



PRODUCT CATALOGUE

PT. BETON ELEMENINDO PUTRA



b-panel[®] & b-deck[®]
b-foam[®] Ultralight Architectural Facade
b-foam[®] Geofoam Grade[®]
b-foam[®] Floating Structure



History and Achievement

- 2007** PT Beton Elemenindo Putra begun operations
- 2009** First export of b-panel[®] (To India and Malaysia)
One week after a major earthquake which killed approximately 1000, b-panel[®] technology was featured at Kompas newspaper frontpage and subsequently was included in Kompas top 50 most prominent innovations
- 2010** Integrated EPS recycling system
Started real estate new product development with the large property developer in Bandung
- 2011** Conversion to fully biomass-fired boiler
- 2012** Lunched 2nd-generation b-panel[®] and carbon-graphite EPS b-panel[®] Neo
First b-foam Geof foam-Grade[®] Project
Won 2012 Singapore Environmental Achievement Award - Regional (ASEAN) Category Merit Award
- 2013** b-panel[®] was included in Green Building Council Indonesia's Green Listing for sustainable building material. With a total of 14 qualifying aspects, higher than any other products listed
First b-foam[®] Floating Structure project
First b-foam[®] Ultralight Facade project
Won 2103 Sustainable Business Award Indonesia, for best SME category
- 2014** Improved b-deck[®]: whitout need of formwork or vertical shotcreting
Introduced b-panel[®] Mortal Mix
- 2015** b-foam[®] Floating Structures won 2015 Archnesia Building Material Awards, Innovations Category
Largest b-foam Geof foam Grade[®] installation to date, at Cikampek - Palimanan (Cipali) toll road project (overpass abutment fills)
Largest b-foam[®] Floating Structure installaion to date, 300m-long water purification floating facility in Batam
- 2016** First b-panel[®] /b-deck[®] project in Brunei Darussalam and Filipina
First overseas b-foam[®] floating structure project, a two-story floating restaurant in Mines lake, Kuala Lumpur
The first floating bridge in Indonesia, erected utilizing b-foam[®] Floating Structure technology
- 2017** b-foam[®] Floating project in Brunei Darussalam - Bandar Seri Begawan Jetty
First shipment of b-panel[®] to Africa (Burkina Faso)
- 2021** Export of b-panel[®] material to Australia
- 2022** Support for the first time using Geof foam in the construction of the Trans Sumatra Toll Road, Join with HKI
- 2024** First b-foam[®] project : Dewatering method at Seadoo Canam Pantai Indah Kapuk 2

b-foam® EPS has 3 types of variants:

1. **Regular** : b-foam® EPS which is used for decoration, packaging, props/protectors of goods, contents of bean bags/furniture, handicrafts/handicrafts and others. Available densities: 9,10,11 kg/m³. Special order up to a density of 35 kg/m³.

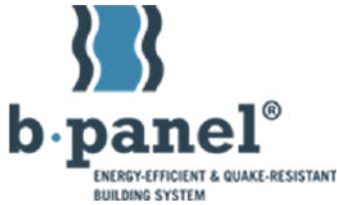


2. **Fire Retardant** : EPS b-foam® contains retardants agent for stop flame propagation in case of contact with flame. Type b-foam® is used for building materials, insulation, and geofom application. Available densities: 10, 12, 18, 15 and 22 kg/m³. Special orders up to a density of 35 kg/m³.

