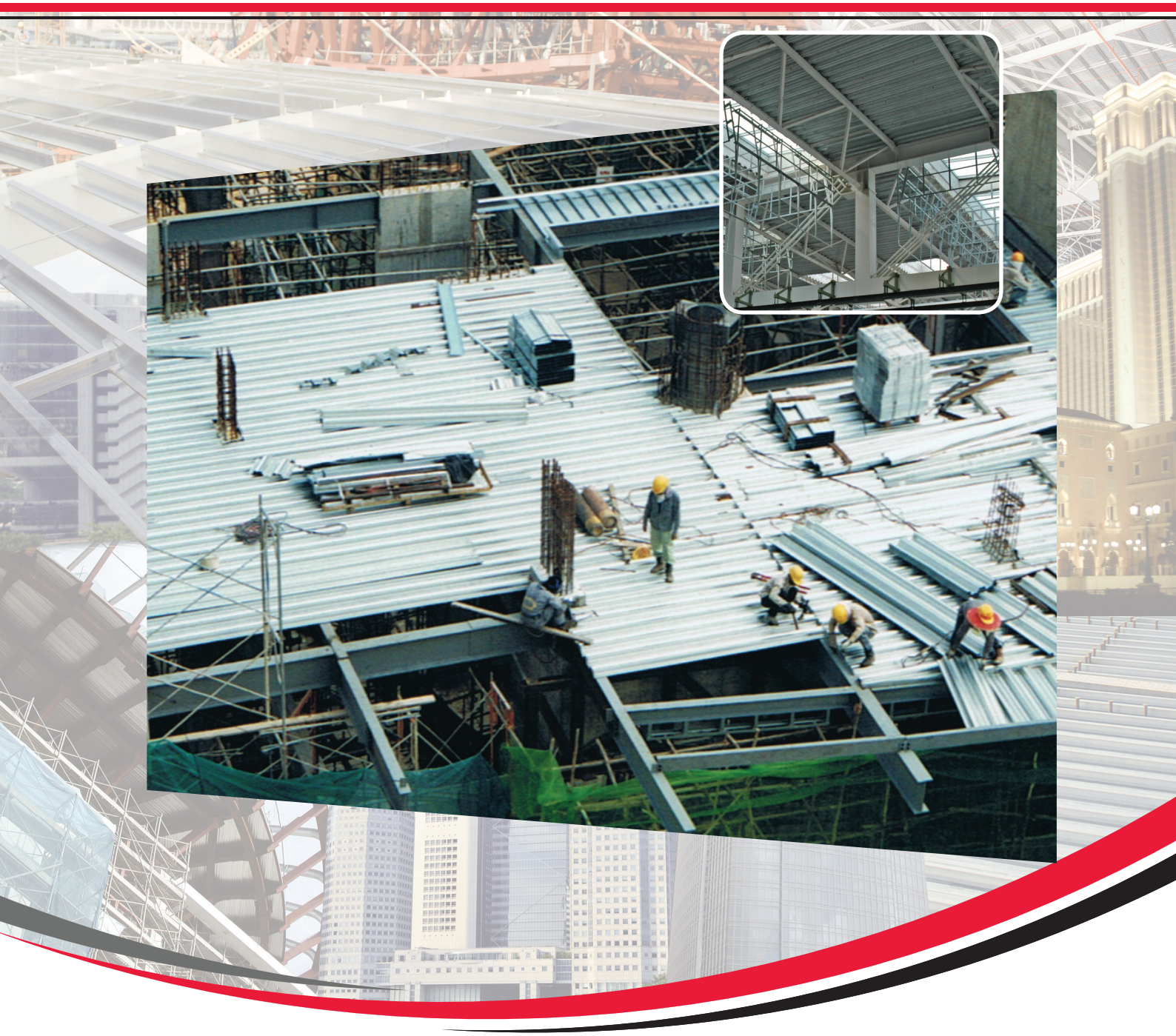
BUILDING PRODUCTS

LCP FORMDEK®

Permanent Steel Formwork

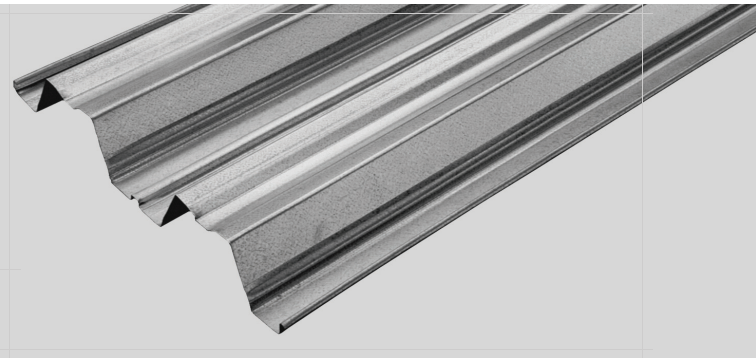


Integrity In Partnership

CERT NO. FM 59595
BS EN ISO 9001 : 2008

FEATURE

LCP FORMDEK® Permanent Steel Formwork system is manufactured by **LCP Building Products Pte. Ltd.** One of the main advantages of **LCP FORMDEK®** Permanent Steel Formwork is its long spanning capability to support concrete slabs without the need for propping.



AESTHETICALLY PLEASING & COST EFFECTIVE

- Excellent performance – long spans, minimal propping.
- 600mm cover – Quick installation & economical.
- Hinge side laps – fewer side lap fasteners.
- Permanent formwork – no need for expensive removal.
- High tensile steel – light weight with high strength.
- Simple installation – light weight sheets.

MATERIALS

LCP FORMDEK® is a cold rolled-formed section manufactured from high tensile hot dipped galvanised zinc steel in standard thicknesses of 0.75mm, 0.90mm, 1.00mm and 1.20mm. For thickness up to 1.00mm, the minimum yield stress of the base steel is 550 MPa in accordance to AS 1397 or JIS 3302 incompliance to BC 1 : 2008. Please contact **LCP Building Products Pte. Ltd.**, Technical Department for steel thicker than 1.2mm. The standard galvanised zinc coating is Z275 (i.e. 275 grams per square metre (ASTM A525 G90).

DESIGN CRITERIA

As a permanent formwork, **LCP FORMDEK®** is designed to withstand a construction load allowance of 1.5 kN/m^2 during the construction stage in accordance to BS5950: Part 4: 1994. The combined bending and web crushing criteria stipulated in BS5950: Part 6: 1995 has been adopted in the accompanying propping tables. Considering this combined bending and web crushing criteria will yield a more conservative propping table.

