

ZAMBEZI STEEL

Strength. Quality. Integrity

ZAMDek®™ COMPOSITE STRUCTURAL DECKING



ZAMDek®™ Composite Structural Decking

- ZAMDek®™ is a multi-story steel or concrete building flooring system made of composite steel.
- The side-lap interlocking system of ZAMDek®™ enables quick and easy assembly of the product. The speed of erection saves a significant amount of money in labour costs.
- ZAMDek®™ has an unsupported span of up to 3 meters under wet concrete and a minimum depth of 65mm over the profile.
- ZAMDek®™ is compatible with the majority of floor service systems.
- Galvanized-coated steel thicknesses of 0.8mm, 1.0mm, and 1.2mm are available in ZAMDek®™.
- ZAMDek®™ has a fire rating of 120 minutes.

Note;

Per square meter of deck, the ZAMDek®™ profile displaces 0.037 cubic meters.

Material: ISQ 300, galvanized to Z275

Consult the ZAMDek®™ installation procedure before beginning the panel installation (pages 7-12).

ZAMDek®™

General

- As a one-way slab, ZAMDek®™ floors are ideal for evenly distributed loads. Heavy concentrated loads or moving loads are not taken into account in the following table. When this occurs, a civil/structural engineer should be consulted about the design.
- To a large extent, the calculations follow the guidelines of British Standard BS5950: 1984, Part 4. This is a design limitation. Estimated deflection during construction using a span/180m measurement.
- In places where ZAMDek®™ isn't attached to the end supports directly, steel closer pieces or transverse straps are necessary (e.g., shear studs, Hilti nails, etc.).
- Normal ZAMDek®™ steel floor applications require no additional reinforcing other than a Conforce 193 mesh for shrinkage control.
- "Fire Application" ZAMDek®™ floors require welded steel mesh reinforcement of 8mm diameter steel bars at 200mm spacing in each direction, with a minimum top cover along the supports (typically on top of shear studs). With a nominal superimposed load of 2.5kN/m², this result in the following ratings for spans up to 3.0 m at 170mm thick, the time limit is 120 minutes, while at less than 170mm thick the time limit is 90 minutes.

Contact Zambezi Roofing & Steel N.B. for more information on fire applications. All tabulated values are only intended to be used as a guide for single span conditions and should be certified and approved by a civil / structural engineer.

Accessories

ZAMDek®™ is compatible with steel side and end closures, self-tapping screws, pop rivets, hammer drives, and custom flashings.

SECTION PROPERTIES OF STEEL DECKING - SIMPLY SUPPORTED CONDITION

Thickness (mm)		Area of steel per metre width of cross section (mm ²)	Mass per square metre (kg/m ²)	Minimum reduced "Z" per metre width (10 ³ mm ²)	Reduced "I" per metre width (10 ⁶ mm ⁴)	Effective depth of ZAMDeK®™ (mm)	Neutral axis from bottom of ZAMDeK®™ (mm)
Nominal	Effective						
0.8	0.76	993	7.8	22.2	0.884	74.76	35.05
1.0	0.96	1254	9.85	30.3	1.170	74.96	36.38
1.2	1.16	1515	11.9	38.7	1.463	75.16	37.37

ZAMDeK®™ Composite Structural Decking : ALLOWABLE LOAD TABLES

Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	0.8mm Thick										
		COMPOSITE ZAMDeK®™ SLAB										
		Nominal uniformly distributed superimposed load (Ln) in kN/m ² for simply supported conditions 25 Mpa concrete										
Span in metres												
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.52	10.00	8.72	7.80	6.84	6.10	5.37	4.80				
150	2.75	10.00	9.61	8.60	7.53	6.70	5.93	5.30				
160	2.99	10.00	10.00	9.39	8.21	7.29	6.46	5.79				
170	3.22	10.00	10.00	10.00	8.79	7.89	7.01	6.29				
180	3.46	10.00	10.00	10.00	9.43	8.48	7.54	6.78	6.13			
190	3.69	10.00	10.00	10.00	10.00	9.17	8.11	7.27	6.50	5.87		
200	3.93	10.00	10.00	10.00	10.00	10.00	8.49	7.76	6.94	6.26	5.66	5.16
210	4.17	10.00	10.00	10.00	10.00	10.00	9.03	8.24	7.36	6.64	5.99	5.44
220	4.40	10.00	10.00	10.00	10.00	10.00	9.58	8.74	7.86	7.14	6.42	5.84
230	4.64	10.00	10.00	10.00	10.00	10.00	10.00	9.23	8.28	7.53	6.75	6.13
240	4.87	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.74	7.93	7.11	6.42
250	5.11	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.14	8.32	7.51	6.82

*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction

Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	1.0mm Thick										
		COMPOSITE ZAMDeK®™ SLAB										
		Nominal uniformly distributed superimposed load (Ln) in kN/m ² for simply supported conditions 25 Mpa concrete										
Span in metres												
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.53	10.00	8.73	7.81	6.84	6.11	5.38	4.81				
150	2.77	10.00	9.61	8.60	7.53	6.70	5.93	5.30				
160	3.00	10.00	10.00	9.40	8.21	7.30	6.46	5.80				
170	3.24	10.00	10.00	10.00	8.79	7.89	7.01	6.29				
180	3.48	10.00	10.00	10.00	9.43	8.48	7.54	6.78				
190	3.71	10.00	10.00	10.00	10.00	9.07	8.06	7.27	6.49	5.87		
200	3.95	10.00	10.00	10.00	10.00	10.00	8.49	7.76	6.94	6.26	5.66	5.16
210	4.19	10.00	10.00	10.00	10.00	10.00	9.03	8.24	7.36	6.64	5.99	5.44
220	4.42	10.00	10.00	10.00	10.00	10.00	9.59	8.74	7.81	7.04	6.33	5.74
230	4.66	10.00	10.00	10.00	10.00	10.00	10.00	9.23	8.24	7.42	6.72	6.13
240	4.89	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.59	7.83	7.07	6.43
250	5.13	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.98	8.22	7.46	6.82

