



## Package MAHSR P-3

### Addendum No. 3, Item No. 15, Attachment No. 01

#### 3.1.10.8 Pile Integrity Test on Working Piles (other than piles subjected to routine load test)

- a) Pile integrity test by Cross Hole Sonic Logging test as per ASTM D 6760 shall be carried out on each pile founded on rock. For piles founded in soil, at least 40% piles per pile group shall be tested by Cross Hole Sonic Logging test and each of the remaining piles shall be tested by Low Strain Integrity Test as per ASTM D 5882, however all piles shall have provision of tubes for sonic logging test.
- b) The piles founded in soils to be tested by Cross Hole Sonic Logging test shall be randomly selected by the Engineer.
- c) Following methodology shall be adopted for Cross Hole Sonic Logging test:
  - 1) Sonic Logging Tubes
    - i) All piles shall be provided with sonic logging tubes cast into it.
    - ii) The tubes shall be manufactured from steel and shall extend 0.5m above the pile head and 0.5m above the pile toe. The tube shall have an internal diameter not exceeding 50mm, except for one tube in each pile, where it shall be of internal diameter 150mm minimum in order to allow for coring of the concrete at the base of the pile.
    - iii) Three tubes shall be required for piles up to 800mm in diameter and four tubes shall be required for piles above 800mm in diameter.
  - 2) Proof Coring
    - i) For piles founded in rock, proof coring shall be done, as per clause 3.1.10.4 (d), for all piles. At least 7 days after the pile has been cast, but before carrying out any sonic logging test, a core of concrete and rock from the founding materials shall be taken.
    - ii) For piles founded in soil, proof coring shall be done only for piles with anomalous sonic logging test results. The core shall be taken from the base of the 150mm diameter sonic logging tube using a triple tube core barrel and shall have a minimum diameter of 50mm. The acceptance of coring shall be in the same manner as stipulated in Sub-Clause 3.1.10.4 hereinabove.
    - iii) The scanning of the pile toe for its integrity by measuring the propagation time of transmitted waves between the vertical tubes and the pile toe/founding strata shall also be carried out.
  - 3) Sonic Logging Equipment



- i) The equipment shall be properly maintained and calibrated.
- ii) Where necessary, means shall be provided to centralize the probes within the tubes, so that variation in the separation of the emitter and receiver resulting from clearance between the probes and the tubes does not occur.

#### 4) Test Procedure

The tubes shall be filled with water. The tests shall be repeated for each pair of tubes, i.e. three runs for a pile with three tubes and six runs for a pile with four tubes.

#### 5) Analysis of Test Results

- i) A report shall be prepared for each pile tested. The photographic record of the oscilloscope displays shall be analysed in detail.
- ii) A deviation from the record to be expected from a pile constructed entirely of sound concrete and without defect shall be reported. The report shall indicate the nature, location and severity of the defect and recommendations shall be made for further testing. The implication of the existence of the defect on the performance of the pile shall be evaluated.

#### 6) Submission of Results

Immediately after testing, a signed copy of all the raw data of a pile shall be given to the Engineer. A test report shall be submitted to the Engineer within 3 days after testing.

#### 7) Anomalous Sonic Logging Test Results

- i) The piles with anomalous sonic logging results shall be rejected at the Engineer discretion unless the Contractor is able to demonstrate that the pile integrity is acceptable through proof coring.
- ii) In case of piles founded on rock, if the results of sonic logging test and/or proof coring (and/or pile load test) confirm or indicate the existence of void, sludge or the like between the pile toe and rock, the Engineer shall reject such piles or pile group, or alternatively, as per geotechnical expert's advice, shall require the Contractor to clean and grout between the pile toe and rock.

#### 8) Grouting of Pile after Testing

Upon completion of sonic logging test, the access tubes and sonic coring holes, if any, shall be grouted using an approved concrete mix or an approved grout mix.

#### 9) Others

Anything not specified hereinabove shall be referred to in the most current version of ASTM D6760.



- d) Results of Low Strain Integrity tests shall be evaluated together with other information, including pile installation procedures and observations, soil information, loading requirements, etc., to assess the pile's acceptance. The report shall indicate the severity of defect and recommendations for further tests, repair or replacement. Immediately after testing, a signed copy of all the raw data of a pile shall be given to the Engineer. A test report shall be submitted to the Engineer within 3 days after testing. The Engineer's decision shall be final and binding on the Contractor without any extra payment.
- e) Before installing the test pile, the Contractor shall finalise the pile testing arrangement and obtain the consent of the Engineer.
- f) Pile tests shall be carried out under the direction of a suitable person experienced in the supervision of pile integrity tests.



