LiGrA™

Lightweight Green Aggregates

Ref: JCP/08/2022/007

JOE Green Concrete Panel Profile

JOE™ just one earth

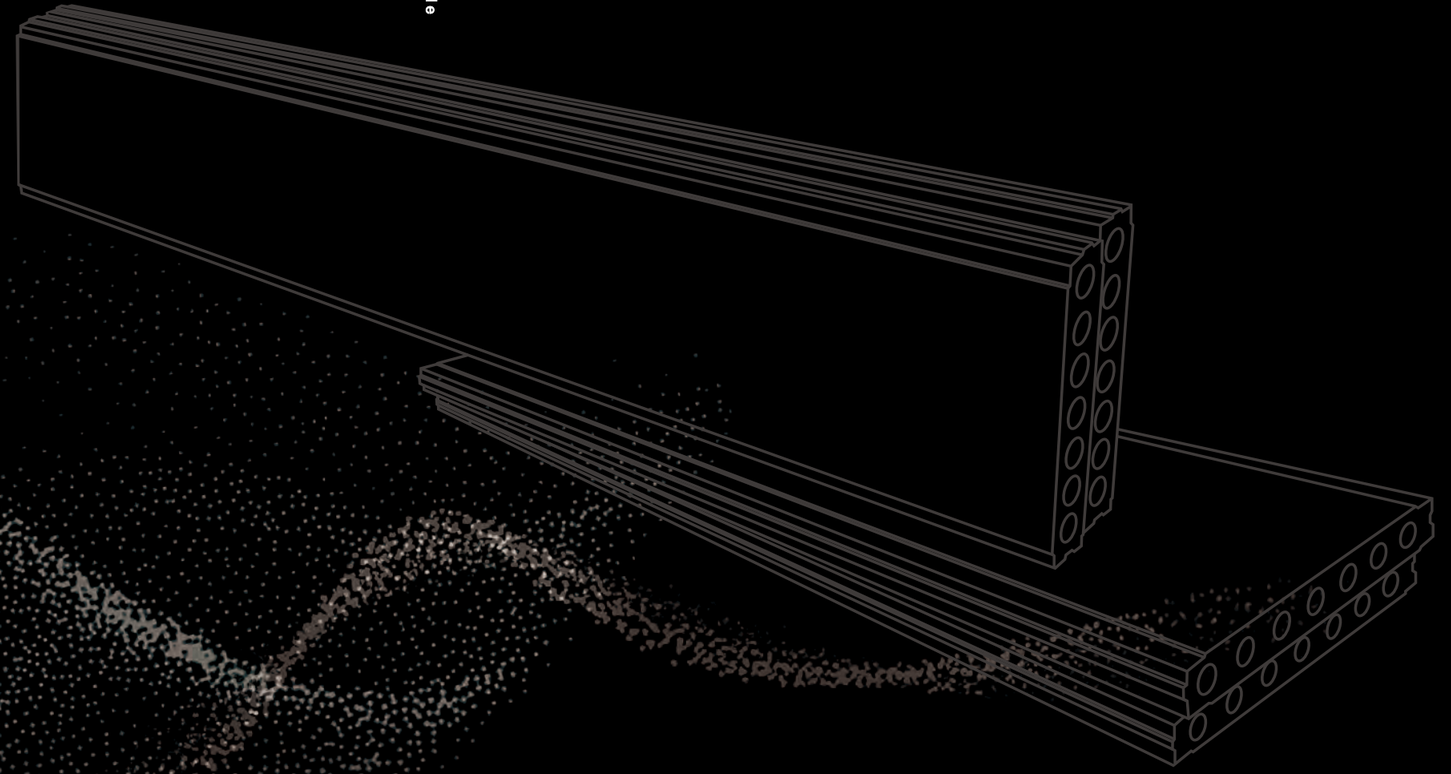
green concrete panel

www.joegreenpanel.com

ENTERPRISE 50

Celebrating Singapore's Enterprising Spirit 2021

SINGAPORE ENTREPRENEUR 100 AWARD YEAR 2021 WINNER



E-Catalogue :

Contact Us :

GREEN MANUFACTURER

ZERO WASTE MANUFACTURER

RECYCLED GREEN CONCRETE

QUALITY

SUPER LIGHT WEIGHT

SUPER FLAT SKIM COAT ONLY

8M

CUSTOMIZED DESIGN & SIZES EASY HOUSEKEEPING












Boediman WIDJAJA, MBA
Pendiri dan CEO JOE Green Group

"Menciptakan dan Mengembangkan bahan baku agregat ringan yang ramah lingkungan dari limbah konstruksi yang turut mendukung tantangan iklim global untuk membangun masa depan yang berkesinambungan."

MENUJU HIJAU MENUJU GLOBAL





JOE™

Peduli & Antusias

Kita hanya memiliki satu bumi (JOE – Just One Earth), yang harus kita jaga dan lindungi dari bahaya pemanasan global, polusi dan eksploitasi alam yang berlebihan.

JOE Green adalah pabrikan tanpa limbah. Semua hasil dinding beton pracetak yang tidak lulus pengendalian mutu kontrol kualitas akan didaur ulang kembali.

JOE Green adalah perusahaan pemegang sertifikat ISO 9001: 2015 Sistem Pengendalian Mutu yang berkontribusi dalam melindungi lingkungan hidup secara berkesinambungan. Selain itu JOE Green juga memiliki ISO 14001:2015 untuk kinerjanya dalam memperbaiki efisiensi pabrik, penggunaan sumber daya, pengurangan limbah dan untuk desain dinding yang aman dan berkualitas. Serta dengan ISO 45001:2018 sebagai panduan untuk menciptakan lingkungan kerja yang aman dan sehat sehingga meminimalisasi kelalaian dan kecelakaan. Sertifikasi ini disesuaikan dengan standar Singapura BizSAFE Star.

Saat ini JOE Green diakui sebagai produk yang ramah lingkungan dan super efisien, serta terbukti menggunakan limbah bangunan sekurang-kurangnya 30% dari keseluruhan bahan baku. Produk kami dipercaya oleh para profesional developer, arsitek, konsultan dan kontraktor bereputasi di Singapura dan di Internasional untuk proyek-proyek prestisius mereka di Singapura, Malaysia, Kamboja dan Indonesia.





Daftar Isi

Tanpa Limbah

PERENCANAAN RAMAH LINGKUNGAN YANG BERKESINAMBUNGAN

Pembangunan yang pesat adalah penyumbang terbesar dalam jejak karbon karena beton adalah komponen utama dalam lingkungan binaan (8% dari emisi CO2 global 2019). JOE Green dan Gramata Fordea dalam hal ini memberikan solusi pengurangan emisi karbon secara holistik.

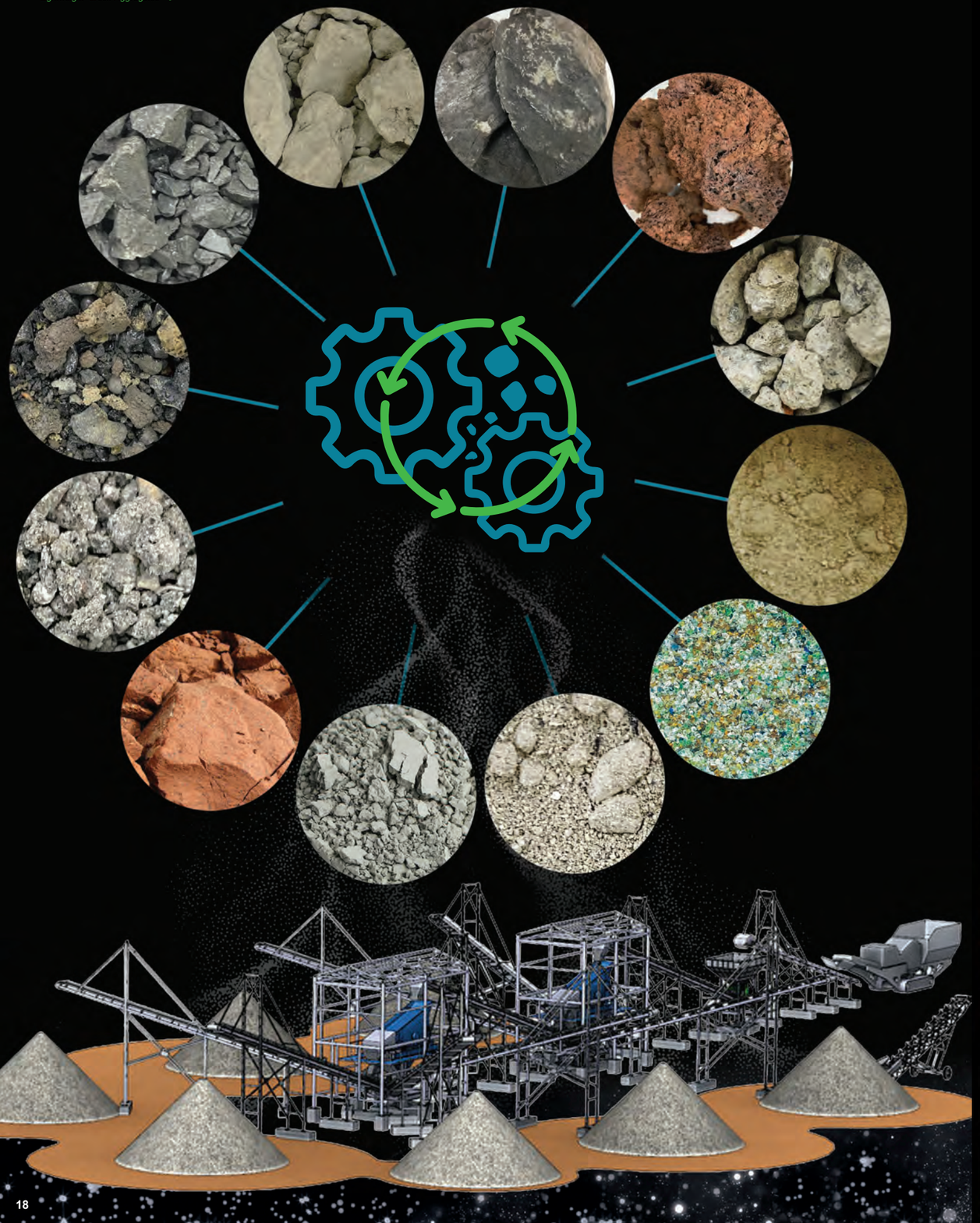
Singapura secara konsisten memperhatikan pencarian solusi untuk pemakaian air, bahan pangan, bahkan pasir, limbah untuk beton dan terbatasnya lahan serta makin banyaknya limbah menjadi dilema yang serius.

Misi kami memanfaatkan limbah menjadi bahan baku baru untuk beton dan industri lain adalah solusi yang sangat krusial. Karena besarnya kebutuhan akan agregat ini, maka makin besar volume limbah yang kami pergunakan untuk didaur ulang.

DAMPAK SOSIAL DAN EKONOMI DARI EMISI KARBON

Berbagai Bahan Limbah Industri

Daur Ulang

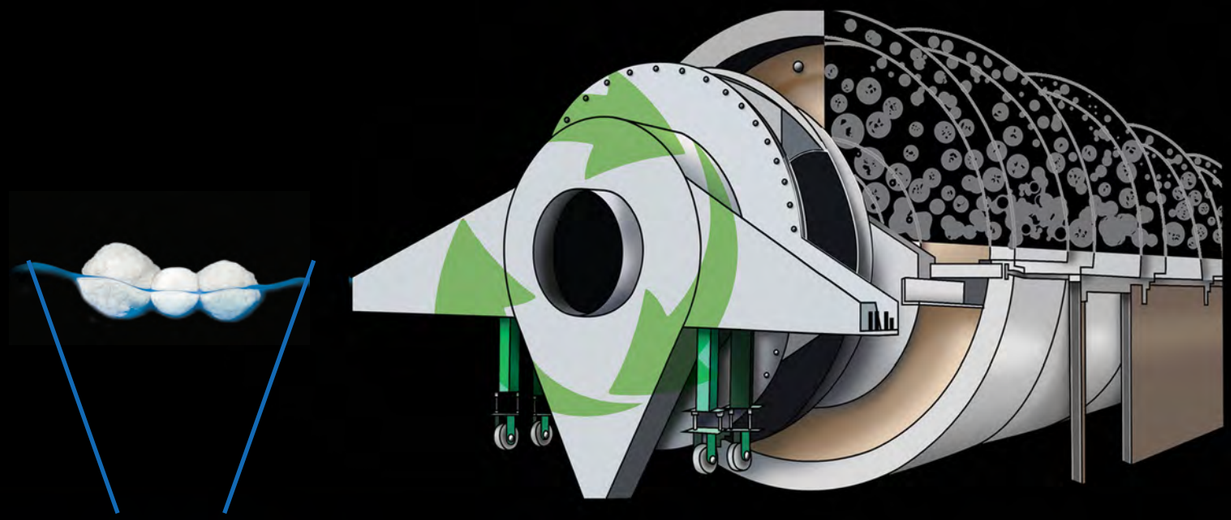


Teknik Rekayasa
Agregat Ringan Ramah Lingkungan

Proses

Kami telah bekerja sama dengan produsen inovatif yang berkaliber untuk menciptakan perangkat yang berteknologi tinggi dan hemat energi dengan tingkat emisi karbon yang rendah.

Menggunakan peralatan berteknologi mutakhir untuk mengubah berbagai macam limbah menjadi Agregat Ringan Ramah Lingkungan untuk dapat dipergunakan di pelbagai industri.

