WHAT IS A VENTILATED CRAWL SPACE ?

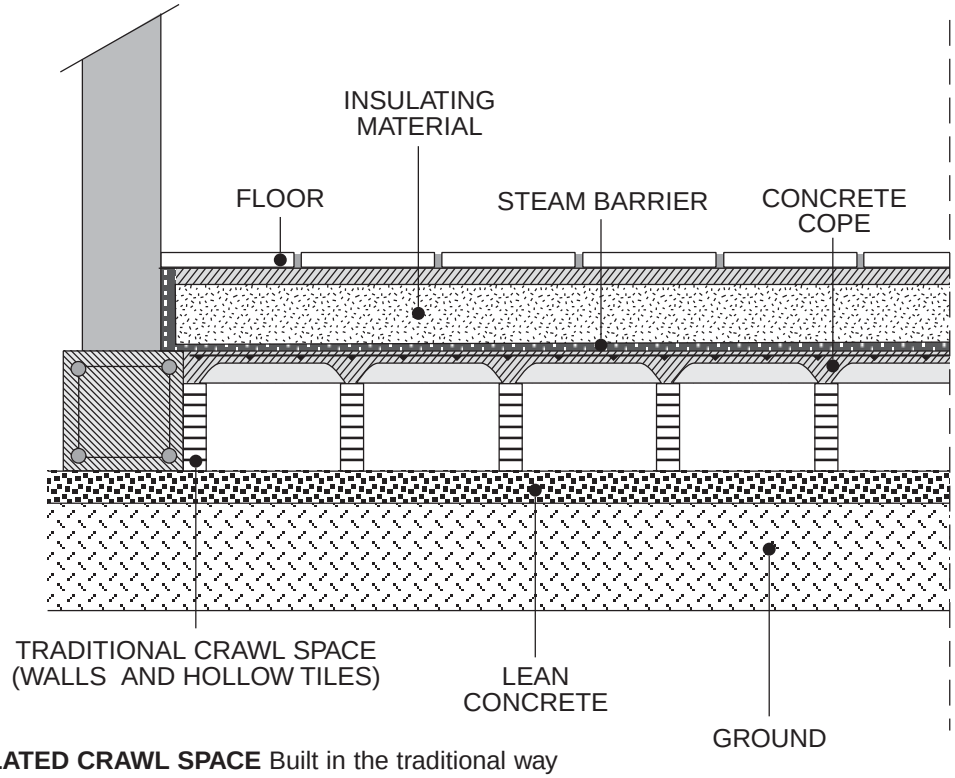
- The ventilated crawl space in house building is an air space built under the ground floor with insulating function, specifically aimed at preventing water infiltrations and upward dampness spreading.
- Not long ago, the traditional ventilated crawl space was made of loose dry stones and provided with ventilation grooves or better with hollow tiles laid on low walls placed at a short distance one from the other.
- The high cost of the traditional crawl space did not allow extensive use (actually it was used for particular spaces or where the building costs made it possible).



NOWADAYS with the **MODULO** system the **CRAWL SPACE** is no longer a few builders' privilege, but a requirement for a fast developing sector.

The **MODULO** is a disposable formwork making the construction of crawl spaces and interspaces possible in a quick and safe way. Thanks to its U shaped fitting joint it enables a worker to lay about 100 square metres of it per hour, consequently reducing labour costs by at least 80%.
Moreover, the resulting surface is dry and can be walked on, thus ensuring greater safety in the building yard during laying and concrete casting phases.
The low cost of laying work and of the modular formwork itself has made this product a valid substitute for materials such as gravel, which have a lower price, but definitely higher labour costs.
The shape of the **MODULO** *formwork has been projected to obtain very good ventilation and the minimum resistance to the air in the element intrados, provided the interspace is connected through pipes with the outside of the building. The in-coming pipes are to be preferably placed north and at ground level, the out-going ones south and driven up to the roof. This arrangement eliminates dampness and possible concentration of* ***RADON*** *gas.*

If compared to the traditional CRAWL SPACE, the **MODULO** creates a reinforced concrete structure that makes its use possible in industrial building yards where loads are higher than in private building and where having an aired interspace for placing pipes and installations has proved really advantageous.