*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction

Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	COMPOSITE ZAMDeK®™ SLAB										
		Nominal uniformly distributed superimposed load (Ln) in kN/m ² for simply supported conditions 25 Mpa concrete										
		Span in metres										
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.56	10.00	8.75	7.80	6.80	6.00	5.34	4.80				
150	2.79	10.00	9.46	8.50	7.45	6.60	5.89	5.30				
160	3.03	10.00	10.00	9.29	8.16	7.29	6.45	5.79				
170	3.27	10.00	10.00	10.00	8.78	7.88	7.00	6.28				
180	3.50	10.00	10.00	10.00	9.48	8.48	7.54	6.78				
190	3.74	10.00	10.00	10.00	10.00	9.06	8.06	7.26	6.49	5.86		
200	3.97	10.00	10.00	10.00	10.00	10.00	8.76	7.76	6.94	6.26	5.66	5.16
210	4.21	10.00	10.00	10.00	10.00	10.00	9.33	8.24	7.36	6.64	5.99	5.44
220	4.44	10.00	10.00	10.00	10.00	10.00	9.69	8.74	7.81	7.04	6.33	5.74
230	4.68	10.00	10.00	10.00	10.00	10.00	10.00	9.13	8.19	7.43	6.72	6.13
240	4.91	10.00	10.00	10.00	10.00	10.00	10.00	10.00	8.63	7.83	7.07	6.42
250	5.15	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.09	8.22	7.41	6.72

*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction

Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	COMPOSITE ZAMDeK®™ SLAB										
		Total FACTORED uniformly distributed superimposed load in kN/m ² for simply supported conditions (1,4 Dn + 1,6 Ln) 25 Mpa concrete										
		Span in metres										
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.52	19.53	17.48	16.01	14.47	13.29	12.13	11.21				
150	2.75	19.85	19.22	17.62	15.90	14.58	13.33	12.34				
160	2.99	20.19	20.19	19.20	17.32	15.84	14.52	13.44				
170	3.22	20.51	20.51	20.51	18.57	17.13	15.72	14.57				
180	3.46	20.84	20.84	20.84	19.93	18.41	16.91	15.69	14.64			
190	3.69	21.17	21.17	21.17	21.17	19.84	18.15	16.80	15.57	14.56		
200	3.93	21.50	21.50	21.50	21.50	21.50	19.08	17.92	16.61	15.52	14.56	13.76
210	4.17	21.84	21.84	21.84	21.84	21.84	20.29	19.03	17.62	16.47	15.42	14.55
220	4.40	22.16	22.16	22.16	22.16	22.16	21.48	20.15	18.73	17.59	16.44	15.51
230	4.64	22.50	22.50	22.50	22.50	22.50	22.50	21.26	19.74	18.54	17.30	16.30
240	4.87	22.82	22.82	22.82	22.82	22.82	22.82	22.82	20.81	19.50	18.20	17.10
250	5.11	23.15	23.15	23.15	23.15	23.15	23.15	23.15	21.77	20.46	19.16	18.06

*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction

ZAMDeK®™ Composite Structural Decking : FACTORED LOAD TABLES


Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	COMPOSITE ZAMDeK®™ SLAB										
		Total FACTORED uniformly distributed superimposed load in kN/m ² for simply supported conditions (1,4 Dn + 1,6 Ln) 25 Mpa concrete										
		Span in metres										
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.53	19.54	17.50	16.04	14.49	13.32	12.15	11.24				
150	2.77	19.88	19.25	17.64	15.93	14.60	13.36	12.36				
160	3.00	20.20	20.20	19.23	17.34	15.87	14.54	13.47				
170	3.24	20.54	20.54	20.54	18.60	17.15	15.75	14.59				
180	3.48	20.87	20.87	20.87	19.96	18.44	16.94	15.72	14.67			
190	3.71	21.19	21.19	21.19	21.19	19.70	18.09	16.82	15.59	14.58		
200	3.95	21.53	21.53	21.53	21.53	21.53	19.12	17.95	16.64	15.55	14.59	13.79
210	4.19	21.87	21.87	21.87	21.87	21.87	20.32	19.05	17.65	16.49	15.45	14.57
220	4.42	22.19	22.19	22.19	22.19	22.19	21.54	20.18	18.68	17.46	16.32	15.38
230	4.66	22.52	22.52	22.52	22.52	22.52	22.52	21.28	19.71	18.40	17.27	16.32
240	4.89	22.85	22.85	22.85	22.85	22.85	22.85	22.85	20.59	19.37	18.16	17.13
250	5.13	23.18	23.18	23.18	23.18	23.18	23.18	23.18	21.55	20.33	19.12	18.09


*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction


Depth of slab (mm)	Nominal dead load of slab (Dn) (kN/m ²)	COMPOSITE ZAMDeK®™ SLAB										
		Total FACTORED uniformly distributed superimposed load in kN/m ² for simply supported conditions (1,4 Dn + 1,6 Ln) 25 Mpa concrete										
		Span in metres										
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
140	2.56	19.58	17.58	16.07	14.46	13.19	12.13	11.27				
150	2.79	19.91	19.04	17.51	15.83	14.47	13.34	12.39				
160	3.03	20.24	20.24	19.10	17.29	15.90	14.56	13.50				
170	3.27	20.58	20.58	20.58	18.62	17.18	15.78	14.64				
180	3.50	20.90	20.90	20.90	20.06	18.46	16.97	15.74	14.69			
190	3.74	21.24	21.24	21.24	21.24	19.73	18.13	16.87	15.64	14.62		
200	3.97	21.56	21.56	21.56	21.56	21.56	19.57	17.97	16.67	15.57	14.62	13.81
210	4.21	21.89	21.89	21.89	21.89	21.89	20.81	19.08	17.67	16.52	15.47	14.60
220	4.44	22.22	22.22	22.22	22.22	22.22	21.72	20.20	18.71	17.48	16.35	15.40
230	4.68	22.55	22.55	22.55	22.55	22.55	22.55	21.15	19.66	18.43	17.30	16.35
240	4.91	22.87	22.87	22.87	22.87	22.87	22.87	22.87	20.68	19.39	18.18	17.15
250	5.15	23.21	23.21	23.21	23.21	23.21	23.21	23.21	21.75	20.36	19.06	17.96

*Broken line indicates maximum modified span/20.
Spans to the right of the solid line require propping during construction

