



GENERAL BROCHURE

Dear consultant,

In the building and construction sector with its peculiar ever increasing costs, discerning consultants (Architects and structural engineers) are eagerly exploring ways to reduce overall cost and time, especially when this reduction has no adverse effect on both the structural integrity and aesthetic appearance of the structure.

Over the years, due to the conclusion revealed by structural analysis that the concrete below the neutral axis of a floor slab does not actually partake in its structural stability, engineers have therefore evolved such contraption such as hollow clay-pot and waffle (grid) floors. the basic advantage, which is common to both contraptions, is essentially the reduction in the dead-loads of the floor slab, thereby reducing the bending moment which is ultimately reflected in a substantial savings in the amount of reinforcement needed.

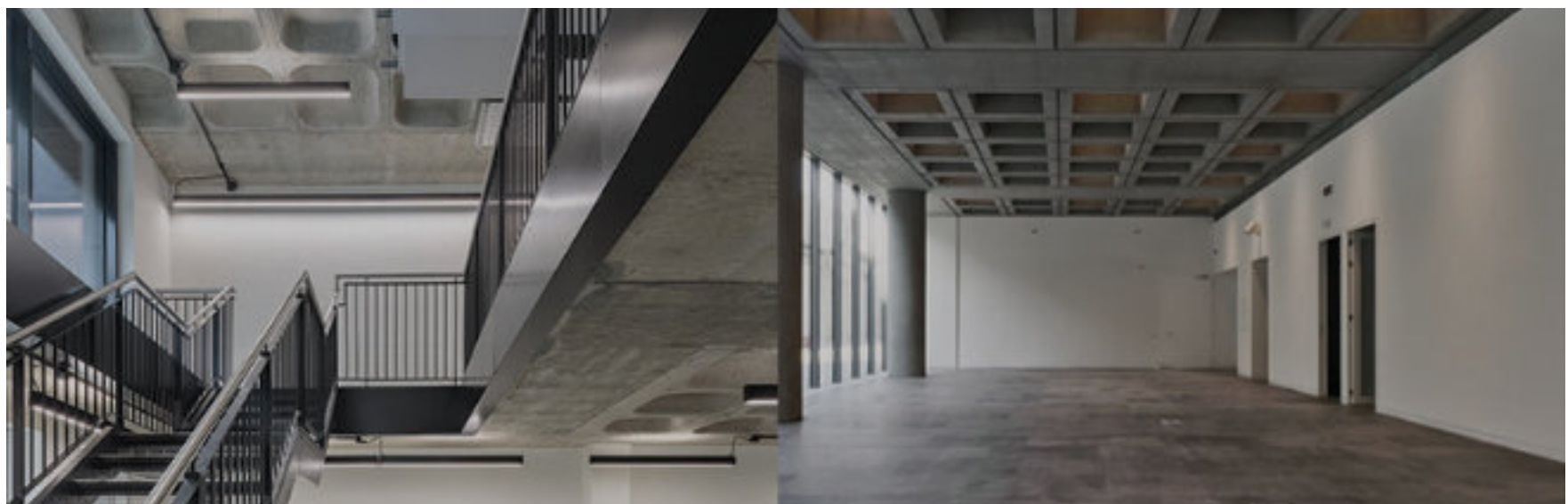
However, while the use of hollow clay-pots has been more profound, that of grid floors (waffle and T.forms) has been limited to only large span industrial or commercial buildings. hence, the primary aim of this brochure is firstly to adequately inform discerning consultants on the wide usage of grid floors, thereby correcting some age-long misconceptions and secondly to promote its application in other areas e.g. shopping complexes, church aisles, multi storey structures, banks, university lecture halls, hotels, office complex, factories, hostels etc..

While, we hope that the information provided will be more than appreciated by the technical minds, we nevertheless encourage non- technical individuals who want to embark on the construction of any building structure to contact us for further clarification.

Thanks

Victor Chiwuzo

C.E.O WAFFLE MOULD Nigeria



F.A.Q

FREQUENTLY ASKED QUESTIONS

? Is There Any Difference Between Grid Floors & Claypot floors?

There is no difference between grid floors and hollow clay floors. Both are contraptions brought about by the fact that the concrete below the neutral axis of a slab is useless, making a solid slab a wasteful venture. The point is that in the hollow clay floor these portions are replaced by light weight hollow clay moulds, while in the grid floor they are actually left hollow. In essence, provided that a client is not fixated to a soffit, grid floor can be used in place of a hollow clay pot.

? Are Grid Floors Limited To Only Large Span Structures?