LCP FORMDEK® is to be used as only a permanent formwork to support the wet concrete, reinforcement bars and construction loads during the concreting works. **LCP FORMDEK®** metal decking is not to be utilized as bottom steel in composite design. Where fire rating is required, then conventional reinforced concrete design to the relevant codes of practice should be adopted.

PRODUCT USE

LCP FORMDEK® is suitable for use with steel support (e.g. I-beams), masonry or concrete framed buildings. The long spanning capacity of **LCP FORMDEK™**, without propping, is ideal for supporting concrete slabs where propping is not feasible or cost effective.

STRUCTURAL SPECIFICATION

The concrete formwork shall be **LCP FORMDEK®** as produced by **LCP Building Products Pte. Ltd.**, with 75mm high ribs spaced at 300mm centres. The effective cover width for **LCP FORMDEK®** sheets shall be 600mm. Minimum bearing requirements on supports for **LCP FORMDEK®** sheets shall be in accordance to BS 5950: Part 6.

The material used for **LCP FORMDEK®** sheets shall be 0.75mm, 0.9mm and 1.0mm BMT, galvanised zinc steel with standard zinc coating of Z275 (i.e. 275 grams per square metre). For sheets with thickness of 0.75mm, 0.9mm and 1.0mm BMT, the minimum yield stress of the base metal is 550MPa. For steel thickness of 1.2mm BMT, the minimum yield stress of the base metal is 500MPa.

