

CUPOLEX®

THE STRUCTURAL DOME FLOORING SYSTEM



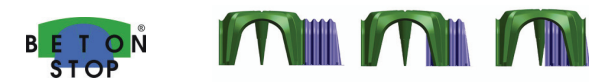
With millions of square meters installed in Europe, Eastern Canada, Africa, Russia and Australia, the CUPOLEX® System is now available for use in Canada and the United States of America. Using approximately 20% less concrete and reinforcing than a raft slab, this cost effective system uses welded wire mesh placed within the topping thickness to create a concrete floor slab, without the environmental issues associated with polystyrene.

Each CUPOLEX® floor is specifically designed to suit site conditions. Specific FEM design calculations, engineered drawings and Design Certificate are provided for each design by a Registered Professional Engineer in your State or Province. Approved Registered CUPOLEX® Contractors are used for the construction of each floor to ensure quality and workmanship is of the highest standard.

CUPOLEX® is available in a range of sizes from 50 mm (2") to 70 mm (28") high and can be designed for residential, commercial, industrial and institutional uses up to a live load of 10 Kpa or higher.

The CUPOLEX® system also consists of an ancillary product called PONTTEX® to create grade beams. Moreover, in order to prevent any voids BETON STOP® provides continuous closures. For a more detail description of the construction method employed and the use of PONTTEX® and BETON STOP® with the CUPOLEX® flooring system to achieve these results, please visit www.pontarolo.com.

ACCESSORIES TO CUPOLEX®



Lateral closures for CUPOLEX®



Creates Beams so that CUPOLEX® Floors Become Self-Bearing

CERTIFIED BY THE MINISTRY OF THE ENVIRONMENT

As building requirements continue to be focused on long-term sustainability with the adoption of numerous programs such as the LEED rating system, or the redevelopment of Brownfields, CUPOLEX® provide economic solutions with its innovative technology that is designed to enhance structures that are environmentally friendly and healthier to live and work in.

Many development sites are underlain with reclaimed or natural deposits where the decomposition of minor amounts of organic matter has produced of harmful gases e.g. methane, radon or carbon dioxide. The distinctive dome shape of the modular elements provides an internal orthogonal mesh allowing for air-circulation ducts that can be fully ventilated.

The CUPOLEX® System has been certified by the Ministry of Environment and has been granted the NETE Certificate of Technology Assessment. The Ministry concludes that the CUPOLEX® System can be a viable technology allowing for the control of vapour emissions from contaminated soil and ground water. Suitable applications of the CUPOLEX® System include Level 2 Risk Management approach in Brownfields redevelopment.

In summary, this "Green Product" provides a superior finished product with measurable labour and cost savings as well as providing other distinct advantages.

PONTAROLO ENGINEERING CUPOLEX® APPLICATIONS:

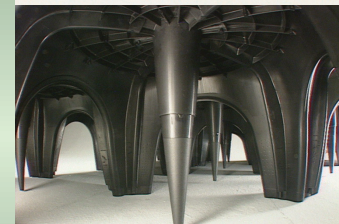
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Winner Second Place Innovative Product Technology Toronto Construction Ass.



XII Trofeo Internacional de la Construcción 2000, Spain



CUPOLEX®

THE STRUCTURAL DOME FLOORING SYSTEM

ADVANCED, INNOVATIVE, MODULAR, SUSTAINABLE, ENERGY EFFICIENT

CUPOLEX, for Concrete Floor Slabs That Stand

Above the Rest

PATENTED



PONTAROLO ENGINEERING



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PONTAROLO ENGINEERING

Research/Know-How/Patents/Sustainable Building Technologies

CUPOLEX®

THE STRUCTURAL
DOME FLOORING
SYSTEM



CUPOLEX® is a patented structural dome flooring system made from recycled non-toxic plastic modular elements. Each element easily inter-connects to create a self-supporting structure which acts as a permanent form work, replacing gravel, hard fill and provides under slab voids for ventilating.