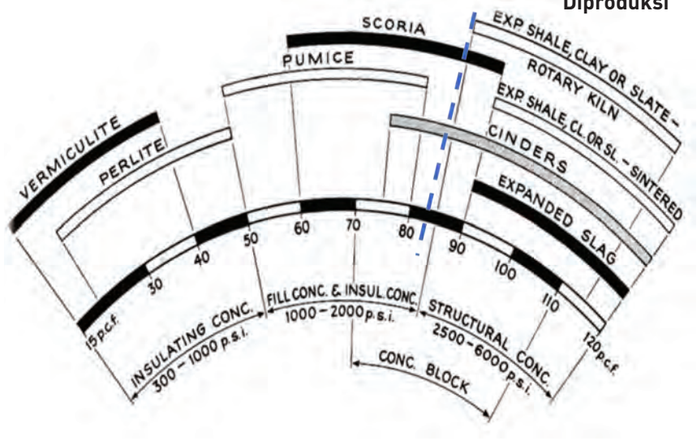


Apa itu Agregat Ringan Ramah Lingkungan?

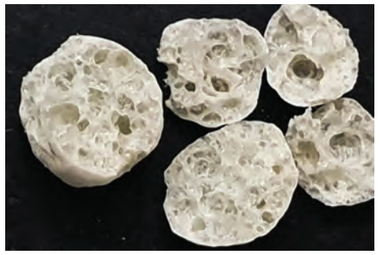
Agregat Ringan adalah butiran atau pellet dari bahan ringan yang memiliki banyak aplikasi. Mereka dapat ditambang dari sumber alami atau diproduksi menggunakan mineral.
Agregat ringan ramah lingkungan (LiGrA), di sisi lain, diproduksi dari bahan limbah.

Agregat Ringan dari Alam

Agregat Ringan yang Diproduksi



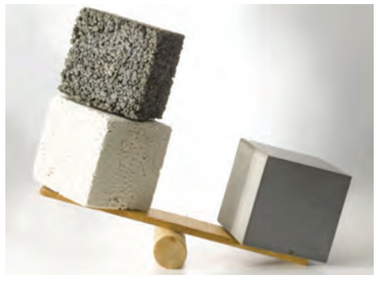
Struktural LiGrA mempunyai pori-pori halus yang dikemas padat

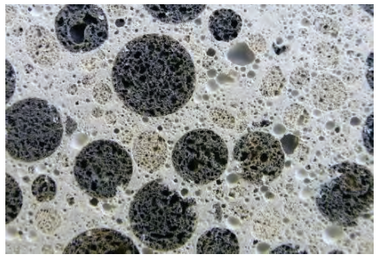


Non-Struktural LiGrA mempunyai pori-pori kasar yang dikemas secara longgar

Apa itu Beton Ringan Ramah Lingkungan ?

Beton ringan ramah lingkungan diproduksi dengan mengganti agregat-agregat yang berat dengan yang ringan.





1 m^3 Berat Beton Normal

Semen	Agregat Halus **(Pasir)**
Air	Agregat Kasar **(Granit)**

Densitas 2400 kg/m^3

Sebagian atau sepenuhnya diganti

1 m^3 of Beton Ringan

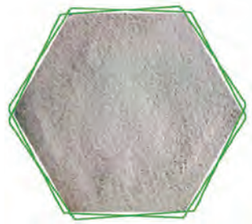
Semen	Agregat Halus **(LWA)**
Air	Agregat Kasar **(LWA)**

Densitas 800 hingga 2000 kg/m^3 untuk aplikasi struktural
&
Densitas di bawah 800 kg/m^3 untuk aplikasi non-struktural

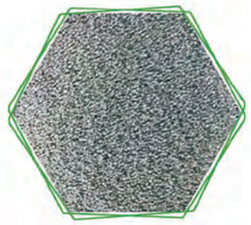
JOE™ joegreenpanel.com

Ukuran LiGrA™

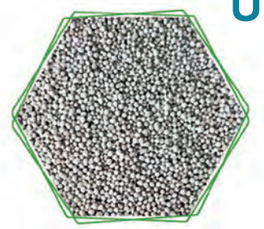
Lightweight Green Aggregates



0.1 - 0.3 mm



0.25 - 0.5 mm



0.5 - 1 mm

Ukuran Agregat Ringan Ramah Lingkungan (LiGrA)

1 - 2 mm

2 - 4 mm

4 - 8 mm

8 - 16 mm

Bangunan Berstruktur Ringan yang Dibangun dengan Beton Ringan

Duke Energy Centre (USA)

Heidrun Platform (Norway)

Wellington Stadium (New Zealand)

The Nordhordland Floating Bridge

Apa solusinya ?

LiGrA™
Lightweight Green Aggregates

LiGrA dengan teknologinya mampu mengubah LIMBAH menjadi AGREGAT RINGAN RAMAH LINGKUNGAN sebagai bahan baku BETON RINGAN RAMAH LINGKUNGAN.

- Menyediakan Solusi untuk Mendaur Ulang Sampah
- Mengurangi Masalah Tempat Pembuangan Akhir (TPA) Limbah & Sampah
- Mengurangi Eksploitasi Sumber Daya Alam
- Memproduksi Produk yang Lebih Unggul dari Bentuk Aslinya

BETON RINGAN RAMAH LINGKUNGAN

LIMBAH

AGREGAT RINGAN RAMAH LINGKUNGAN

Keunggulannya

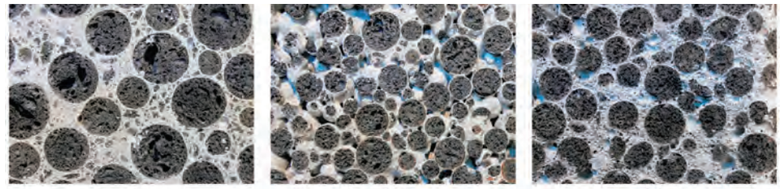
- Hemat biaya dan waktu konstruksi
- Hemat biaya penanganan dan transportasi
- Hemat biaya fondasi
- Struktur yang lebih kuat & tahan lama
- Ketahanan gempa yang lebih tinggi
- Umur Bangunan Lebih Lama
- Hemat lebih banyak ruang antar kolom
- Hemat biaya lintel & stiffener
- Kapasitas angkat lebih rendah
- Hemat energi
- Membangun lingkungan yang berkelanjutan

Keunggulannya

- Ekstra ringan & kuat
- 100% dapat terurai alami & didaur ulang
- Ramah Lingkungan
- Emisi karbon yang lebih rendah
- Ekonomis & kompetitif
- Aman untuk kesehatan
- Tidak mudah terbakar
- Tahan api
- Isolasi termal yang baik
- Peredam suara
- Daya serap air rendah

Keuntungan Beton Ringan Daur Ulang Melebihi Beton Pada Umumnya

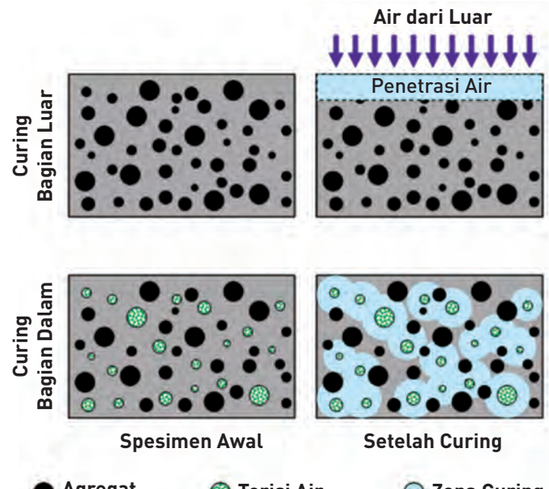
INTERNAL & EKSTERNAL CURING	**MENDAPATKAN KEKUATAN TERUS MENERUS**
ANTARMUKA YANG KUAT ANTARA AGREGAT & SEMEN	**DURABILITAS SEUMUR HIDUP**
KOMPATIBILITAS MODULUS AGREGAT & SEMEN	**DISTRIBUSI TEKANAN YANG SERAGAM**



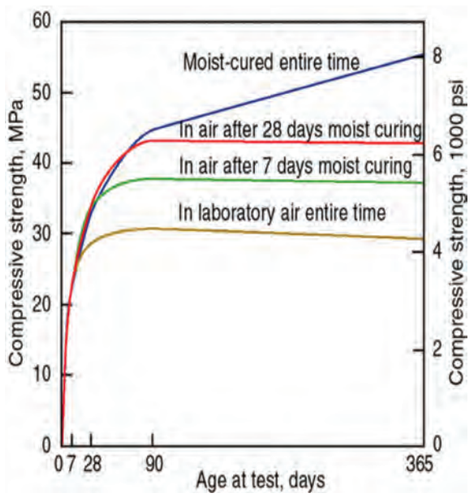
(a) Gambar beton ringan struktural dengan struktur matriks padat;
(b) Gambar beton agregat ringan dengan struktur pori terbuka;
(c) Gambar beton agregat ringan dengan matriks berpori yang mengisi struktur pori terbuka

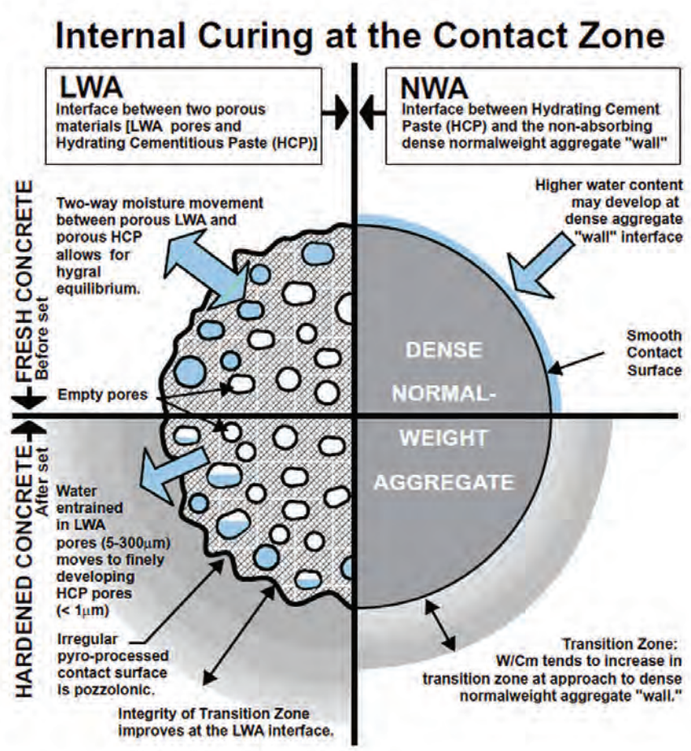
Peluncuran Kapal Berbahan Beton Ringan U.S.S. SELMA pada tahun 1919

Tahun 1919 : 26.7 MPa
Tahun 1980 : 55.2 MPa



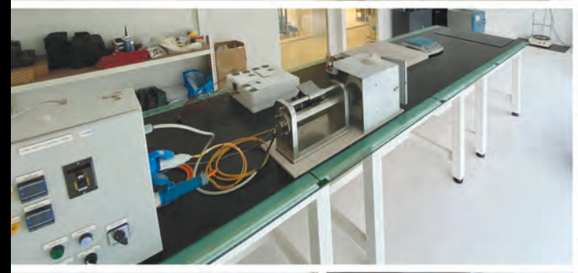
KINERJA BETON RINGAN YANG LUAR BIASA

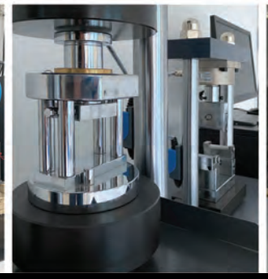




Kami adalah Inovator LiGrA

Teknologi LiGrA secara konsisten berkolaborasi dengan Institusi dari beberapa universitas terkemuka, profesional dan pemain industri menjadi bahan bangunan masa depan untuk industri konstruksi. Formulasi kami menghasilkan banyak produk baru yang menawarkan solusi efisiensi biaya, kualitas tinggi dengan mengikuti perkembangan teknologi untuk mendobrak teknologi baru. Laboratorium R & D dengan teknologi canggih bersama ilmuwan dan insinyur profesional yang berdedikasi untuk terus menerus mengembangkan produk baru ramah lingkungan untuk kelestarian masa depan. Sejalan dengan dunia "RENCANA MENUJU RAMAH LINGKUNGAN".