No, there is a general misconception over the fact that grid floor is only cost effective when large floors are involved. If for the simple theory that grid floor discountenances wasteful proportion (unnecessary deadloads) of the slab, then this argument is certainly untenable. As we noted earlier, the only encumbrance to a grid floor is when a client (or designer) is fixated to a soffit.

The Grid Floor Advantage

TO THE STRUCTURAL ENGINEER:

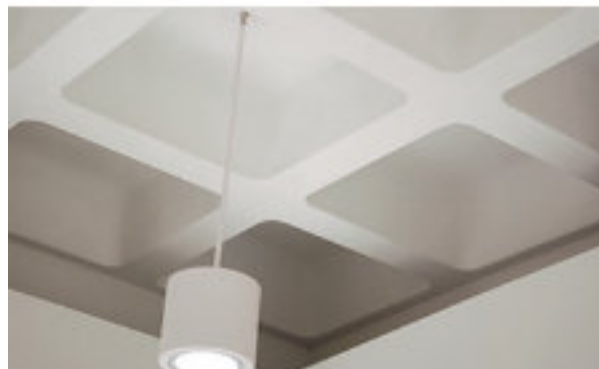
The moulds are suitable for incorporation in majority of reinforced concrete floors, providing considerable economies in concrete, steel, support and foundation work due to the reduced deadweight. It is particularly suited to high rise structures, economically and aesthetically ideal for multi storey buildings.

TO THE ARCHITECT:

The wide column spacing obtainable enables greater flexibility of interior planning. Waffle floors offer a very attractive visual soffit

TO THE CONTRACTOR:

Available for hire or sale with the site supervisory advice
Moulds can be used with any proprietary support systems on timber beams with side battens or flat decking



Why

Waffle Moulds..?

Because it is BETTER

Economically, Technically, Aesthetically, Environmentally



REDUCED CONCRETE CONSUMPTION OF UP TO 60%:

Waffle floors reduce consumption of concrete by placing it in its most efficient position



AESTHETICALLY ATTRACTIVE FINISH

Waffle moulds offer greater flexibility for interior planning and design providing an attractive soffit finish which can be left exposed or painted thereby saving the cost of suspended ceiling.

STRUCTURAL PERFORMANCE:

Waffle & trough floors with wider column spacings allow longer, uninterrupted floor spans to be achieved.

REDUCED SLAB THICKNESS & WEIGHT

The weight of the waffle slab itself is reduced, improving structure behavior and reducing dead loads.

FLEXIBLE PAYMENT & PRICING OPTIONS

Price and terms of payment are very negotiable.



Minus the cost of ceiling, waffle slabs offer savings of approximately **N2,336.50 per square meter compared to claypot of the same depth.**

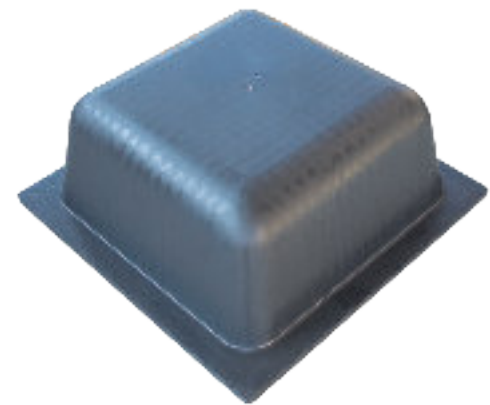
KNOWN TO BE THE BEST IN CASES OF FIRE OR NATURAL DISASTERS

In view of the interplay of the voids created by the waffle moulds.

REDUCED REINFORCEMENTS & FOUNDATION COSTS

up to 25-40% saving in steel reinforcements.

