

**Dragages Hong Kong Limited**  
(Attn: WONG Kit-fai, Keith)  
26/F, Two Harbour Square,  
180 Wai Yip Street,  
Kwun Tong, Hong Kong

28 March 2025

Dear Mr. WONG,

**Letter of In-principle Acceptance of  
Innovative Building Materials and Technologies (IBMT)  
(Acceptance Reference No.: IBMT 1/2025)**

This letter is issued to **Dragages Hong Kong Limited** to confirm that **Precast Steel Fibre Concrete (SFRC) Tunnel Segmental Lining** (Model No. **SFRC-TUN-001-60/40**) 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 **Precast Steel Fibre Concrete (SFRC) Tunnel Segmental Lining** (Model No. **SFRC-TUN-001-60/40**) submitted by **Dragages Hong Kong Limited** 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 curve followed by a stylized 'S' and a vertical line.

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

**c.c. IEONG Kwok Lun (RSE)  
c/o AECOM  
12/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 1/2025**

The in-principle acceptance covers the following performance aspects of **Precast Steel Fibre Concrete (SFRC) Tunnel Segmental Lining** (Model No. **SFRC-TUN-001-60/40**) of **Dragages Hong Kong Limited** under the Buildings Ordinance (BO) and its subsidiary legislations:

- (a) Sections 3, 14 and 35 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 1/2025**

The in-principle acceptance (IPA) of **Precast Steel Fibre Concrete (SFRC) Tunnel Segmental Lining** (Model No. **SFRC-TUN-001-60/40**) of **Dragages Hong Kong Limited** 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 SFRC are as follows:

Characteristic Compressive Strength (28-days)	60 MPa
Characteristic Tensile Splitting Strength	4.1 MPa
Characteristic Limit of Proportionality (LOP)	4.5 MPa
Characteristic Residual Flexural Tensile Strength at Crack Mouth Opening Displacement (CMOD) = 0.5 mm ( $f_{R,1}$ )	4.0 MPa
Characteristic Residual Flexural Tensile Strength at CMOD = 3.5 mm ( $f_{R,4}$ )	2.0 MPa

- (ii) Constituents and mix proportions of SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/290.
- (iii) Early-age characteristic concrete compressive and flexural tensile strengths of SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/290.
- (iv) Design reference codes, standards, principles and considerations are as shown on drawing no.: 1201/B/301/BDJ/C03/290.
- (v) Mixing and casting procedures of SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/290.
- (vi) Minimum requirements on verification tests for SFRC, including precast yard and laboratory trials, are as shown on drawing no.: 1201/B/301/BDJ/C03/291.

- (vii) Minimum requirements on prototype tests and fire tests for SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/291.
  - (viii) Quality assurance and quality control for SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/291.
  - (ix) Minimum requirements of site supervision for SFRC are as shown on drawing no.: 1201/B/301/BDJ/C03/291.
  - (x) The usage of SFRC is limited to precast tunnel segmental linings in underground tunneling works.
  - (xi) The fire resisting rating (FRR) of SFRC is limited to a maximum of 240 minutes.
  - (xii) Geotechnical constraints and underground conditions should be carefully assessed for suitability of SFRC, particularly in areas with uneven load conditions, high shear zones or contamination sensitive area.
- (c) Prototype test of a precast SFRC segment in terms of 3-point bending test to verify the design capacity should be carried out. A performance test report shall be submitted and found satisfactory prior to the commencement of precast segment installation.
- (d) Prototype test of a precast SFRC segment in terms of TBM thrust loading test should be carried out. A performance test report shall be submitted and found satisfactory prior to the commencement of precast segment installation.
- (e) Qualified supervision for the production of SFRC on use of steel fibres with the specified dosage in concrete mix should be provided by the Registered Structural Engineer (RSE) and the Registered Contractor (RC) to ensure that the relevant standards would be complied with. The minimum qualifications and experience of the representative of the RSE and RC are to be the same as the technically competent person (TCP) of grade T3 of the RSE's stream and grade T1 of the RC's stream respectively, as stipulated in the Code of Practice for Site Supervision 2009 (2024 Edition).

### Appendix III

#### Manufacturer and Factory

Details of the accepted factory for manufacture of Precast Steel Fibre Concrete (SFRC) Tunnel Segmental Lining (Model No. SFRC-TUN-001-60/40) of Dragages Hong Kong Limited under acceptance reference no.: IBMT 1/2025 are as follows:

Manufacturer: Dragages Hong Kong Limited

#### Manufacture Factory and Address:

Name	Address	Type of Works
Winstand – Ho Jet (JV) Limited	中國廣東省深圳市龍崗區橫崗街道西坑社區平鹽鐵路橫崗站西坑折返段西側	Production and supply of precast concrete product.

#### 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 SFRC.*
  - (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.*