

CONCRETE TECHNOLOGY LLC



تقنية الخرسانة ذ.م.م.

PLASTBAU METAL SLABS

Lightweight Forming System for Concrete Floors & Roofs



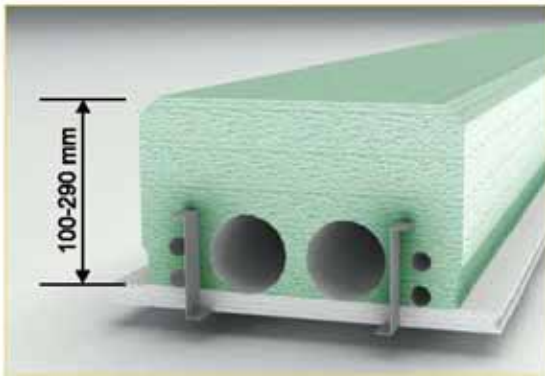
The width of the panel is fixed (600 mm)
Thickness of the panel is variable (180 mm-320mm)
& the length can be as long as needed

Self supporting • Thickness in dimension is tailor made • Variable insulation values are available
No thermal bridging • Reduced job site labor • Ventilation ducts are built into the panels • Drywall
(Gypsum Board) is applied directly to the panels • Utility passages molded in • Increased safety on the job site



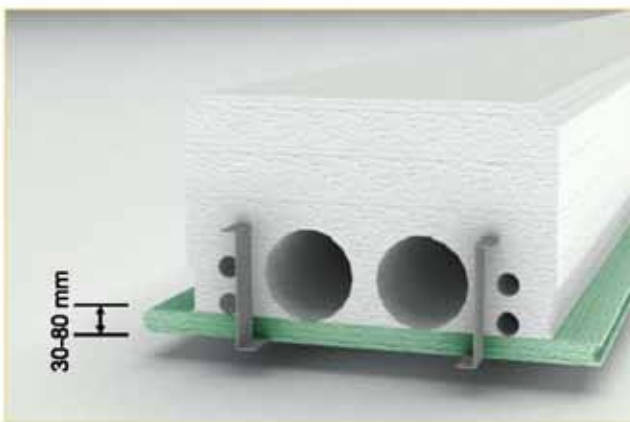
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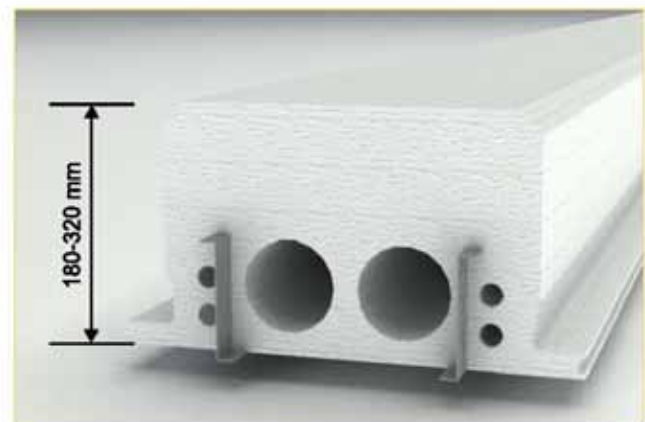


Variability in thickness of the concrete rib (100-290 mm)

The **PLASTBAU® METAL** floor is a stay-in-place insulating concrete forming system for joisted concrete floors. This system is the result of several years of research, design and practical field experience. The result of all this permits the set up of a continuous production line able to combine the insulating capabilities of the EPS with the metal insert.



Variability of the insulation thickness (30-80 mm)

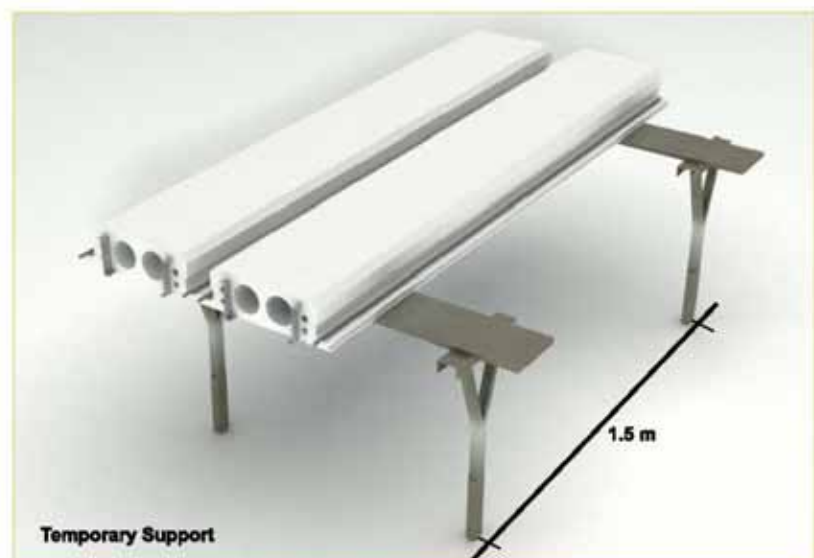


Variability of the thickness (180-320 mm)

The **PLASTBAU® METAL** equipment technology permits the variability of the thickness to be programmed "On Line" as the project needs require. Changes are made as the machine is running.

SELF SUPPORTING CAPABILITY

The panels have self supporting capacity and support the usual loads at the job site, like the weight of the workers and the fresh concrete weight. Temporary supports are needed approximately every five feet (1.5 m).



