STEEL DECKING

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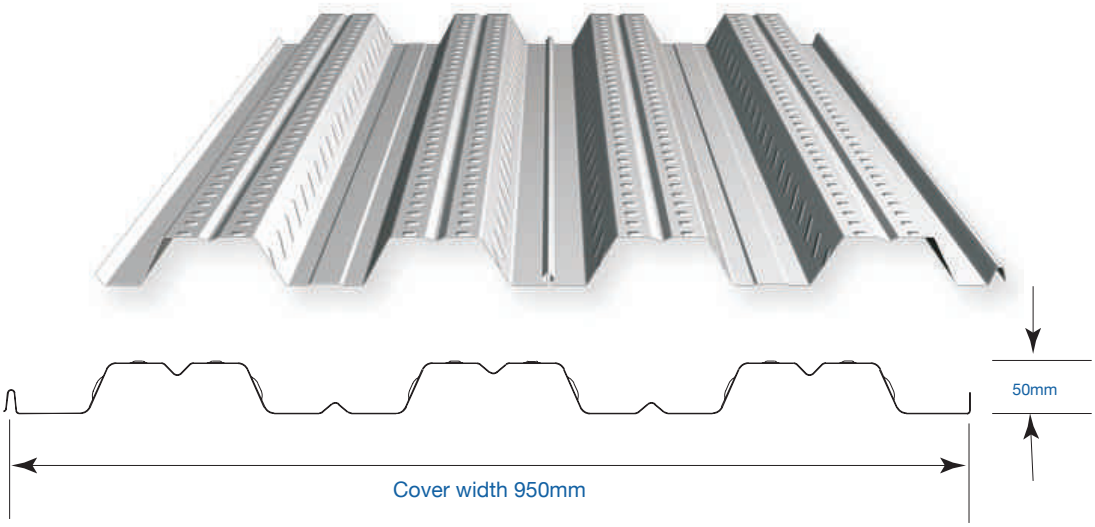
RMI Steel Deck is a new innovative profiled steel decking which brings greater economy and design freedom to building with composite concrete slabs. Our design engineers scoured the globe to find the best “W”- profiles in the world.

- This is a profiled zinc-coated high tensile steel and mild steel decking for use in the construction of composite floor slabs. It has exceptional composite performance – no additional reinforcement is required in most applications.
- It can be used as formwork during construction and as a reinforcement system in composite slabs.
- Our increased understanding of composite slabs, together with testing in our NATA-accredited laboratory and leading Australian universities, has paid off with an optimised product, which provides significant cost savings for projects.
- It has exceptional spanning characteristics and spans more than 3 metres, reducing the need for supporting structures.
- The built-in properties of high tensile steel are maximised in the design and fabrication of the deck profiles which result in products with high strength-to-weight ratio. This is currently the most economical structural steel decking in India for typical applications because it provides widest cover per weight of steel and minimizes reinforcement.
- The profiled ribs are nominal 51mm in height, having excellent concrete displacement characteristics and minimal propping requirements. This speeds up installation and makes the costs of delivery, erection and structural framing significantly lower than for other systems.



Features and Applications:

1. **Spanning Capacities**
   It has good spanning capacities. 1.0 mm BM Steel Deck can span more than 3 metres unpropped.

2. **Composite Action**
   Roofmart Steel Deck is a permanent and integral formwork for making a concrete slab. Composite action will develop in a slab because two elements (namely concrete and steel deck) are tied together using mechanical means, namely shear connectors. The composite action of a composite slab depends on a complex interaction between steel sheeting and the surrounding concrete and is the key factor of determining the behaviour of the composite slab. Experiments indicate that longitudinal shear transfer mechanism (composite action) is provided by mechanical interlock between deck and concrete.

3. **Design Efficiency**
   The thickness of our varies from 0.75 to 1.0 mm BMT and its grades of steel varies from 300 MPa to 550 MPa

4. **Design for Fire**
   Roofmart Steel Decking composite slabs can be designed for up to 4 hours of fire rating.

5. **Quicker Trouble-Free Installation**
   Ideal for quick and easy installation. It is available in long lengths so large areas can be quickly and easily covered to form a safe working platform during construction. Roofmart Steel deck provides a cover width of nominal 950 mm.

RMI Structural Decking System (RMSD)

RMI structural decking system is an innovative high strength Zinc-coated steel decking system design for use in the construction of composite floor slabs. It is specially develop for the Sri Lankan construction industry and is one of the most ecnomical structural decking in the country . Roofmart floor deck is suitable for typical application as it provides widest cover per weight of steel and also nibninizes the requirement for reinforcement . It acts as a permanent formwork for composite concrete slab, which in it's assemble state can be used as a working platform as well as a formwork to support wet concrete, contraction material and trades. when the concrete hardens, it acts as the bottom tensile reinforcement.

Roofmart deck is a complete structural steel decking system for concrete, masonry and steel frame construction and has an exceptional composite perfomance.

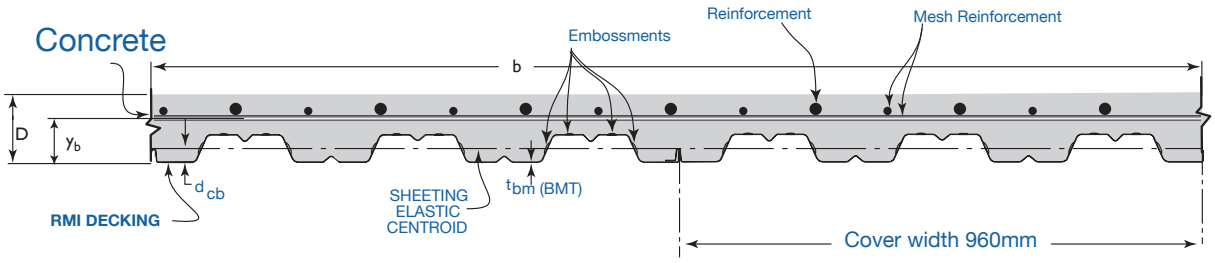
Designed to perfection

RMI structural decking system is an innovative 'W' profile structural decking system. its brings great economy and design freedom as it is precision engineered and provided ease of use as well as safety. RMI deck system haas excellent spaning capicities that ensure greater strength and less defection.

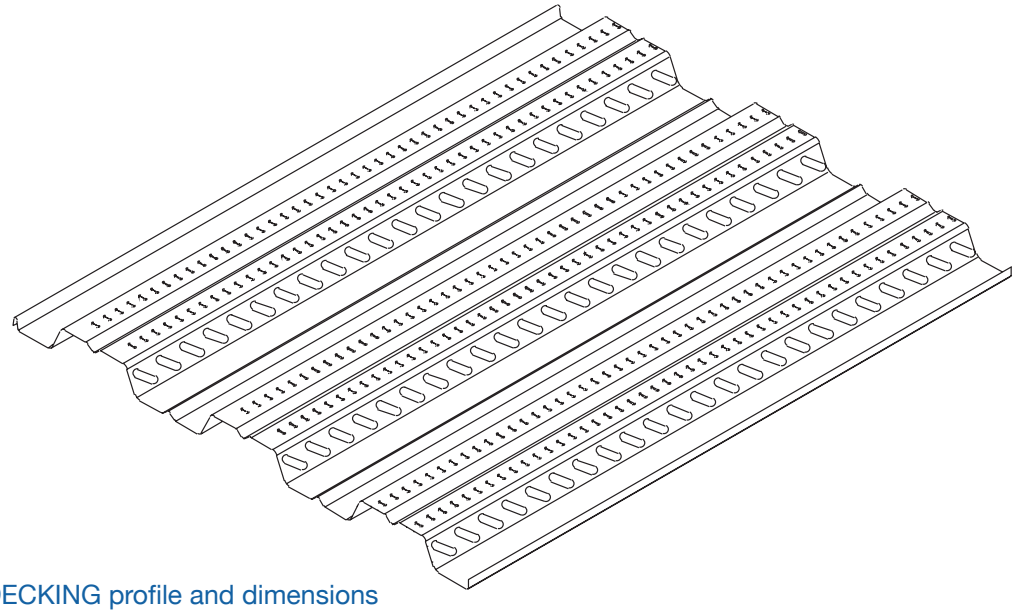
RMI steel deck panel has a rib depth of 51mm and provides an effective cover width of 960mm as shown in the figure in the below. Embossmentson top of the flange provide excellent mechanical interlocking between steel and concrete. In the assemble state, the profile compromises of intermediate male and female rib for every interlocking side-lap joint.