Individual **LCP FORMDEK®** sheets shall be placed in accordance with the manufacturer's recommendations. Immediately after **LCP FORMDEK®** sheets are laid, the side laps are to be crimped with a crimping tool at every 300mm centres before the wet concrete is poured on to the deck. End closure or edgeforma are to be securely fastened to the ends of **LCP FORMDEK®** sheets prior to commencement of concreting works. Prior to concrete pouring and foot traffic loads, **LCP FORMDEK®** sheets shall be propped, if required, in accordance with the manufacturer's propping table. Props are not to be removed until authorized by a qualified engineer. Care must be exercised to avoid heaping of wet concrete on to **LCP FORMDEK®** sheets during concreting works.

Reinforcement and concrete placement shall be as directed by the engineer.

LCP FORMDEK® steel decking are to be used as only a permanent formwork to support the wet concrete, reinforcement bars and temporary construction loads during concreting works. **LCP FORMDEK®** metal decking is not to be utilized as bottom steel in composite slab design. Where fire rating is required to the slab, then conventional reinforced concrete design to the relevant codes of practice should be adopted.

SECTION PROPERTIES

The following sectional properties of **LCP FORMDEK®** has been computed in accordance to BS5950: Part 6: 1995 – "Code of Practice for design of light gauge profiled steel sheeting".

LCP FORMDEK® SECTIONAL PROPERTIES (per metre width)

Base Metal Thickness (mm)	Strength Property						Deflection Property		P_v	P_w End Span		P_w Internal Span	
	M^+_u kNm/m	I^+ x10^6 mm^4	y^+ mm	M^-_u mm	I^- x10^6 mm^4	y^- mm	I^+ x10^6 mm^4	I^- x10^6 mm^4	KN	50mm bearing (kN)	100mm bearing (kN)	50mm bearing (kN)	100mm bearing (kN)
0.75	9.50	0.773	37.57	8.48	0.689	37.56	0.944	0.736	69.4	10.44	13.46	20.89	26.92
0.90	11.47	0.947	38.14	10.41	0.879	39.02	1.122	0.930	94.0	14.43	18.49	28.86	36.97
1.00	12.86	1.061	38.31	11.77	1.011	39.70	1.240	1.062	112.0	17.39	22.20	34.79	44.39
1.20	9.62	1.296	38.48	9.09	1.310	41.14	1.470	1.316	96.4	18.89	23.90	37.78	47.88

Note : a) The minimum yield stress for 0.75mm, 0.90mm and 1.00mm thick base steel is 550 MPa.
b) The minimum yield stress for 1.20mm thick base steel is 300 MPa.

LCP FORMDEK®

M^+_u - Design "+ve" moment capacity, kNm/m, Cl. 5.2.1

I^+ (Strength) - Second moment of area of effective cross section for "+ve" moment, mm^4, Cl. 4.3

y^+ - Distance of top flange from the neutral axis, mm

I^- (Strength) - Second moment of area of effective cross section for "-ve" moment, mm^4, Cl. 4.3

y^- - Distance of bottom flange from the neutral axis, mm

I^+ (Deflection) - Second moment of area of effective cross section for "+ve" moment, mm^4, Cl. 4.6

I^- (Deflection) - Second moment of area of effective cross section for "-ve" moment, mm^4, Cl. 4.6

P_v - Design shear capacity, kN, Cl. 5.4

P_w - Design web crushing resistance, kN, Cl. 5.3.2

Note: The clauses cited above refer to BS 5950: Part 6 : 1995

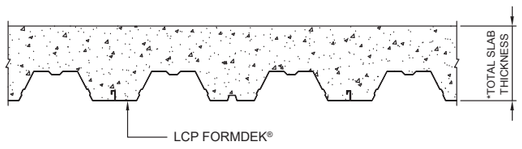
TECHNICAL SPECIFICATION

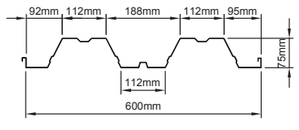
PROPPING TABLE

LCP FORMDEK® MAXIMUM UNPROPPED SPAN (mm)
Still Bearing Length = 100 mm Concrete Density = 2400 kg/m^3