Temporary Support



DESCRIPTION OF PRODUCTION PROCESS:

I. THE RAW MATERIAL EPS

Expandable Polystyrene (EPS) is obtained from polymerization of styrene with introduction of a blowing agent called "pentane". This polymer looks like spherically shaped beads having a diameter varying between 0.7 and 1.1 mm. Expanded polystyrene is made out from expandable polystyrene, in three industrial steps:

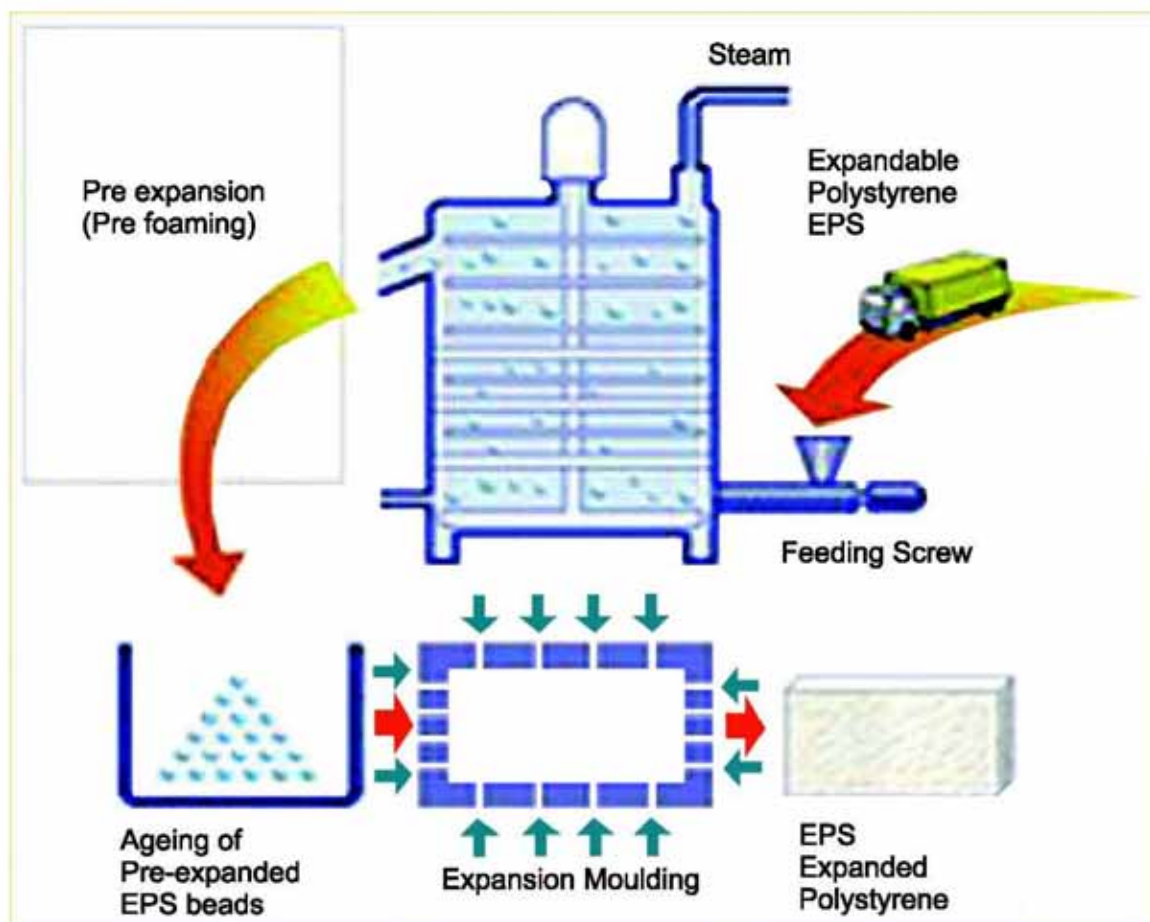
- **The pre-expansion:**

EPS raw material is introduced into a stainless steel drum where water steam is injected, that makes the pentane particles reacting and the EPS beads expanding (up to 50 times their initial volume).

- **Ageing of pre-expanded EPS beads:**

After pre-expansion the EPS beads are stocked during several hours inside bag-type silos in order to allow their physical stabilization.

- **The pre-expanded beads** are then blown and again submitted to the action of injected water steam. In that way the beads plasticize and expand again, filling all the space inside the mould and welding together while forming a block or a molded piece.

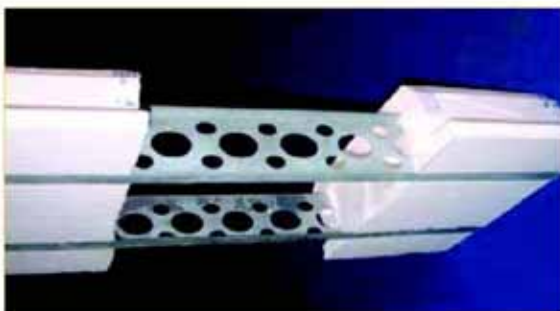
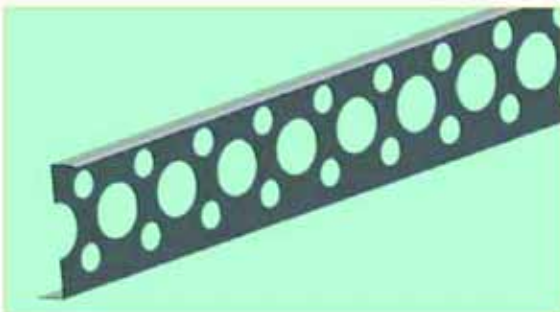


DESCRIPTION OF PRODUCTION PROCESS:

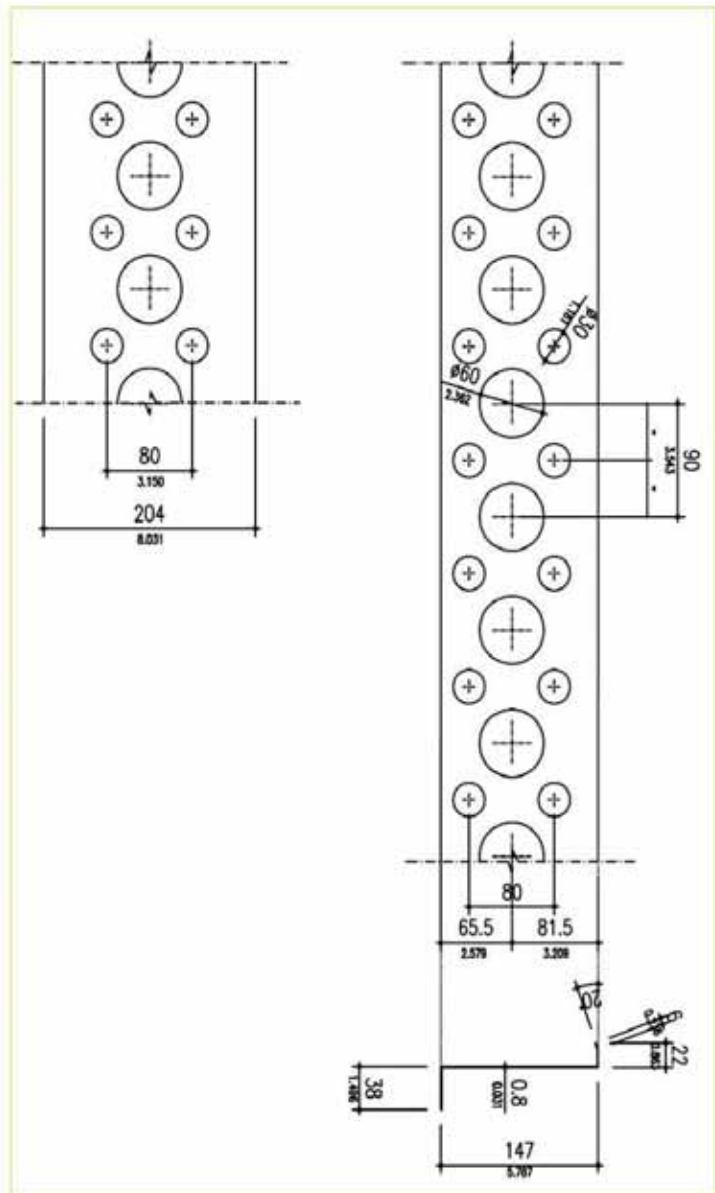
II. THE RAW MATERIAL "ZINC COATED STEEL RIBBON"

The elements of expanded polystyrene, molded with the **PLASTBAU® METAL** system, can be reinforced by means of metallic stiffeners, roll-formed in-line by a train of profiling rollers for galvanized sheet.

The sheet is perforated in order to allow the welding (synthesizing) of the beads through the perforation and to create a mechanical co-operation between the two materials and to give to the products rigidity and exceptional mechanical characteristics.



The stiffeners serve for the self-supporting of the element during the construction of the floor, before the concrete consolidates and develops its own bearing characteristics.