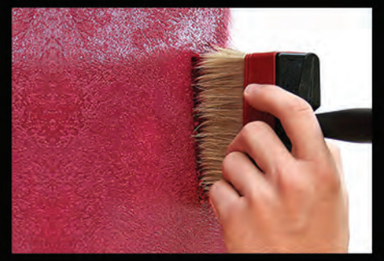




Agregat Ringan Ramah Lingkungan Penggunaan LiGrA

Isolasi Termal pada Atap, Lantai dan Pintu Tahan Api

Plester & Semen Instan Tahan Panas



Cat & Wallpaper Tahan Panas

PPVC & PBU Beton Pracetak

Bahan-Bahan Bangunan Ringan

Ready Mix Ringan, Beton Ringan & Industrialised Building System (IBS)

Beton & Struktur Apung

Reservoir Ladang Minyak

Beton Polimer untuk Perabotan Kamar Mandi & Meja Dapur

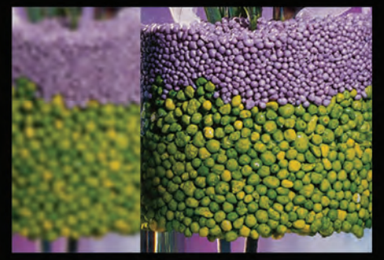
Aplikasi Geoteknik (Dinding Penahan, Stabilitas & Fondasi Tanah)

Pengolahan Air Limbah

Campuran untuk Badan Kendaraan

Media Hidroponik

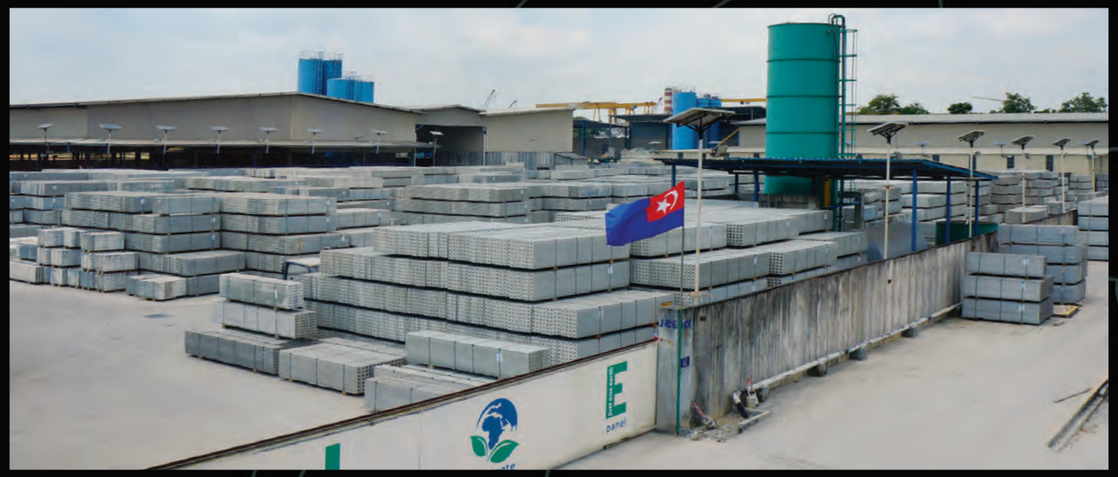
Media Filtrasi



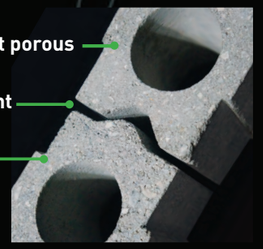
Bahan-Bahan Dekoratif


Waste Materials


Minimum 30% RCAs

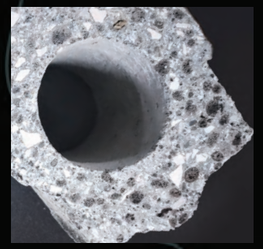


JOE GREEN PANEL DESIGN & RECESS



XS / X5

Thickness : 75 - 200mm
Nominal Weight : 128 - 281 kg/m^2
Fire rating : 1 - 4 Hours
Sound Insulation : STC 47 - 58
Nominal Density : 2,200 kg/m^3
Water Absorption : 6%
Compressive Strength : >40 MPa



X3

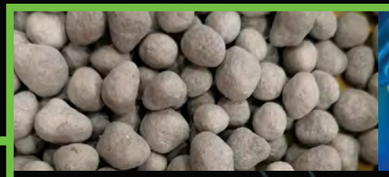
Thickness : 75 - 200mm
Nominal Weight : 93 - 204 kg/m^2
Fire rating : 2 - 4 Hours
Sound Insulation : STC 45 - 54
Nominal Density : 1,600 kg/m^3
Water Absorption : 11%
Compressive Strength : >25 MPa

X2

Thickness : 75 - 200mm
Nominal Weight : 84 - 166 kg/m^2
Fire rating : 2 - 4 Hours
Sound Insulation : STC 41 - 50
Nominal Density : 1,300 kg/m^3
Water Absorption : 14%
Compressive Strength : >15 MPa

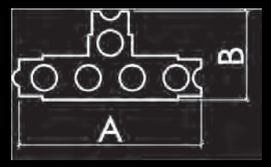
X1

Thickness : 75 - 200mm
Nominal Weight : 58 - 115 kg/m^2
Fire rating : 2 - 4 Hours
Sound Insulation : STC 39 - 48
Nominal Density : 900 kg/m^3
Water Absorption : 15%
Compressive Strength : >5 MPa



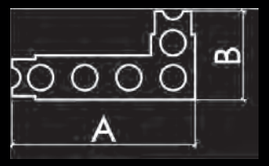
Content : Lightweight Green Aggregates
Characteristic : Xtra Light, Solid, Strong
Performance : Lighter Than Other Hollow-Core Wall Panels
High Fire Resistance
Low Water Absorption
High Sound Insulation
Better Compressive Strength
Green & Environmentally Friendly
Economic & Competitive
Skim Coat Finishing Only

T-Joint



Thickness available		Dimension
75mm, Ø 40mm	:	A=290mm : B= 143mm
90mm, Ø 58mm	:	A=290mm : B= 185mm
100mm, Ø 64mm	:	A=290mm : B= 195mm
150mm, Ø 40mm	:	A=290mm : B= 270mm
200mm, Ø 64mm	:	A=290mm : B= 350mm

L-Joint



Thickness available		Dimension
75mm, Ø 40mm	:	A=290mm : B= 143mm
90mm, Ø 58mm	:	A=290mm : B= 185mm
100mm, Ø 64mm	:	A=290mm : B= 195mm
150mm, Ø 40mm	:	A=290mm : B= 270mm
200mm, Ø 64mm	:	A=290mm : B= 350mm

Other Special Customization Available

Width: 100mm, 200mm, and 300mm
Numbers of Tensile Wire : 8 - 12 nos
Solid Panels
M&E Recess
Groove Lines
Noise Barrier Panel
Anti Blast Design with Rebar and Grouting
Stiffener Panel with Rebar and Grouting

Customized

Width : 600mm, 300mm, 200mm, 100mm

Thickness available :
200mm, Ø 64mm
150mm, Ø 40mm
100mm, Ø 64mm
100mm, Ø 40mm
90mm, Ø 58mm
75mm, Ø 40mm

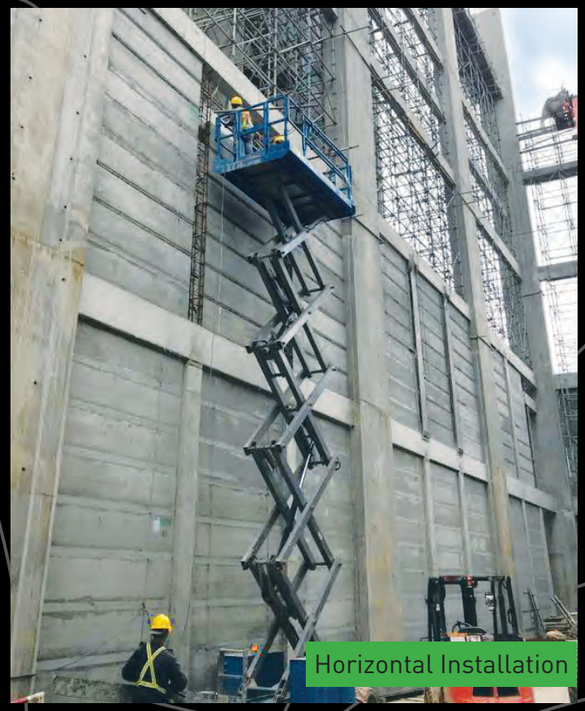
Note: Solid Panels Available (Except 75mm)Customized Panels Available

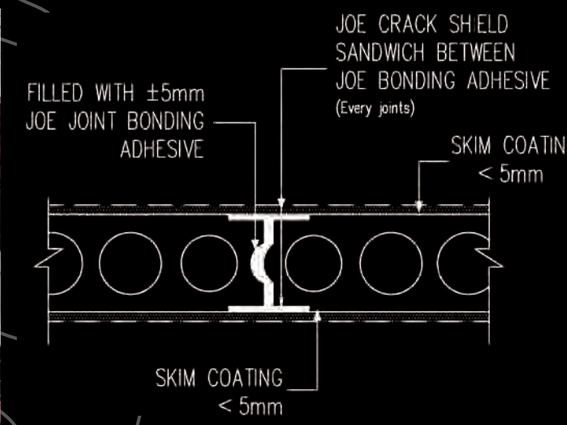
Standard (XS / X5)		Max Panel Height
200mm Solid	:	max 6.0m (with wire)
150mm Solid	:	max 6.0m (with wire)
100mm Solid	:	max 6.0m (with wire)
200mm, Ø 64mm	:	max 6.0m (with wire)
150mm, Ø 40mm	:	max 6.0m (with wire)
100mm, Ø 64mm	:	max 5.2m (with wire)
100mm, Ø 40mm	:	max 6.0m (with wire)
90mm, Ø 58mm	:	max 4.5m (with wire)
75mm, Ø 40mm	:	max 3.3m

Note: Panel above 3.3m will be wired for safety & impact strength

X1 & X2 & X3		Max Panel Height
X1 100mm, Ø 64mm	:	max 5.2m (with wire)
X1 100mm, Ø 40mm	:	max 6.0m (with wire)
X2 100mm, Ø 64mm	:	max 5.2m (with wire)
X2 100mm, Ø 40mm	:	max 6.0m (with wire)
X3 100mm, Ø 64mm	:	max 5.2m (with wire)
X3 100mm, Ø 40mm		max 6.0m (with wire)
Reinforcement Tensile Wire	:	Tensile Strength min. 600 MPa (Ø3, Ø4.5, Ø5)
Recess Design	:	depth 6mm width 40mm


Vertical Installation


Horizontal Installation




Reinforced with High Tensile Wire for Long Panel


Customized with Rebar & Grout

JOE Beyond LiCrA Test Reports

*Skim Coat on Both Sides ** Thin Plasters on Both Sides *** Plaster on Both Sides

With M&E ^Without Wire ^^With Wire { } Acoustic Assessment

tested by: TUV SUD PSB Singapore, SETSCO, Admaterials Technologies, SIRIM QAS INTERNATIONAL, CPG, fischer innovative solutions, HILTI, MULTIFIX™

Functional Requirements	JOE Green Standard Concrete Panel					
	75mm (Ø40mm)	90mm (Ø58mm)	100mm (Ø40mm)	100mm (Ø64mm)	150mm (Ø40mm)	200mm (Ø64mm)
ASTM - E90						
Sound Insulation (STC)	STC 47*	STC 48*	STC 52*	STC 49* {STC 50-51**}	{STC 55}	{STC 56-58}
ASTM C 518						
Thermal Conductivity (W/m^{o}K) K-value	0.675	0.6796	1.194	0.665	N/A	N/A
Thermal Resistance (m^{2} ^{o}K/W) R-value	0.111	0.132	0.0832	0.1484		
BS 476: Part 22: 1987						
Fire Resistance						
Integrity	132Mins*	68Mins*	132Mins#*	132Mins*	N/A	N/A
Insulation	125Mins*	68Mins*	132Mins#*	131Mins*		
Deflection Test (mm)	33mm	65mm	42mm	25mm		
Difference of Area Under Curve with Standard (%)	0.1	0.1	0.0	0.2		
Fire Resistance (4 Hours, Single Wall)						
Integrity	N/A	N/A	N/A	N/A	260Mins*	260Mins*
Insulation					260Mins*	260Mins*
Deflection Test (mm)					35mm	19mm
Difference of Area Under Curve with Standard (%)					-0.1	0.1
BS EN 772						
Compressive Strength - Cube	57.90 N/mm^{2}					
Compressive Strength - Section	42.8 N/mm^{2}	31.6 N/mm^{2}	48.2 N/mm^{2}	37.0 N/mm^{2}	50.8 N/mm^{2}	34.8 N/mm^{2}
SS 271: 1983						
Water Absorption (24 hrs Immersion) - Setsco Labs (Should Not Exceed 23.5%)	7.15 %	7.16 %	7.81 %	6.63 %	6.37 %	5.89 %
Drying Shrinkage - Setsco Labs (Should Not Exceed 0.09%)	0.05 %					
SS 492: 2001 / BS 5234 (Impact Tests)						
Determination of Partition Wall Stiffness	SD	SD	N/A	SD	N/A	N/A
Surface Damaged by Small Hard Body Impact	SD	SD		SD		
Perforation by Small Hard Body Impact	SD	SD		SD		
Damaged by Large Soft Body Impact	SD	SD		SD		
Structural Damaged by Large Soft Body Impact	SD	SD		SD		
Door Slamming	SD	SD		SD		
Lightweight Anchorage Pull-Out	Pass	Pass		Pass		
Lightweight Anchorage Pull-Down	Pass	Pass		Pass		
Heavyweight Anchorage Wash Basin (N)	1500	1500		1500		
Heavyweight Anchorage Wall Cupboard (N)	4000	4000		4000		
Horizontal Load/Crowd Pressure (3.0 kN/m)	Up to 3.0 kN/m	Up to 3.0 kN/m		Up to 3.0 kN/m		
1. Deflection (mm)	-0.04	-0.06		-1.2		
2. Residual Deflection (mm)	0	0		-0.1		
Bending Strength (N/mm^{2})	10.80 N/mm^{2}					