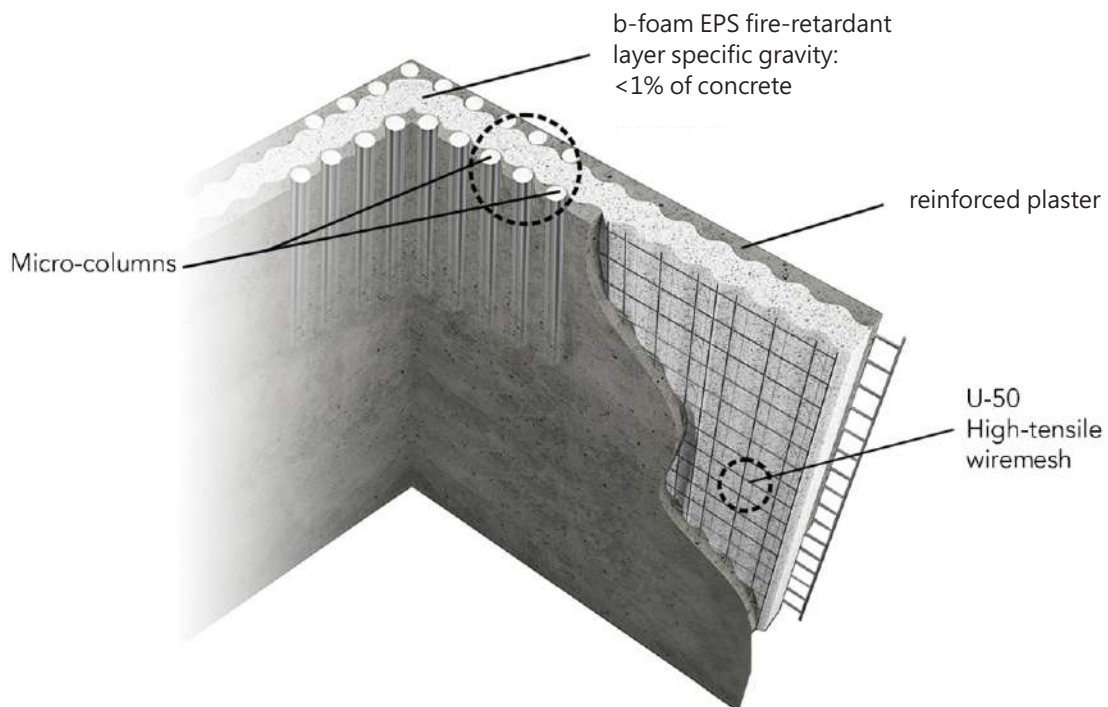
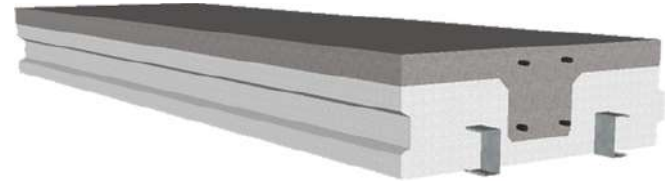


3. **b-foam Neo®** : superior EPS FR product containing carbon graphite, for highest performance temperature insulation applications, density 15 - 25 kg/m³.



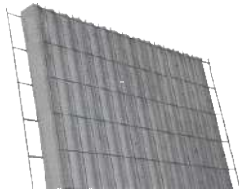


b-panel® / b-deck® is a concrete sandwich panel building system, insulated with b-foam® fire-retardant Expanded Polystyrene (EPS) layer. It offers excellent thermal & acoustic insulation, and exceptional typhoon & earthquake resistance



Benefits of b-panel® / b-deck® :

- Rigid** - monolithic structure (all walls act as one unit), highly resistant against break-ins, earthquake, and typhoon.
- Superior insulation against heat and humidity (up to 93% better).
- Acoustic barrier (STC 42 minimum, b-coustic+® : STC 45).
- Safe during fire - fire test at National Building Material Testing Center, Cileunyi: b-panel® 120 minutes @1000°C (BS 476 Part 22 Equivalent) b-deck® 160/180/160 minutes @1000°C w/loading.
- Rapid and material-efficient installation with modular cutting list system.
- Cost savings :**
 - Buildings are lighter, reducing the volume of foundations and structures
 - Modular cutting list, eliminates waste at sites
 - Reduced A/C consumption up to 40%



b-panel®
ENERGY EFFICIENT & QUAKE-RESISTANT
BUILDING SYSTEM

Versatile - for load bearing wall, partition wall with high hang load requirement, exterior wall