Main Benefits:

- Up to 20% reduction in concrete consumption
- Up to 20% reduction in reinforcing steel
- Up to 80% reduction in interior box forming for grade beams, footings, and foundations
- Ease of transportation of components 110 m² (1200sq.ft.)/pallet
- Reduced labour costs, 150 m² (1600 sq.ft) laid in 2 man hours, fast assembly with minimal site work requirements
- One trade used to construct entire foundation and slab.
- Replaces gravel, engineered fill or hard fill and associated compaction costs. 3 truck loads of gravel to 1 Pallet of CUPOLEX®
- Reduced plant and machinery requirements
- Minimal construction traffic damage on site
- Substantially reduces dampness, mould & mildew by controlling moisture wicking through slabs, eradicating resultant problems with tiles or carpets lifting
- Reduces Slab curling and shrinkage cracks
- Provides space for running services such as cables, conduit, ductwork, chases, etc.;
- Eliminate the need for expensive mechanical piping systems on contaminated soils
- Can be fully ventilated to disperse Radon, Methane and other harmful gases.
- High standard of workmanship through the use of Approved Registered CUPOLEX® Installers.
- Considerable cost savings in poor load-bearing soils especially in expansive soils.

STANDARD FLOOR SLABS

Typically a 150mm (6") or a 300mm (12") thick CUPOLEX® floor slab is used for a standard floor such as residential or light commercial using CUPOLEX® and the corresponding accessory BETON STOP®. Where allowable bearing pressures are less than 100 kPa, additional reinforcements are used and a specific design is applied to reduce the imposed bearing pressures.

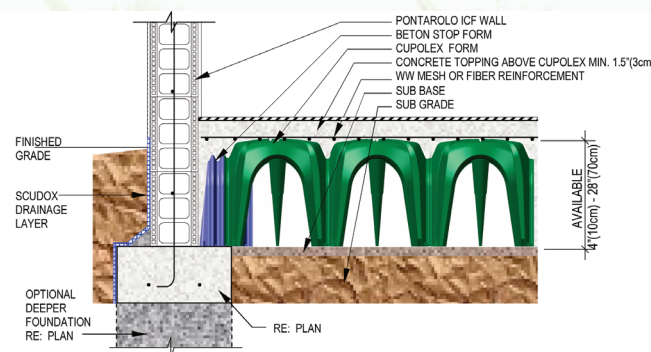
6x6 W4.0/4.0 (152x152 MW25.8/25.8) welded wire mesh with saw cuts or 152 x 152 MW34.9/34.9 (6x6 W5.4/5.4) mesh without saw cuts are used in the topping throughout the slab. Additional reinforcing is used where increased load capacity is required such as garage areas or heavy loaded floors.

A common criticism of wire mesh is that it settles in the fresh concrete and ends up lying on the granular base, rendering it completely useless. The wire mesh when placed on the CUPOLEX® elements is positioned exactly at the elevation required with no need to be lifted up into place.

Where top soil layers are thick, higher CUPOLEX® can be used to create a deeper slab. This replaces the hard fill that typically is required to bring the slab to level and eliminate the costs associated with importing, compacting and certifying engineered fill.

Each slab is specifically designed and includes; Stamped construction drawings with schedule indicating the number of CUPOLEX® and BETON STOP® required, the total concrete volume required and the reinforcements for the entire floor, an inspection and certificates from a Registered Professional Engineer on completion of each slab.

When the slab is ready for construction simply phone your Registered Approved Contractor and quote the reference number of your design to arrange delivery. The exact quantity of CUPOLEX® and BETON STOP® will be delivered to the project site. No cutting, wastage or disposal of the CUPOLEX® components is required reducing time and costs.