Functional Requirements	JOE Green Standard Concrete Panel		JOE Green Light Panel				
	100mm Solid	150mm Solid	100mm (Ø64mm) X1	100mm X1 SOLID	100mm (Ø64mm) X2	100mm X2 SOLID	100mm (Ø64mm) X3
ASTM - E90							
Sound Insulation (STC)	{STC 54-55}	{STC 57-58}	STC 41*	N/A	STC 43*	{STC 45}	STC 47*
ASTM C 518							
Thermal Conductivity (W/m^{o}K) K-value	0.9012	N/A	0.2306	N/A	0.535	N/A	0.4393
Thermal Resistance (m^{2} ^{o}K/W) R-value	0.111		0.434		0.189		0.2276
BS 476: Part 22: 1987							
Fire Resistance							
Integrity	N/A	N/A	196Mins*	N/A	132Mins*	N/A	N/A
Insulation			169Mins*		120Mins*		
Deflection Test (mm)			-3mm		12mm		
Difference of Area Under Curve with Standard (%)			0.0		0.1		
Fire Resistance (4 Hours, Single Wall)							
Integrity	260Mins*	260Mins*	N/A	240Mins*	N/A	240Mins*	120Mins*
Insulation	260Mins*	260Mins*		240Mins*		240Mins*	120Mins*
Deflection Test (mm)	5mm	23mm		8mm		32mm	25mm
Difference of Area Under Curve with Standard (%)	0.0	0.0		0.0		0.0	0.0
BS EN 772							
Compressive Strength - Cube	57.90 N/mm^{2}		-	-	-	-	-
Compressive Strength - Section	40.9 N/mm^{2}	-	3.7 N/mm^{2}	7.1 N/mm^{2}	11.3 N/mm^{2}	17.5 N/mm^{2}	19.6 N/mm^{2}
SS 271: 1983							
Water Absorption (24 hrs Immersion) - Setsco Labs (Should Not Exceed 23.5%)	5.57%	N/A	14.94 %	20.16 %	14.60 %	12.58 %	11.31 %
Drying Shrinkage - Setsco Labs (Should Not Exceed 0.09%)	0.05 %		0.09 %		0.08 %		0.07 %
SS 492: 2001 / BS 5234 (Impact Tests)							
Determination of Partition Wall Stiffness	N/A	N/A	SD	N/A	SD	N/A	SD
Surface Damaged by Small Hard Body Impact			SD		SD		SD
Perforation by Small Hard Body Impact			SD		SD		SD
Damaged by Large Soft Body Impact			SD		SD		SD
Structural Damaged by Large Soft Body Impact			SD		SD		SD
Door Slamming			SD		SD		SD
Lightweight Anchorage Pull-Out			Pass		Pass		Pass
Lightweight Anchorage Pull-Down			Pass		Pass		Pass
Heavyweight Anchorage Wash Basin (N)			1500		1500		1500
Heavyweight Anchorage Wall Cupboard (N)			4000		4000		4000
Horizontal Load/Crowd Pressure (3.0 kN/m)			Up to 3.0 kN/m		Up to 3.0 kN/m		Up to 3.0 kN/m
1. Deflection (mm)			-0.745		-2.334		-0.4
2. Residual Deflection (mm)			-0.2		-0.2		-0.1
Bending Strength (N/mm^{2})	10.80 N/mm^{2}		0.8 N/mm^{2}		3.5 N/mm^{2}		4.45 N/mm^{2}

JOE™ Quality

LiGrA™ Lightweight Green Aggregates We Are The Best

FOOTNOTE :
* - Varies as per thickness
# - Skimcoat Finishing
NA - Not Available

REFERENCES :
(1) Quoted the report by Lightweight Concrete Journal, that the moisture of AAC wall lab test at 45% moisture content when the wall is just built. In time to come, the moisture will drop to 3.5%. The ratio of 45% and 3.5% will result in what I said 11dB drop of sound insulation.
(2) Panels and other materials which show a water absorption test should directly be connected to the length of time the test sample was submersed under water.
The relationship between these two factors are important and directly related until maximum value is reached.
(3) Requires Plastering to achieve thickness to comply Code for electrical installation - 50mm cover to Electrical Conduits , without damaging the Steel Reinforcement of ALC Panel.

	PROPERTIES	COMPARISON FOR 100MM THICK WALL MATERIALS							COMPARISON FOR 100MM THICK WALL MATERIALS		
		JOE X5 (XS)	Other Panel	Red Brick	JOE X3	AAC Block Bata Ringan	ALC/GIP Panel Bata Ringan	SANDWICH PANEL (EPS)	JOE X2	Dry Wall / Gypsum Board	JOE X1
TEST REPORTS	Nominal Density (kg/m3)	2200	2200	1760	1600	550	800	720	1300	10	900
	Weight (kg/m2)- 100mm thickness	135	145	160	96	80	80	72	85	100 (Frame & Insulation)	65
	Maximum Height without lintel (mm)	8000*	3300	3000	6000*	3000	6000	3000	6000*	2400	6000*
	Compressive Strength (MPa) Cube	49	25	2 - 4	-	4.5	4.5	-	-	NA	-
	Compressive Strength (MPa) Section	42-59	15	2.5	20	2.5 - 5	5 - 7	4	11 - 17	NA	3 - 7
	Water Absorption (Percentage)	6% (24-hr immersed)	5% (30-min immersed)[2]	15 - 25%	11% (24-hr immersed)	35 - 60%	35 - 60%	20%	13% (24-hr immersed)	Not Usable (Dry Areas Only)	15% (24 -hr immersed)
	Water Absorption (Capillary) $g/m^2s^{0.5}$	24	NA	NA	NA	130	190	45	11 (WP-SPEC)	Not Usable (Dry Areas Only)	NA
	Air Tightness Certified	Yes	No	No	No	No	No	No	No	No	No
	Thermal Coductivity (W/K.m) - 100mm (Lower is Better)	0.74	NA	1.15	0.44	0.15 - 0.25	0.15 - 0.25	0.26	0.54	0.17	0.23
	Fire Rating (Hours)	1 - 4	1 - 2 (needs infill)	1 - 2	2 - 4	3 - 4	2 - 4	1 - 4	2 - 4	1 - 2 (needs infill)	2 - 4
	Sound Transmission Class (STC)	49 - 58	37 - 41	37 - 42	45 - 54	35 - 40 (11dB Drop after 3-6 Mos)[1]	40 - 46 (11dB Drop after 3-6 Mos.)[1]	41	41 -50	35 - 52 (Rock Wool) (Requires Insulation)	39 - 48
PERFORMANCES	Buildability (Labour Saving Index))	0.85#	0.85#	Demerits	0.85#	0.10	0.85#	0.85#	0.85#	1.00	0.85#
	Productivity (m^2/manday)	20	18	6	22	12	18	18	24	23	25
	Use of Green Recycled Material	Yes	No	No	Yes	No	No	No	Yes	No	Yes
	Use of Flammable Material	No	No	No	No	No	No	Yes	No	No	No
	Heavyweight Anchorage (4000N) Strength & Robustness	Severe Duty (Highest)	Severe Duty (Highest)	Pass (chemical & mechanical fixing)	Severe Duty (Highest)	Pass (chemical fixing)	Pass (chemical fixing)	Medium - Severe Duty	Severe Duty (Highest)	Pass (mechanical fixing- special bolt)	Severe Duty (Highest)
	Customised Height Available	Yes (8M)	No	No	Yes (6M)	No	Yes (3M or 6M only)	No	Yes (6M)	No	Yes (6M)
	Customised Thickness Available	75 - 200	75 - 200	100 - 230	75 - 200	100-200	75-200	100-200	75 - 200	75-150	75- 200
	Wire Reinforcement (safety & strength) (Earthquake, Vibration, Movement, Impact)	High tensile wire (600 Mpa) 3-5mm dia	No	No	High tensile wire (600 Mpa) 3-5mm dia	No	BRC Mesh	BRC Mesh	High tensile wire (600 Mpa) 3-5mm dia	Metal Stud	High tensile wire (600 Mpa) 3-5mm dia
	Crack Resistance Accessories	1. JOE UV Crackshield 2. JOE Bond Adhesive	Wire or Fiber Mesh	-	1. JOE Crackshield 2. JOE Bond Adhesive	Wire or Fiber Mesh	Wire or Fiber Mesh	Fiber Mesh	1. JOE Crackshield 2. JOE Bond Adhesive	-	1. JOE Crackshield 2. JOE Bond Adhesive
	Stopper Cap for Hollow Insert	Yes	No	No	Yes	No	No	No	Yes	No	Yes
	Joint Recess for Stronger Joints	Yes	No	No	Yes	No	No	No	Yes	No	Yes
	Product Structure	Strong & Compact	Low Strength, More Sand, Less Cement	Compact, Low Strength	Strong & Compact & Lightweight	Porous, Full of Capillary, Low Strength, Potential Fungus/Molding Growth	Porous, Full of Capillary, Low Strength, Potential Fungus/Molding Growth	Porous, Low Strength, Easy to Debond, Weak Glue Adhesive	Strong & Compact & Lightweight	Fragile, Easy to Break, Lowest Strength	Strong & Compact & Lightweight
	Production Process	Extrusion Flat Surface, Compact, Special Customised Machine	Extrusion on Conveyor, Potential Uneven Wavy Surface	Moulding, Potential Uneven Wavy Plate Surface	Extrusion Flat Surface, Compact, Special Customised Machine	Moulding, Potential Uneven Wavy Plate Surface	Moulding, Potential Uneven Wavy Plate Surface	Moulding, Potential Uneven Wavy Surface	Extrusion Flat Surface, Compact, Special Customised Machine	Extrusion on Metal Roller, Potential Uneven Surface, Thin & Brittle	Extrusion Flat Surface, Compact, Special Customised Machine
	Finishing Application (mm)	Thin Skimcoat	Plaster + Skimcoat	Plaster + Skimcoat	Thin Skimcoat	Plaster + Skimcoat	Plaster + Skimcoat	Plaster + Skimcoat	Thin Skimcoat	Putty	Thin Skimcoat
COST SAVINGS	Plaster Material & Labor Savings	-	15-25 mm (3 Layers)	15-25 mm (3 Layers)	-	15-25 mm (3 Layers)	-	15-25 mm (3 Layers)	-	-	-
	Skimcoat Material & Labor Savings (Due to Flatness & Waving)	1 - 5mm (1 Layer)	5 - 15mm (1 Layer)	5 - 20mm (1 - 2 Layer)	1 - 5mm (1 Layer)	5 - 10mm (1 -2 Layer)	5 - 10mm (1 - 2 Layer)	10 mm (2 - 3 Layers)	1 - 5mm (1 Layer)	Rockwool & Putty	1 - 5mm (1 Layer)
	Total Weight (kg/m2) (After Finishing)	155	185	260	115	140	140	122	105	105	85
	Lintel Savings	Up to 8M	Every 3M	Every 3M	Up to 6M	Every 3M	Every 3M	Every 3M	Up to 6M	Every 3M	Up to 6M
	Stiffener Savings	Up to 8M	Every 3M	Every 3M	Up to 6M	Every 3M	Every 3M	Every 3M	Up to 6M	Every 3M	Up to 6M
	M&E Services Savings (MEP - Indonesia)	Services can be run through hollow core with minimum opening	Services can be run through hollow core with minimum opening	Require surface hacking & trimming for recess	Services can be run through hollow core with minimum opening	Require surface hacking & trimming for recess	Require surface Cutting and Trimming for recess (Max. 30mm) No cutting to BRC reinforcement	Require surface Cutting and Trimming for recess (Max. 30mm) No cutting to BRC reinforcement	Services can be run through hollow core with minimum opening	By fitting services before closing up	Services can be run through hollow core with minimum opening
	Wall Fixing	L-bracket + Sleeve Anchor / H10 Dowel Bar	Bracket / H10 Dowel Bar	Wall Tie	L-bracket + Sleeve Anchor / H10 Dowel Bar	Wall Tie	Wall Panel Bracket	Wall Panel Bracket	L-bracket + Sleeve Anchor / H10 Dowel Bar	Metal Stud & Drive Pins	L-bracket + Sleeve Anchor / H10 Dowel Bar
	Site Houskeeeping & Wastage	Min. Wastage & Cutting due to Custom Length	More Wastage Higher Breakage	More Wet Works & High Wastage	Min. Wastage & Cutting due to Custom Length	More Wastage Higher Breakage	More patching material to M&E Works / More Debris to handle	More patching material to M&E Works / More Debris to handle	Min. Wastage & Cutting due to Custom Length	More Wastage (12 - 15%)	Min. Wastage & Cutting due to Custom Length
	External Waterproofing	Joints Only	Full Surface Waterproofing	Full Surface Waterproofing	Joints Only	Full Surface Waterproofing	Full Surface Waterproofing	Joints Only	Joints Only	Not Recommended (Indoor Only)	Joints Only
	Additional Scaffolding / Work Platform Savings Based on Single Tier @ 3.3M	-	-	Needs Scaffolding / Work Platform	-	Needs Scaffolding / Work Platform	Needs Scaffolding / Work Platform	-	-	Needs Scaffolding / Work Platform	-