Specification and Design

RMI DECKING Composite Slabs



RMI DECKING profile dimension and reinforcement



RMI DECKING profile and dimensions

RMI DECKING section properties

RMI DECKING section properties

RMI DECKING **(TCT)**	Thickness **(BMT) (mm)**	Self weight **kg/m²**	Full cross-sectional **mm²/m**
0.75	0.70	7.35	888.9
1.00	1.00	10.34	1269.7

Note:
- *Self weight is given for Z275 coating*
- *Available steel yield stresses are 300, 400, 450 MPa*
- *Maximum yield stress for 1 mm bmt is 500 MPa*

Formwork Tables

Formwork Span 0.7mm 300 MPa — **No props**

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	1850	1790	1730	1690	1640	1600	1560	1520	1460	1310	1180
Continuous spans, mm	2040	1970	1910	1860	1810	1760	1650	1550	1460	1310	1180

1 prop

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3530	3300	3100	2920	2620	2370
Continuous spans, mm	3200	3600	3800	3720	3620	3530	3300	3100	2920	2620	2370

2 props

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3600	3800	4000	4200	3930	3560
Continuous spans, mm	3200	3600	3800	4200	4600	4800	4800	4650	4380	3930	3560

Formwork Span 0.7mm 550 MPa — **No props**

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2360	2280	2200	2140	2080	2030	1980	1930	1890	1810	1740
2 spans, mm	2610	2520	2430	2360	2290	2230	2180	2120	2080	1990	1910
3 spans, mm	2610	2520	2430	2360	2290	2230	2160	2090	2030	1920	1820

1 prop

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3600	3800	4000	4160	3980	3830
Continuous spans, mm	3200	3600	3800	4200	4590	4470	4360	4250	4160	3980	3830

2 props

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4800
Continuous spans, mm	3200	3600	3800	4200	4600	4800	4800	5200	5600	5940	5640

Formwork Span 1.0mm 550 MPa — **No props**

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2620	2540	2460	2400	2340	2290	2240	2190	2110	2040
2 spans, mm	3200	3290	3200	3110	3040	2950	2870	2800	2740	2620	2510
3 spans, mm	3200	3130	3030	2950	2840	2740	2650	2570	2490	2360	2240

1 prop

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4800
Continuous spans, mm	3200	3600	3800	4200	4600	4800	4800	5200	5140	4870	4630

2 props

Slab thickness, mm	100	110	120	130	140	150	160	170	180	200	220
Single span, mm	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4800
Continuous spans, mm	3200	3600	3800	4200	4600	4800	4800	5200	5600	6000	6000

Note:
- *Continuous maximum spans are limited as given in composite slab tables for interior spans and total 6000mm limit.*
- *Maximum formwork spans are based on L/180 deflection limit and ratio of two adjacent spans equal 1:1.*
- *1kPa Live Load due to stacked materials is used.*
- *Other BMTand steel grades are available in the software.*

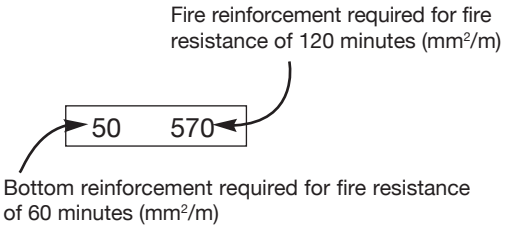
Design Tables

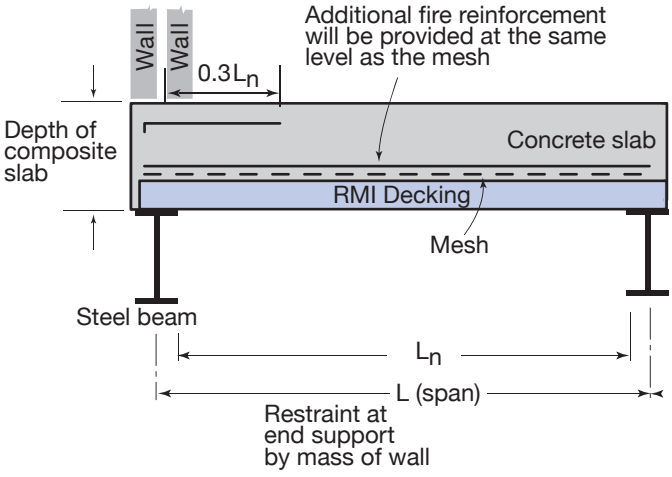
Use of design tables

The following parameters are common for all tables.

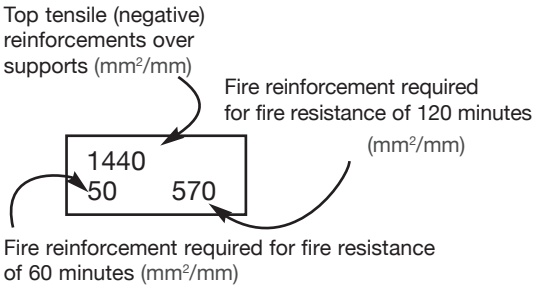
Exposure	Mild
Spans	More than four
Deflection Limits	L/250 total and L/350 Incremental
Ratio of composite slab spans	1
Crack Control	Required
Concrete grade	M20
Reo bars gradce	415MPa
Reo bars diameter	10mm
Reinforcement mesh	See Table 6.1
Superimposed dead load	1.0kPa
y c (Part of imposed load (which is permanent)	0.25
Formwork deflection limit	L/180 or 20mm, whichever is less
Formwork spans	Two spans
Fire imposed load factor	0.5
Support width	100mm
(BMT)	0.7mm
grade	550MPa
Shear studs	No
Maximum spans	up to 6m
Fire ratings	60 minutes, 120 minutes

KEY- Single Spans





KEY- Continuous Spans



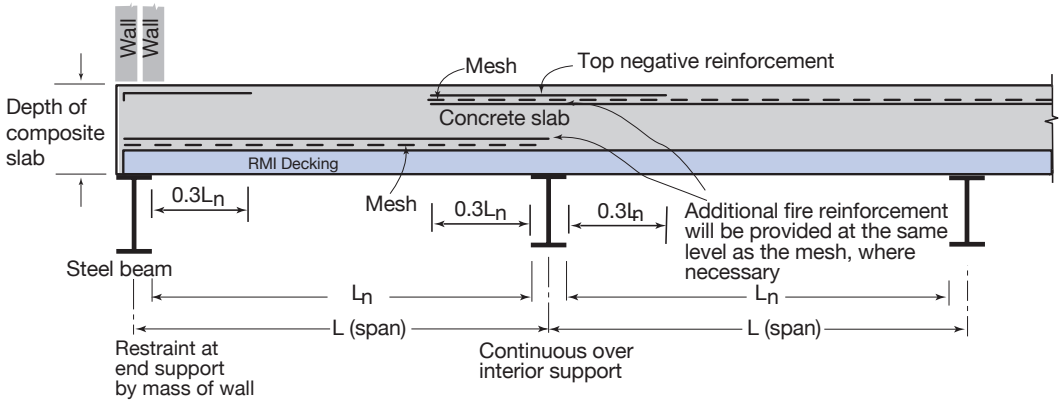
Note:
- *Areas without cells mean that a design solution is not possible.*
- *Single spans do not require top tensile reinforcement, relevant cells are not shown.*
- *All spans are centre to centre.*
- *Adash (-) means no fire reinforcement is necessary.*
- *N/Ameans a design solution with this particular fire rating is not possible.*
- *Top tensile/negative reinforcement is additional to shrinkage mesh area which is shown in Table 6.1 below.*

Empty cell means no solution is possible with adopted reinforcement pattern and selected parameters. It is possible to find solutions in many instances using our software, which can design compression and bottom tensile reinforcement and may provide other extra functionality.