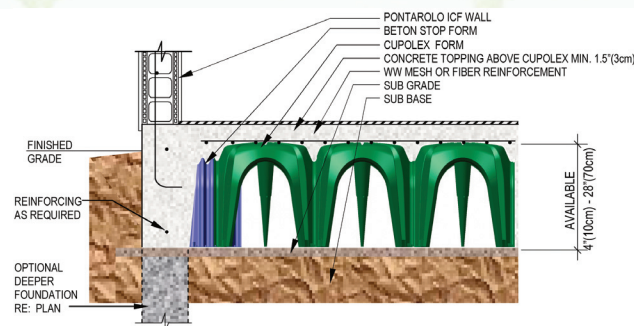
CONVENTIONAL FLOOR SLAB: HARDFILL REPLACEMENT, FLOATING SLABS OR CRAWLSPACES

Where conventional block base construction or concrete wall foundations are used, the CUPOLEX® domes can be placed between foundation walls to replace the compacted hard fill or clear gravel.

Advantages of the CUPOLEX® system include a reduction in:

- Labour / Subcontractors
- Hard fill or gravel and associated compaction and plant costs
- Concrete consumption
- Exterior footing size associated with retaining compacted engineered fill
- Minimal construction traffic damage
- Mould and mildew associated with conventional crawl spaces.

The CUPOLEX® units can be installed flush against the foundation wall without using BETON STOP®. On sloping sites various height CUPOLEX® units from 26cm (10") to 70cm(28") high can be used, stepping down the site to form a level upper surface. The CUPOLEX® slabs can also be stacked if finished floor elevations are required to be higher.



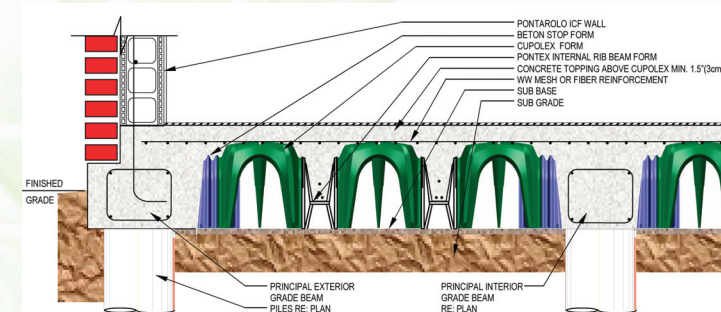
FULLY SUSPENDED STRUCTURAL FLOOR SLAB

Reasons for suspending a floor slab may include:

- Unsuitable ground conditions (very low bearing pressures) and expansive soils
- Bridging over public storm water and sewer lines
- Slope stability issues

The CUPOLEX® floor slab can be fully suspended on reinforced concrete piles. Additional reinforced internal ribs are then used in the slab by introducing PONTTEX®, the structural CUPOLEX® accessory to provide a structure capable of spanning between pile locations.

Very little additional work or material is required to provide a suspended floor slab system and in many cases exterior footing reinforcement remains unchanged. As with all slabs, each suspended CUPOLEX® floor is specifically designed to suit site conditions, pile numbers are optimized to limit additional costs. Specific design calculations, engineered drawings and Design Certificates are provided for each design by an Approved Registered Professional Engineer.



INDUSTRIAL/COMMERCIAL FLOORS

CUPOLEX® Dome Forming System can be specifically designed for use on industrial floors. Loads of more than 10 kPa can be accommodated with topping thicknesses ranging from 50mm (2") to 120mm (5") over the CUPOLEX® elements.

In industrial applications, the reinforcing cages, pad foundations and other load bearing wall lines can be fixed into place first. The CUPOLEX® elements can then be used between load bearing lines to act as hard fill replacement and to bring the slab up to the required elevation. The footings, tie beams and the floor slab can be poured in one operation.

Advantages of the CUPOLEX® industrial floor slab system include:

- Footings, grade and tie beams, load bearing wall lines cast monolithically with the floor slab
- Elimination of interior box forming without wasting concrete
- Reduced concrete consumption
- Reduced reinforcement usage
- Eliminate or reduce engineered or hard fill and compaction requirements beneath the slab controlling slab thickness
- Ease of transportation of components 1.2m (4') x 1.2m (4') x 1.9m (7') = 110 m² (1200sq.ft.)
- Reduced labour costs, 150 m² (1600 sq.ft) laid in 2 man hours, fast assembly with minimal site work requirements and construction traffic damage on site.