Singapore Green Mark

BCA GREEN MARK

		Requirements		Higher Scoring X1	X2	X3	XS/X5
1	ENERGY EFFICIENCY		Reduced Heat Gain (ETTV)	✓	✓	✓	✓
2	HEALTH & WELLBEING	HW 1.2	HW 1.2 Material Emissions	✓	✓	✓	✓
		HW 2.3	Sound			✓	✓
3	RESILIENCE	RE 1.1 b	Resources	✓	✓	✓	✓
		RE 1.2b	Urban Heat Island Mitigation				
4	WHOLE LIFE CARBON	CN 1.1	Whole Life Carbon Calculation	✓	✓	✓	✓
		CN 1.2	Embodied Carbon	✓	✓	✓	✓
		CN 1.3	2030 Transition Plan	✓	✓	✓	✓
		CN 2.1	Sustainable Construction	✓	✓	✓	✓
		CN 2.2	Sustainable Products & Finishes	✓	✓	✓	✓
		CN 3.2	Fit out Products	✓	✓	✓	✓
5	MAINTAINABILITY	General	BIM model	✓	✓	✓	✓
		1.5	Design Factor - Masonry & Lightweight Concrete Panel	✓	✓	✓	✓
		1.5.1	Reduce risk of Water ingress and Efflorescence formation	✓	✓	✓	✓
		1.5.2	Reduce risk of façade flaking/peeling/cracking /blistering	✓	✓	✓	✓
		2.5	Basement and Car Park				

malaysia green building index

Applicable GBI Credits	Criteria	Higher Scoring X1	X2	X3	XS/X5
1 Energy Efficiency	EE	✓	✓	✓	✓
Minimum Energy Efficiency Performance					
2 Indoor Environmental Quality	EE	✓	✓	✓	✓
Indoor Air Pollutants		✓	✓	✓	✓
Mould Prevention		✓	✓	✓	✓
Internal Noise Levels / Sound Installation		✓	✓	✓	✓
IQA Before & During Occupancy					
3 Suistanable Planing & Management	SM	✓	✓	✓	✓
Suistanable Construction		✓	✓	✓	✓
Qlasic - Quality Assessment System for Building		✓	✓	✓	✓
IBS - Industrialised Building System					
4 Material & Resources	MR	✓	✓	✓	✓
Material Reuse & Selection		✓	✓	✓	✓
Recycled Content Materials		✓	✓	✓	✓
Regional Materials		✓	✓	✓	✓
MateriL Manufacture & Ingredients		✓	✓	✓	✓
Storage & Collection of Recyclabels		✓	✓	✓	✓
Construction Waste Management		✓	✓	✓	✓

JOE LiGrA Kustomisasi

Land Transport Authority
We Keep Your World Moving

JOE LiGrA Terbukti

Kustomisasi Desain & Spesifikasi

Penyesuaian kebutuhan dan spesifikasi tiap proyek yang unik dan berbeda-beda, seperti tingkat kekedapan suara untuk dinding peredam suara dan bioskop, tingkat ketahanan dinding terhadap kebakaran atau ledakan, maupun permintaan dalam segi bentuk/pola, kami mampu memodifikasi jumlah lubang/hollow dan jumlah kawat dari 8 sampai 12 kawat maupun permintaan panel dinding solid/padat tanpa lubang. Kami juga memproduksi panel dinding dengan berbagai ketebalan, sambungan L & T dan berbagai aksesoris untuk mencegah keretakan dan memudahkan pemasangan.

Dinding Penghalang Kebisingan dengan Desain Garis Alur (Groove Line)

Design Dinding Berpola





Spesial Order Berbentuk Blok – Untuk Semua Ketebalan dan Model



KUALITAS TINGGI
SUPER DATAR
HANYA DIDEMPUL
TIPIS SAJA
SGBC LEADER

DAYA SERAP AIR RENDAH
KAPILER AIR RENDAH
DAYA TAHAN AIR TINGGI
MINIMAL LAPISAN KEDAP AIR

ISOLASI API
YANG TINGGI

ISOLASI SUARA
YANG TINGGI

KEDAP UDARA

8M
KUSTOMISASI
DESAIN & UKURAN
AREA KERJA
BERSIH & RAPI

MINIMUM
LINTEL
DAN
STIFFENER
PENGHEMATAN
BIAYA
STRUKTURAL

KUAT &
AMAN

PVC
M&E
KUAT, CEPAT
& MUDAH

INSTALASI
CEPAT TANPA
SCAFFOLDING

MENGURANGI
PEMBUANGAN

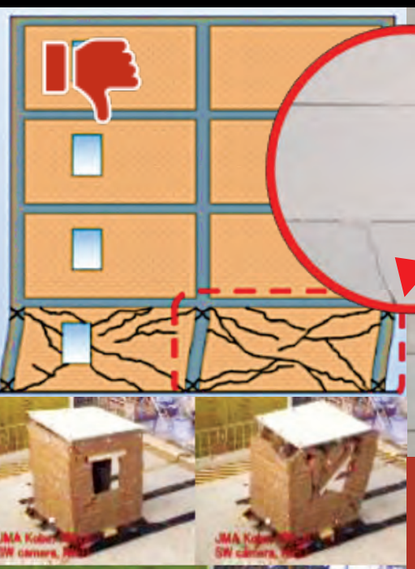
TAHAN
BENTURAN

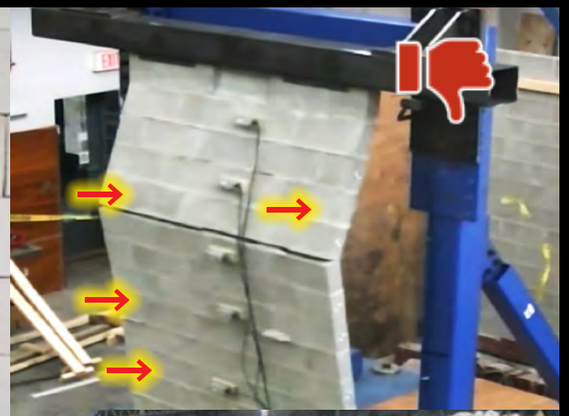
JOE™ just one earth

LiGrA™ Lightweight Green Aggregates

Tahan Benturan & Aman

Aktivitas Seismik
AAC Block/Bata VS Panel





Lapisan Tipis yang Lemah pada Sambungan Bata
Banyaknya sambungan semen di dinding bata membentuk garis horizontal yang rentan rubuh saat goncangan gempa. Bagian atas dan bawah dinding bata tidak menyatu secara mekanik pada struktur bangunan sehingga daya tahannya sangat lemah saat terjadi gempa.

Sistem Panel dengan Kawat Penguat untuk Keamanan

Sistem Dinding Beton Pracetak dengan Kawat Penguat
Pada dinding beton pracetak, tidak ada garis horisontal, bagian atas dan bawah dinding tersambung secara mekanik dengan adanya L bracket / dowel bar sehingga lebih kuat menahan getaran.

Sambungan pada panel dinding beton pracetak dengan kawat penguat bersifat padat, kuat dan terhubung penuh meminimalkan dampak gempa

Adanya Kawat Penguat untuk Keamanan

PRODUK:
Panel Dinding JOE Green Berkawat

KEJADIAN:
Dinding Tertabrak Forklift dan Rusak

LOKASI:
Tampines Warehouse L3

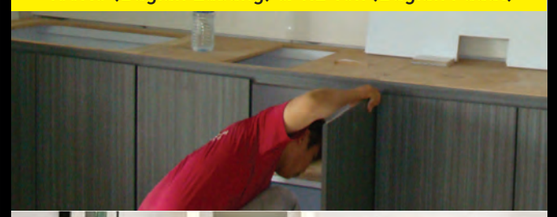
SOLUSI:
Mudah Diperbaiki dengan Menambal

Dinding Rusak Tertabrak Forklift

Aplikasi Lainnya Digunakan sebagai Plafon Tahan Api

Tes Kedap Udara untuk Rumah Sakit

Kemampuan Pemasangan Beban Berat
Normal Sleeve Anchor M8 Per Titik hingga 400KG (Bagian Lubang) & 1.2 Ton (Bagian Padat)



Tes Kedap Air untuk Dinding Bagian Luar

TES KEDAP UDARA
Transmisi Udara = 0% TUV Certified

TES KEDAP AIR = 0% MEREMBES

Aksesoris
PEREKAT SAMBUNGAN

JOE Joint Bonding Adhesive

Adalah semen polimer siap pakai, mengandung campuran yang sudah teruji, perekat berbahan dasar semen yang didesain khusus untuk panel dan blok dinding beton pracetak. Formulanya bekerja sempurna untuk meminimalisir keretakan dan penyusutan. Hanya dengan menambahkan dan mencampur dengan air sesuai takaran, semen ini siap dipakai.

Data Teknis :

Berat	: 40 kg/bag	Pemakaian ±1 bag = 6 m^2 - 8 m^2
Densitas	: 1.4 gm/cm^3	Gunakan dalam waktu 30 menit
Waktu Pengaturan	: 0 - 5 jam	setelah pencampuran

Petunjuk Pemakaian :

1. Permukaan yang akan dilapisi semen harus bersih dari debu, minyak dan kotoran apapun. Basahi permukaan dengan semprotan air sebelum dilapisi semen.
2. Campurkan 26% - 28%, 10 - 11 liter air.
3. Masukkan semen ke dalam air selama proses pengadukan.
4. Gunakan mixer listrik untuk mengaduk selama 5 menit sampai adukan merata (homogen).
5. Campuran harus digunakan dalam waktu 30 menit setelah diaduk.
6. Untuk lubang/celah yang besar, gunakan pompa semen genggam untuk memastikan celah tertutup sempurna.

Aksesoris
CRACKSHIELD

Pita Penyambung Panel Dinding Beton Pracetak

APLIKASI PENGGUNAAN
- Sambungan pada dinding bagian dalam dan luar
- Bagian dalam dan luar sudut dinding
- Sambungan antara struktur dan dinding.

TIPE	LEBAR/KETEBALAN	PANJANG	UNIT/KARTON
ROLL	50 mm/0.5 mm	40 M	10 Roll

TENTANG PRODUK

JOE CRACKSHIELD dibuat dari bahan UPVC dengan formulasi spesial sebagai pita penguat sambungan yang memiliki daya tarik kuat tahan robek untuk menahan peregangan dan distorsi. JOE CRACKSHIELD bersifat fleksibel-terpusat untuk memungkinkan gerakan dan didesain sesuai dengan penggunaan JOE Joint Bonding Adhesive untuk :

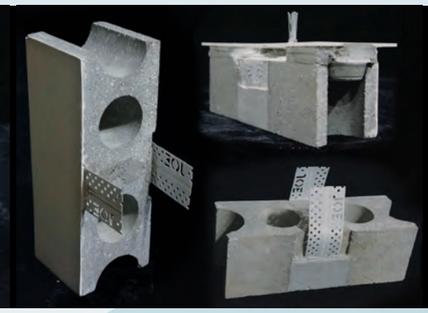
1. Sambungan penguat pada sudut dinding bagian dalam, bagian luar, sambungan struktural antara kolom, balok dan plafon.
2. Mencegah keretakan yang disebabkan oleh panas, peregangan dan distorsi lain. JOE CRACKSHIELD memiliki performa yang lebih kuat daripada fiber dan jaring kawat yang lain.
3. Meningkatkan tingkat kedap air dan mengurangi rembesan air di antara sambungan bila dinding panel digunakan sebagai dinding bagian luar dan area basah.
4. Didesain dengan lubang kecil-kecil untuk mengunci ikatan antar lapisan.
5. Didesain mudah dilipat dan melengkung fleksibel untuk aplikasi pada sudut-sudut, siku maupun pada sambungan yang rata.

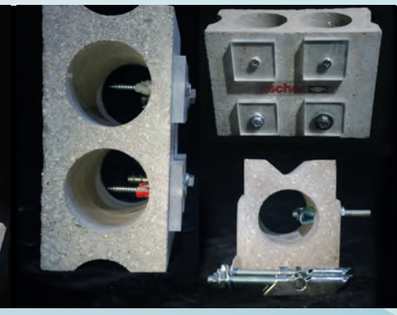
Aksesoris
STOPPERCAP

- Dibuat khusus untuk menutup lubang pada bagian atas dinding JOE Green Panel sesuai diameter lubang ukuran 40mm dan 58/64mm.
- Sangat mudah digunakan dibandingkan backer rod, spons dan bahan lainnya.
- Mencegah masuknya air ke dalam lubang pada dinding bagian luar saat proses pengerjaan.
- Mencegah pemborosan JOE Joint Bonding Adhesive supaya tidak jatuh ke dalam lubang dinding dan memastikan kepadatan semen grouting.
- Memperkuat sambungan di bagian atas dinding panel, menutup lubang di atas dinding, menambah pertemuan dengan permukaan bagian ujung atas dinding sehingga mengurangi resiko pergerakan.

BAHAN	TINGGI	DIAMETER	UNIT/KARTON
Polypro-pylene (PP)	30mm	40mm	500 Pieces
	20mm	58/64mm	500 Pieces

CARA PEMAKAIAN
- Letakkan di setiap lubang bagian atas dinding saat dinding dipasang vertikal.
- Letakkan di kedua sisi ujung lubang dinding saat dinding dipasang horisontal.