*Slab Thickness (mm)	Single Span				Double Span				Triple Span				Continuous Span			
	0.75 (mm)	0.90 (mm)	1.00 (mm)	1.20 (mm)	0.75 (mm)	0.90 (mm)	1.00 (mm)	1.20 (mm)	0.75 (mm)	0.90 (mm)	1.00 (mm)	1.20 (mm)	0.75 (mm)	0.90 (mm)	1.00 (mm)	1.20 (mm)
100	3800	4000	4090	3880	3450	3450	4310	4050	3530	4080	4400	4150	3490	4030	4350	4100
115	3630	3820	3930	3710	3200	3200	4040	3790	3260	3810	4130	3880	3240	3770	4080	3840
125	3520	3710	3820	3600	3050	3050	3880	3630	3130	3660	3970	3730	3090	3610	3930	3080
135	3430	3610	3720	3510	2900	2900	3730	3500	3000	3520	3830	3590	2950	3470	3760	3540
140	3380	3570	3670	3460	2820	2820	3660	3430	2920	3450	3760	3530	2870	3400	3710	3480
145	3340	3520	3630	3420	2750	2750	3600	3370	2850	3390	3690	3470	2800	3340	3650	3420
150	3300	3480	3590	3380	2680	2680	3530	3310	2780	3330	3630	3410	2730	3280	3580	3360
155	3260	3440	3540	3340	2620	2620	3470	3250	2720	3270	3570	3350	2670	3220	3520	3300
165	3190	3360	3470	3260	2500	2500	3360	3150	2590	3160	3450	3240	2550	3110	3410	3190
170	3150	3330	3430	3220	2450	2450	3300	3100	2540	3100	3400	3190	2490	3060	3350	3140
180	3090	3260	3360	3150	2340	2340	3200	3000	2430	3000	3300	3090	2390	2950	3250	3050
190	3030	3200	3300	3090	2250	2250	3110	2900	2340	2900	3200	3000	2290	2850	3150	2950
200	2970	3140	3240	3030	2160	2160	3020	2800	2250	2800	3110	2910	2210	2750	3060	2860
205	2950	3110	3210	3000	2120	2120	2970	2760	2210	2750	3060	2860	2160	2700	3020	2810
210	2920	3090	3180	2970	2090	2090	2920	2720	2170	2700	3020	2820	2130	2660	2970	2770
220	2870	3040	3130	2910	2010	2010	2830	2640	2090	2620	2930	2730	2050	2570	2880	2690
230	2800	2990	3090	2850	1950	1950	2750	2560	2020	2540	2850	2650	1980	2490	2800	2610
250	2590	2900	3000	2740	1820	1820	2590	2420	1900	2390	2690	2510	1860	2350	2640	2470

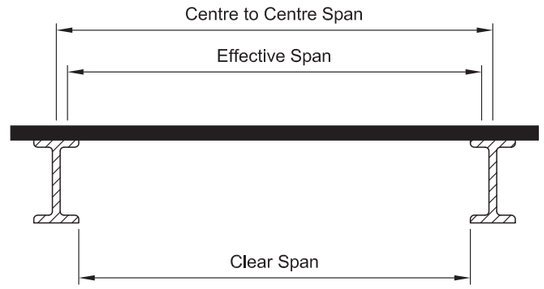
Note: The spans refered here are Effective Spans
0.75mm, 0.9mm & 1.00mm decking with P_y = 550 MPa
1.20mm decking with P_y = 500 MPa





In **LCP FORMDEK®** propping table, the spans indicated in this table refers to "effective span". The British Standards defines "effective span" during formwork stage = clear span between supports + height of rib. Since **LCP FORMDEK®** ribs are 75mm in height, the effective span = clear span + 75mm. The minimum bearing requirements shall be in accordance to BS5950: Part 4: 1994. The minimum end bearing on steel or concrete supports is 50mm. Propping to the underside of **LCP FORMDEK®** is required whenever the maximum unpropped spans are exceeded.

Localised concentrated point loads must be spread over sufficient webs to distribute the loads. Under no circumstances should the maximum construction load of 1.5 kN/m^2 is to be exceeded. The maximum deflection limit for **LCP FORMDEK®** is Span/180 or 20mm maximum where ponding is not considered (BS5950: Part 4: 1994). With ponding, the deflection limit is set at Span/130 or 30mm maximum.