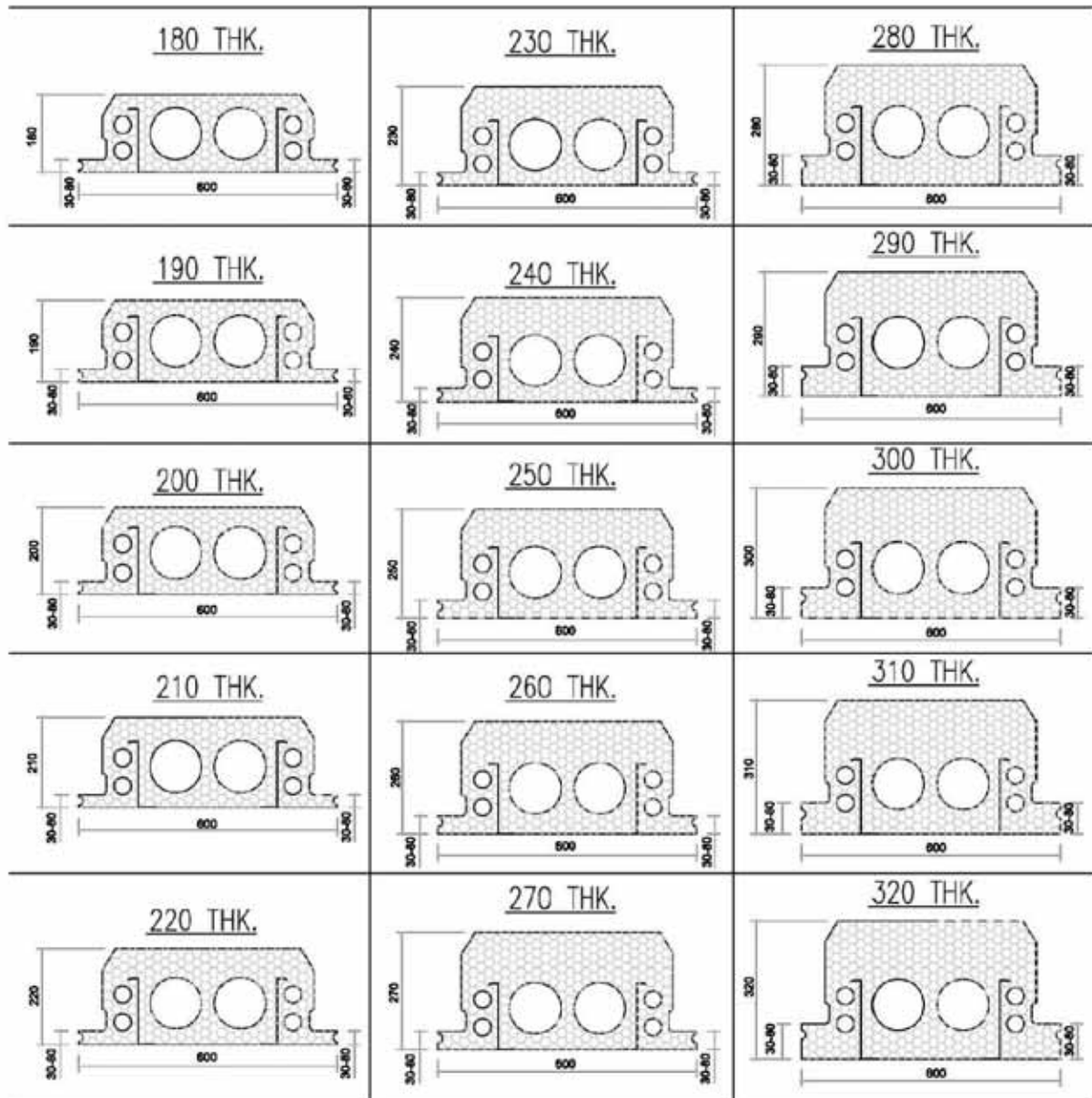




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STANDARD SIZES



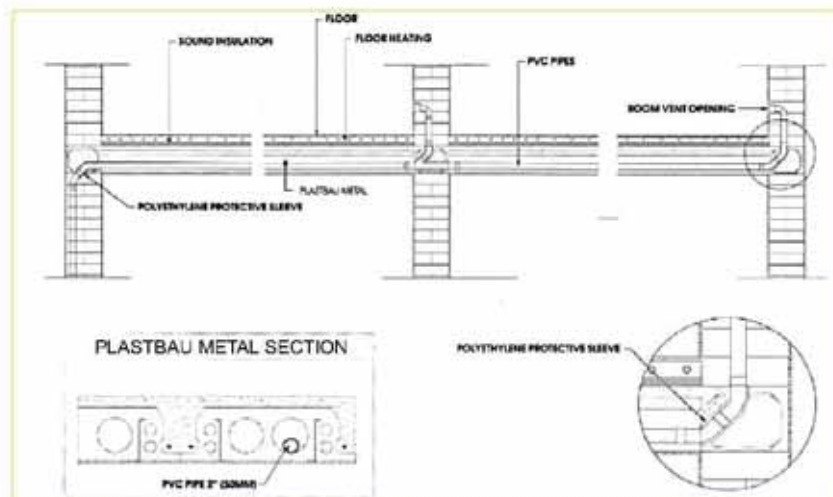
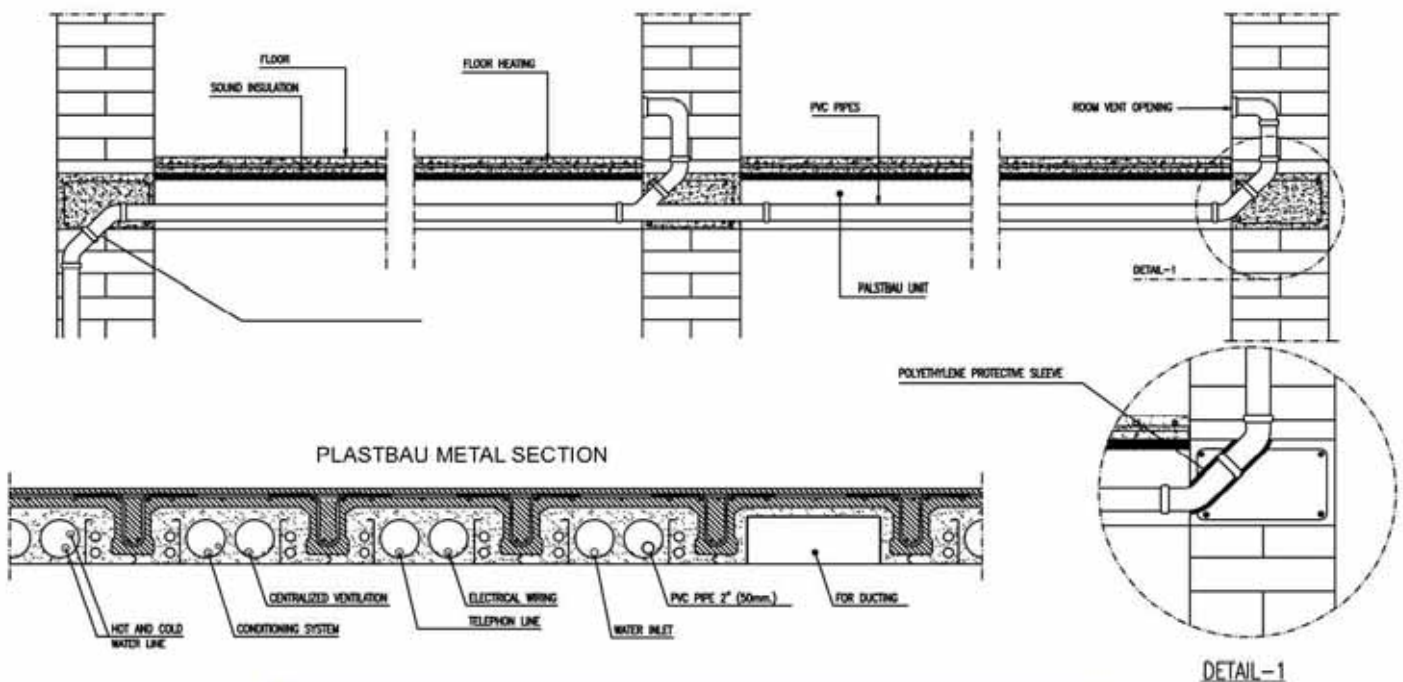
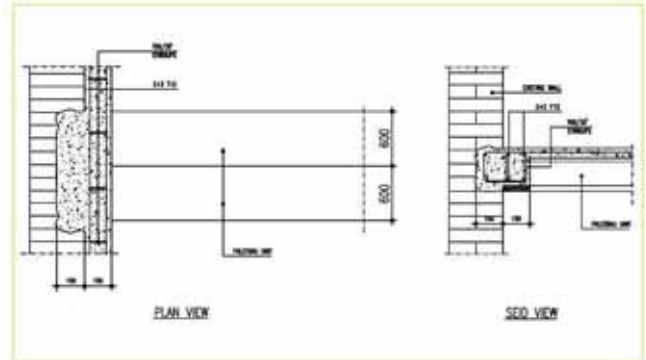