JOE BOND
JOINT BONDING ADHESIVE

JOE AKSESORIS
GAP PUMP

JOE AKSESORIS
CRACKSHIELD

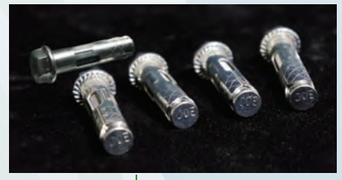
JOE PIM
PANEL INSTALLATION MACHINE

JOE AKSESORIS
STOPPERCAP

JOE PERALATAN KEAMANAN
SAFETY SHOES

JOE PERALATAN KEAMANAN
TOOLS BAG

JOE AKSESORIS
ACRYSHIELD



JOE AKSESORIS
SLEEVE ANCHOR

JOE PERALATAN KEAMANAN
SOCKS

JOE AKSESORIS
GRAVITY ANCHOR

JOE AKSESORIS
L BRACKET

JOE PERALATAN KEAMANAN
MASKER

Honourable Partners

10 YEARS ++

More Than 1,000 Projects

PUBLIC DEVELOPERS

Building and Construction Authority
HOUSING & DEVELOPMENT BOARD
Land Transport Authority — We Keep Your World Moving
People's Association
Ministry of Education SINGAPORE
MINISTRY OF HEALTH SINGAPORE
NUS National University of Singapore
NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE
TEMASEK HOLDINGS
PSA The World's Port of Call
sembcorp
NUH National University Hospital
MINDEF SINGAPORE
MINISTRY OF HOME AFFAIRS
jtc Breaking New Ground
ntuc National Trades Union Congress
CIDB MALAYSIA
SAFRA
CHANGI airport singapore
URBAN REDEVELOPMENT AUTHORITY
RafflesMedicalGroup
mapletree
Sentosa Sentosa Development Corporation
JKR

DEVELOPERS

长春产业 ALLGREEN PROPERTIES
CITY DEVELOPMENTS LIMITED
ascendas Reit
Aurum
AGUNG SEDAYU GROUP
Far East Organization INSPIRING BETTER LIVES
SGM SOKA GAKKAI MALAYSIA Creating Value, Empowering Lives
CHIU TENG GROUP 九鼎集团
GSH
ROXY-PACIFIC HOLDINGS LIMITED
CAMHOMES
lendlease
CapitaLand
FRASERS CENTREPOINT
FOREST CITY COUNTRY GARDEN PACIFICVIEW
OKH
LIPPO GROUP
IHG
PERENNIAL (PERENNIAL REAL ESTATE HOLDINGS LIMITED)
TASEK MAJU
MB WORLD GROUP
GuocoLand
OUE
MCL Land A member of the Hongkong Land Group
Oxley OXLEY HOLDINGS LIMITED
Keppel Land
YTL SINCE 1955
Setia
MahSing Reinvent Spaces. Enhance Life.
PP PROPERTI
COUNTRY GARDEN
POLLUX PROPERTIES
UOL Group Limited 华业集团有限公司

ARCHITECTS

architects61 singapore shanghai
ADDP ARCHITECTS LLP
aesler
ARUP
CIAP
DP ARCHITECTS
Forum Architects
ida
ONG&ONG
kyoobo
ARKITEK REKACIPTA
CPG CONSULTANTS
AKIPRO Chartered Architect
RSP RSP ARCHITECTS PLANNERS & ENGINEERS
SAA
RONNY CHIN ARCHITECTS
P&T GROUP
SURBANA JURONG
KAJIMA DESIGN
swan & maclaren
WOHA

MAIN CONTRACTORS

新建工程私人有限公司 BHCC CONSTRUCTION PTE LTD
BOUSTEAD Projects
DAEWOO E&C
Dragages Singapore
上海兴浦建筑有限公司 HPC BUILDERS PTE LTD
Gammon
Greatearth
長龍峰建築工程有限公司 CHAN RONG FEN BUILDING CONSTRUCTION PTE LTD
DMC DUA MEDAN CONSTRUCTION SDN BHD
中国建筑(南洋)发展有限公司 China Construction (South Pacific) Development Co Pte Ltd
集永成机构有限公司 CHIP ENG SENG CORPORATION LTD
CNQC 青建国际
LIAN HO LEE CONSTRUCTION
GIANT LEAP
GENNAL
HYUNDAI ENGINEERING & CONSTRUCTION
LAUBROS
强枫建筑私人有限公司 KEONG HONG CONSTRUCTION PTE LTD
Sembawang
SoilBuild CONSTRUCTION GROUP LTD
SQA Builders Sdn Bhd
KSH HOLDINGS LIMITED
KIMLY CONSTRUCTION
LUM CHANG
SKS GROUP MALAYSIA | AUSTRALIA
KAJIMA OVERSEAS ASIA
PRECISE DEVELOPMENT PTE LTD
Ho Lee Group
SSANGYONG Engineering & Construction Co., Ltd.
SHMZ SHIMIZU CORPORATION
Straits Construction Higher Further Together
NAKANO SINGAPORE
聯明集團有限公司 LIAN BENG GROUP LTD
NCB NEWCON BUILDERS PTE LTD
PM PESONA METRO
MCC SHANGHAI BAOYE GROUP CORP., LTD.
SIM LIAN GROUP LIMITED
Lian Soon Construction Pte Ltd
CONSTRUCTION & INVESTMENT
SonKeh
PENTA-OCEAN CONSTRUCTION CO.,LTD. 五洋建设
TEAMBUILD BUILDING ASPIRATIONS
PSYCON SDN BHD
PULAUINTAN
SUMITOMO MITSUI CONSTRUCTION CO.,LTD.
SATO KOGYO Founded 1862
TAY HUP BROTHERS CONSTRUCTION SDN BHD
SPACIOUS STRUCTURE SDN. BHD.
SAMSUNG
ZHENG KENG
WOH HUP BUILDING WITH INTEGRITY
TIONG AIK CONSTRUCTION PTE LTD (A Subsidiary of TA CORPORATION LTD)
TIONGSENG GROUP 长成控股
TAKENAKA
SAMSUNG C&T
OBAYASHI

AIRPORT & LTA PROJECTS

Land Transport Authority
CHANGI airport singapore
JEWEL CHANGI AIRPORT

Efficient & Cost Effective Noise Barrier Walls

Project MRT - T205 - Woodlands South Station

JOE Singapore

LiGrA Lightweight Green Aggregates | Mixed Development

STARS OF KOVAN

ROYAL SQUARE AT NOVENA

Hillion

MARINA ONE
Residences | Offices | Retail

Northpoint City

NORTH PARK Residences

JOE Singapore
LiGrA Mixed Development

THE WOODLEIGH RESIDENCES

THE WOODLEIGH MALL

SOUTH BEACH

EON SHENTON

V ON SHENTON

DUO
RESIDENCES.OFFICES.RETAIL.HOTEL

Paya Lebar Quarter Mall

Paya Lebar Quarter

King Albert Park (KAP)

Le Quest @ Bukit Batok West Avenue 6

SENGKANG GRAND RESIDENCES

FUNAN, comprises a retail component, two office blocks and lyf Funan Singapore serviced residence

ONE KM

JOE Singapore Residential

LiGrA Lightweight Green Aggregates

ONE HOLLAND VILLAGE Residences

Twin VEW Condominium

Martin Modern Condominium

Waterwoods EC at Punggol Field Walk

D'Nest Condominium at Pasir Ris Grove

Sennett Residence Condominium

18 Woodsville Condominium

Sant Ritz Condominium







COMMONWEALTH TOWERS
QUEENS PEAK
THE trilinq 御品居
Centennia suites
MARGARET VILLE
GEM RESIDENCES CLUB + CONDO
EDEN

THE ALPS Residences





A New Facelift of Upper Serangoon Rd

JOE Singapore
LiGrA Residential
Lightweight Green Aggregates

Coco Palms Condominium

Seven Palms Sentosa Cove

Ripple Bay Condominium at 2 Pasir Ris Link


The Greenwich Residential


Forest Woods Residences


The Amore EC at Edgedale Plains


THE TOPIARY Executive Condominium


THE LAKEFRONT RESIDENCES Condominium


Ecopolitan EC at Punggol Walk


The Tapestry Condominium


Sky Park Residences Executive Condominium


Thomson Impressions Condominium


Bartley Ridge Condominium


Sea Esta Condominium


KOVAN REGENCY Condominium


Waterfront Gold Condo at Bedok Reservoir Rd

THE INFLORA Condominium

euHabitat Condominium


SKY GREEN Condominium


WILSHIRE RESIDENCES

SIGNATURE AT YISHUN
Executive Condominium


PARC Life Condominium


ROYALGREEN Condominium @ Bukit Timah


15 Holland Hill


Grandeur Park Residences Condominium


Seventy St Patrick's Condominium

JOE Singapore

LiGrA Residential

Lightweight Green Aggregates

HOUSING & DEVELOPMENT BOARD

JOE Singapore
LiGrA Residential
Lightweight Green Aggregates

HOUSING & DEVELOPMENT BOARD

PIE

18 Woodsville Condo

Sant Ritz Condominium

Upp Serangoon Rd

Park Colonial Condo

Sennett Residence

HDB Bidadari (Alkaff Courtview)

HDB Bidadari (Alkaff Lakeview)

The Woodleigh Residences

HDB Bidadari (Alkaff Oasis)

Alkaff OASIS

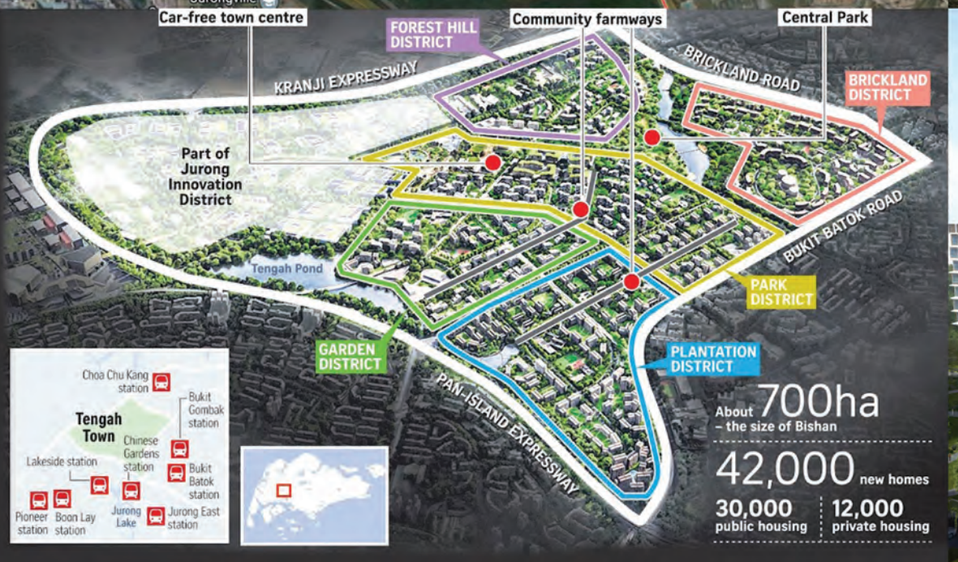
BIDADARI ESTATE

Alkaff LAKEVIEW

Alkaff COURTVIEW

JOE Singapore
LiGrA Residential

HOUSING & DEVELOPMENT BOARD



JOE Singapore
LiGrA Institutions

Integrated Care Hub (ICH)

CENTRE FOR HEALTHCARE INNOVATION

National Centre for Infectious Diseases

RafflesHospital

Sengkang General Hospital SingHealth

NUH National University Hospital

MINISTRY OF HEALTH SINGAPORE

HOMETEAMNS KHATIB

NTUC Health Nursing Home (Chai Chee)

St. Andrew's Nursing Home at Jalan Penjara

Ren Ci @ Ang Mo Kio (Nursing Home)

National Cancer Centre Singapore

NATIONAL SKIN CENTRE (NSC) Singapore

JOE Singapore
LiGrA Institution
Lightweight Green Aggregates

BCA ACADEMY
of the built environment

NUS
National University
of Singapore

YaleNUSCollege

NUS
National University
of Singapore

MINISTRY OF EDUCATION
SINGAPORE

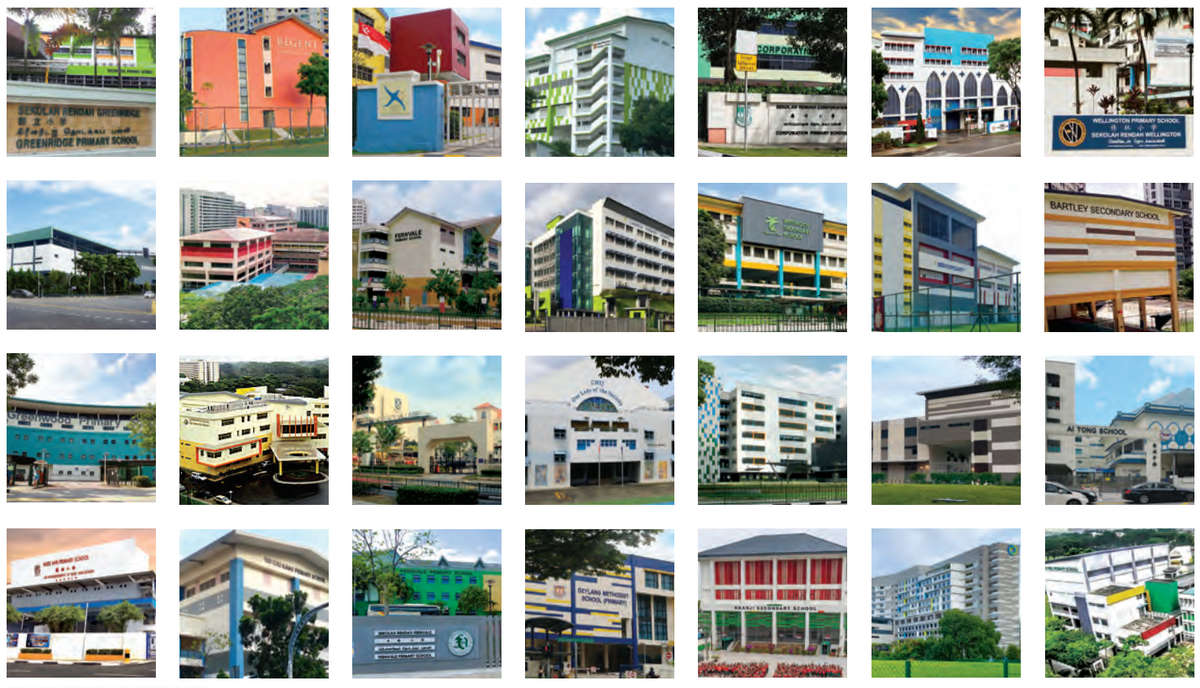
LEE KONG CHIAN
SCHOOL OF
MEDICINE

NTU Yunnan Garden Campus

SUTD
SINGAPORE UNIVERSITY OF
TECHNOLOGY AND DESIGN

NANYANG
TECHNOLOGICAL
UNIVERSITY
SINGAPORE

More Than Hundred Schools Projects in Singapore



Temasek POLYTECHNIC

Global Indian International School

Ministry of Education Singapore

Overseas Family School

NEXUS INTERNATIONAL SCHOOL SINGAPORE

JOE Singapore
LiGrA Commercial

Professional Choice

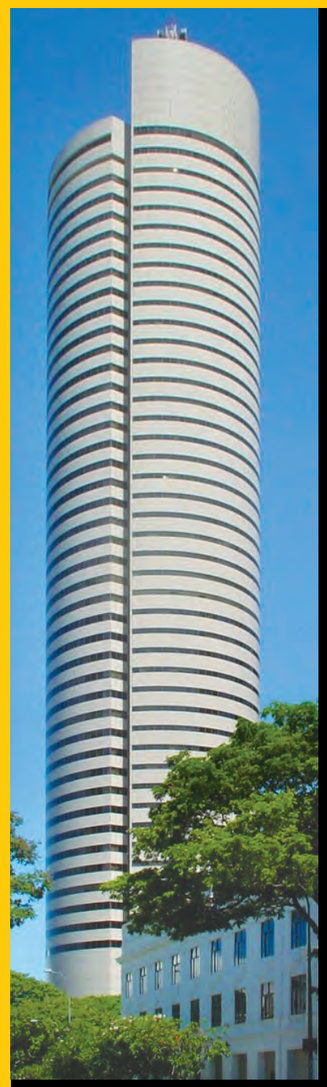
Singapore Chinese Cultural Centre (SCCC)