Depth (mm)	Mesh (mm)
100 - 130	5.8 x 200 x 200
140 - 180	7 x 200 x 200
200 - 250	8 x 200 x 200

Shrinkage mesh, gauge 480MPa was used in design table.

Mesh reinforcement grades are as per the guidelines outlined in Section 7, IS432 (Part II) - 1982. See also IS1566-1992, Appendix Afor the Detail Specification. Mesh should be specified in addition to reinforcement in Design Tables.



Note: • *1/3 top negative reinforcement shall continue all over the spa if ratio of live load to total deal load is more than 2.*

Single Spans

Single Spans 100 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
2600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
2800	N/A	N/A	N/A	N/A										

Single Spans 120 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	20	N/A	40	N/A
2000	0	N/A	0	N/A	10	N/A	20	N/A	30	N/A	50	N/A	80	N/A
2200	10	N/A	20	N/A	40	N/A	50	N/A	60	N/A	90	N/A	120	N/A
2400	30	N/A	50	N/A	70	N/A	80	N/A	100	N/A	130	N/A		
2600	60	N/A	80	N/A	100	N/A	120	N/A						
2800	90	N/A	110	N/A										
3000	120	N/A												
3200														

Single Spans 150 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
2400	0	50	20	60	30	80	40	90	50	100	70	120	90	160
2600	30	80	40	90	50	110	70	120	80	140	100	160	130	200
2800	50	110	70	120	80	140	100	160	110	180	130	200	170	250
3000	80	140	90	160	110	180	130	200	150	220	170	250	220	300
3200	100	170	120	190	140	210	160	240	180	260	210	300		
3400	130	200	160	230	180	250	200	280	220	310				
3600	160	240	190	270	220	300	240	330						
3800	200	280	230	310										
4000	240	320												
4200														

Single Spans 200 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
3200	0	70	10	80	20	100	40	110	50	130	70	150	100	190
3400	20	90	40	110	50	130	60	140	80	160	100	190	140	230
3600	50	120	60	140	80	160	90	180	110	200	140	230	180	270
3800	70	150	90	170	110	190	130	220	140	240	170	270	220	320
4000	100	180	120	210	140	230	160	250	180	280	210	310		
4200	130	220	150	240	170	270	200	300	220	320				
4400	160	250	180	280	200	310	230	330						
4600	190	290	210	320										
4800	220	320												
5000														

Intertior Spans

Interior Spans 100 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	0	N/A	0	N/A	0	N/A	10	N/A	30	N/A	70	N/A	130	N/A
2000	0	N/A	0	N/A	20	N/A	50	N/A	80	N/A	70	N/A		
2200	0	20	20	N/A	60	N/A	100	N/A	140	N/A				
2400	20	N/A	60	N/A	100	N/A	150	N/A						
2600	50	N/A	100	N/A	160	N/A								
2800	90	N/A	150	N/A										
3000	130	N/A												
3200	180	N/A												
3400														

Interior Spans 120 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	0	- N/A	0	- N/A	0	- N/A	0	- N/A	0	- N/A	20	- N/A	60	- N/A
2000	0	- N/A	0	- N/A	0	- N/A	10	- N/A	30	- N/A	60	- N/A	120	- N/A
2200	0	- N/A	0	- N/A	20	- N/A	40	- N/A	70	- N/A	110	- N/A	190	N/A N/A
2400	0	- N/A	20	- N/A	50	- N/A	80	- N/A	120	- N/A	170	- N/A	270	- N/A
2600	10	- N/A	50	- N/A	90	- N/A	130	- N/A	170	- N/A	240	- N/A		
2800	40	- N/A	90	- N/A	140	- N/A	190	- N/A	240	- N/A				
3000	80	- N/A	130	- N/A	190	- N/A	250	- N/A						
3200	110	- N/A	180	- N/A	240	- N/A								
3400	150	- N/A	230	- N/A										
3600	200	- N/A												
3800	250	- N/A												
4000														

Interior Spans 150 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)						
	2	3	4	5	6	7.5	10
2400	0 - -	0 - -	0 - -	0 - -	0 - -	20 - -	90 - -
2600	0 - -	0 - -	0 - -	0 - -	30 - -	70 - -	150 - -
2800	0 - -	0 - -	0 - -	40 - -	70 - -	120 - -	220 N/A -
3000	0 - -	0 - -	40 - -	80 - -	120 - -	180 - -	300 - -
3200	0 - -	40 - -	80 - -	130 - -	180 - -	250 - -	
3400	30 - -	70 - -	130 - -	180 - -	240 - -	330 - -	
3600	60 - -	120 - -	180 - -	240 - -	310 - N/A		
3800	100 - -	160 - -	230 - -	310 - N/A			
4000	140 - -	210 - -	290 - N/A				
4200	180 - -	270 - N/A					
4400	230 - N/A	330 - N/A					
4600	270 - N/A						
4800	320 - N/A						
5000							

Interior Spans 200 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)						
	2	3	4	5	6	7.5	10
3200	0 - -	0 - -	0 - -	0 - -	0 - -	50 - -	130 - -
3400	0 - -	0 - -	0 - -	10 - -	50 - -	100 - -	190 - -
3600	0 - -	0 - -	10 - -	50 - -	90 - -	150 - -	260 - -
3800	0 - -	10 - -	50 - -	100 - -	140 - -	210 - -	340 - -
4000	0 - -	40 - -	90 - -	140 - -	190 - -	270 - -	420 - -
4200	20 - -	80 - -	130 - -	190 - -	250 - -	340 - -	510 - -
4400	60 - -	120 - -	180 - -	240 - -	310 - -	420 - -	
4600	90 - -	160 - -	230 - -	300 - -	380 - -	500 - -	
4800	130 - -	210 - -	290 - -	370 - -	440 - -		
5000	170 - -	260 - -	350 - -	440 - -			
5200	220 - -	310 - -	410 - -				
5400	270 - -	370 - -	480 - -				
5600	320 - -	430 - -					
5800	370 - -	500 - -					
6000	420 - -						

End Spans

End Spans 100 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	0	N/A	0	N/A	0	N/A	30	N/A	60	N/A	100	N/A	170	N/A
2000	0	N/A	10	N/A	40	N/A	80	N/A	110	N/A	170	N/A		
2200	10	20	50	N/A	90	N/A	130	N/A	180	N/A				
2400	50	N/A	90	N/A	150	N/A								
2600	90	N/A	150	N/A										
2800	130	N/A												
3000	180	N/A												
3200														

End Spans 120 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)													
	2		3		4		5		6		7.5		10	
1800	0	-	0	-	0	-	0	-	10	-	40	-	90	-
2000	0	-	0	-	10	-	30	-	60	-	90	-	160	-
2200	0	-	10	-	40	-	70	-	100	-	150	-	240	-
2400	10	-	50	-	80	-	120	-	160	-	220	-		
2600	40	-	90	-	130	-	180	-	230	10				
2800	80	-	130	-	180	10	240	20						
3000	120	-	180	10	250	20								
3200	160	10	240	30										
3400	210	30												
3600	270	70												
3800														

End Spans 120 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)						
	2	3	4	5	6	7.5	10
2400	0 - -	0 - -	0 - -	0 - -	20 - -	60 - -	130 - -
2600	0 - -	0 - -	0 - -	30 - -	70 - -	110 - -	200 - -
2800	0 - -	10 - -	40 - -	80 - -	120 - -	180 - -	280 - 40
3000	0 - -	40 - -	90 - -	130 - -	180 - 10	250 - 30	
3200	40 - -	80 - -	130 - 10	190 - 20	240 - 40	330 - 80	
3400	70 - -	130 - 10	190 - 40	250 - 60	320 - 90		
3600	110 - 20	180 - 50	250 - 70	320 - 100			
3800	160 - 50	240 - 80	320 - 110				
4000	210 - 90	300 10 120					
4200	260 10 130						
4400	330 50 170						
4600							