Load Tables

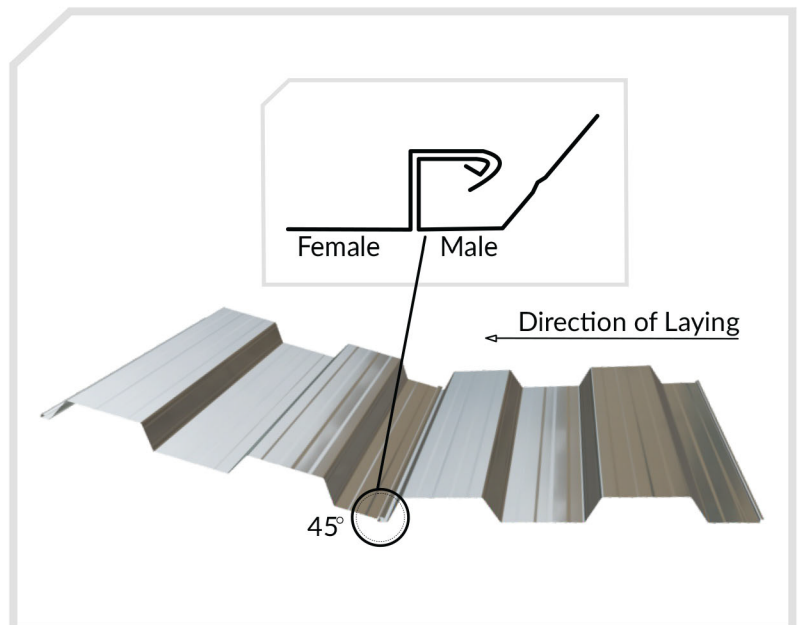
	0.8mm THICK ZAMDek®™ DECKING SPANS DURING CONSTRUCTION (UNPROPPED) Allowing for a construction load of 1,5 kN/m ² plus wet concrete											
Slab depth (mm)	140	150	160	170	180	190	200	210	220	230	240	250
Unpropped span (m)	2.7	2.6	2.6	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1

	1.0mm THICK ZAMDek®™ DECKING SPANS DURING CONSTRUCTION (UNPROPPED) Allowing for a construction load of 1,5 kN/m ² plus wet concrete											
Slab depth (mm)	140	150	160	170	180	190	200	210	220	230	240	250
Unpropped span (m)	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.5

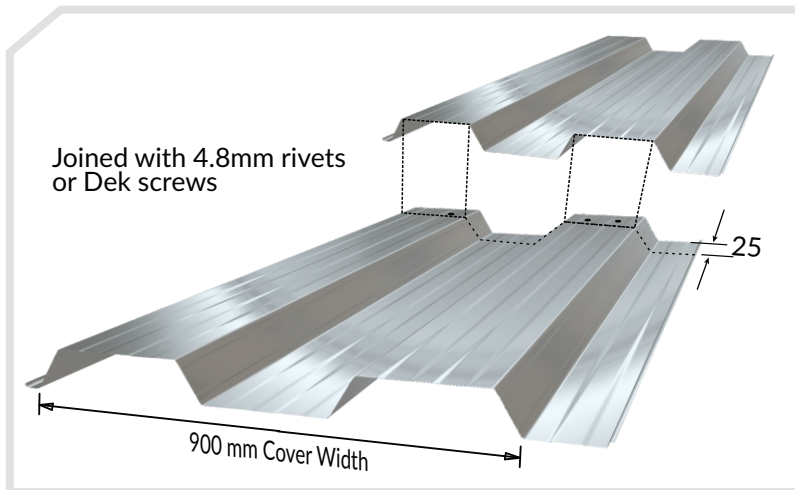
	1.2mm THICK ZAMDek®™ DECKING SPANS DURING CONSTRUCTION (UNPROPPED) Allowing for a construction load of 1,5 kN/m ² plus wet concrete											
Slab depth (mm)	140	150	160	170	180	190	200	210	220	230	240	250
Unpropped span (m)	3.5	3.4	3.4	3.3	3.2	3.1	3.1	3.0	2.9	2.9	2.8	2.8

How to install (Read entire procedure before pouring concrete)

ZAMDek®™ panels serve as both a formwork and reinforcement for wet concrete slabs. To begin installation, set the first ZAMDek®™ panel in the desired location, with the male interlocking rib pointing in the direction of laying as illustrated. To the outside, place the female interlocking rib. Place the second panel's interlocking female rib at a 45° angle to the first panel's male rib, and then drop the panel onto the supports, locking the side lap together. Continue with each subsequent panel.