WAFFLE MOULDS



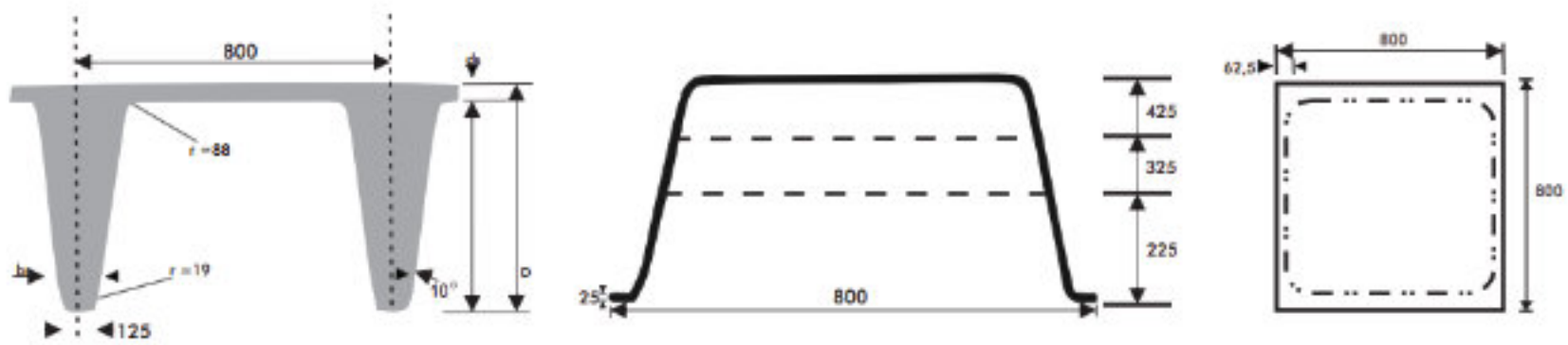
M Moulds have been designed for constructing two - way spanning “waffle” type floors. This type of floors offers considerable economies in construction, by reducing the amount of concrete and steel required, and by providing an attractive finish which can be left completely exposed or have a directly applied decorative treatment.

Also, because the floors are lighter, there is a reduction in the support and foundation work needed.

‘M’ Moulds are available in three depths, providing considerable freedom of structural design. 900 x 825mm square - 225mm, 325mm, 425mm high.

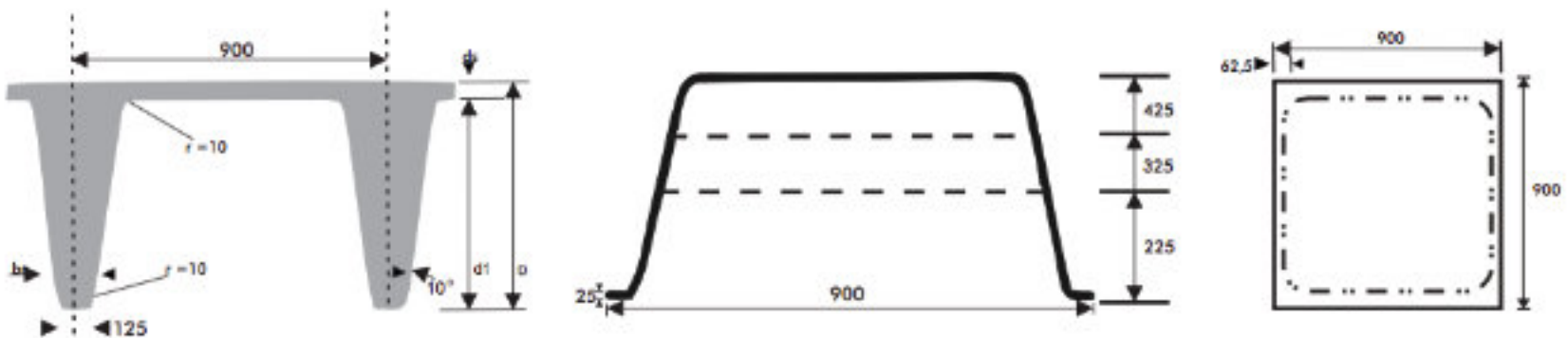
800 x 800 Waffle Mould Properties

MOULD DEPTH mm	DEPTH OF TOPPING mm	TOTAL DEPTH mm	AVERAGE RIB WIDTH mm	SECTION AREA cm ²	DISTANCE OF C.G.		INERTIA cm ⁴	SECTION MODULAS		VOLUME OF VOID		SELF WEIGHT KN / m ²	VOLUME OF CONCRETE m ³ / m ²
					FROM TOP mm	FROM BASE mm		Zt cm ³	Zb cm ³	PER MOULD m ³ /m ²	PER AREA OF FLOOR m ³ /m ²		
400	50	450	200	1162	156	294	203062	13017	6907	0,145	0,226	5,60	0,224
	75	475	204	1362	157	318	251824	16040	7919			6,25	0,249
	100	500	208	1562	160	340	301779	18861	8876			6,85	0,274
d1	ds	D	br	A	yt	yb	I	zt	zb	V/V	V/V	CONCRETE 25KN / m ²	