RESTORATION PROJECTS

Because of the light weight of the finished floor, old floors can be replaced with the **PLASTBAU® METAL** system without adding too much excess weight on the foundation or the wall structure. In addition, **PLASTBAU® METAL** floor elements are installed without the use of heavy lifting equipment. The light weight elements can be easily handled by two workers.

OPTIMIZING THE THICKNESS OF THE FLOOR

By utilizing the passages in the **PLASTBAU® METAL** element for the utility lines, the thickness of the floor can be minimized. The diameter of the longitudinal passages is approximately 4.75" (120 mm). Additional reductions of thickness and cost are obtained by the elimination of insulating panels when a floor heating system is installed.





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DRYWALL VERSION



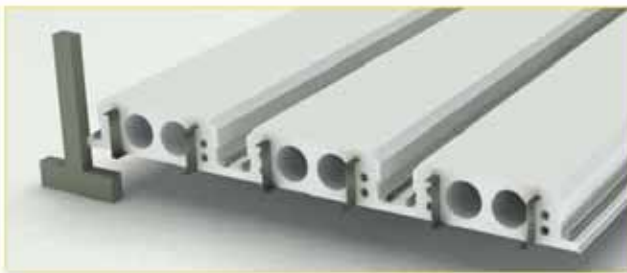
PLASTBAU® METAL is available in the drywall version that is manufactured without the metal mesh for plaster. The drywall (Gypsum Board) is fixed with normal drywall screws directly onto the metal firing strips which are an integral part of the panel. The thickness of the galvanized steel firing strip is 1/32" (0.8 mm) with spacing on approximately 12" centers (300 mm).

PLASTER VERSION

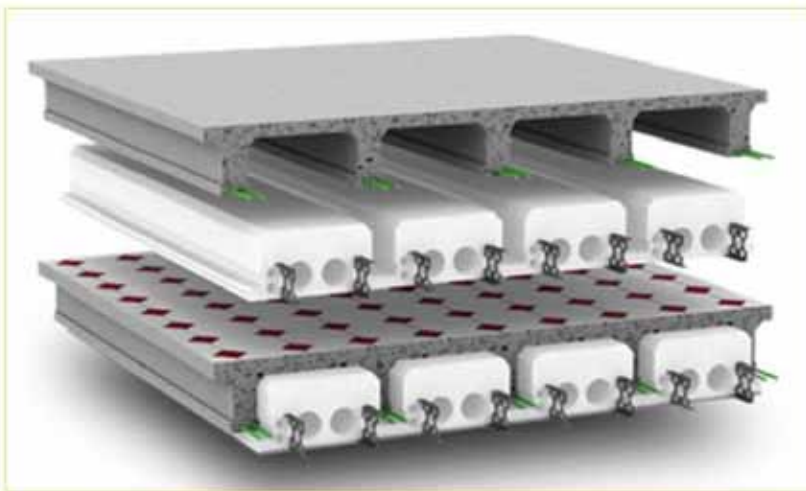


PLASTBAU® METAL is also available in the plaster version. In this case it is necessary to add a metal mesh to the panel in order to have a good bond between the plaster and the element. The optimum result can be obtained by the use of premixed plaster with gypsum cement and expanded perlite.

BIG ADVANTAGE / LOW COST



Using the **PLASTBAU® METAL** floor system for basement and first level floors results in better living conditions and energy savings. When **PLASTBAU® METAL** is used in roof construction a ventilated roof is achieved by connecting the longitudinal cavities.



VENTILATION

The longitudinal cavities (4.752" 120 mm Dia.) can be easily extended to the exterior of the walls. In this way any pitched or flat roof can be easily ventilated. **PLASTBAU® METAL** provides a rational solution for condensation problems that can occur between the outside and inside surfaces.

Finished Floor Weight

The **PLASTBAU® METAL** floor system is less than half the weight of comparable hollow core, Precast floor systems, yet will provide the same load capacity. Another significant benefit of the lighter floor system is the reduced load on the Structural elements (Beams, Columns, Walls & Footings)



TAILOR MADE SYSTEM

The **PLASTBAU® METAL** manufacturing system can provide tailor made products to solve your individual floor and roofing needs. The new, highly sophisticated, fully automated production line can produce **PLASTBAU® METAL** panels that are tapered and can include such features as openings for skylights, etc.

The insulation value can be varied according to the job requirements. Any roof sloop from horizontal to vertical can be accommodated. Floor and roof shapes other than rectangular or square can be easily made by simply cutting the panels into the proper shape, yet still maintaining perfect continuity of the insulation value. All of these features provide the builder with custom tailored products without the usual tailor made labor content.