VENTILATED CRAWL SPACE Built in the traditional way

WORK STAGES FOR PRIVATE USE
OVERLOADS

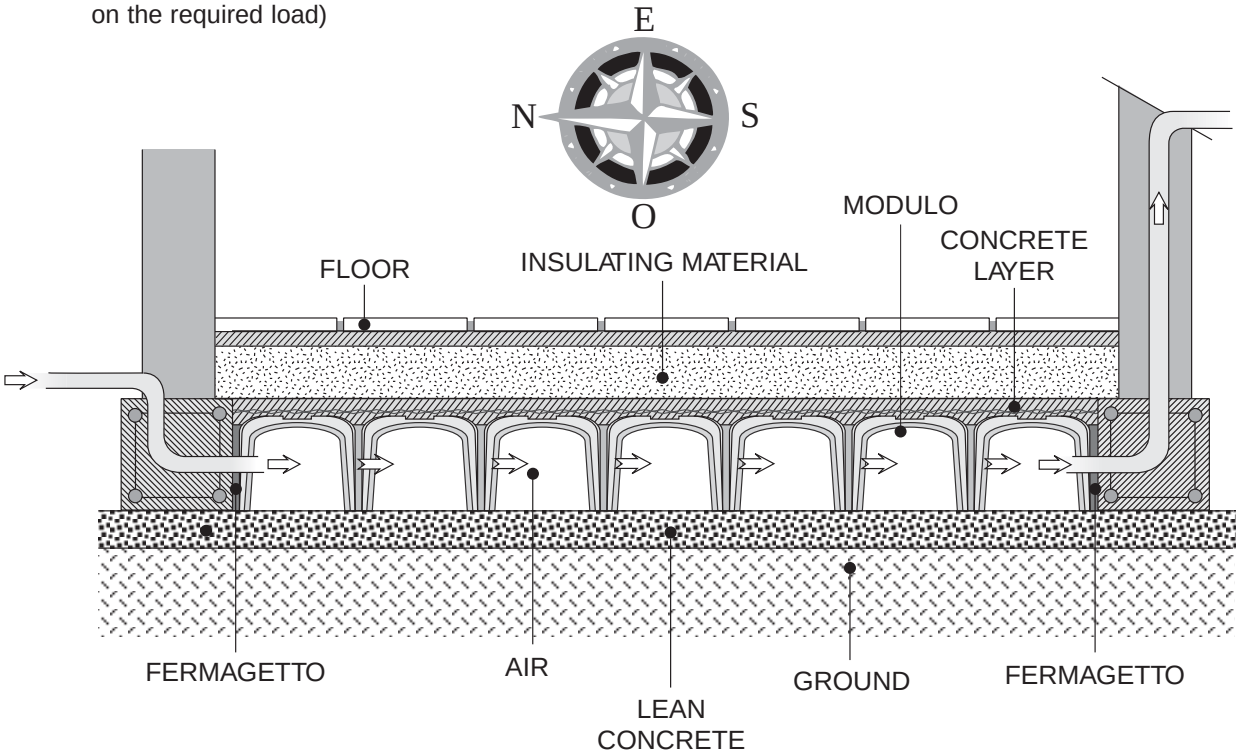
1/ Ground digging and surface flattening

2/ Concrete casting for underground foundation (lean concrete) R'CK 150, thickness depending on required overload (see chart)

3/ Placing of **MODULO** workforms and fitting **FERMAGETTO**

4/ Laying of electro-soldered net ø 6 - 20x20 over the **MODULO**

5/ Filling up of the Modulo workforms with R'CK 300 concrete (slab thickness depending on the required load)



The new **CRAWL SPACE**

CONTRACT SPECIFICATIONS

A perfectly ventilated crawl space, insulated from the underlying ground, made of concrete and mudular disposable plastic formworks, type **MODULO** Geoplast Srl.