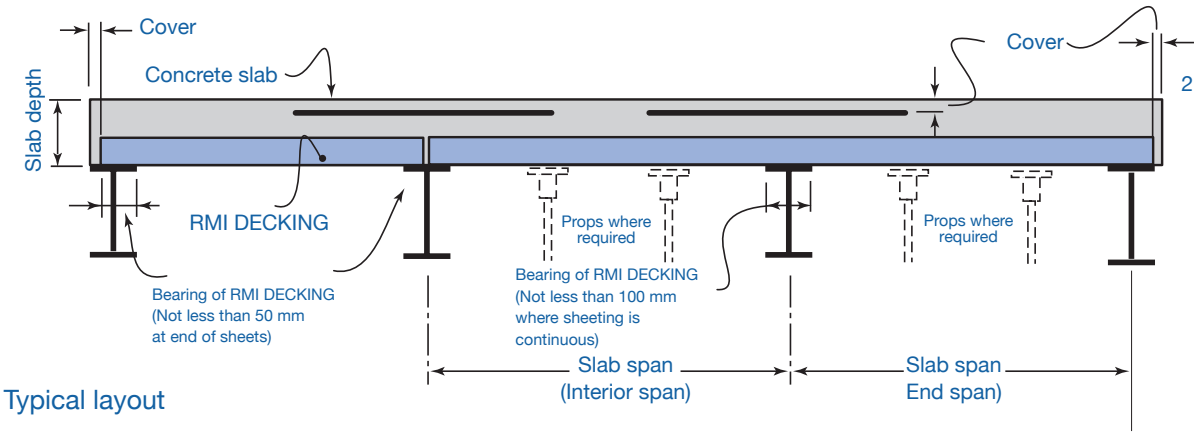
End Spans 120 mm slab

Span (mm)	Characteristic Imposed Load Qk (kPa)						
	2	3	4	5	6	7.5	10
3200	0 - -	0 - -	0 - -	20 - -	50 - -	100 - -	190 - -
3400	0 - -	0 - -	30 - -	60 - -	100 - -	160 - -	270 - -
3600	0 - -	30 - -	70 - -	110 - -	160 - -	220 - -	350 - 10
3800	20 - -	70 - -	110 - -	160 - -	210 - -	290 - 10	440 - 30
4000	50 - -	100 - -	160 - -	210 - -	270 - 10	370 - 20	
4200	90 - -	150 - -	210 - -	270 - 10	340 - 30	450 - 40	
4400	130 - -	200 - 10	270 - 20	340 - 30	410 - 50		
4600	170 - 10	250 - 20	330 - 40	410 - 50	500 - 90		
4800	220 - 30	310 - 40	400 - 60	500 - 90			
5000	270 - 40	300 - 60	470 - 100				
5200	330 - 70	300 - 100					
5400	390 - 100						
5600							

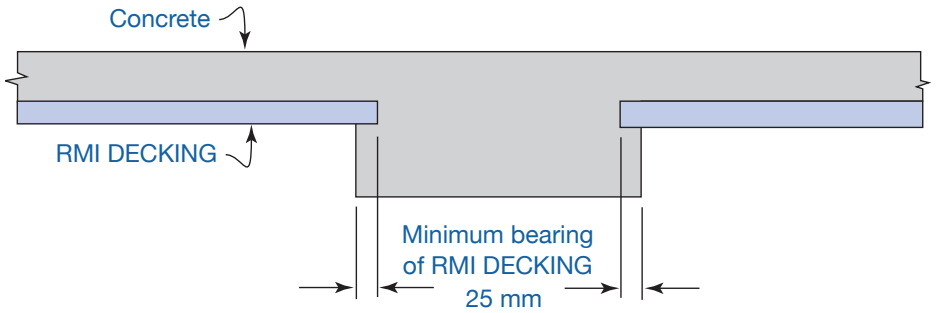
CONSTRUCTION

Installation

RMI DECKING is delivered in strapped bundles. If not required for immediate use stack sheets or bundles neatly and clear of the ground, on a slight slope to allow drainage of water. If left in the open, protect with waterproof covers.



Typical layout



RMI DECKING is discontinuous in concrete frame construction.

Note: • *Minimum bearing of RMI DECKING shall be 25mm when used in concrete framed construction.*
• *RMI DECKING sheeting is discontinuous through the support.*

Propping

It is a common practice to specify unpropped RMI DECKING formwork, however, depending on the span of a RMI DECKING slab, temporary propping may be needed between the slab supports to prevent excessive deflections or collapse of the formwork. RMI DECKING formwork is normally placed directly on prepared propping. Props must stay in place during the laying of RMI DECKING formwork, the placement of the concrete, and until the concrete has reached the strength of 15MPa.

Propping generally consists of substantial timber or steel bearers supported by vertical props. The bearers must be continuous across the full width of RMI DECKING formwork. Propping must be adequate to support construction loads and the mass of wet concrete. Maximum propped and unpropped spans are given in Section 3.3.

Laying

RMI DECKING must be laid with the sheeting ribs aligned in the direction of the designed spans. Other details include the following:

- The slab supports must be prepared for bearing as required.
- Lay RMI DECKING sheets continuously over each slab span without any intermediate splicing or jointing.
- Lay RMI DECKING sheets end to end. Centralise the joint at the slab supports. Where jointing material is required the sheets may be butted against the jointing material.
- Support RMI DECKING sheets across their full width at the slab support lines and at the propping support lines.
- For the supports to carry the wet concrete and construction loads, the minimum bearing is 50mm for ends of RMI DECKING sheets, and 100mm for intermediate supports over which the sheeting is continuous.
- Fix to every support (temporary and permanent, end and internal)

Interlocking the Sheets

Place the female lap rib overlapping the male lap rib of the first sheet and then simply lower it down, (see Figure7.2) until the laps engage. Crimp the sheets at 500mm centres. If sheets don't interlock neatly (perhaps due to some damage or distortion from site handling or construction practices) use screws to pull the laps together tightly (see Section7.2.6, Fastening side-lap joints).

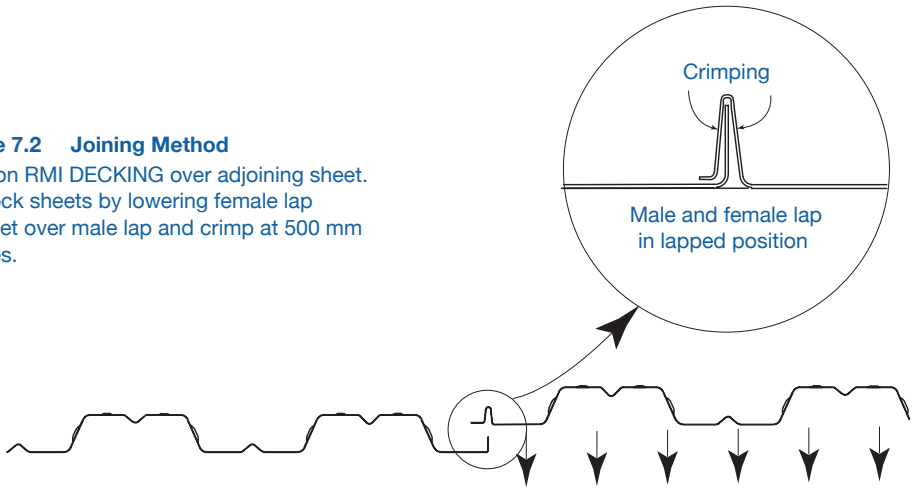


Figure 7.2 Joining Method
Position RMI DECKING over adjoining sheet. Interlock sheets by lowering female lap of sheet over male lap and crimp at 500 mm centres.