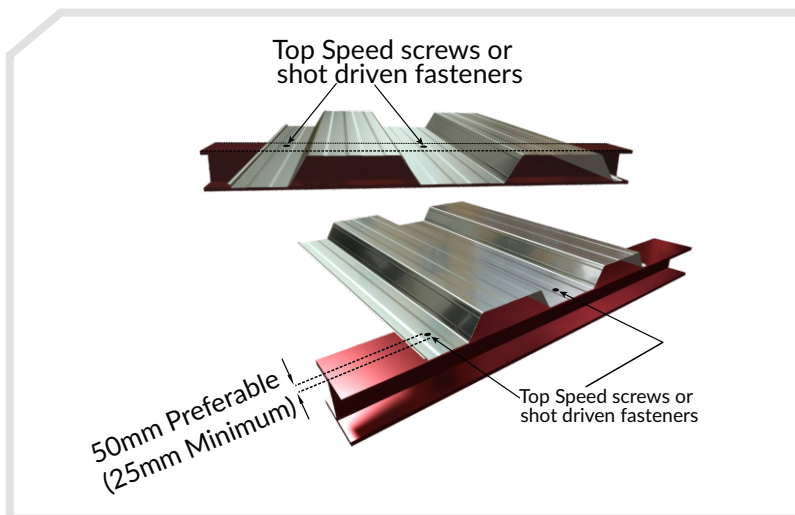


End-to-End Sheet Lapping



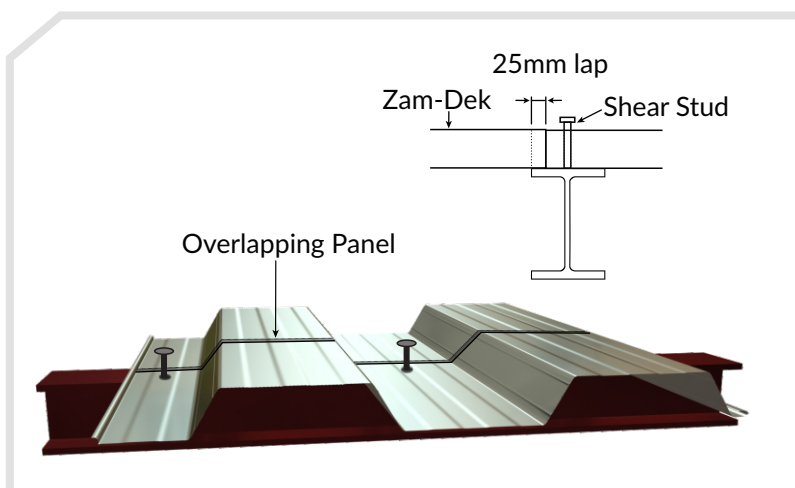
Lapping ZAMDek®™ rather than butt-joining it is the standard procedure. Lower panel ZAMDek®™ interlocking ribs are trimmed by 25 mm before the top panel is overlapped to finish the lap. Beam supports need to be secured with Top Speed screws in order to keep them stable.

Structural Steelwork



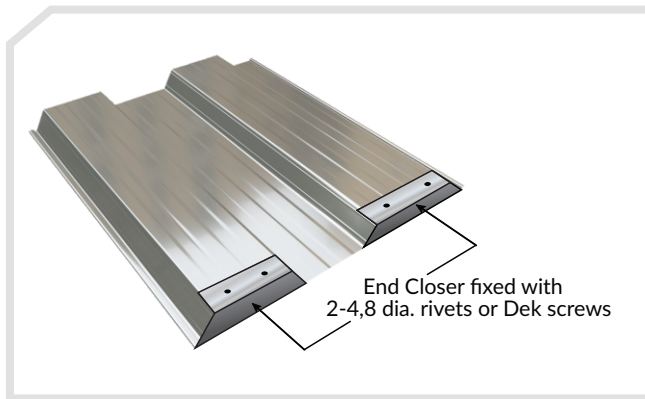
Using "Top Speed" screws or shot-driven fasteners, ZAMDek®™ panels can be easily attached to steel supports. There is only one fix for each pan.

Shear Stud



Installing shear studs over a beam in the panel pan is the proper way to go if you're going to use them. Panels that are end-lapped must have the 25mm lap on one side of the beam, so that a shear stud can be positioned through the center of the beam and fixed through the bottom panel.

ZAMDek®™ ends must be protected from concrete run-out.



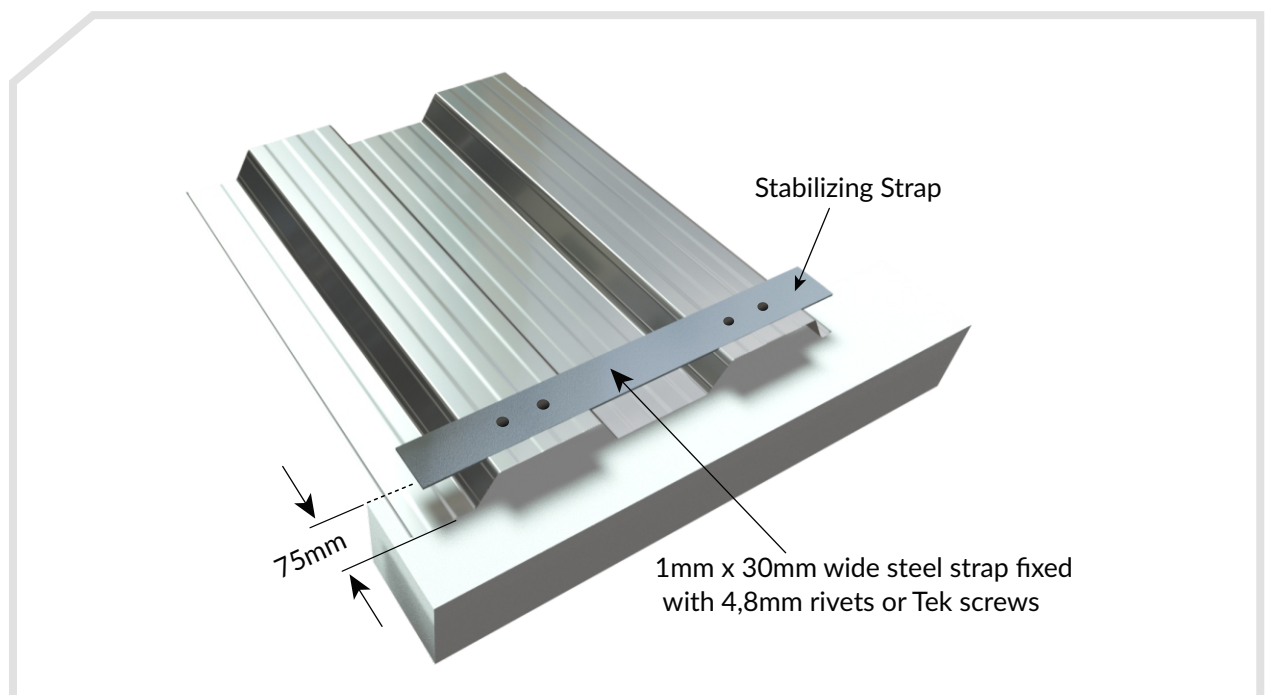
By using a closer at the ends of the ZAMDek®™ panels, lateral stability is provided without the use of strapping

Buildings made of concrete or brick

Make sure the top face of the concrete beam or brick wall is level before installing any ZAMDek®™ panels. Having an uneven top face will cause the structure to be overloaded with concrete in some areas.