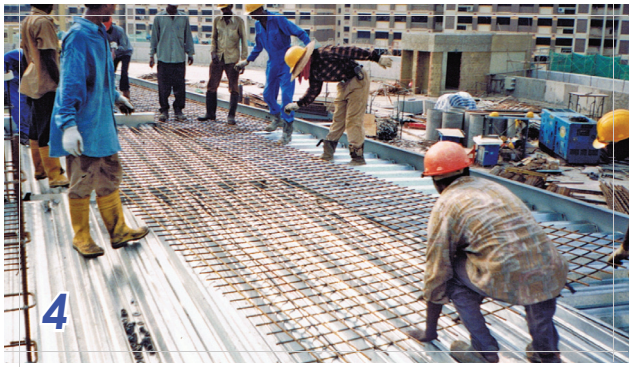


INSTALLATION DETAILS

Laying of LCP FORMDEK® - The photograph illustrate the laying of **LCP FORMDEK®**.

Crimping of side lap - The side laps for the **LCP FORMDEK®** has to be crimped with a crimping tool at every 300mm centres before wet concrete is poured on to the deck.

Installing the Edgeforma - The photograph illustrate the laying of **LCP FORMDEK®** & LCP Edgeforma.



Laying of Wire Mesh - wire mesh were layed as a reinforcement for the concrete slab.

Preparing for concreting - clean the area for all debris before pouring the concrete.

Concreting - pouring of concrete on **LCP FORMDEK®**

MANUFACTURING and CONSTRUCTION

ORDERING

When ordering, please have the following information available to ensure a speedy processing of your requirements:

- Customer/Company name, address, phone number & fax number.
- Contact person name & phone number.
- Name of Product (e.g. **LCP FORMDEK®**) and material (e.g. G550 steel). Thickness of product (e.g. 0.75mm TCT).
- Coating (e.g. galvanised).
- Number/quantity and length of sheets (e.g. 10 pieces of 5 metres length per piece).
- EDGEFORMA – style, thickness, quantity, length and coating.
- Delivery address (e.g. No. 10 Telok Kurau Lane, Singapore).
- Delivery date & preferred time.
- Site access (please specify whether current access to delivery location would permit entry by standard 12 metres length flat-bed trailers).
- Cranage requirement (please specify whether cranage will be required at site).

LENGTH

The sheets are manufactured at **LCP Building Products Pte. Ltd.** factory or on construction site. The length of the sheet is a function of design requirements, geometry of the floor (i.e. curving or other factors), site conditions and workability and transportation constraints. Lengths specified must be actual site measurements and not drawing dimensions. The length should be measured accurately, and allowance should be made for the bearing at both end. The tolerance of the length of product supplied is +0, -15mm.

EDGEFORMA

Standard Edgeforma are readily available for use with **LCP FORMDEK®** metal decking. **LCP Building Products Pte. Ltd.** will give design advice for Edgeforma details and will manufacture the required edgeforma.

DELIVERY

Delivery can normally be made within 2 or 3 days, subject to the delivery location and material availability, or can be at a pre-arranged date and time.

Please assist us to provide undamaged product by ensuring that suitable arrangements have been made for truck unloading. When lifting sheeting by crane, care should be taken to ensure that the load is spread to prevent sheeting damage. Where a crane is not available, sufficient labour must be supplied to assist in manual unloading.

HANDLING

LCP FORMDEK® should be handled with care at all times to preserve the quality of the finish. Packs should always be kept dry and stored above ground level whilst on site. If however the sheets have become wet then they should be separated, wiped and placed in the open to aid in drying.

SHEAR STUD

All shear stud should conform to BS5950 and be compatible with the decking material used. If required.

CUTTING

LCP FORMDEK® can be cut, if necessary by means of cutting discs and gas cutting torch.

CLEAN UP

Ensure that all debris, nails, rivets, screws, rags, and especially filings & particles from cutting or drilling, are carefully cleared from the surface after each day's work or premature corrosion could occur.

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