OUE Downtown

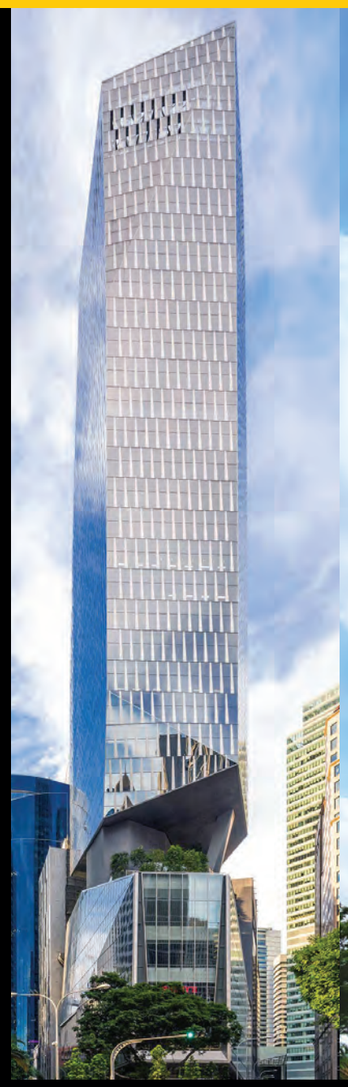
SBF Center

JOE Singapore LiGrA Commercial

Hotel Boss

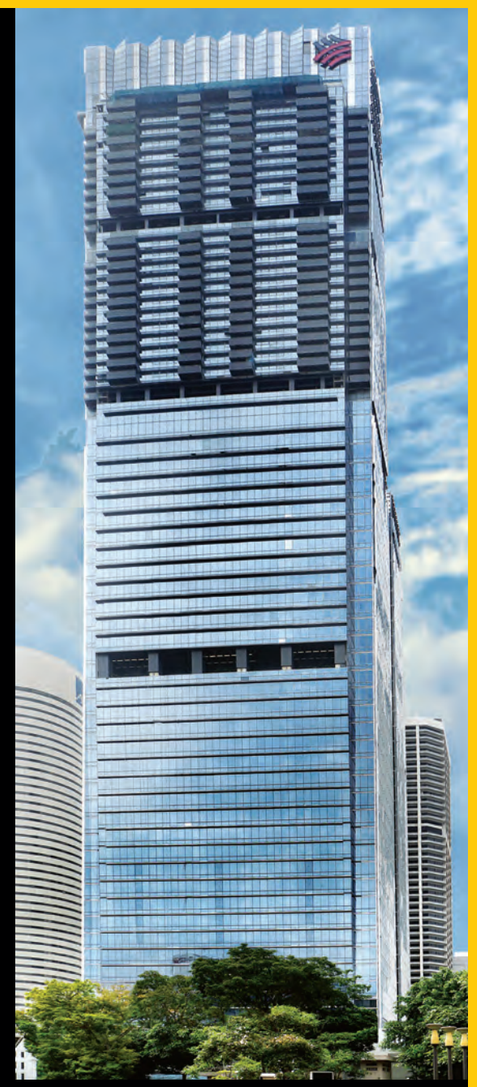


AXA Tower at 8 Shenton Way



Robinson Tower Redevelopment

CapitaSpring at 88 Market St



Guoco Tower at Tanjong Pagar Centre

New PSA Corporate HQ

InterContinental Singapore Robertson Quay

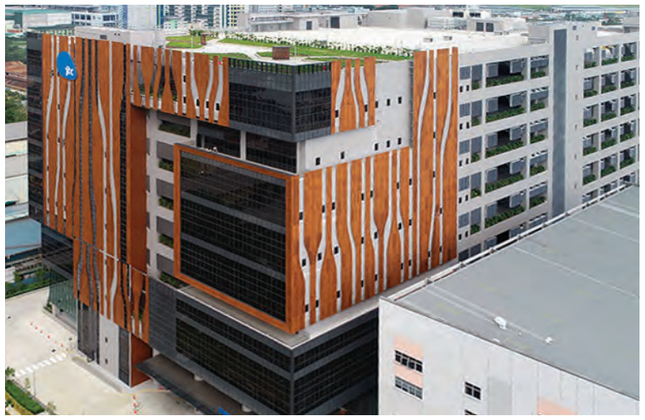
Orchard Hotel Singapore

JOE Singapore
LiCrA Industrial

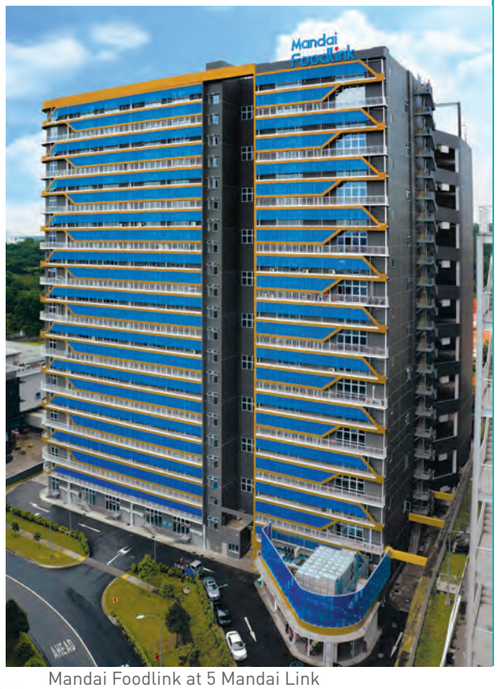
High-Tech Industrial Buildings

Industrial Development at Ang Mo Kio Street 65 for ST Electronics

JTC MedTech Hub @ MedTech Park



JTC Furniture Hub @ Sungei Kadut



Mandai Foodlink at 5 Mandai Link

THE WESTCOM at 1 Tuas South Avenue 6

Micron 300mm NAND Facility at 1 North Coast Drive

NORDCOM I

NORDCOM II

proxima

T-SPACE

JTC Business Aviation Complex at Seletar

Tagore 8 at 421 Tagore Industrial Avenue

JTC Chemicals Hub @ Tuas South

The InDex @ Tuas South Ave 3

External Facade

Industrial Building With Ancillary Office at Tuas South Link

Mandai Link Logistics' Warehouses-Cold Storage at Mandai Link

Data Center at Loyang Drive

6 Storey Warehouse at 47 Jln Buroh

COSL (Singapore) at 3 Benoi Rd

STTelemedia Global Data Centres at 51 Defu Lane 10

Jurong Shipyard Office at Tuas South Boulevard / Tuas View Extension

Using panel 5.2m height for external wall and window opening

EATON RESIDENCES at Kuala Lumpur, Malaysia

MERIDIN EAST

FOREST CITY Projects (Plot 4 - Phase 1, Plot 26 - Phase 2, Plot 26 - Phase 4), Johor Bahru, Malaysia

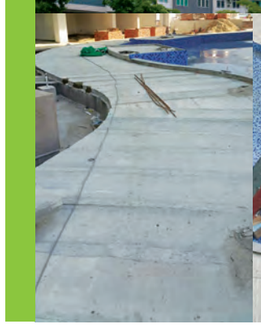
THE AMERALD Resort Hotel at Pengerang, Johor, Malaysia

Taman Pelangi Indah Sales Gallery by SP Setia

Holiday Inn Johor Bahru City Centre

Sky Habitat @ Meldrum Hills, Johor Bahru, Malaysia

Warehouse, Chemical and Paint Store for Malaysia Marine and Heavy Engineering Sdn Bhd, Johor, Malaysia



Walkway Slab at Podium

Perimeter Fence

GRANDVIEW 360° Condominium, Johor Bahru, Malaysia

Permas Jaya - Johor Bahru

Sierra Perdana - Johor Bahru

Brickfields - Kuala Lumpur

Larkin - Johor Bahru

Medini - Johor Bahru

Ecoworld Business Park - Johor Bahru

JOE International
LiGrA Malaysia

Nilai District Police Headquarters, Malaysia

Additional Buildings In Johor State CIDB Complex at Jalan Tampoi, Johor Bahru, Malaysia

ISKANDAR Residences Medini @ Nusajaya, Johor Bahru

PS Jalan Reko Kajang for Petronas

Marlborough College Malaysia, Johor

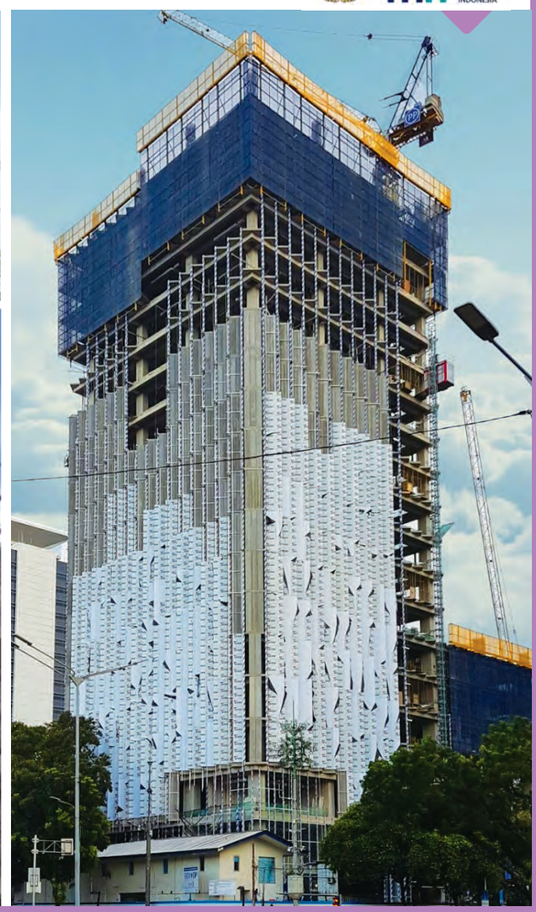
SIHANOUKVILLE, CAMBODIA
D'Seavien

CAMHOMES

International JOE
Cambodia LiGrA

HS Hotel Santika

BUMN KEMENTERIAN BADAN USAHA MILIK NEGARA REPUBLIK INDONESIA



Gereja Reformed Injili Indonesia (GRII) Batam, Indonesia

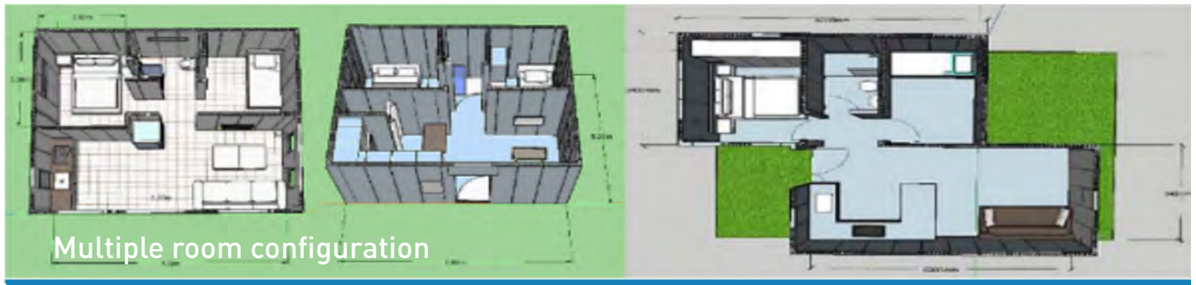
Hotel santika Batam, Indonesia

Affordable Housing Using JOE Green Wall Panel System

✓ **No In-Situ Structural Columns**

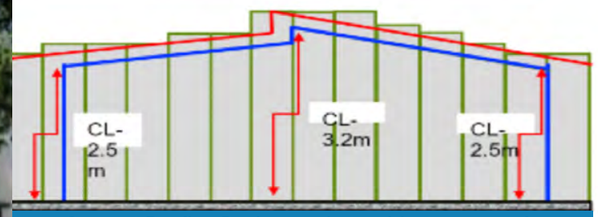
✓ **Fast & Simple Construction**

✓ **High Quality**



Semi-D : Low-cost Housing w/ Piched Roof / Flat False Ceiling
Partition Wall Between Unit to use JOE Panel & Duplicate for Terrace Layout

Tyipical Terrace Facade can duplicate the front entrace design



Concept Roofing Design as photo with stagger roof profile for Modern Look

Gable end / corner Unit can have similar treatment.