- Thermal insulation: Fire-Retarding (FR) b-foam® EPS 0.037 W/M.K (b-panel Neo® carbon-graphite EPS 0.035 W/M.K)
- Maximum span up to 6 meters without additional columns
- Hang load capacity: approx. 60 Kg per point
- Approx. 145 kg/m² finished, for ANY wall thickness (10-30 cm)



Double Panel

Applications: Main structures, retaining wall, lot boundary/party walls. Available final thickness : 20, 22, 24 cm

- Especially designed for high-load main structures, basement wall, and high security wall
- Total thickness starts at 20 cm



b-panel Neo®
ENERGY EFFICIENT & QUAKE-RESISTANT
PERFORMANCE BUILDING SYSTEM

For the outer walls of buildings facing east or west, high temperature gradient walls

- b-panel® made with high performance carbon-graphite EPS
- Thermal insulation: b-foam Neo® 50 EPS @0.035W/M.K
- Thermal performance is equivalent to >2x the density of regular EPS
- German Technology



b-coustic+®
PERFORMANCE THERMO-ACOUSTIC BUILDING SYSTEM

For external walls in noisy areas, music/recording studio partition walls

- b-panel® optimized for sound insulation
- Uses rockwool lining and air gaps for maximum comfort
- Increased soundproofing on average 8 dB better than standard b-panel® in frequencies 500-4000Hz

Available thickness: 10,15, & 20 cm

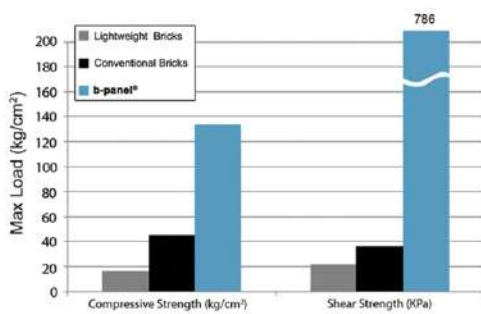


b-deck®
THERMALLY-INSULATED FLOOR & ROOF DECK

- Shield againsts sunlight and ambient outside temperature
- Complete thermal insulation, no thermal bridges
- Rapid installation without formwork
- Weight: 125-220 kg/m²
- Maximum span : 8 metres (FP-20)

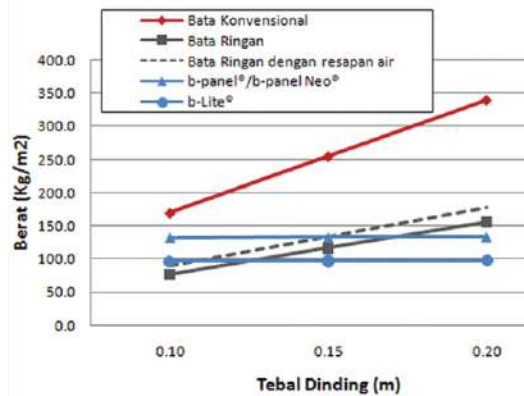
Technical Table

COMPRESSIVE AND SHEAR STRENGTH COMPARISON

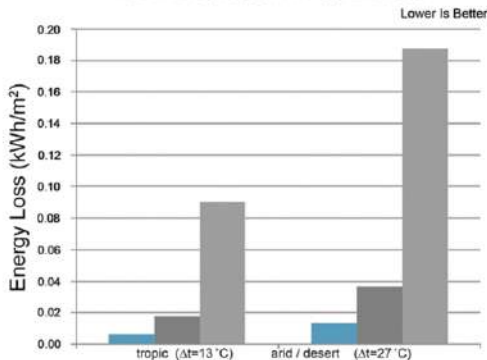


Sources : PT. Beton Elemenindo Putra R&D, ITB Civil Engineering Lab M. Z. Kabir and M. H. Nasab "Mechanical Properties of 3D Wall Panels Under Shear and Flexural Loading"

