Building and Construction Authority

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

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Construction Productivity Centre

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Dear Sir/Madam,

BUILDING INNOVATION PANEL DRIVING INNOVATION IN PRODUCTIVE TECHNOLOGIES

This circular is to update the industry on the Building Innovation Panel (BIP) and to invite submissions from interested applicants.

Objective of Buildings Innovation Panel

2 The one-stop BIP was established in 2011 to facilitate expedient multiple agency evaluation and approval of innovative products or processes that improve construction productivity. Participating agencies of the BIP include BCA, HDB, JTC, LTA, MOM, NEA, PUB, SCDF and URA.

Scope and Eligibility

3 Firms that require assistance in obtaining multi-agency regulatory acceptance of their innovative product or process can submit their application to the BIP Secretariat. The BIP Secretariat will facilitate regulatory acceptance under the ambit of the following agencies: BCA, LTA, MOM, NEA, PUB, SCDF, and URA, if the innovation can lead to a 20% or more improvement in productivity.

Application

4 Firms can submit their applications using the form available at BCA's website. Applications shall be accompanied by the following:

(a) documentary evidence of compliance with current codes of practice (Singapore or overseas)
(b) track record of implementation overseas;
(c) material or product specifications;
(d) quality certifications or test reports; and
(e) any other relevant information

5 The BIP secretariat will evaluate the application based on the (i) level of innovation and (ii) impact on construction productivity of the products or processes. Once the application has been accepted, the BIP Secretariat will coordinate submissions to regulatory agencies and facilitate early resolution of outstanding issues between the applicant and respective regulatory agencies.

6 A certificate of In-Principle Acceptance (IPA) will be granted to the innovative products or processes if acceptances are obtained from the relevant participating regulatory agencies.

In-Principle Acceptance Certificates for Innovative Productive Technologies

7 Since the BIP was established, several innovative productive systems have been granted in-principle acceptance for use in building projects in Singapore. Some details of the different systems may be found in Annex A. The IPA certificates issued to the applicants can be found at the following link (https://www.bca.gov.sg/cpc/BIP.html).

8 As an affirmation of their productivity impact, building projects which utilise these productive systems that are granted an IPA are also accorded a green lane status for the regulatory submissions that are made to the technical agencies.

Invitation of Submissions from Interested Applicants

9 With a greater push for construction productivity, more developers have expressed interest to explore or adopt innovative construction products or processes for their projects. BCA would like to take this opportunity to invite the industry to tap on the BIP and bring in new and innovative construction products or processes into Singapore and drive the productivity movement further forward.

Contact Person

10 Interested applicants may contact Mr Cameron Ng at cameron_ng@bca.gov.sg or +65 6325 5099. More details can also be found at the following link (https://www.bca.gov.sg/cpc/BIP.html).

Yours faithfully,

ANG LIAN AIK
GROUP DIRECTOR
CONSTRUCTION PRODUCTIVITY CENTRE
BUILDING AND CONSTRUCTION AUTHORITY

Annex A

The different systems which have received IPA certificates thus far are Cross Laminated Timber and Prefabricated Prefinished Volumetric Construction. More information about the systems can be found below.

A) About Cross Laminated Timber (CLT)

CLT is manufactured from wood harvested from sustainably managed forests and fabricated by binding layers of timber at 90 degrees with structural adhesives to produce a solid timber panel. Unlike sawn timber, CLT can support heavier loads and be applied for structural and non-structural components in buildings. Also, as it is flexible and light (about 500 kg/m3, compared to 2,400 kg/m3 for reinforced concrete), it is usually used for the construction of walls, lift shafts and floors. Depending on the dimensions of the building elements, the CLT panels can comprise more than three layers of timber and be manufactured in varying sizes. CLT panels are also cut in factories for window and door openings before they are assembled on-site.

CLT installation on site – Picture courtesy of Lend Lease

Benefits of using CLT for construction

- Reduction of waste onsite and positive impact on the surrounding community (via reduced construction noise, truck movements and reduced concrete / general dust emission).
- Faster construction and fewer labour needed on site, compared to conventional construction methods
- Sustainability benefits throughout a building's lifecycle: timber has the lowest energy and water consumption of any building material and it is a renewable structural building material. Even at time of demolition, CLT is recyclable and can be reused.
- CLT also provides a higher level of thermal performance, reducing heating and cooling costs for occupiers.

B) About Prefabricated Prefinished Volumetric Construction

For Prefabricated Prefinished Volumetric Construction (PPVC), complete flats or modules made of multiple units complete with internal finishes, fixtures and fittings are manufactured in factories, and are then transported to site for installation in a lego-like manner. PPVC is more suited for projects which have a regular layout, such as residential projects, hotels, nursing homes, schools etc. For buildings that have a large span, such a shopping centres or factories, this technology might not be suitable as the modules would be too big to be transported to the construction site.