Securing The Platform

Once laid, RMI DECKING provides a stable working platform. RMI DECKING shall be fixed to supporting structure at all permanent and temporary supports with screws or nails or equivalent. Where additional security is needed you can use:

- weights;
- screws or nails into the propping bearers

Take care if you use penetrating fasteners (such as screws and nails) because they can make removal of the props difficult, and perhaps result in damage to the RMI DECKING.

Installing RMI DECKING on Steel Frames

RMI DECKING may be installed directly on erected structural steel works.

General fastening:

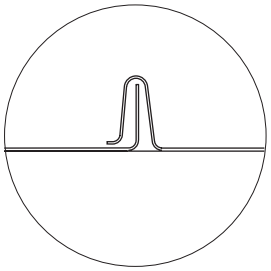
The sheeting shall be fixed to the structural steel using spot welds, or fasteners such as self-drilling screws or equivalent. Place the fixings (fasteners and spot welds) in the flat areas of the pans adjacent to the ribs or between the flutes. The frequency of fixings depends on wind or seismic conditions and good building practice. However at least one fastener per pan shall be provided at all supports. Use one of the fixing systems as appropriate.

- Fix RMI DECKING with self-drilling screws or spot welds or equivalent.
- For structural steel up to 12mm thick, use 12-24x16mm self-drilling hexagon head screws or equivalent.
- For structural steel over 12mm thick, pre-drill and use 12-24x38mm hexagon head screws or equivalent.
- Spot welds should be 8 mm minimum diameter. Surfaces to be welded must be free of loose material and foreign matter. Where the RMI DECKING soffit or the structural steel works has a pre-painted surface, securing methods other than welding may be more appropriate. Take suitable safety precautions against fumes during welding zinc coated products.

Fastening composite beams

Stud welding through the sheet has been considered a suitable securing method for the sheeting in a composite beam; however some preliminary fixing by one of the methods mentioned above is necessary to secure the sheeting prior to the stud welding. Some relevant welding requirements are:

- Mating surfaces of steel beam and sheeting to be cleaned of scale, rust, moisture, paint, over spray, primer, sand, mud or other contamination that would prevent direct contact between the parent material and the RMI DECKING.
- Welding must be done in dry conditions by a certified welder.
- For pre-painted RMI DECKING sheets, special welding procedures may be necessary; and
- For sheets transverse to beams, Stud welding must be within the pan.



Fixing at a lap

Positions for fixing RMI DECKING to steel framing

Fixing at sheeting supports

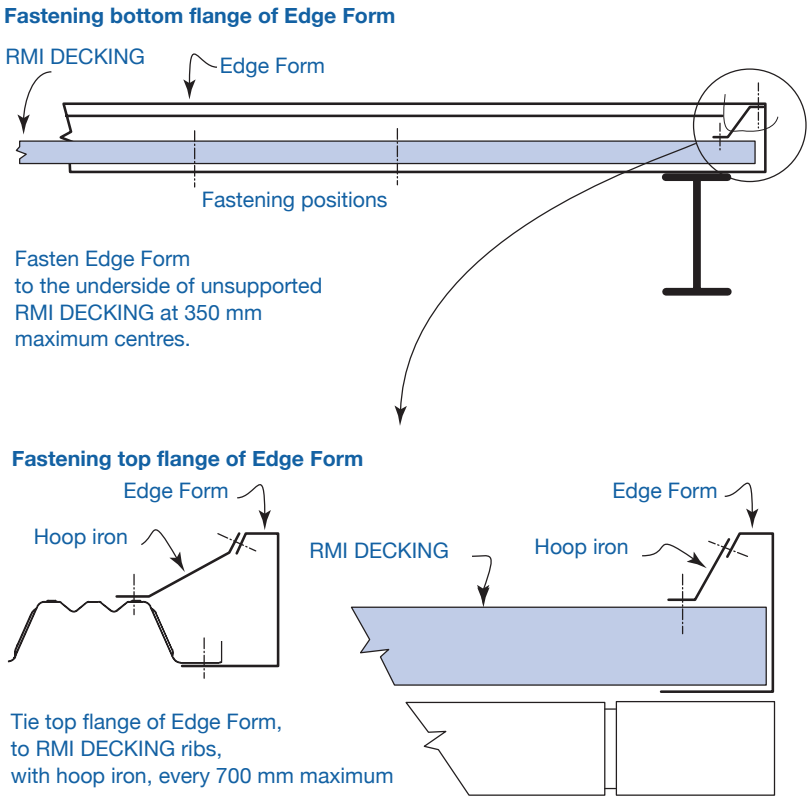
Fastening Side Lap Joints

If RMI DECKING sheeting has been distorted in transport, storage or erection, side-lap joints may need fastening to maintain a stable platform during construction, to minimise concrete seepage during pouring, and to gain a good visual quality for exposed soffits (Figure7.4). This can be achieved by positioning clinch connections at intervals closer than 500mm.

Fitting Accessories for Edge Form

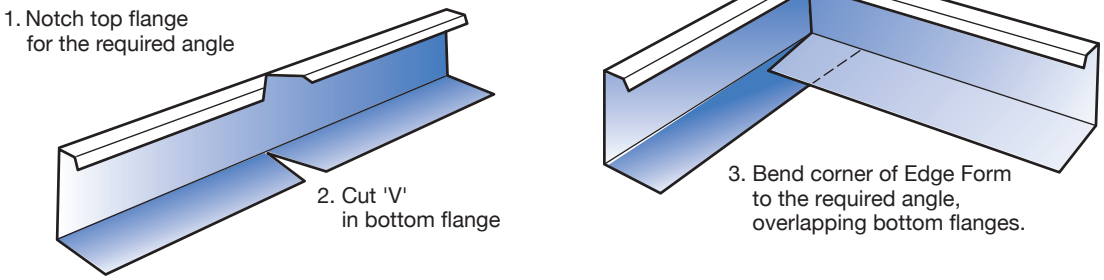
EDGE FORM is a simple C-shaped section that simplifies the installation of mostRMI DECKING slabs. It is easily fastened to the RMI DECKING sheeting, neatly retaining the concrete and providing a smooth top edge for quick and accurate screeding. We make it to suit any slab thickness.

EDGE FORM is easily spliced and bent to form internal and external corners of any angle and must be fitted and fully fastened as the sheets are installed. There are various methods of forming corners and splices. Some of these methods are shown in Figures7.5 and 7.6. Fasten EDGE FORM to the underside of unsupported RMI DECKING panels every 350mm. The top flange of EDGE FORMmust be tied to the ribs every 700mm with hoop iron 25mmx 1.0mm (Figures7.7). Use 10–16 x 16mm self-drilling screws.