Kurva Perbandingan Berat

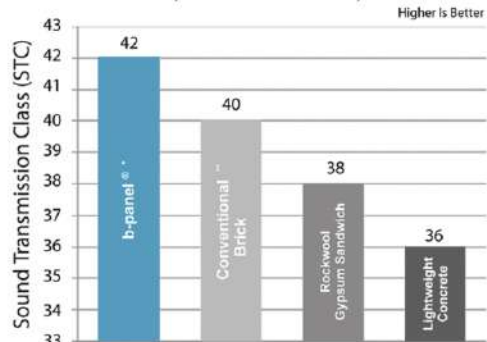


THERMAL CONDUCTIVITY COMPARISON



Sources : PT. Beton Elemenindo Putra R&D, AAC : A Lime-Based Technology (Ronald E. Barnett, P.E., 2005), plastics.org.nz

ACOUSTIC PERFORMANCE COMPARISON (Wall Thickness = 10 cm)



Sources : PT. Beton Elemenindo Putra R&D, ITB Physics Lab, MHE International (ASTM E90 Test), Diracdelta.co.uk Science & Engineering Encyclopedia
* 23 EPS Density
** With 12.5mm plaster on both sides

Wind resistance load table (b-panel®, b-panel Neo®)

Desired wall thickness	Panel Thickness	Wall height (m) and max. load (kg/m²) (Structural Application)															
		2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00
10 cm	4 cm	508	419	350	297	255	252	194	171	152	136	122	110	100	91	83	76
12 cm	6 cm	613	505	423	358	308	267	234	206	183	164	147	133	121	110	101	92
14 cm	8 cm	718	591	495	420	365	313	274	242	215	192	173	156	141	129	118	108

Max axial force : 4 ton per linear meter

Load Table - Floor Panel

b-deck FP-10/FP-10x

Live Load kg/m²	Hf mm	Ht mm	H mm	Ø1 mm	Span (m) dan Longitudinal Reinforcement (Ø2)												
					<1.5	2	2.5	3	3.5	4	4.5	5	5.5	6			
100	100	50	150	1D8	None	2D10	2D10	2D13	3D13								
250	100	50	150	1D8	None	2D10	2D13	3D13	3D16								

b-deck FP-15

Live Load kg/m²	Hf mm	Ht mm	H mm	Ø1 mm	Span (m) dan Longitudinal Reinforcement (Ø2)												
					<1.5	2	2.5	3	3.5	4	4.5	5	5.5	6			
100	150	50	200	2D8		2D8	2D8	3D8	2D10	3D10	2D13	3D13	2D19	2D22			
250	150	50	200	2D8		2D8	2D8	3D8	3D10	2D13	3D13	2D16	3D19				

b-deck FP-20

Live Load kg/m²	Hf mm	Ht mm	H mm	Ø1 mm	Span (m) dan Longitudinal Reinforcement (Ø2)												
					3.5	4	4.5	5	5.5	6	6.5	7	7.5	8			
100	200	50	250	2D10	2D8	2D10	2D10	2D13	2D13	2D16	2D16	2D16	3D16	3D16			
250	200	50	250	2D10	2D10	2D13	2D13	2D16	2D16	2D16	2D19	2D19	3D19	3D19			
400	200	50	250	2D10	2D13	2D13	2D16	3D16	2D19	2D19							

A new way of constructing - rapid, efficient, and superior end product

- No need for heavy equipment
- Smaller teams, faster completion
- Minimized material waste with cutting list modules

b-panel®

1 Rebar & panel installation

Install rebar on foundation beams, floor slabs, columns and beams, where the panels are to be installed. For steel structures, the rebar are welded onto the steel beams and columns. Tie the panel onto the rebar using tie wire.