JOE Green Wall Panel System for Affordable housing / Worker Dormitory / Etc.

Using JOE Green Wall Panel System for Concrete Flooring Slab.

Achievements

JOE Green Lightweight Concrete Panel has received an Excellent rating certification mark from SGBC and TÜV SÜD PSB at SGBC-BCA Sustainable Leadership Awards Gala Dinner 2016. Today, JOE Green Concrete Panel has been awarded the rating Leader under SGBC product certification scheme

Managing Director of JOE Green, Mr. Boediman Widjaja, received a trophy as one of the winner Asia Green Business Awards 2015/16 in BEI Asia Awards 2015/16 for JOE Green Lightweight Concrete Wall Panel product

Director of Joe Green, Ms. Cindy Lim, received a trophy in Singapore Brands 2012 Gala Dinner Night, 28 April 2012

Ms. Charlina Lim from JOE Green was receiving a trophy as one of the winner of Asia Green Business Awards 2017 in BEI Asia Awards 2017 for JOE Green Lightweight Concrete Wall Panel product

Mr. Boediman Widjaja and Ms. Charlina Lim represented JOE Green to receive a trophy as one of the winner of Enterprise 50 Awards. E50 recognises the enterprises whose journey to innovation is helping to shape a sustainable future.

JOE™ just one earth

LiGrA™ Lightweight Green Aggregates

Seeing Is Believing

We had honorary guests visiting JOE's plant, HQ and project sites to observe our usage of recycle concrete aggregates and waste materials for eco-friendly green products, to make our earth more sustainable.

An honour to have the Ambassador of the Republic of Indonesia H.E. Suryo Pratomo visit JOE Green HQ and Lab at Amazana Building Singapore

Petronas and Dua Medan Construction Sdn Bhd Team

Construction Industry Development Board Malaysia (CIDB) with 40 PKMM (Persatuan Kontraktor Melayu Malaysia)

China Communications Construction

Sunway Construction Sdn Bhd visited Tiong Woon Corporation's Warehouse project site

Country Garden Pacificview Sdn Bhd for Forest City, Gelang Patah

SKS Group and Atria Architects visit JOE Green's project site Holiday Inn JBCC

An honour to have the Ambassador of the Republic of Indonesia H.E. I Gede Ngurah Swajaya visit JOE Green HQ at Amazana Building Singapore

Ministry of Manpower (MOM) Singapore visited The MKZ Condominium project site

CEO of Housing and Development Board (HDB), Dr Cheong Koon Hean, visit HDB project site at Sengkang East Road

JOE Green's prestigious project Pollux Habibie Meisterstadt Batam residential towers topping-out ceremony on April 2019

BCA's Super Low Energy Buildings Department Environmental Sustainability Group visit JOE Green Lab

ECOWORLD Development Group

MCL Land Ltd, Lum Chang Building Contractors Pte Ltd, P&T Architects & Engineers Ltd

Lum Chang Building Contractors Pte Ltd

AESLER Architects Indonesia (PT. Aesler Grup Internasional)

PT PP Tbk visit JOE Green HQ in Singapore for their Indonesia construction projects

Nan Shan Group, Bintan - Indonesia & China

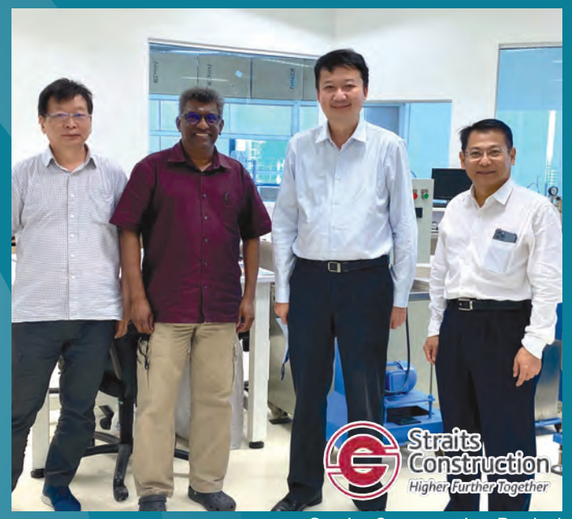
Woh Hup, construction and civil engineering specialist company

Pulau Intan

Shimizu Corporation and ExxonMobil Asia Pacific Pte Ltd

Honorary Guests
Hearing is Believing

Teambuild Singapore



Straits Construction Pte Ltd

JOE Green visits HLH Group HQ in Cambodia to see the projects and potential set up new factory

Obayashi Corporation visited Ripple Bay Condominium Singapore project site

Mr. Richard Koh, MD of Nawarat Group - Thailand

Chiu Teng Enterprise

Daewoo Engineering & Construction Co. Ltd.

Nippon Paint Singapore

Globally Recognized
Patent, Registered Design & Trademark

Singapore

Malaysia

Indonesia

India

China

Hong Kong

Hong Kong

Australia

New Zealand

USA

Cambodia

European Union

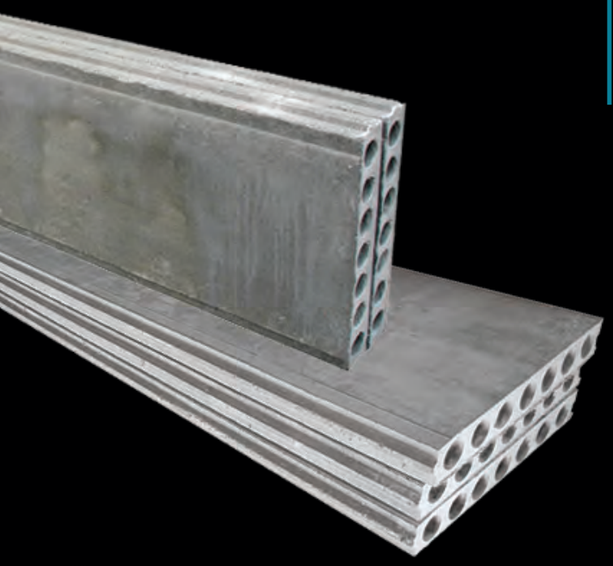
USA

Testimonials

Hearing is Believing

Professional Verdicts :

"The Right Wall Panel for Every Construction"



"Our project hotel Santika Batam had completed in December 2019. We would like to thank JOE Green Team for the full support. We have been satisfied using your products, in terms of cost savings, time and quality of products. We have other projects that may need your support again. We will contact you soon. Thank you very much."

Frans Bambang
Manager
CV. MEGA CONTRACTOR INDONESIA

"Compare to other precast wall panels, we definitely can see the quality and precission of JOE Green panel far more better for INOAC Project."

Tipluk Jati
Director
AGNI **PT. AGNI SATYA PERSADA INDONESIA**

"JOE Green products e.g. panels, brackets and accessories are found to be in high quality standard. JOE Green wall panel system is easy to install & hence can improve productivity. JOE Green's technical support i.e. submission of shopdrawings & details is also excellent. The technical personnel is found to be knowledgeable, responsive. JOE Green panel can be further improved if the panel use in the residential dwelling unit can be lighter in weight, currently need 3 - 4 workers to erect 1 panel"

Lim Jit Heng
Project Manager
長龍峰建築工程有限公司 CHAN RONG FEN BUILDING CONSTRUCTION PTE LTD

"Good material. It would be important to brief customers every construction details shown in the catalogue, especially to the worker of the erector on the dos and don'ts"

Mdm Eng Y H
Project Manager
三達利建設私人有限公司 SANTARLI CONSTRUCTION PTE LTD

"We have been with JOE Green for many years. Their product quality is good & have a broad product range."

Ivy Toh
Contract Manager
WOH HUP BUILDING WITH INTEGRITY

"We are the 1st time work with JOE Green and very satisfy with JOE Green product quality."

Tan Teck Chong
Senior Project Manager
PSYCON SDN BHD

"Installing Joe Green product is very easy. All the material accessories were designed to make it easy. Joe Green product also can be cut to size required, so it can speed up the installation time. We experience those things in one of our project in PIK 2."

Setyowati K
Director
PT. BARA BINTANG SEMESTA

"JOE Green offers wide range of solid and reliable products that not only improve work productivity. It also stands out in term of value proposition that we can offer to our clients"

Wayne Fu Cheng
Director
FU CHENG BUILDING CONSTRUCTION PTE LTD

"Overall service is excellent"

Marvin Laxamana
Quantity Surveyor
誠 建築私人有限公司 YES Construction Pte Ltd

"JOE Green's service is good"

Jackson Tiong
Contract Manager
聯明集團有限公司 LIAN BENG GROUP LTD

"Dear JOE Green, we are very impressed with the strong technical knowledge and fast support of the team. Overall we are very satisfied with your commitment and service"

Soh Lip Hong
Project Manager
BC 新建工程私人有限公司 BHCC CONSTRUCTION PTE LTD

"Quality products, prompt delivery and great support !"

Johnny Xu
Director
CHIAN TECK PEOPLE FOREMOST ADVANCE WITH TIMES

"Service and product quality from JOE Green is good"

May Beh
Purchaser

"The product is good. However the product delivery process need to be improved. Moving forward the contractor's installer need to familiarize with JOE product and take advantage of the speed and quality of JOE product offering for elevating construction industry standard."

Ar. Selamat
Director, JYP Architects Sdn Bhd
Principal, Arkitek Selamat Sdn Bhd
as Arkitek Selamat

"Joe Green products are strong and good quality. The sizes are cut precisely according to our requirement so the waste of material are limited. We do Tokyo Riverside Project."

Harjoto H
Director
PT. TIRTA CITRA BARA PERSADA

JOE™ just one earth
LIGrA™ Lightweight Green Aggregates | Go Global

Ekspansi Menembus ke Arena Global

JOE Green berhasil menguasai pasar Singapura dan melangkah menjadi pelopor global. Dengan suksesnya riset penemuan Agregat Ringan Ramah Lingkungan LIGrA dan teknologi mesin pembuat panel dinding ringan yang superior, kami optimis dan tidak terelakkan JOE Green akan memberikan sumbangsih secara global terhadap industri sistem dinding ringan daur ulang.

Objek utama kami adalah menyediakan sistem dinding yang superior, lebih kuat, lebih ringan, berkualitas dan aman.

Ekspansi menuju pasar global adalah tujuan dan visi kami untuk menciptakan standar baru dalam industri sistem dinding beton pracetak ringan yang diakui secara internasional.

MENUJU HIJAU **MENUJU GLOBAL**

JOE™ just one earth
green concrete panel

Spesialis Dinding

Paling Kuat
Paling Tinggi
Paling Ringan

Kantor Pusat JOE Green
Gedung amazana
Singapura

LIGrA™ Lightweight Green Aggregates

Seni Teknologi Agregat Ringan Ramah Lingkungan

Agregat Ringan Daur Ulang Struktural & Non-Struktural Diciptakan Di Sini
Agregat yang Tepat untuk Beton, Konstruksi & Industri Lainnya

PENGHEMATAN ANDA,MISI KAMI

PT JOE Green Indonesia
PT Zeroweis Batavia Marketing
Jalan Raya Serang KM.71, Serang 42185,
West Java - Indonesia
Tel: +6221 2262 0685/86/87
Fax: +6221 2262 0681/82
Hp & : +65 9760 5272
E: charlina@joegreenpanel.com

JOE Green Precast Sdn Bhd
JOE Green Marketing Sdn Bhd
GM 293, LOT 514 Mukim Senai Industrial Park,
Taman Desa Idaman, Senai 81400,
Johor - Malaysia
Ph: +607 599 7875
Fax: +607 599 7876
Hp & : +60 16 632 2277
E: nikki@joegreenpanel.com

JOE Green Pte Ltd
JOE Green Marketing Pte Ltd
Amazana Building #02-01,
50 MacPherson Road, Singapore 348471
Ph: +65 6745 5377
Fax: +65 6745 1755
Hp & : +65 9760 5272
E: charlina@joegreenpanel.com

www.joegreenpanel.com

Green Label Singapore — Cert. No.:022-015 Eco-Friendly Building Material/Low Emission Concrete/Cement/ 30% Recycled Content

Singapore Green Building Product SGBC Leader — SGBP 5031/1 SGBP 5031/2 SGBP 5031/3 SGBP 5031/4 SGBP 5031/5

MyHijau MyHP00085/17

IMPACT SIRIM BS EN 14992 : 2007 + A1 : 2012 CERT. NO. : PC000041

U.S. Green Building Council Member

Singapore Entrepreneur 100 Award Year 2021 Winner

Enterprise 50 — Celebrating Singapore's Enterprising Spirit 2021

EQAIMS European Quality Assurance — JAS-ANZ — ISO 9001:2015 — CERTIFICATE NUMBER: JQS-17-0094

EQAIMS European Quality Assurance — JAS-ANZ — ISO 14001:2015 — CERTIFICATE NUMBER: JES-17-0071

EQAIMS European Quality Assurance — JAS-ANZ — ISO 45001:2018 — CERTIFICATE NUMBER: JSH-17-0006

bizSAFE STAR

BEI ASIA AWARDS 2017

CIDB MALAYSIA