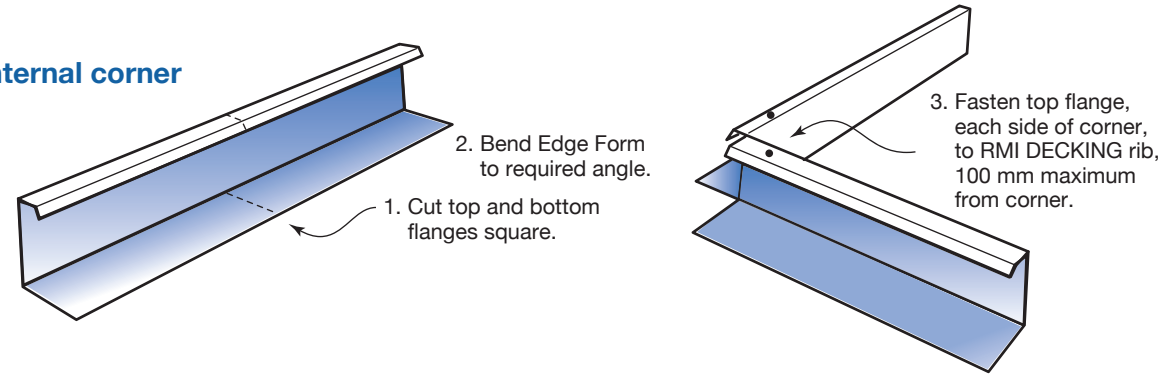


Typical fastening of EDGE FORM to RMI DECKING

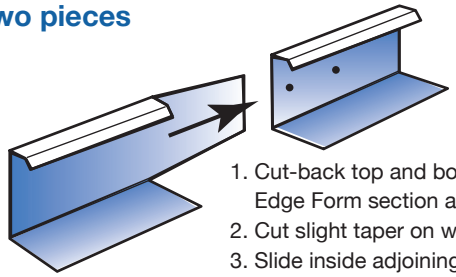
External corner



Internal corner



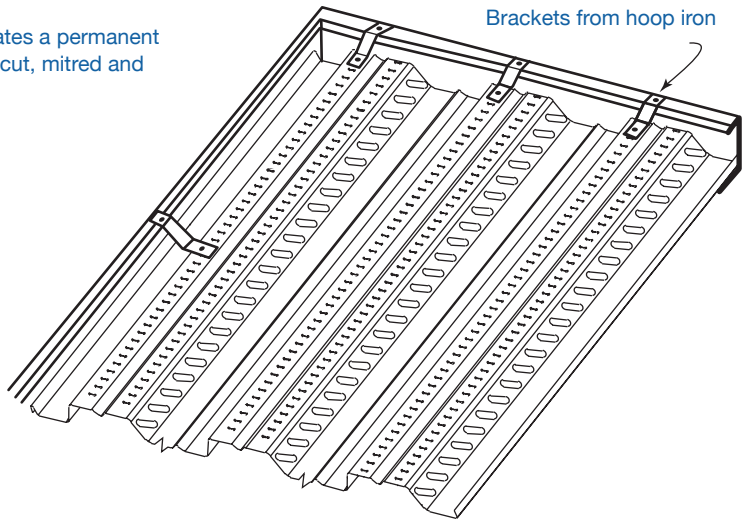
Splicing two pieces



1. Cut-back top and bottom flanges of one Edge Form section approximately 200 mm.
2. Cut slight taper on web.
3. Slide inside adjoining Edge Form, and fasten webs with at least 2 screws

Fabrication of formwork is easy with EDGE FORM

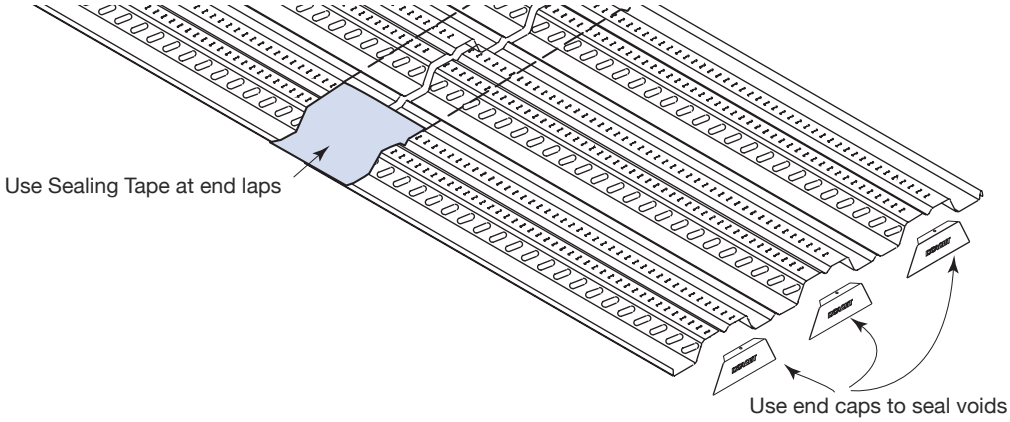
Edgeform
A galvanised section that creates a permanent formwork at the slab edges—cut, mitred and screwed on site.
Stock length: 6100 mm



Fabrication accessories for EDGE FORM

Sealing

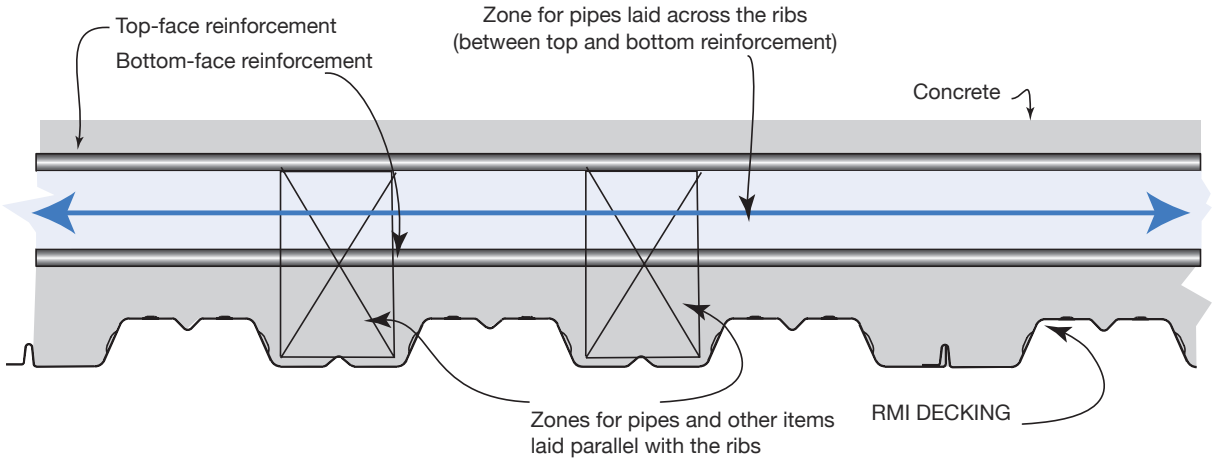
Seepage of water or fine concrete slurry can be minimised by following common construction practices. Generally gaps are sealed with waterproof tape or by sandwiching contraction joint material between the abutting ends of RMI DECKING sheet. If there is a sizeable gap you may have to support the waterproof tape. (Figure7.8).



Use waterproof tape to seal joints in
RMI DECKING sheets and end capping to seal ends

Items Embedded In Slabs

Included are pipes and conduits, sleeves, inserts, holding-down bolts, chairs and other supports, plastic strips for plasterboard attachment, contraction joint material and many more. Location of items within the slab (Figure 7.9)
Minimise the quantity and size of holes through RMI DECKING sheeting, by hanging services from the underside of RMI DECKING.

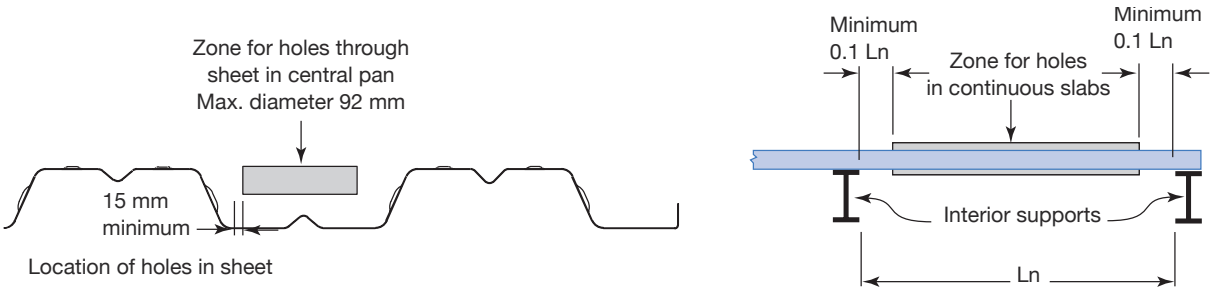


Zones for location of items embedded in slabs

Holes

RMI DECKING acts as longitudinal tensile reinforcement similarly to conventional bar or fabric reinforcement does in concrete slabs. Consequently, holes in RMI DECKING sheets, to accommodate pipes and ducts, reduce the effective area of the steel sheeting and can adversely effect the performance of a slab.
Some guidelines for holes are (Figure7.10):

- Place holes within the pan of any sheet, with a minimum edge distance of 15 mm from the rib gap.
- Holes should be round, with a maximum diameter of 92mm.
- For slabs designed as a continuous slab: space holes from an interior support of the slab less than one tenth of a clear span.