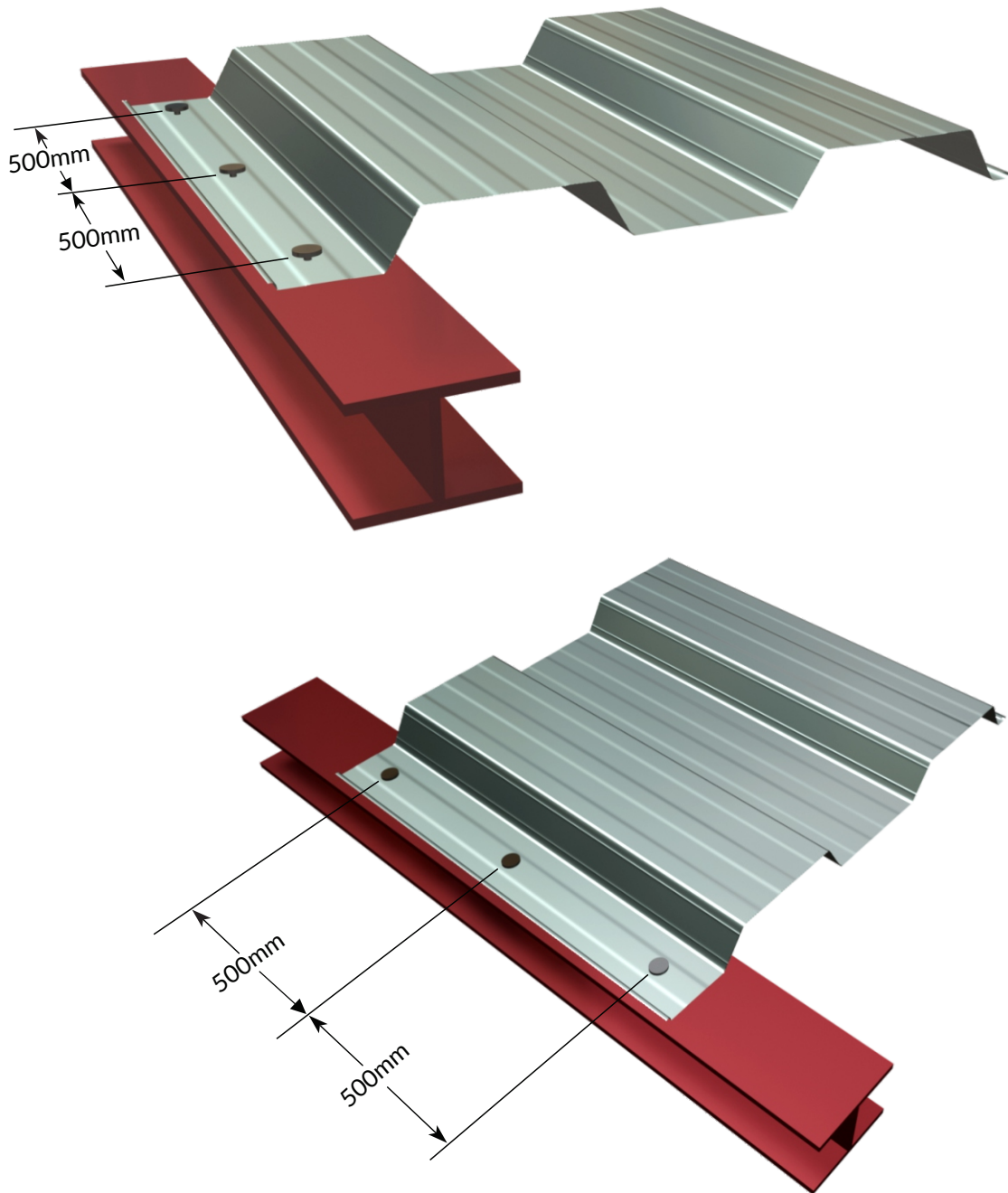
Placing the ZAMDek®™ panels on the concrete beams or the brick walls is all that is required to install it. Each flute is secured by a steel strap

that is wrapped around the panels. While the slab is being cast, this is done to ensure the slab's stability in the horizontal direction. It is recommended that a steel strap be fixed in place at both ends and the middle of the deck when it reaches its maximum span.

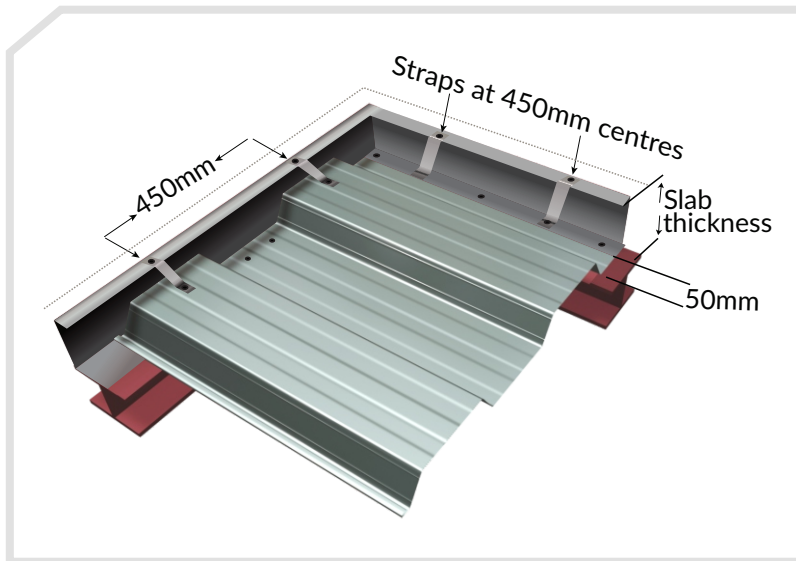


A lateral support for the structure

Cut the panel's edge with a utility tin snips, and then use a Top Speed or shot-driven fastener to keep it in place. It's important to maintain the same rib angle*. ZAMDek®™ and a 75mm deep make-up Z-piece can be attached to the beam as an alternative.