INSULATION WITHOUT THERMAL BRIDGES

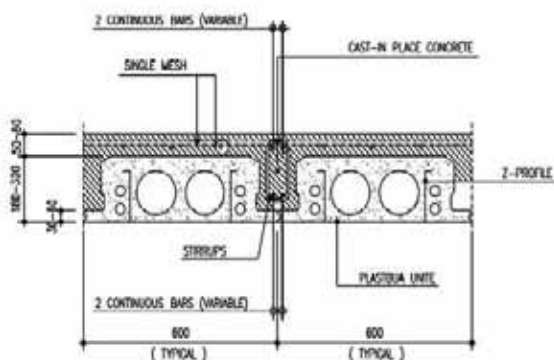
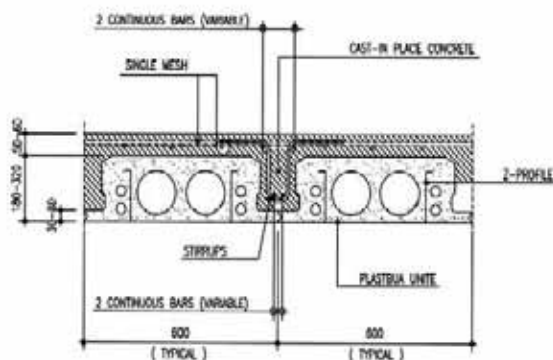
One of the most important and unique characteristics of this wonderful product is the continuity of insulation that is assured by the tongue and groove connection between panels. The insulation is incorporated in the floor structure.

Therefore the insulation level is obtained automatically, in an optimal way, at the production facility and is not subject to the skill of the installers. The insulation R-Value can vary according to the job requirements in a range from R-10 to R-25.



Concrete Wall and Floor poured together creating a monolithic pour giving best possible strength

- No movement between floors and walls
- No squeaks
- No drafts
- No heat loss





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BENEFITS FOR THE ENVIRONMENT

The **PLASTBAU® METAL** Floor System eliminates the use of precious wood products. Superior insulation value of the system results in much less energy expended to heat and cool the structure.

Reduction in fossil fuels, not only results in a significant cost savings to the building owners, it also results in a reduction of pollutants emitted into the atmosphere. EPS does not contain any harmful gas that can affect the earth's ozone layer.



Pouring the Floor



Roof System Ready to Pour

JOB SITE SAFETY

Worker safety can be directly related to the weight of the panels that are handled on the job site. **PLASTBAU® METAL** panel weighs about 1.3 lb/ft. (6 kg/m) as compared to 90 lb./sq.ft. (450 kg/m) for the pre-cast hollow core panels. The installation of the **PLASTBAU® METAL** panels can be done manually in a very short time, taking into account that one panel that is 180 mm thickness and 16 ft. (5 meters) long weighs only 39 lb.(18 kg).



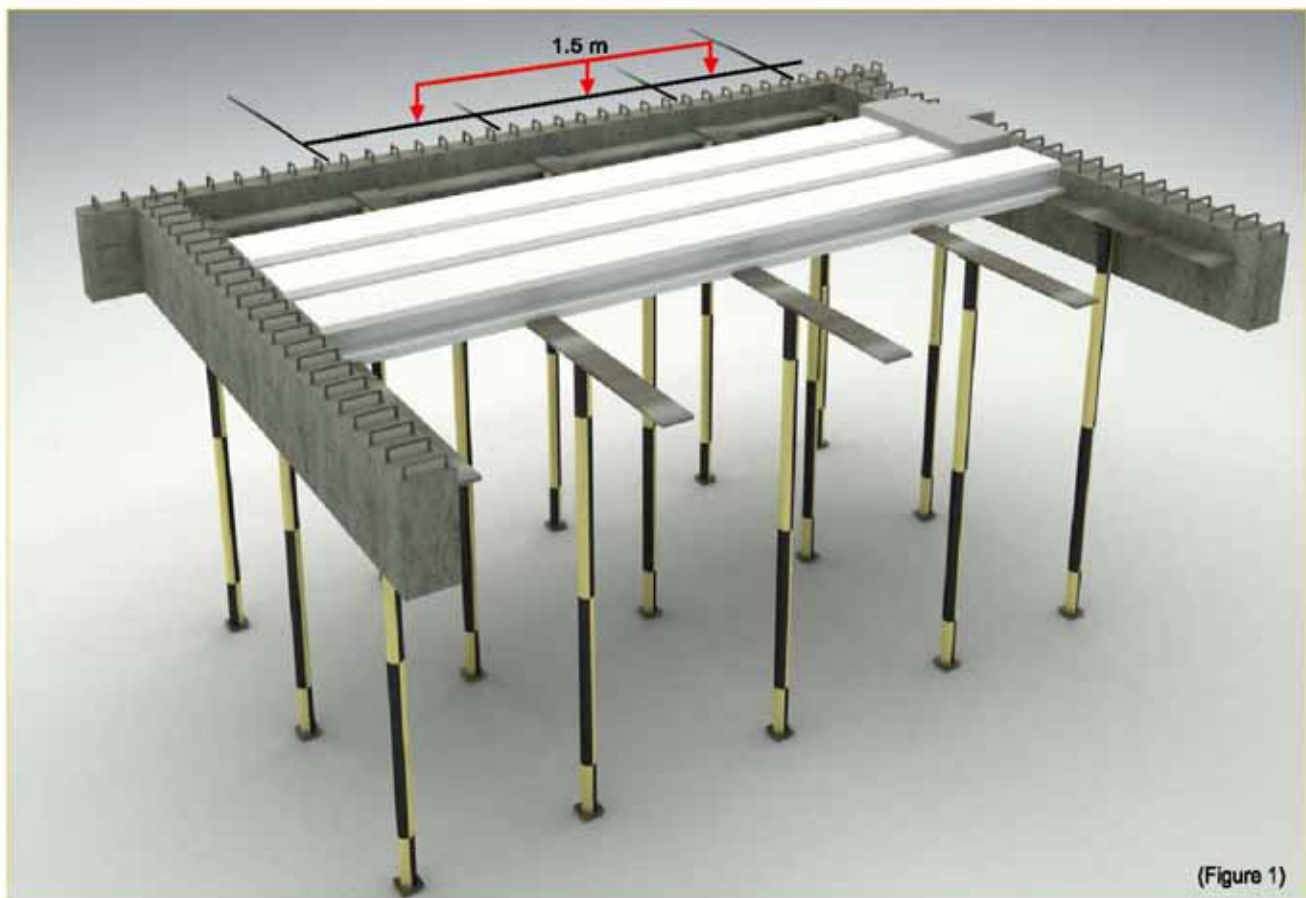
Continuous forming machine for **PLASTBAU® METAL** panels; production rate: (40-50 m²/ h)