Zones for location of holes through RMI DECKING

Inspection

We recommend regular qualified inspection during the installation, to be sure that the sheeting is installed in accordance with this publication and good building practice.

Cutting

It is easy to cut RMI DECKING sheets to fit. Use a power saw fitted with an abrasive disc or metal cutting blade. Initially lay the sheet with its ribs down, cut through the pans and part-through the ribs, then turn over and finish by cutting the tops of the ribs.

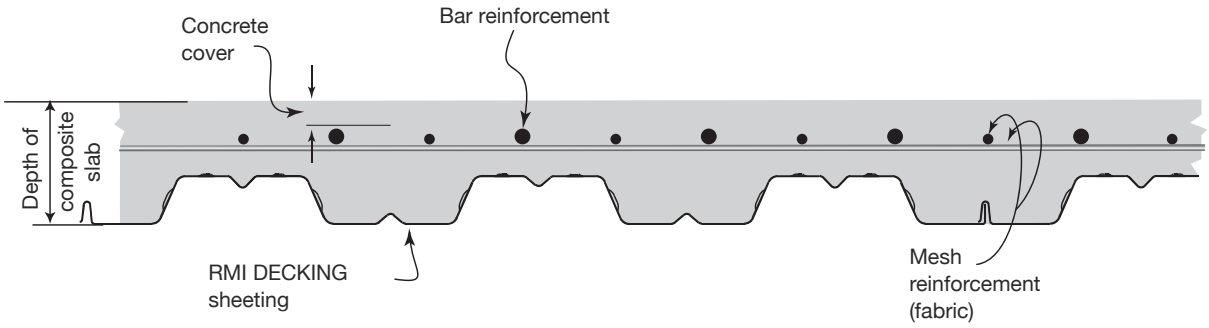
Reinforcement

RMI DECKING sheeting acts as longitudinal tensile reinforcement. The condition of sheeting should be inspected before concrete is poured.

Reinforcement in slabs carries and distributes the design loads and controls cracking. Reinforcement is generally described as transverse and longitudinal in relation to span, but other reinforcement required for trimming may be positioned in other orientations. Figure7.11 shows a typical cross-section of a RMI DECKING composite slab and associated terms. Reinforcement must be properly positioned, lapped where necessary to ensure continuity, and tied to prevent displacement during construction. Fixing of reinforcement shall be in accordance with IS456:2000-Section 26.

To ensure the specified minimum concrete cover, the uppermost layer of reinforcement must be positioned and tied to prevent displacement during construction.

Where fabric is used in thin slabs, or where fabric is used to act as both longitudinal and transverse reinforcement, pay particular attention to the required minimum concrete cover and the required design reinforcement depth at the splices—splice bars are a prudent addition. Always place chairs and spacers on pan areas. Depending upon the type of chair and its loading, it may be necessary to use plates under chairs to protect the RMI DECKING, particularly where the soffit will be exposed. Transverse reinforcement may be used for spacing or supporting longitudinal reinforcement.



Typical cross-section of a slab showing common terms For fire reinforcement requirements, see Figure 5.2.

Transverse reinforcement

Transverse reinforcement is placed at right-angles to the ribs of RMI DECKING. Deformed bar or fabric reinforcement may be used. In most applications the transverse reinforcement is for the control of cracks caused by shrinkage and temperature effects, and for locating longitudinal reinforcement.

To control flexural cracking in the top face of the slab, transverse reinforcement in the top-face may be required over walls or beams which run in the same direction as the RMI DECKING sheets.

For ease of construction, reinforcement for control of cracking due to shrinkage and temperature is usually fabric reinforcement.

Longitudinal Reinforcement

Longitudinal reinforcement is positioned to carry design loads in the same direction as the ribs of RMI DECKING. Deformed bar or fabric reinforcement may be used.

Top-face longitudinal reinforcement is usually located over interior supports of the slab and extends into approximately a third of the adjoining spans.

Bottom-face longitudinal reinforcement is located between supports of the slab but, depending upon the detailing over the interior supports, it may be continuous, lapped, or discontinuous. Bottom-face longitudinal reinforcement may be placed on top of or below transverse reinforcement.

Location of top and bottom-face longitudinal reinforcement in elevated temperatures requires special design. (Figure5.2)

Trimmers

Trimmers are used to distribute the design loads to the structural portion of the slab and/or to control cracking of the concrete at penetrations, fittings and re-entrant corners. Reinforcing bars or fabric reinforcement may be used.

Trimmers are sometimes laid at angles other than along or across the span, and generally located between the top and bottom layers of transverse and longitudinal reinforcement. Trimmers are generally fixed with ties from the top and bottom layers of reinforcement.

Concrete

Specification

The concrete is to have the compressive strength as specified in the project documentation. The concrete shall be in grades designated as per IS456:2000 - Table 2.

Concrete Additives

Admixtures should not impair the durability of concrete nor combine with the constituent to form harmful compounds nor increase the risk of corrosion of steel. For further information refer to IS456:2000 - Section 5.5.

Preparation

Before concrete is placed, remove any accumulated debris, grease or any other substance to ensure a clean bond with the RMI DECKING sheeting. Remove ponded rainwater.

Construction Joints

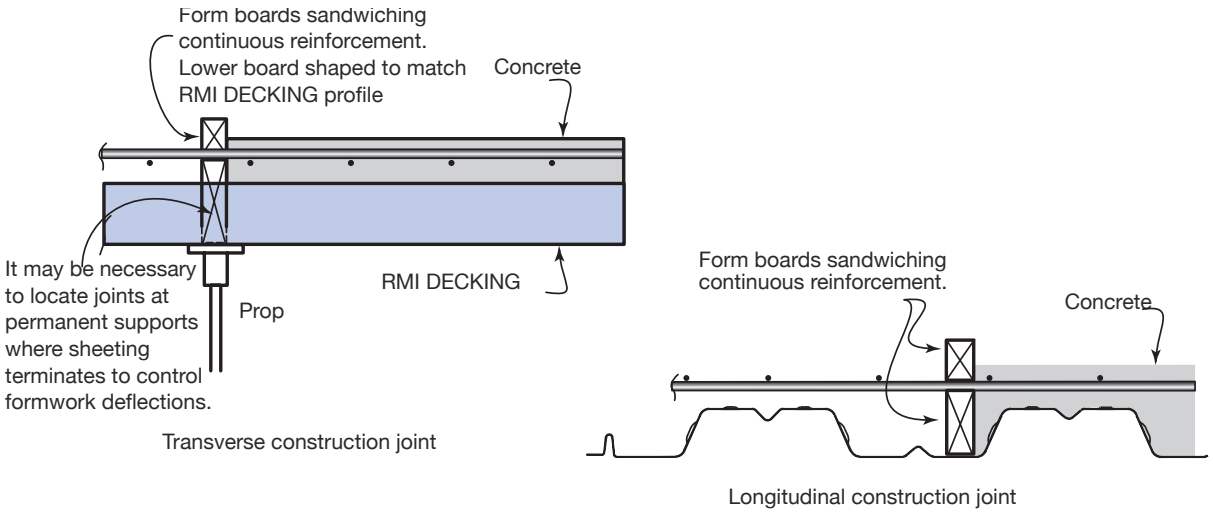
It is accepted building practice to provide construction joints where a concrete pour is to be stopped. Such discontinuity may occur as a result of a planned or unplanned termination of a pour. Apour may be terminated at the end of a day's work, because of bad weather or equipment failure. Where unplanned construction joints are made, the design engineer must approve the position.