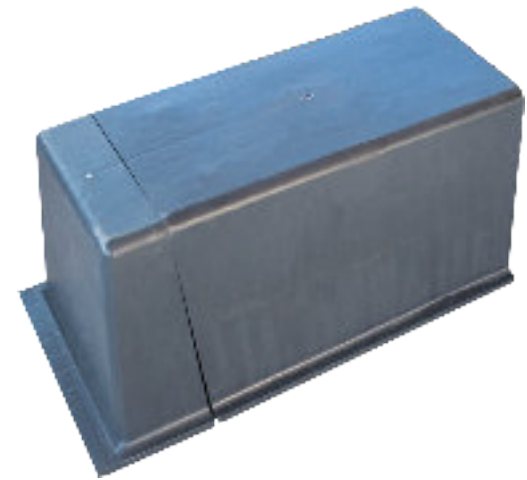


900 x 900 Waffle Mould Properties

MOULD DEPTH mm	DEPTH OF TOPPING mm	TOTAL DEPTH mm	AVERAGE RIB WIDTH mm	SECTION AREA cm ²	DISTANCE OF C.G.		INERTIA cm ⁴	SECTION MODULAS		VOLUME OF VOID		SELF WEIGHT KN / m ²	VOLUME OF CONCRETE m ³ / m ²
					FROM TOP mm	FROM BASE mm		Zt cm ³	Zb cm ³	PER MOULD m ³ /m ²	PER AREA OF FLOOR m ³ /m ²		
225	50	275	172	816	83	192	48561	5971	2581	0,113	0,139	3,45	0,136
	75	300	176	1040	87	213	65670	7548	3083			4,05	0,161
	100	325	180	1266	95	230	84158	8858	3659			4,65	0,186
325	50	375	192	1043	122	253	125718	10304	4969	0,156	0,192	4,60	0,183
	75	400	197	1268	123	277	159245	12947	5749			5,20	0,208
	100	425	203	1493	128	297	194449	15191	6547			5,85	0,233
425	50	475	207	1310	166	310	255029	15456	8226	0,197	0,242	5,85	0,233
	75	500	212	1536	183	337	314390	19347	9315			6,45	0,258
	100	525	217	1761	185	360	374573	22701	10450			7,10	0,283
d1	ds	D	br	A	yt	yb	I	zt	zb	V/V	V/V	CONCRETE 25KN / m ²	



THROUGH MOULDS



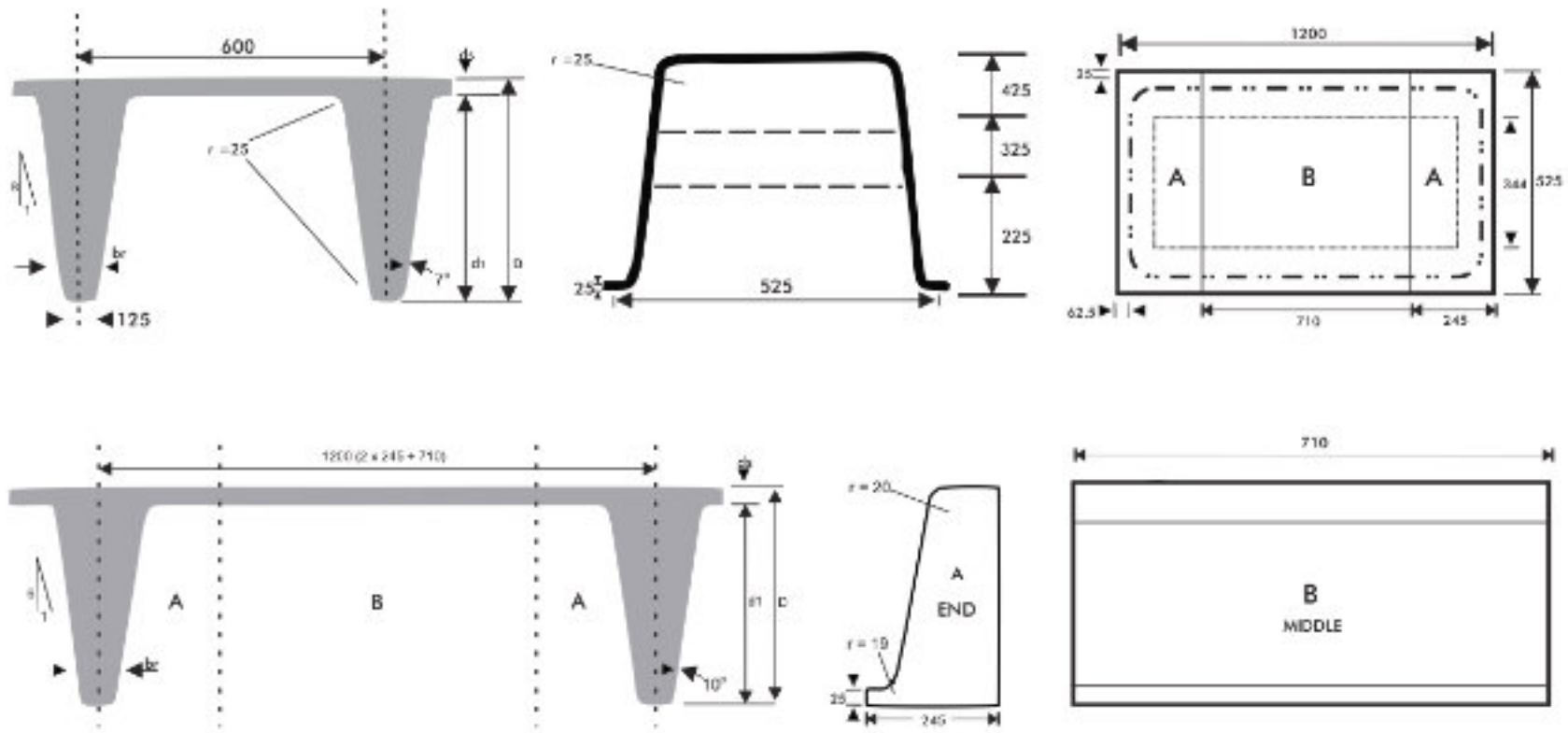
M Moulds have been designed for constructing two - way spanning “waffle” type floors. This type of floors offers considerable economies in construction, by reducing the amount of concrete and steel required, and by providing an attractive finish which can be left completely exposed or have a directly applied decorative treatment.

