
l) Suitable for most ceiling finishes, i.e. painting to soffit, plastering
m) Easily cut and fitted to shapes
n) Shear studs can be site welded through-deck for composite action
o) Can be used on steelwork, concrete, blockwork and mansory structures
p) Ceiling and services can be easily suspended using in-house

DESIGN REQUIREMENT

Table 1 STRUCDEK Material and Section Properties

Minimal Thickness (mm)	Steel Grade (MPa)	Zinc Coatings Class +	2nd Moment of Area ($10^4 mm^4/m$)	X-Sectional Area (mm^2/m)	Weight (kg/m^2)
0.75	550.00	Z275	94.00	908.00	9.10
1.00	550.00	Z275	127.00	1422.00	12.57
1.20	550.00	Z275	141.00	1727.00	14.70

STRUCDEK is manufactured from high tensile steel (min 500 MPa yield stress) with a base metal thickness (BMT) of 0.75mm, 1.00mm, 1.20mm. The galvanised coating is Z 275 (min 275g/m²) in accordance with EC4.

Other base metal thickness and coating classes are also available on request, subjected to availability.

+ A zinc coating of total 275 g/m2(including both sides) is sufficient for internal floors in a non-aggressive environment, but the specification may be varied depending on service conditions – EN1994-1-1 4.2(3)

Table 1 STRUCDEK Maximum Un-propped Span with Fire Rate 2 hours

BMT	0.75 mm									
Slab thickness (mm)	130	150	160	170	180	200	220	230	240	250
Single span (mm)	3200	3040	2960	2900	2840	2720	2540	2500	2450	2380
Continuos span (mm)	3410	3230	3090	3050	3000	2880	2780	2730	2690	2630

BMT	1.0 mm									
Slab thickness (mm)	130	150	160	170	180	200	220	230	240	250
Single span (mm)	3520	3350	3280	3210	3150	3040	2720	2670	2620	2570
Continuos span (mm)	3840	3580	3530	3480	3370	3170	3000	2930	2850	2780

BMT	1.2 mm									
Slab thickness (mm)	130	150	160	170	180	200	220	230	240	250
Single span (mm)	3750	3600	3510	3440	3380	3260	3160	3100	3050	3000
Continuos span (mm)	4200	4000	3910	3850	3800	3700	3580	3520	3450	3390

Notes:
- The calculation based on EC4 (Eurocode 4).
- The load factor is 1.35 for super imposed dead load.
- The load factor is 1.5 for imposed load.
- Construction is based on Eurocode

INSTALLATION METHOD

1. Prerequisite Condition

Before Proceeding with decking (decking concrete slab) installation, there some prerequisite conditions which are listed below:

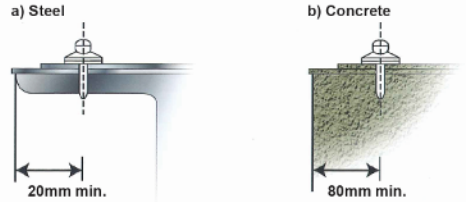
- All sub-structure works have been done.
- Columns and beam have been erected, adjusted, and bolt and nuts have been tightened properly.
- All equipment and materials have been placed near to area.

2. Decking layering

Put all deck on top of beam, arrange the STRUCDEK properly and connected it by clipping them properly (male to female).

3. Tightening STRUCDEK to Beam

Since the STRUCDEK is layered and tied together, we must ensure the level is flat. By using water levels to make sure the surface of deck is flat, we continue by welding the edge of STRUCDEK (min 50 mm) using self drilling screws (fastener) or tack-welded with spacing of every 150 mm. Quality of welding must be checked visually by inspectors and approved by engineers.



Minimum edge distances for shot-fired fasteners on steel and concrete supports.

End Bearing Requirements

End bearing and shared bearing (minimum)

Continuos bearing (minimum)