CONSTRUCTION GUIDELINES

1. **PLASTBAU** houses can be certified for structural characteristics as well as for the thermal and sound insulation properties.
2. **PLASTBAU® METAL** system panels have been created to be fire rated to reach the qualification of 2 to 3 hours of fire resistance, depending on the type of bottom surface finishing.
3. Nominal formwork is required, as a fact, to support the spaces, which designed to be covered with the **PLASTBAU® METAL** panels.

Erection steps could be summarized in the following general steps:

- Temporary Vertical supports are to be erected and distributed with maximum spacing of 1.5 meter.
- Horizontal supports in the form of wooden panels or metal profiles or combinations of both are to be placed on top of the vertical supports at spacing of 1.5 meter. (See Fig. 1)
- **PLASTBAU® METAL** panels are to be cut and laid on top of the temporary supports as per the structural drawings.



(Figure 1)



PLASTBAU METAL SLABS

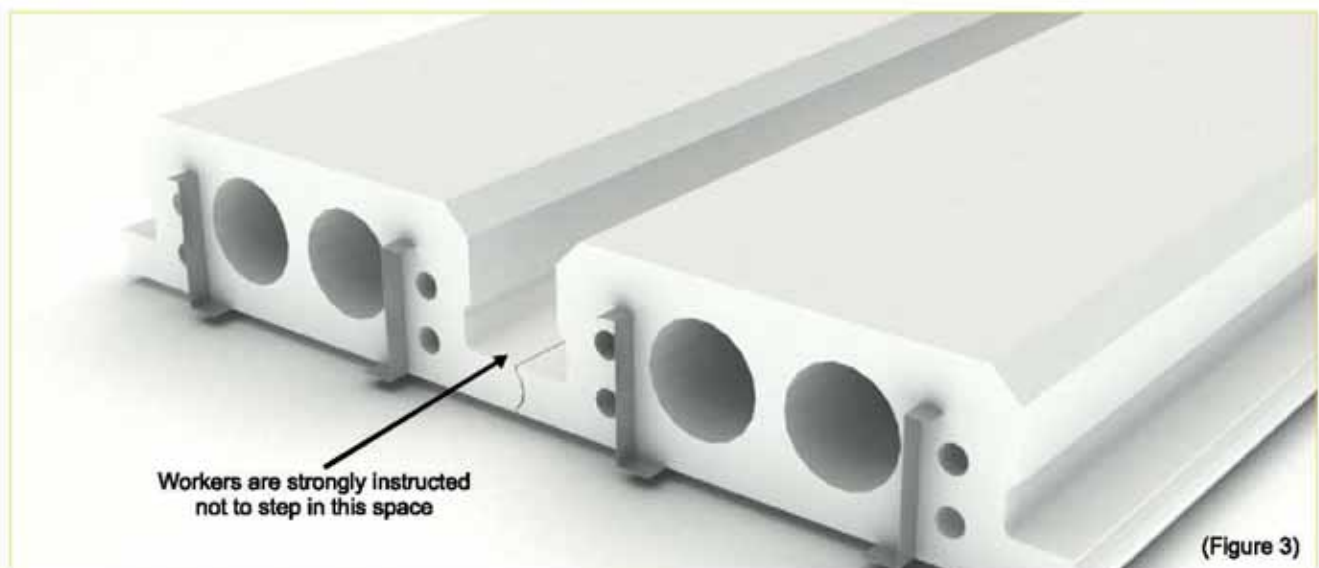
Lightweight Forming System for Concrete Floors & Roofs

- Bracing system may be provided in both directions to maintain lateral stability of the temporary supports if needed. (See Fig. 2)



(Figure 2)

- Workers are strongly instructed not to step in the space created between two adjacent panels when placed side by side, this way to maintain the thickness and shape of the inverted flange of the Panel where reinforcement bars will be placed. (See Fig. 3)