In certain applications, the addition of water stops may be required, such as in roof and balcony slabs where protection from corrosion of reinforcement and sheeting is necessary.

Construction joints transverse to the span of the RMI DECKING sheeting are normally located at the (mid-third of a slab span) and ideally over a line of propping. Locate longitudinal construction joints in the pan (Figure7.12).

It may be necessary to locate joints at permanent supports where sheeting terminates. This isnecessary to control formwork deflections since formwork span tables are worked out for UDLloads. Form construction joints with a vertical face-the easiest technique is to sandwich a continuous reinforcement between two boards.

Prior to recommencement of concreting, the construction joint must be prepared to receive the new concrete, and the preparation method will depend upon the age and condition of the old concrete. Generally, thorough cleaning is required to remove loose material, to roughen the surface and to expose the course aggregate.



Typical construction joint

Placing

The guidelines for the transportation, placing and compaction of the concrete,
refer to IS456:2000 - Section 13.1, 13.2 and 13.3

The concrete is placed between construction joints in a continuous operation so that new. concrete is placed against plastic concrete to produce a monolithic mass. If the pouring has to be discontinued for more than one hour, depending on the temperature, a construction joint may be required.

Start pouring close to one end and spread concrete uniformly, preferably over two or more spans. It is good practice to avoid excessive heaping of concrete and heavy load concentrations. When concrete is transported by wheel barrows, the use of planks or boards is recommended.

During pouring, the concrete should be thoroughly compacted, worked around ribs and reinforcement, and into corners of the EDGEFORMS by using a vibrating compacter. Ensure that the reinforcement remains correctly positioned so that the specified minimum concrete cover is achieved.

Unformed concrete surfaces are screeded and finished to achieve the specified surface texture, cover to reinforcement, depths, falls or other surface detailing.

Surfaces which will be exposed, such as EDGEFORMS and exposed soffits, should be cleaned of concrete spills while still wet, to reduce subsequent work.

Curing

After placement, the concrete is cured by conventional methods, for example, by keeping the slab moist for at least seven days, by covering the surface with sand, building paper or polythene sheeting immediately after it has been moistened with a fine spray of water. Follow good building practice. Be particularly careful when curing in very hot or very cold weather. Until the concrete has cured, it is good practice to avoid concentrated loads such as barrows and passageways with heavy traffic. Refer to IS456:2000 - Section 13.5 for detailed information.

When To Remove Props

Various factors affect the earliest time when the props may be removed and a slab initially loaded. Generally speaking props shall not be removed until the concrete achieved the strength of 15 MPa. Methods of calculating times and other detail guidelines are outlined in IS456:2000 - Section 11.3.

Finishing

Soffit And Edge Form Finishes

For many applications, RMI DECKING gives an attractive appearance to the underside (or soffit) of a composite slab, and will provide a satisfactory ceiling—for example, in car parks, under-house storage and garages, industrial floors and the like. Similarly, EDGE FORM will give a suitable edging. Additional finishes take minimal extra effort.

Where the RMI DECKING soffit is to be the ceiling, take care during construction to minimise propping marks (refer to Installation—Propping), and to provide a uniform surface at the side-laps (refer to Installation—Fastening Side-lap joints).

Exposed surfaces of RMI DECKING soffit and EDGE FORMmay need cleaning and/or preparation for any following finishes.

Plastering

Finishes such as vermiculite plaster can be applied directly to the underside of RMI DECKING with the open rib providing a positive key. With some products it may be necessary to treat the galvanised steel surface with an appropriate bonding agent prior to application.

Plaster-based finishes can be trowelled smooth, or sprayed on to give a textured surface. They can also be coloured to suit interior design requirements.

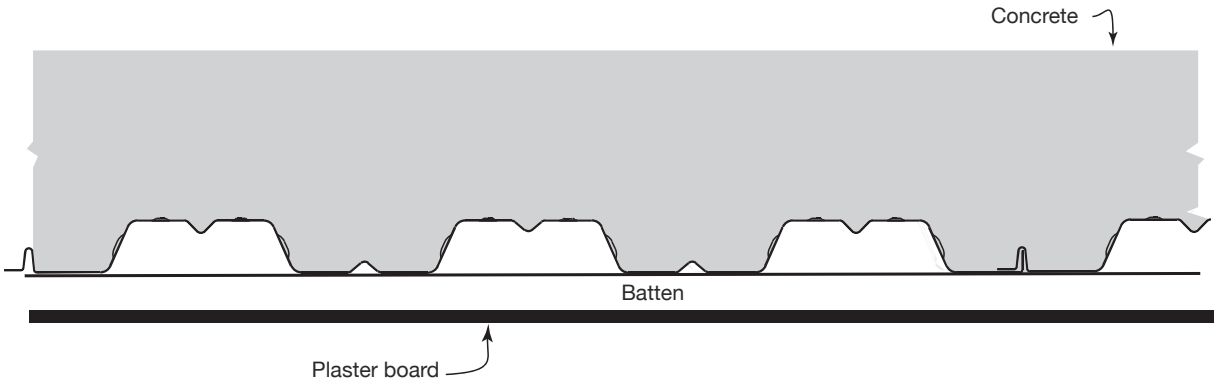
Change Of Floor Loadings

Where a building is being refurbished, or there is a change of occupancy and floor use, you may need to increase the fire resistance of the RMI DECKING composite slabs. This may be achieved by the addition of a suitable fire-protection material to the underside of the slabs.

Suspended Ceilings & Services

Plasterboard

RMI DECKING soffit may be covered with plasterboard by fixing to battens. Fixing to battens Steel ceiling battens can be fixed directly to the underside of the slab using powder actuated fasteners. The plasterboard is then fixed to ceiling battens in the usual way (Figure7.13).



Fixing platerboard to RMI DECKING

Suspended Ceiling

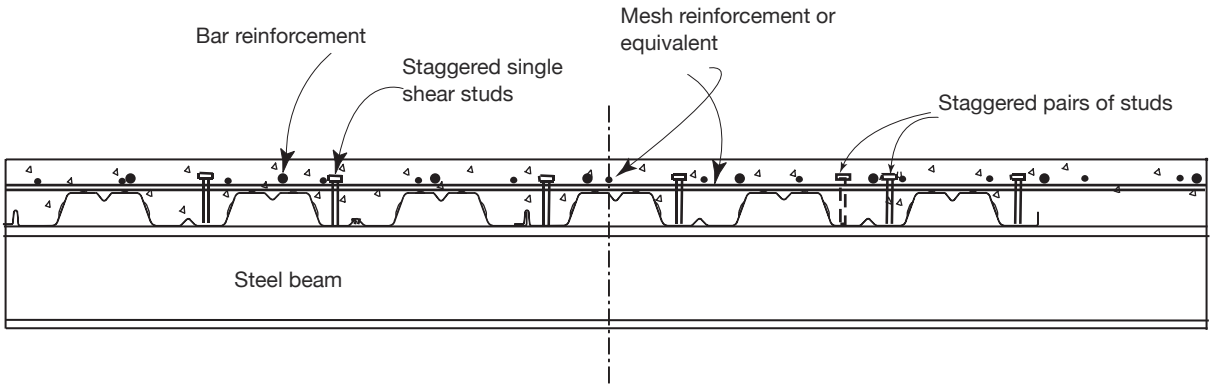
Ceilings are suspended from hangers attached to eyelet pins power driven into the underside of the slab.

Suspended Services

Services such as fire sprinkler systems, piping and ducting are easily suspended from RMI DECKING slabs using traditional installation methods to support these services.

Composite Beams

- Primary and secondary beams are designed as simply supported.
- Primary beams can be designed as continuous - prEN1994-1-1 or BS5950-3.1:1990 should be followed.
- Alternate and staggered position for a single stud per pan (in the case of secondary composite beams) shall be used. Refer to Figure 8.1.
- Staggered position for pairs of studs per pan (in the case of secondary composite beams) Refer to Figure 8.1.



Shear stud position in secondary beam (alternate location - single studs)