2 Wiremesh reinforcement installation

Install cross braces on each corners of door and window openings. Mount U-mesh around the perimeter of door and window openings, and L-mesh for wall corner.



3 Support braces and M/E installation

Install supports, and perform alignment for the panels, so they are installed straight and each plane is perpendicular to each other. Installation of M/E lines by melting part of EPS using heat gun.



4 Plastering

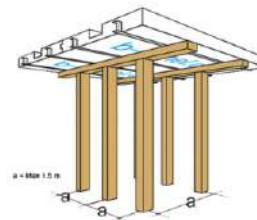
Apply plastering of concrete on both side of the panels using shotcrete method. Afterwards, install guidance and then continue to layer 2 and finishing by skim coat.



b-deck®

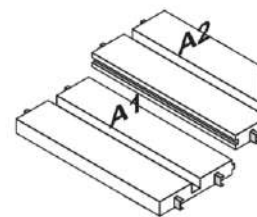
1 Support installation

Install the support using wood rafters, bamboo, scaffolding, or hollow pipe along transverse direction of joist (minor beam) every 1 – 1.5 m.



2 Module installation

Set up b-deck® module according to cutting list drawing.



3 Joist rebar installation

Install the rebar (refer to b-deck® load table) using b-deck® joist spacer. Ensure rebar protrude through main beam at 40D depth.



4 Concrete Casting

Set up b-deck® spacer every 1 m, and place the wire-mesh top of the spacer. Install additional formwork to ensure main beams are cast properly.





2 Story Home Lembang Bandung



3 Story Budiasih Residence Bandung



2 Story Residence Villa Duta, Bandung



3 Story Home Graha Citra Raya, Tangerang



Maja House Gallery Bandung



Performing Art Center Soreang, Bandung Regency



Sky Diving Pusdik Kopassus Batujajar Bandung



Wine Processing Plant Pelaga, Bali



2 Story Residence Ganggu, Bali



3 Story Bukit Hijau Residence Medan



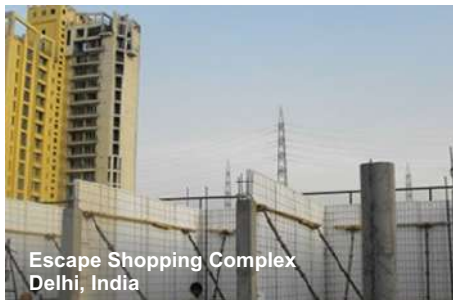
Hotel Sinkenken Legian, Bali



Dewi Sri Apartments Bali



Villa Ouagadougou Burkina Faso, Afrika



Escape Shopping Complex Delhi, India



Housing Project, Kampong Kiarong Brunei Darussalam



PPR Housing Project (88 Units) Perak, Malaysia



Luxury Villa Bangsar, Kuala Lumpur



Stella Hotel Johor, Malaysia

Architectural Facades | Canopies | Ornaments | Profiles | Signages


- ✓ Ultralight, less than 1/20 the weight of conventional precast facades
- ✓ Reduces building loads and improves earthquake safety
- ✓ Computerized CNC cutting machine capable of accurately forming unique designs
- ✓ Delivered pre-finished ready to paint
- ✓ Rapid installation without the need of heavy machineries

Technical Specifications

Core : Fire-Retardant (FR), construction-grade EPS (expanded polystyrene) foam
 Casing : Durable Cementitious Coating with fiber mesh reinforcement
 Finish : Ready to paint or special order finish (texture, terracota, betonlooks)