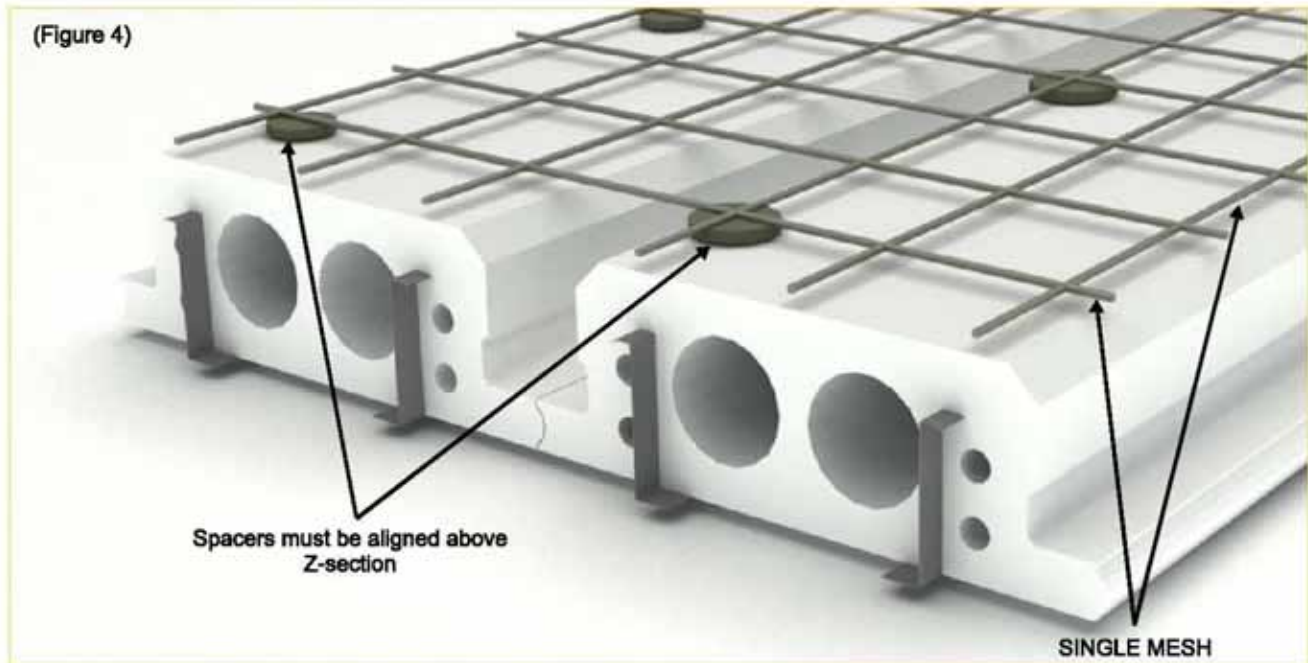


(Figure 3)



- Spacers between the **PLASTBAU® METAL** panel and the mesh must be aligned above Z-section metal sheet. (See Fig. 4)

(Figure 4)



4. Two finishing options are available for the bottom of the slab: the drywall version and the Plaster version:

Drywall Version: The Gypsum Boards have to be fixed with normal self-threading screws directly onto the zinc-coated metal sheet profile (38 mm wide, 0.8 mm thick, placed every 30 mm). (See bottom view in Fig. 5)

Plaster Version: The panels already provided with expanded metal. The best result is obtained by employing ready to-use gypsum, lime or expanded perlite based mortars, manually or automatically.





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- The site engineer should familiarize his work team with the unique features of this system especially when it comes to their movement on the erected formwork and while concreting the slab. This will reflect on the safety factors for the workers and maintain high standards of performed work.
- The site engineer has to bring to the attention of the sub-contractors performing Services work like electricity, air-conditioning, ventilation and mechanical works etc., about the ability of the **PLASTBAU® METAL** slab to have their utility lines run through the panels passage. The diameter of the longitudinal passages is 120 mm and 40 mm.

SITE PRODUCTION IMAGES:



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UNITED ARAB EMIRATES
Government of Ras Al Khaima
Department of Economic Development

دولة الإمارات العربية المتحدة
حكومة رأس الخيمة
إدارة التنمية الاقتصادية

رخصة صناعية
INDUSTRIAL LICENSE
لترخيص أنشطة التصنيع
PARTNERS NAME LIST

رقم الرخصة: 24543
License No.

الاسم التجاري: شركة الخرسانة أ.م.م
Trade Name: CONCRETE TECHNOLOGY LLC

الشركاء المسجلون في الرخصة

الاسم Name	الجنسية Nationality	النسبة Share %
أحمد بن محمد	الإمارات	50
محمد بن علي	الإمارات	50

دولة الإمارات العربية المتحدة
وزارة الداخلية
إدارة الترخيص الصناعية

رقم الترخيص: 2108
Date of Issue: 24/03/2008

رخصة التصنيع
INDUSTRIAL LICENSE

الاسم التجاري: شركة الخرسانة أ.م.م
Trade Name: CONCRETE TECHNOLOGY LLC

الأنشطة المسموعة:
1. إنتاج الخرسانة الجاهزة
2. تصنيع الخرسانة المسلحة

UNITED ARAB EMIRATES
Government of Ras Al Khaima
Department of Economic Development

دولة الإمارات العربية المتحدة
حكومة رأس الخيمة
إدارة التنمية الاقتصادية

شهادة قيد في السجل التجاري
CERTIFICATE OF REGISTRATION

رقم السجل التجاري: 21180
Commercial Register No.

الاسم التجاري: شركة الخرسانة أ.م.م
Trade Name: CONCRETE TECHNOLOGY LLC

النوع القانوني: شركة ذات مسؤولية محدودة
Legal Form: Limited Liability Company

المقر: رأس الخيمة
Office: Ras Al Khaima

RAKIA
Ras Al Khaima Industrial Authority

رخصة
LICENCE

رقم الرخصة: 074
Licence No.

الاسم التجاري: شركة الخرسانة أ.م.م
Trade Name: CONCRETE TECHNOLOGY LLC

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غرفة تجارة وصناعة رأس الخيمة
Ras Al Khaima Chamber of Commerce and Industry

شهادة عضوية لعام 2007
MEMBERSHIP CERTIFICATE 2007

إن غرفة تجارة وصناعة رأس الخيمة، بناء على قانونها رقم 8 لسنة 2000 م،

قد سجلت: ترقية الخرسانة (أ.م.م.)
من الجمعية: دولة الإمارات العربية المتحدة
نوع النشاط: صناعة الخرسانة الجاهزة - صناعة الخرسانة المسلحة - صناعة الخرسانة الجاهزة

في القبة: المصنعة
المحل: الجزيرة الحمراء - الصناعية شارع العام - بناية: مبنى رأس الخيمة للاستثمار

العضو القانوني: شركة ذات مسؤولية محدودة
الجمعية: شركة - الإمارات/أ.م.م

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غرفة تجارة وصناعة رأس الخيمة
Ras Al Khaima Chamber of Commerce and Industry