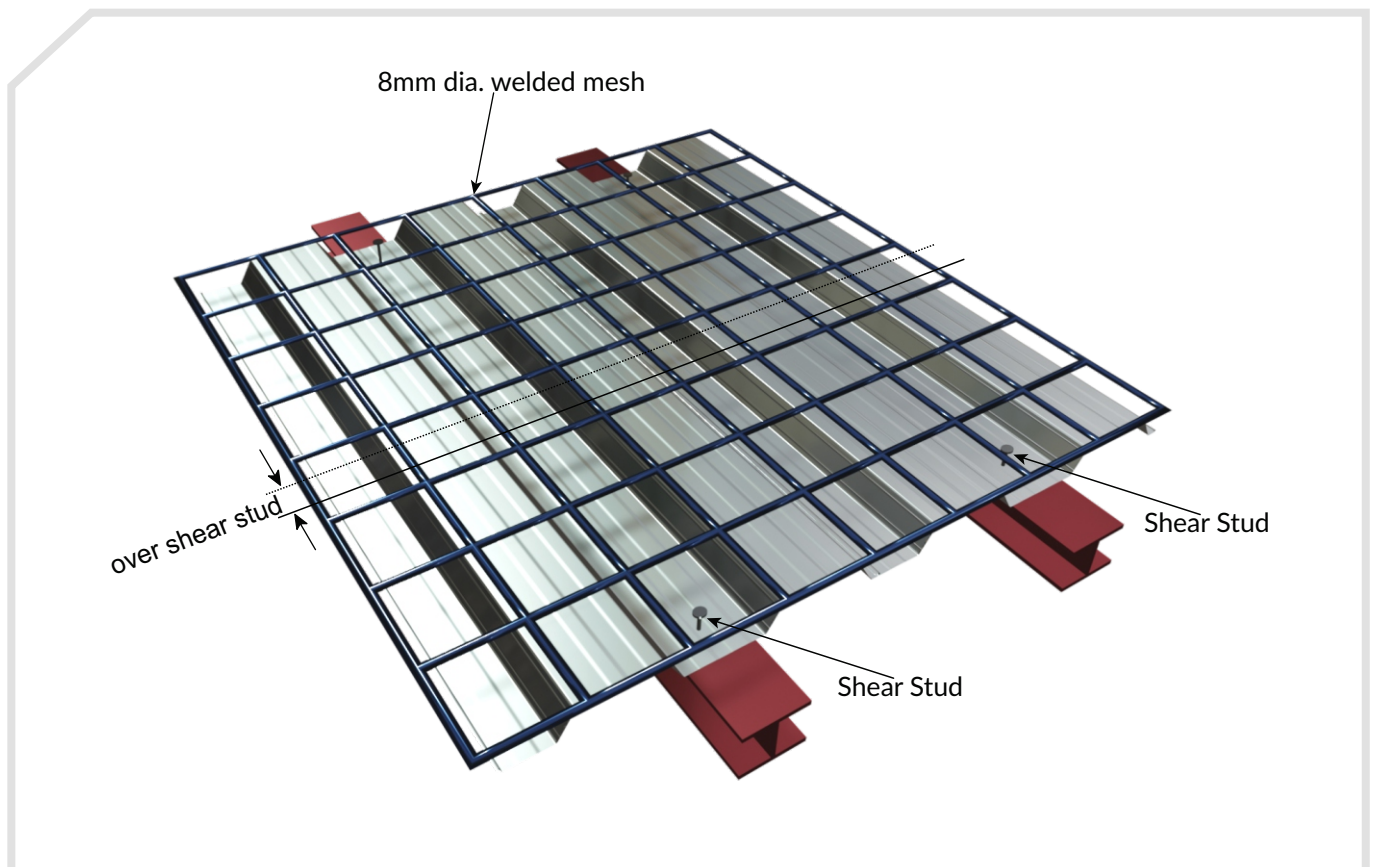
Kerb Flashing



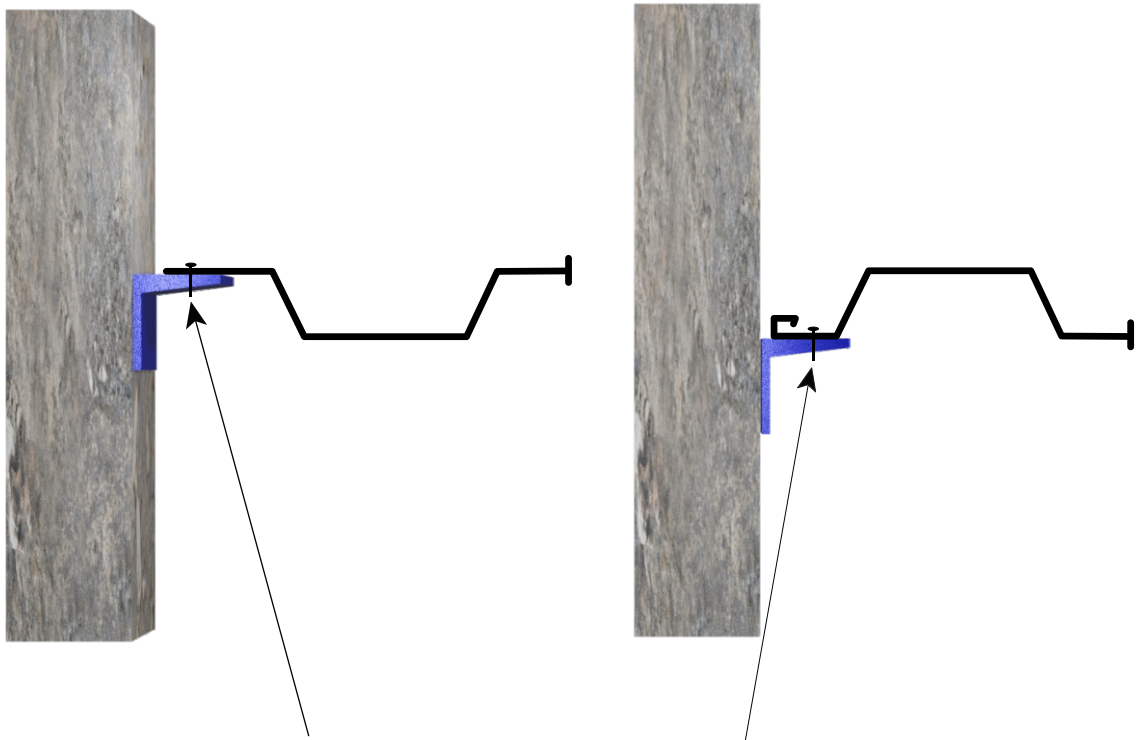
Top and bottom of the ZAMDek®™ rib are riveted to the top of the Kerb flash and top leg of the Kerb flash, respectively. The thickness of Kerb flashings should be at least 1mm.