**Sport Club Jadeite BSD
Jakarta**



**Gate Pasar Kreatif Jawa Barat
Bandung**



**Mahata Apartment Serpong
Tangerang**



**Luwansa Hotel
Manado**



**Damai Kristus Church Kampung Duri
Jakarta**



**Darul Jannah Mosque
Jakarta Selatan**



**Pulman & Ibis Hotel
Bandung**



**Neo Hotel Gajahmada
Pontianak**



**Aston Sentul Lake Resort
& Conference Center Bogor**



**Alphabet Blocks
Export to Australia**



**Al-Azhar Memorial Garden
Karawang**



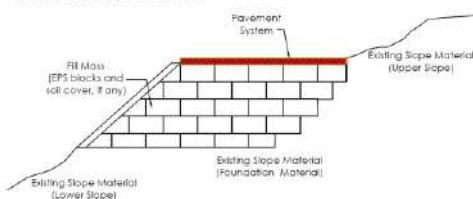
**Retaining Walls | Road Construction/Widening | Overpass Abutments/Ramps
Landscaping | Tribune Seats | Raised Floors**



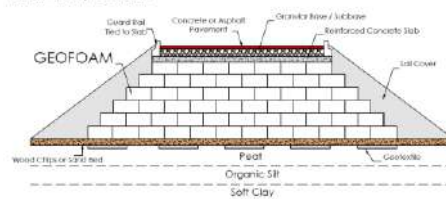
Cisumdawu Toll Road
Sumedang

b-foam® Geofoam-Grade® designed for light geotechnical backfill, suitable for manufacturing/ road widening, retaining walls, flyover/overpass bases, land elevation/landscaping, with high QC standards and precise cuts.

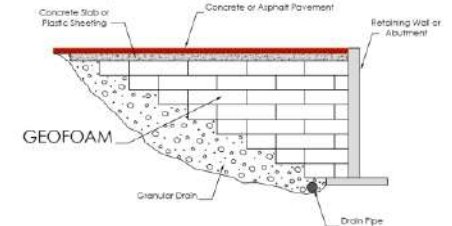
EMBANKMENT / ABUTMENT



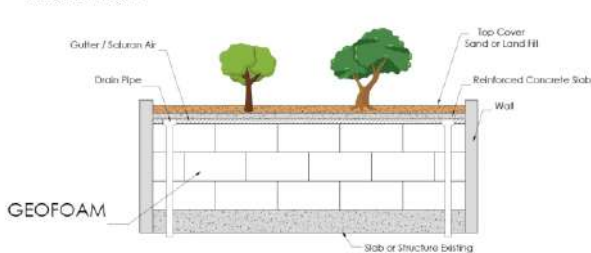
ROAD WAY / DPROAD



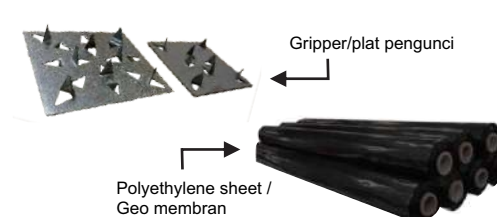
EMBANKMENT / ABUTMENT



RAISED FLOOR



Accessories :

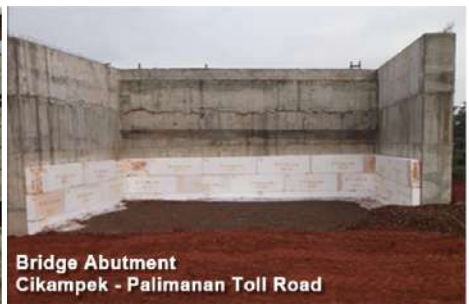


- ✓ **Ultralight** (specific mass is 1/50 or just 2% of soil) - thus significantly reduces soil settlement and slope failures
- ✓ **Very high compressive strength to weight ratio** - thus can be used for heavy load application
- ✓ **Super-long service life** - does not decay (non-biodegradable) and does not oxidize in air, water, and most other natural elements
- ✓ **Save time (save cost)** - super-light, pre-cut EPS blocks reduce logistical challenges
- ✓ **Precise dimension** - ensure ease of installation, does not depend on weather as much