A) Floor rough made of rolled scree with variable thickness as per chart

B) Layer of lean concrete with variable thickness as per chart

C) At the builder's discretion, before placing the formworks, holes and/or chases can be made for the passage of pipes or of all sorts of installations.

D) The floor will be ventilated by making 80/120 mm diameter holes on the outside walls, one every 3.50/4.00 metres and possibly provided with connecting PVC pipes and external stainless steel grates equipped with anti-insect plastic nets. For a better ventilation the holes will have to be made at a higher level on the south, warmer side of the building rather than the north, colder side. In case there are parts of crawl space inside the foundation beams these will have to be connected with the outside or peri-meter portions.

E) The Modulo will be laid over a lean concrete slab, previously prepared and with a suitable thickness (see specific charts). The formworks must be arranged in rows from right to left and from up to down always keeping the printed arrow upwards.

F) Placing of **Fermagetto EXTENSION** and **FERMAGETTO** made of polystyrene, preventing concrete from penetrating into the crawl space and facilitating the construction of external kerbs and foundation beams during the casting phase.

G) Laying of weight distributing reinforcement with a 6 mm minimum diameter and with a 20 x 20 mesh, necessary to stand stress.

H) Filling up of the formworks and casting of the top layer with concrete (Resistance class R'CK 250 Kg/cm^2 and with 3 cm minimum thickness (see chart). Work executed with or without the help of pumps.

I) Vibration phase

LOAD CHART **FOR MODULO H 3/6**

TYPE OF LOAD	Overload Kg/sq.m.	Cap thickness cm	Pressure on the floor Kg/cm^2	Bar diameter mm	Net mesh cm x cm
Terraces	250	1,5	0,43	3	10 x 10
Houses	400	2	0,69	3	10 x 10
Offices	700	3	1,22	6	20 x 20
Garages	1.500	4	2,60	6	20 x 20
Ind.bdgs	3.000	6	5,21	6	20 x 20

CONTRACT SPECIFICATIONS

LOAD CHART **FOR MODULO H 9**

TYPE OF LOAD	Overload Kg/sq.m.	Cap thickness cm	Lean concrete thickness cm	Pressure on the coarse gravel Kg/cm²	Coarse gravel thickness cm	Pressure on the ground Kg/cm²	Bar diameter mm	Net mesh cm x cm
CIVIL	1.000	4	0		0	2,27	6	20 x 20
			5		0	1,04		
			10		0	0,59		
			5	1,04	10	0,38		
	3.000	5	0		0	6,80	6	20 x 20
			5		0	3,12		
			10		0	1,78		
			5	3,12	10	1,15		
	10.000	7	10	5,95	25	1,21	6	20 x 20
INDUSTRIAL	20.000	10	15	7,69	30	1,62	8	20 x 20
	30.000	15	15	11,54	35	2,05	8	20 x 20

LOAD CHART **FOR MODULO H 13/15/17/20/27/30/35/40**

TYPE OF LOAD	Overload Kg/sq.m.	Cap thickness cm	Lean concrete thickness cm	Pressure on the coarse gravel Kg/cm²	Coarse gravel thickness cm	Pressure on the ground Kg/cm²	Bar diameter mm	Net mesh cm x cm
CIVIL	1.000	3	0		0	2,06	6	20 x 20
			5		0	0,56		
			10		0	0,26		
			5	0,56	10	0,15		
	3.000	4	0		0	6,19	6	20 x 20
			5		0	1,70		
			10		0	0,78		
			5	1,70	10	0,45		
	10.000	5	10	5,66	25	0,49	6	20 x 20
INDUSTRIAL	20.000	10	15	2,97	25	0,60	6	20 x 20
	30.000	15	15	4,46	25	0,90	8	20 x 20

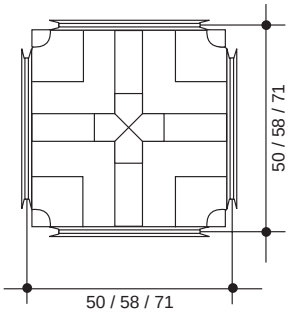
LOAD CHART **FOR MODULO H 45/50/55/60/65/70**

