

The Hong Kong Polytechnic University  
(Attn: CHUNG Kwok-fai)  
Room 106, Block Z,  
The Hong Kong Polytechnic University,  
Hungghom, Kowloon, Hong Kong

8 April 2025

Dear Mr. CHUNG,

**Letter of In-principle Acceptance of  
Innovative Building Materials and Technologies (IBMT)  
(Acceptance Reference No.: IBMT 2/2025)**

This letter is issued to **The Hong Kong Polytechnic University** to confirm that **Structural Lightweight Aggregate Concrete** (Model No. **CRBMT - LWAC**) as submitted to the Buildings Department (BD) is acceptable in principle for use in private building projects in Hong Kong in respect of the performance aspects listed in Appendix I, subject to the following conditions:

- (i) The design and construction of any building project adopting the above material shall comply with the provisions of the Buildings Ordinance (BO) and its subsidiary legislations;
- (ii) The conditions as set out in Appendix II shall be complied with;
- (iii) The material shall be fabricated in the factories listed in Appendix III with a valid ISO 9001 or equivalent quality assurance certification; and
- (iv) This in-principle acceptance (IPA) is valid for 5 years from the date of this letter.

2. General information of **Structural Lightweight Aggregate Concrete** (Model No. **CRBMT - LWAC**) submitted by **The Hong Kong Polytechnic University** is available on BD's website.

3. Upon expiry of the IPA, application for its renewal should be prepared by a Registered Structural Engineer (RSE). In case different RSE is to be appointed, you are reminded to clarify any copyright issues.

4. This IPA shall not be construed as an exemption from obtaining prior approval and consent from the Building Authority under the BO before commencement of building works nor the granting of any exemption in gross floor area calculation.

/5. ...

5. This IPA does not give any warranties, explicit or implied, regarding their availability, efficacy, fitness for a particular purpose, title or non-infringement of copyright. The manufacturer/supplier/user must ensure that the above material is safe for public use and complies with all relevant legislation and statutory requirements at all times.

Yours faithfully,

A handwritten signature in black ink, consisting of a large, sweeping loop followed by a smaller, more intricate flourish.

**( CHAN Wai Tong, Victor )**  
**Chief Officer/Technical Services**  
**for Director of Buildings**

**c.c. WONG Kong-loi (RSE)**  
**c/o AECOM**  
**18/F, Grand Central Plaza, Tower 2,**  
**138 Shatin Rural Committee Road,**  
**Shatin, Hong Kong**

## Appendix I

### **Applicable Performance Aspects for In-principle Acceptance Reference No. IBMT 2/2025**

The in-principle acceptance covers the following performance aspects of **Structural Lightweight Aggregate Concrete** (Model No. **CRBMT - LWAC**) of **The Hong Kong Polytechnic University** under the Buildings Ordinance (BO) and its subsidiary legislations:

- (a) Section 3 of the Building (Construction) Regulation (B(C)R);
  - (b) Provisions for structural performance required under Code of Practice for Structural Use of Concrete 2013, Code of Practice for Precast Concrete Construction 2016 and B(C)R.
2. For other performance aspects of the material under the purview of the BO not listed above, compliance with the provisions of the BO and the subsidiary legislations shall be demonstrated when plans are submitted for approval under the BO.

## Appendix II

**Acceptance Conditions (Structural)  
for In-principle Acceptance Reference No. IBMT 2/2025**

The in-principle acceptance (IPA) of **Structural Lightweight Aggregate Concrete** (Model No. **CRBMT - LWAC**) of **The Hong Kong Polytechnic University** is subject to the following conditions:

- (a) The application of the captioned IBMT in building works should follow the plans accepted by the Buildings Department (accepted plans) and tally with the testing criteria of the submitted test reports;
- (b) The captioned IBMT is accepted based on the assumptions listed below. Overall stability, structural analysis, adequacy of structural member and/or structural connections, deflection etc. should be checked in future structural plans submitted for approval under the BO.
  - (i) Essential characteristic and properties of lightweight aggregate concrete (LWAC) are as follows:

Density of fresh concrete	1600 kg/m <sup>3</sup>
Oven-dry density of hardened concrete	1480 kg/m <sup>3</sup>
Characteristic compressive strength	Cube: 30 MPa Cylinder: 27 MPa
Short-term static modulus of elasticity	14.0 GPa
Bond strength for all reinforcing bars – with bar diameter $\leq 25$ mm (500B)	2.17 MPa ('good' bond condition) 1.52 ('poor' bond condition)
Coefficient of thermal expansion	$8 \times 10^{-6}/^{\circ}\text{C}$
Poisson's ratio	0.2

- (ii) Aggregate properties, testing methods, specified values and compliance requirement of lightweight aggregate (LWA) are as shown on drawing no.: 60721138/9202.
- (iii) Quality assurance and quality control for LWA are as shown on drawing no.: 60721138/9202.
- (iv) Constituents and mix proportions of LWAC are as shown on drawing no.: 60721138/9203.
- (v) Handling of LWAC for precast concrete and cast in-situ concrete are as shown on drawing no.: 60721138/9201.

- (vi) Design reference codes, standards and approaches are as shown on drawing no.: 60721138/9200.
  - (vii) Minimum requirements on fire tests for LWAC are as shown on drawing no.: 60721138/9200.
  - (viii) Quality assurance and quality control for LWAC are as shown on drawing no.: 60721138/9203.
  - (ix) Minimum requirements of site supervision for LWAC are as shown on drawing no.: 60721138/9200.
  - (x) Requirement of future maintenance for LWAC are as shown on drawing no.: 60721138/9201.
  - (xi) The usages of LWAC are limited to floor slabs, beams, columns and walls with exposure class 1 as stipulated in the Code of Practice for Structural Use of Concrete 2013 (2020 Edition) (Concrete Code) (which is similar to exposure condition of XC3 as stipulated in BS EN 1992-1-1:2004 (Eurocode 2) (i.e. moderate humidity)) or exposure class 2 as stipulated in the Concrete Code (which is similar to exposure condition XC4 as stipulated in Eurocode 2 (i.e. cyclic wet and dry)) with 60 minutes fire resisting requirement.
  - (xii) The designs of LWAC are limited to ignore the complementary shear strength between precast and in-situ LWAC elements.
  - (xiii) Design of temporary stage of LWAC is not included in the scope of this IBMT submission.
  - (xiv) Design of prestressed LWAC is not included in the scope of this IBMT submission.
  - (xv) Maximum diameter of reinforcing bars for LWAC is limited to 25 mm.
- (c) Fire resistance tests on horizontal and vertical elements should be carried out prior to commencement of the LWAC works. Fire test reports should be submitted and found satisfactory prior to commencement of the LWAC works.

## Appendix III

**Manufacturer and Factory**

Details of the accepted factory for manufacture of Structural Lightweight Aggregate Concrete (Model No. CRBMT - LWAC) of The Hong Kong Polytechnic University under acceptance reference no.: IBMT 2/2025 are as follows:

Manufacturer: The Hong Kong Polytechnic University

**Manufacture Factory and Address:**

Name	Address	Type of Works
China Resources Intelligent Building Technology (Jiangmen) Limited	Tianshui Yamen Town, Xinhui District, Jiangmen, Guangdong, People's Republic of China 529152	Production and supply of precast concrete product.
Redland Concrete Limited Yuen Long (II) Plant	1207 RP, 1208A, 1263 RP (part), 1264 RP & 1842 RP adjoining G.L. to DD 121 Tong Yan San Tsuen Road, Yuen Long, Hong Kong	Production of ready mixed concrete
Redland Concrete Limited Tuen Mun Plant	DD134 Lot 176 & 177 Lung Kwu Sheung Tan, Tuen Mun, Hong Kong	
Redland Concrete Limited Chai Wan Plant	1/F Safety Godown, 56 Ka Yip Street, Chai Wan, Hong Kong	

**Remarks:**

- (a) *The above factory shall maintain a valid ISO 9001 or equivalent quality assurance certification at all times.*
- (b) *The above factory shall maintain a valid certificate under the Quality Scheme for the Production and Supply of Concrete (QSPSC) at all times.*
- (c) *The following items in the Quality Assurance Scheme are for information only. Updated information should be submitted for future building projects with precast concrete construction with lightweight aggregate concrete (LWAC).*
  - (i) *Frequency and extent of inspection by in-house staff and independent parties required in Practice Note for Authorized Persons, Registered*

*Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-143; and*

- (ii) Frequency and extent of audit by in-house staff and independent parties required in PNAP APP-143.*