Technical Specifications

- Fire Retardant (FR), b-foam[®] Geofoam-Grade[®] EPS (Expanded Polystyrene)
- Adheres to ASTM D6817-07 (US standard) and JIS
- Modular block : 600x120x60 dan 600x100x60

Type	GG 12	GG 15	GG 19	GG 22	GG 29
Density, min., Kg/m ³	11.2 (0.70)	14.4 (0.90)	18.4 (1.15)	21.6 (1.35)	28.8 (1.80)
Compressive Resistance, min., kPa (psi) at 1%	15 (2.2)	25 (3.6)	40 (5.8)	50 (7.3)	75 (10.9)
Compressive Resistance, min., kPa (psi) at 5%	35 (5.1)	55 (8.0)	90 (13.1)	115 (16.7)	170 (24.7)
Compressive Resistance, min., kPa (psi) at 10%	40 (5.8)	70 (10.2)	110 (16.0)	135 (19.6)	200 (29.0)
Flexural Strength, min. kPa (psi)	69 (10.0)	172 (25.0)	207 (30.0)	276 (40.0)	345 (50.0)



**Floating Structure Solutions for:
Commercial Area | Restaurant | Recreation Facilities | Dock**



- ✓ Ultra-long life - does not decay/degrade, chemically and dimensionally stable - 25 year floating warranty
- ✓ Solid foam core - impossible to leak and sink
- ✓ High buoyancy (Max Load : 5 Ton/m²)
- ✓ Environmentally responsible production - recycled foam blend, CFC-free, Singapore Green Label compliant casing

Technical Specifications

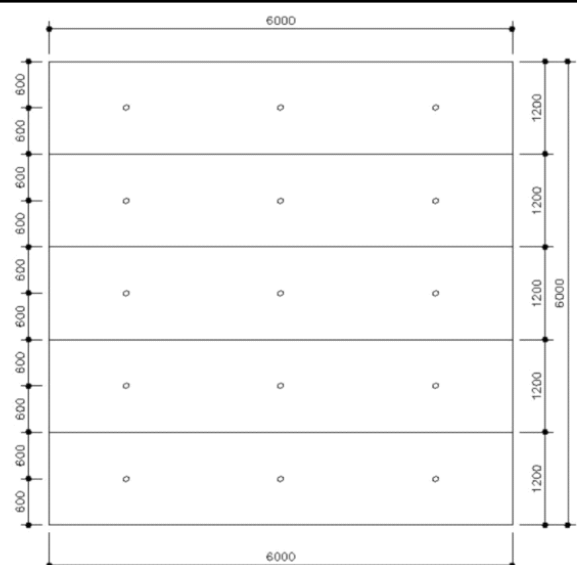
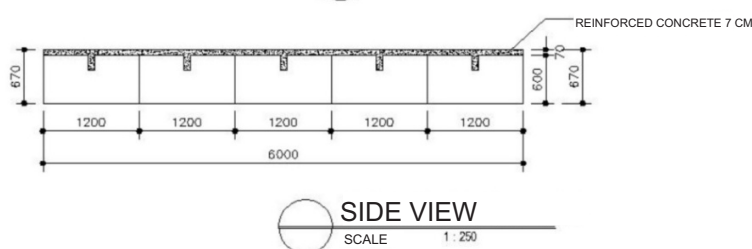
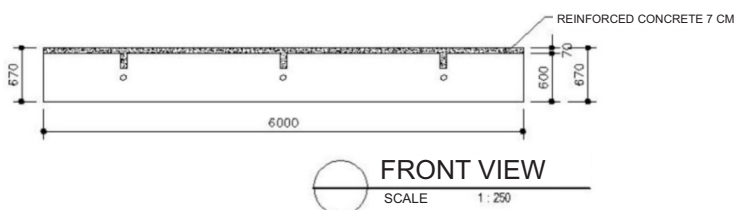
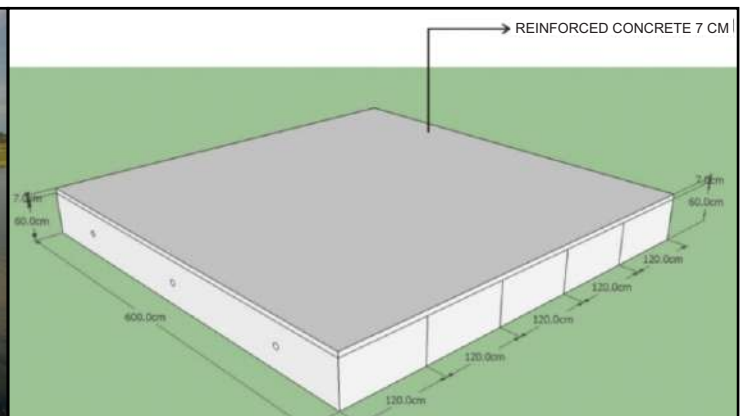
Core : b-foam[®] Construction-grade expanded polystyrene (EPS)