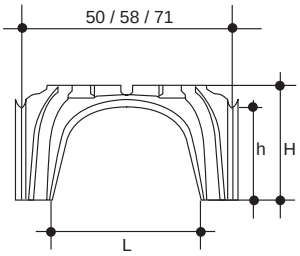
TYPE OF LOAD	Overload Kg/sq.m.	Cap thickness cm	Lean concrete thickness cm	Pressure on the coarse gravel Kg/cm²	Coarse gravel thickness cm	Pressure on the ground Kg/cm²	Bar diameter mm	Net mesh cm x cm
CIVIL	1.500	5	0		0	3,40	6	20 x 20
			5		0	1,56		
			10		0	0,89		
			5	1,56	10	0,58		
	3.000	8	0		0	6,80	6	20 x 20
			5		0	3,12		
			10		0	1,78		
			5	3,12	10	1,15		
INDUSTRIAL	20.000	10	15	7,69	30	1,62	8	20 x 20
	30.000	15	15	11,54	35	2,05	8	20 x 20

CONTRACT SPECIFICATIONS

SPECIFICATIONS OF MODULO **PILLARS**

ARTICLE	Pillar side cm	Pillar surface cm^2	Number of MODULO pillars	Number of MODULOS for sq.m.	Number of pillars for sq.m.
Modulo H 3	2	4	36	4	144
Modulo H 6	3	9	25	4	100
Modulo H 9	6	36	4	3	12
Modulo H 13	14	196	1	4	4
Modulo H 15	15	225	1	4	4
Modulo H 17	13	169	1	4	4
Modulo H 20	14	196	1	4	4
Modulo H 27	12	144	1	4	4
Modulo H 30	12	144	1	4	4
Modulo H 35	12	144	1	4	4
Modulo H 40	12	144	1	4	4
Modulo H 45	16	256	1	2	2
Modulo H 50	16	256	1	2	2
Modulo H 55	15	225	1	2	2
Modulo H 60	15	225	1	2	2
Modulo H 65	14	196	1	2	2
Modulo H 70	14	196	1	2	2





MODULO'S CONCRETE CONSUMPTION AND PACKING SIZES

ARTICLE dim. cm	Concrete consumption for the top layer	h cm clean span	L cm	Package cm	no. pieces per pallet	sq.m. per pallet
Modulo 50x50 H 3	m^3 0,004xsq.m.	2,1	5,5	110x110x230	720	180
Modulo 50x50 H 6	m^3 0,009xsq.m.	4,5	5,4	110x110x230	720	180
Modulo 58x58 H 9	m^3 0,010xsq.m.	7,5	20,5	120x120x230	360	120
Modulo 50x50 H 13	m^3 0,028xsq.m.	7	28	110x110x230	300	75
Modulo 50x50 H 15	m^3 0,030xsq.m.	9,5	26,4	110x110x230	300	75
Modulo 50x50 H 17	m^3 0,035xsq.m.	11,5	30	110x110x230	300	75
Modulo 50x50 H 20	m^3 0,037xsq.m.	14,5	28	110x110x230	300	75
Modulo 50x50 H 27	m^3 0,040xsq.m.	21	34	110x110x230	300	75
Modulo 50x50 H 30	m^3 0,045xsq.m.	24,5	31,7	110x110x230	300	75
Modulo 50x50 H 35	m^3 0,052xsq.m.	30	35	110x110x230	300	75
Modulo 50x50 H 40	m^3 0,056xsq.m.	34	36	110x110x230	300	75
Modulo 71x71 H 45	m^3 0,064xsq.m.	36	48	145x145x230	200	100
Modulo 71x71 H 50	m^3 0,080xsq.m.	41	48	145x145x230	200	100
Modulo 71x71 H 55	m^3 0,073xsq.m.	46	50	145x145x230	200	100
Modulo 71x71 H 60	m^3 0,085xsq.m.	51	50,9	145x145x230	200	100
Modulo 71x71 H 65	m^3 0,077xsq.m.	56	53	145x145x230	200	100
Modulo 71x71 H 70	m^3 0,090xsq.m.	61	53	145x145x230	200	100