Fire Applications

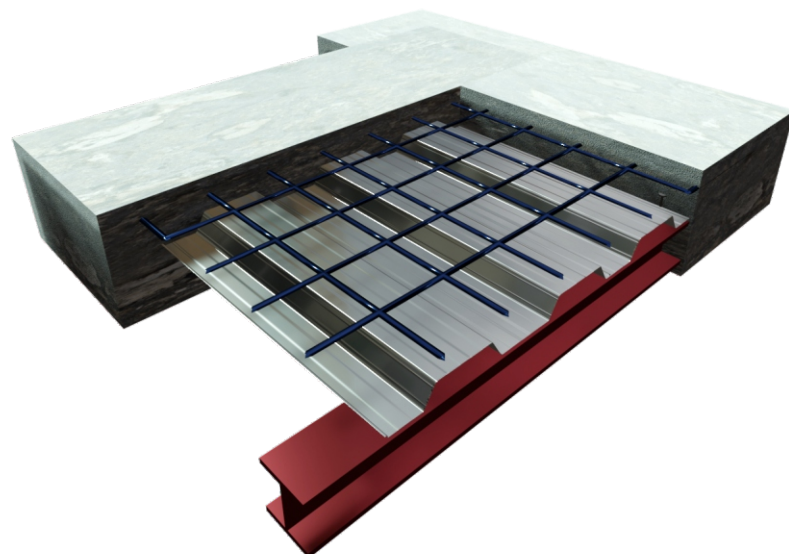
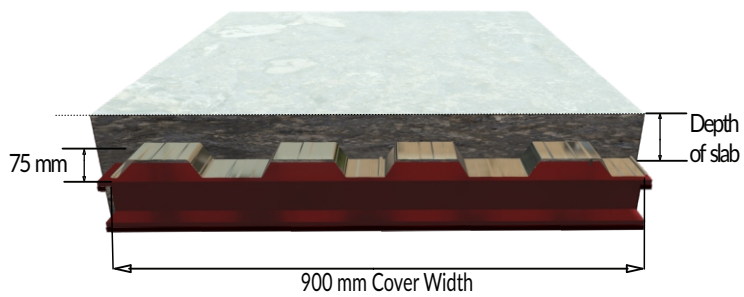
For "Fire Applications" of ZAMDek®™ floors, 8mm diameter steel bars at 200mm centers in each direction are required for steel mesh reinforcement (typically on top of shear studs).