Casing : Marine-grade casing

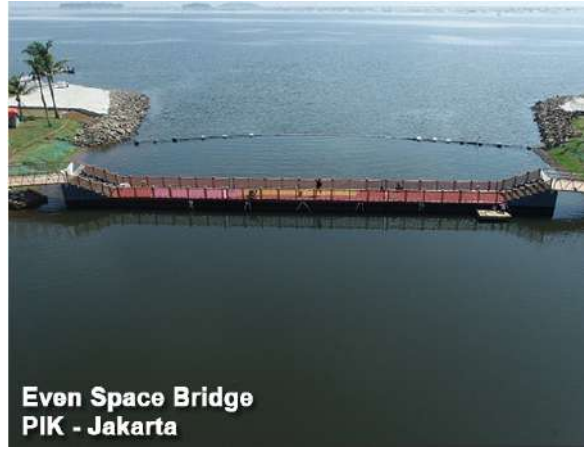
Positive-lock grooves ensures adhesion with concrete casting top

	Heavy-Duty (HD)	Light-Duty (LD)
Foam dalam	b-foam® Construction-Grade FR EPS (Expanded Polystyrene), kepadatan dan campuran berdasarkan beban yang diterima	b-foam® Construction-Grade FR EPS (Expanded Polystyrene), kepadatan dan campuran berdasarkan beban yang diterima
Penyerapan air	< 1% vol/vol setelah 30 bulan, < 5% setelah 15 tahun (Below grade)	
Kestabilan dimensi	+/- < 2 % (ASTM Test Method D2126)	
Lapisan pelindung	High-tensile (20 Mpa) polymer, ketebalan rata-rata 1000 mikron tiap tepi, 500 mikron sisi bawah	High-tensile (20 Mpa) polymer, ketebalan rata-rata 500 mikron untuk semua tepi
Beban hidup maks.	hingga 5 tons/m ²	hingga 1 ton/m ²
Garansi	30 tahun daya apung dan kapasitas beban 10 tahun lapisan pelindung	10 tahun daya apung dan kapasitas beban 1 tahun lapisan pelindung
Faktor keramahan dan lingkungan	Tidak mengandung zat kimia berbahaya seperti Merkuri, Kadmium, Timbal, VOCs. Tidak mencemari perairan sekitarnya. bersertifikat Singapore Green Label.	

BASIC PONTOON CONFIGURATION



PONTOON PLAN
SCALE 1:250





Innovation Category 2015



2013 Indonesia Winner - Best SME



THE SINGAPORE
ENVIRONMENTAL
ACHIEVEMENT
AWARDS
Singapore Environment Council

Merit Winner - Regional (ASEAN) Category
2012 Singapore Environmental Achievement Award

BETON WORKS



PT. BETON ELEMENINDO PUTRA

Factory, Headquarters & Showroom

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