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600 Trough Properties For use with Drop Head System

MOULD DEPTH mm	DEPTH OF TOPPING mm	TOTAL DEPTH mm	AVERAGE RIB WIDTH mm	SECTION AREA cm ²	DISTANCE OF C.G.		INERTIA cm ⁴	SECTION MODULAS		VOLUME OF VOID		SELF WEIGHT KN / m ²	VOLUME OF CONCRETE m ³ / m ²
					FROM TOP mm	FROM BASE mm		Zt cm ³	Zb cm ³	PER MOULD m ³ /m ²	PER AREA OF FLOOR m ³ /m ²		
225	50	275	159	644	94	181	41770	4444	2308	0,105	0,146	3,23	0,129
	75	300	162	794	99	201	55690	5625	2771				
	100	325	165	944	106	219	71460	6742	3263				
325	50	375	171	838	136	239	104560	7688	4375	0,143	0,199	4,10	0,164
	75	400	175	988	138	262	132740	9619	5066				
	100	425	178	1138	143	282	162540	11366	5764				
425	50	475	184	1057	179	296	210410	11755	7108	0,179	0,249	5,66	0,226
	75	500	187	1207	180	320	258750	14375	8086				
	100	525	190	1357	184	341	308450	16764	9045				
d1	ds	D	br	A	yt	yb	I	zt	zb	V/V	V/V	CONCRETE 25KN / m ²	





A few projects carried out using our Waffle and Trough Moulds.

Yaba College of Technology, Library and Classrooms
Niger Insurance Office Block, Odalanmi street, Lagos
Adeleke University, Ede, Osun State.

Ghana High Commission, Abuja
'N.A.C.B Central Area. Abuja

Bassan office complex central area, Abuja

AP Plaza opposite CBN quarters, Wuse II, Abuja

Nepa Headquarters, Maitama District, Abuja

Supreme Court, Abuja

Kano State Investment and Property Development Building

Sokoto Cement Industry, Sokoto

CBN Offices, Nationwide

Federal Mortgage Bank, Abeokuta

Agric. Extension Building, ABU, Zaria

NEPA Regional Office, Ahmadu Bello Way, Kaduna

Abeni House, Ring Road, Oluyole Estate, Ibadan

University of Nigeria, Nsukka

University of Port Harcourt - Library

Shopping complex, Jabi, Abuja

Ikeja Travel Inn hotel, Toyin Street, Ikeja, Lagos

Gambia Embassy, Abuja

NTA office complex, Abuja, Area 2

Redeemed Christian Church, Sagamu

LAUTECH General Hospital, Ogbomosho

UNAAB sports complex, Abeokuta

Osun State University - Engineering block

Kwara State University, Molete, Ilorin

INEC office, Asaba

BUK Hostels and Library, Kano

University of Maiduguri, Senate building

Katsina State University, Katsina

BUA Office complex, M. Buhari way, Abuja.

1st Eckwa church, Ilorin



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