Fixing to concrete

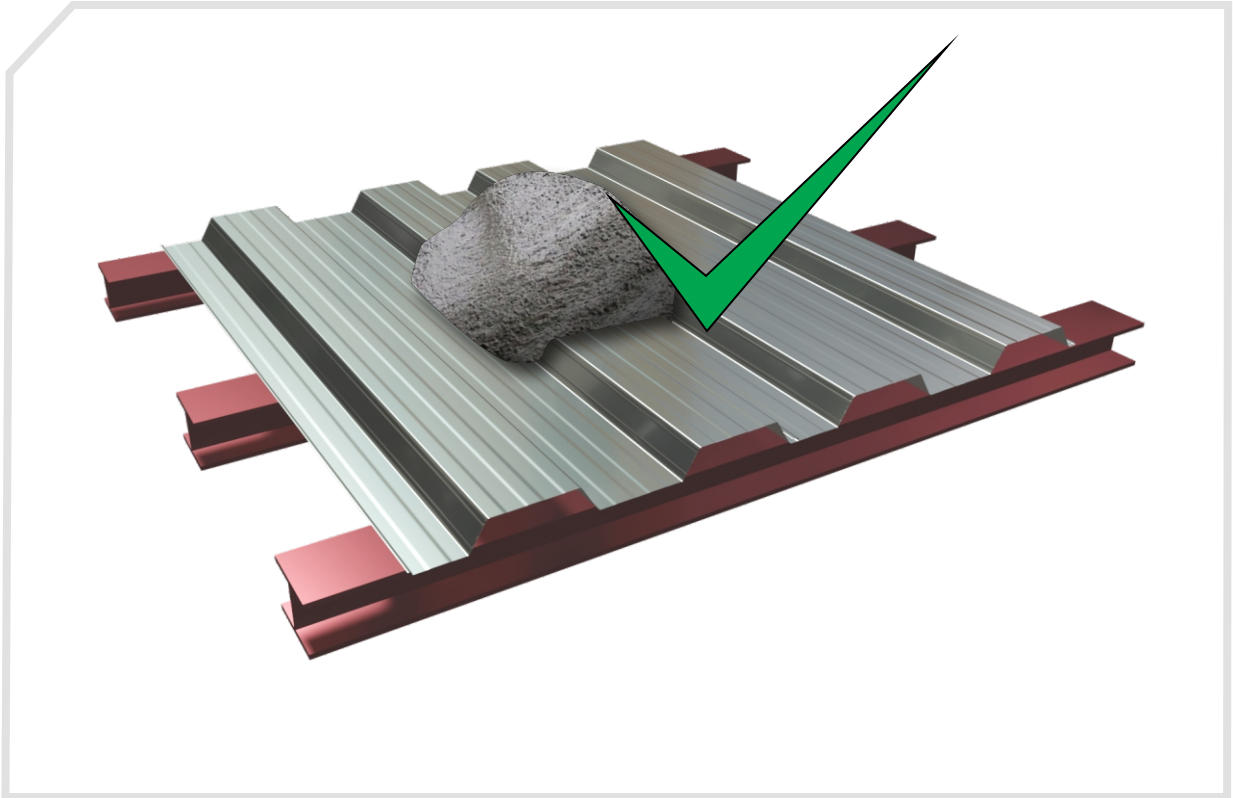


Fixing with Top Speed screws or shot driven fasteners at 500mm centres

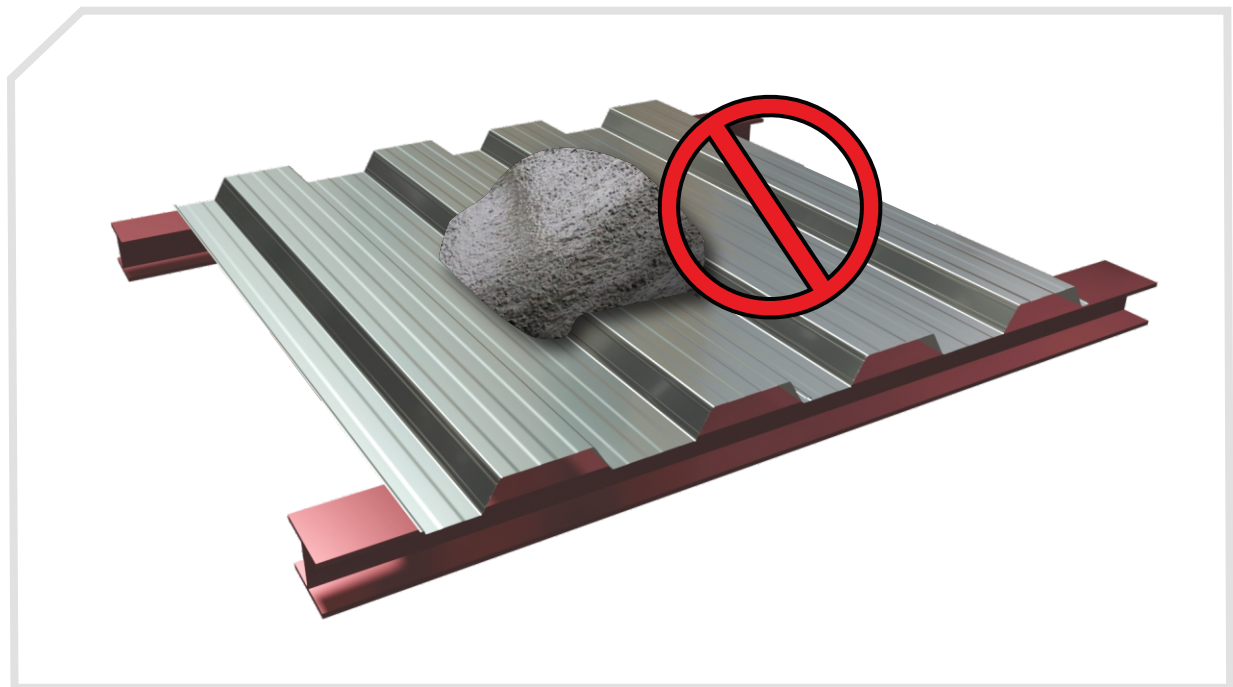


Pouring Concrete

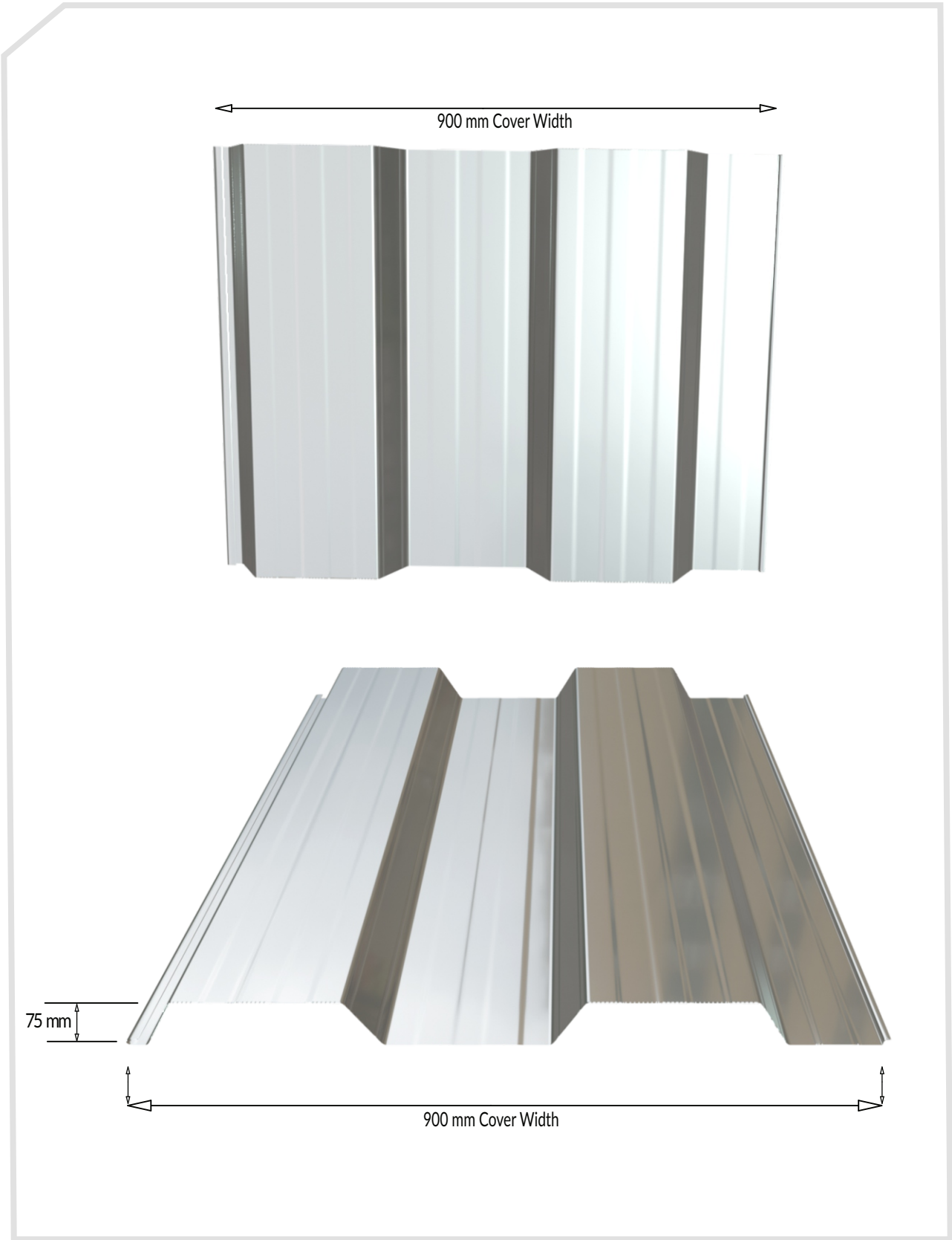
Concrete should be poured over the bearing beams. A maximum concrete height of 300mm should be avoided, and additional equipment or manpower should not be used.



NEVER POUR CONCRETE IN THE MIDDLE OF THE SPAN!

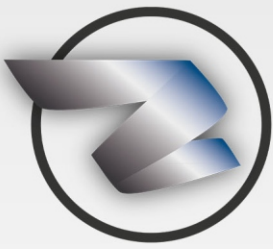


ZAM-Dek





**ZAMBEZI
STEEL**



ZAMBEZI STEEL

Strength. Quality. Integrity

#DevelopingZambia
#MadeinZambia

CONTACTS

sales@zambezi-roofing.com
sales1@zambezi-roofng.com
sales2@zambezi-roofing.com

ZAMBEZI ROOFING & STEEL
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+260 765023300
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+260 765023302
+260 765023303
+260 765023304