PPVC installation on site – Picture courtesy of UB Australia

Benefits of using PPVC for construction

- PPVC can help to significantly speed up construction. It can potentially achieve a productivity improvement of 30-50% in terms of manpower and time savings, depending on the complexity of the projects.
- Furthermore, dust and noise pollution can be minimised as more activities are done off-site.
- With the bulk of the installation activities and manpower moved off-site to a factory controlled environment, site safety will also improve.

DISTRIBUTION (via e-mail):

President
Institution of Engineers, Singapore (IES)
70, Bukit Tinggi Road
Singapore 289758
ies@iesnet.org.sg

President
Association of Consulting Engineers, Singapore (ACES)
18, Sin Ming Lane,
#06-01 Midview City
Singapore 573960
secretariat@aces.org.sg

President
Real Estate Developers' Association of Singapore (REDAS)
190 Clemenceau Avenue
#07-01 Singapore Shopping Centre
Singapore 239924
enquiry@redas.com

President
Singapore Contractors Association Limited (SCAL)
Construction House
1 Bukit Merah Lane 2
Singapore 159760
enquiry@scal.com.sg

President
Singapore Institute of Architects (SIA)
79 Neil Road
Singapore 088904
info@sia.org.sg

President
Society of Project Managers (SPM)
Macpherson Road P.O.Box 1083
Singapore 913412
sprojm@yahoo.com

President
Singapore Institute of Building Limited (SIBL)
70 Palmer Road,
#03-09C Palmer House
Singapore 079427
josephine@sib.com.sg

President
Singapore Institute of Surveyors & Valuers (SISV)
110 Middle Road #09-00
Chiat Hong Building
Singapore 188968
sisv.info@sisv.org.sg

President
Singapore Structural Steel Society (SSSS)
1 Liang Seah Street
#02-11/12 Liang Seah Place
Singapore 189022
secretariat@ssss.org.sg

President
Geotechnical Society of Singapore
c/o Professional Activities Centre
NUS Faculty of Engineering
9 Engineering Drive 1
Singapore 117576
geoss@nus.edu.sg

President
Professional Engineers Board, Singapore (PEB)
1st Storey, Tower Block, MND Complex,
5 Maxwell Road
Singapore 069110
registrar@peb.gov.sg

President
Board of Architects (BOA)
5 Maxwell Road
1st Storey Tower Block, MND Complex,
Singapore 069110
boarch@singnet.com.sg

Director
Protective Infrastructure & Estate
Defence Science & Technology Agency
1 Depot Road #03-01J
Singapore 109679
lcheehio@dsta.gov.sg

Deputy Director
Project Development & Maintenance Branch
Ministry Of Education
1 North Buona Vista Drive
Office Tower Level 9
Singapore 138675
eng_wee_tong@moe.gov.sg

Chief
Health Infrastructure Project
MOH Holdings Pte Ltd
1 Maritime Square #11-25
HarbourFront Centre
Singapore 099253
bengthong.koh@mohh.com.sg

Director
Best Sourcing Department
Public Utilities Board
40 Scotts Road #18-01
Environment Building
Singapore 228231
koh_boon_aik@pub.gov.sg

Chief(Sports Facilities)
Singapore Sports Council (SSC)
230 Stadium Boulevard
Singapore 397799
Kenneth_hui@ssc.gov.sg

Chief Planner
Urban Redevelopment Authority (URA)
45 Maxwell Road
The URA Centre
Singapore 069118
Lim_eng_hwee@ura.gov.sg

Deputy Chief Executive
Infrastructure & Development
Land Transport Authority
1 Hampshire Road
Block 8 Level 1
Singapore 219428
chong_kheng_chua@lta.gov.sg

Deputy Director
Project Devt & Mgt Sect 1 (C&S)
Building Quality Group
Housing & Development Board
HDB Hub
480 Lorong 6 Toa Payoh
Singapore 310480
hkc1@hdb.gov.sg

Director
Engineering Planning Group
JTC Corporation
The JTC Summit
8 Jurong Town Hall Road
Singapore 609434
chwee.koh@jtc.gov.sg

Director
Building
People's Association
9 Stadium Link
Singapore 397750
foo_soon_leng@pa.gov.sg

President
The Tunnelling and Underground Construction Society Singapore (TUCSS)
c/o CMA International Consultants Pte Ltd
1 Liang Seah Street
#02-12 Liang Seah Place
Singapore 189022
info@tucss.org.sg

President
Society of Rock Mechanics and Engineering Geology
1 Liang Seah Street
#02-12 Liang Seah Place
Singapore 189022
smeg@cma.sg

Director
Procurement and Project Facilitation Department
National Environment Agency
40 Scotts Road #19-01
Environment Building
Singapore 228231
tan_kok_hoe@nea.gov.sg

All CORENET e-Info subscribers