## Addendum No. 3, Item No. 17, Attachment No. 02

### 6.2.9 Sheathing Ducts

#### 6.2.9.1 Sheathing Duct Material

- a) Ducts for internal and external prestressing tendons shall be High Density Polyethylene (HDPE) sheathing with more than 2% carbon black to provide resistance to ultraviolet degradation. The properties of raw materials for corrugated HDPE sheathing ducts shall comply with the technical report Bulletin 7 published by FIB “Corrugated plastic ducts for internal bonded post tensioning”. The duct shall be fully compatible with the proposed prestressing system.
- b) The sheaths shall be as long lengths as practical and of such strength that they cannot be dented or deformed during handling or concreting.
- c) Duct couplers shall be used in joints. All joints between ducts and any other part of the prestressing system shall be effectively sealed to prevent entry of cement paste, dust, water or other deleterious matter.
- d) For bridges with precast segmental girders and cast-in-situ girders, the uncoated prestressing steel is used as an internal prestressing tendon. Precast-segmental-duct-couplers FIB Bulletin 75 shall only be used in the segmental joint.

#### 6.2.9.2 Inspection and Testing of Sheathing Duct

Inspection and testing of sheathing duct, including precast-segmental-duct-couplers, shall conform to the requirements as per tests specified in “IS 1343 Prestressed Concrete - Code of Practice” and Table 6.a attached hereunder. In case there are any contradictions, the latter shall prevail. All test certificates shall be furnished by the Contractor.

**Table 6.a Testing of Sheathing Duct**

Name of test	Standard & Criteria to be applied	Note	
(1) Dimensional requirement	The test method and acceptance criteria shall be as per manufacturer’s standards.		
(2) Flexibility of duct system	IS1343 Annex B B-3.1 Workability Test		
(3) Lateral load resistance of duct system	IS1343 Annex B B-3.2 Transverse Load Rating Test	The test load shall be as per following unless otherwise specified in IS1343.	
		Diameter of Sheath(mm)	Load(N)
		More than 90 up to 130	1050



(4) Longitudinal load resistance of duct system	IS1343 Annex B B-3.3 Tension Load Test	The test load shall be as per following unless otherwise specified in IS1343.	
		Diameter of Sheath(mm)	Load(N)
		More than 90 up to 100	1900
		More than 100 up to 130	2200
(5) water tightness of duct system	IS1343 Annex B B-3.4 Water Loss Test  The water tightness should be deemed acceptable if there is no visually detectable loss of water during test period.		
(6) Stiffness of duct	FIB Bulletin 7 4.1.2 Flexural Behaviour of Duct		
(7) Concrete pressure on duct system	FIB Bulletin 75 6.7 Concrete Pressure in Duct		
(8) Bond test	IS1343 Annex B B-4.1 Bond Test		
(9) Wear resistance on duct system	IS1343 Annex B B-4.2 Compression Test for the Loss of Wall Thickness		
(10) Precast segmental duct coupler system	IS1343 Annex B B-3.4 Water Loss Test		

Tests specified in item (2) to item (5) above shall be carried out on the same sample in the order.

At least 3 samples for one lot of supply (not exceeding 7000m length) shall be tested.



## Addendum No. 3, Item No. 18, Attachment No. 03

### 8.2.1 Materials

#### 8.2.1.1 Steel Box Stoppers

a) This Stopper shall consist of materials conforming to Table 8.1 and the Drawing:

**Table 8.1: Materials of Steel Box Stopper**

Item	Physical Properties		Unit	Standard Value	Name of Test and Referred Standard	
Steel plate	Grade		-	See Table's Note 1	IS: 2062/JIS G 3101, JIS G 3106	
Post filling concrete	Grade		-	M40 or more, as per the Drawing	IS: 516	
Chloroprene Elastomeric elements	(1) Static shear modulus		MPa	0.60±0.10	Low displacement tensile test	JIS K 6254
	(2) Elongation		%	500 or more	Tensile test	IRC:83(Part II)
	(3) Oil resistance properties (Rate of volume change)		%	+120 or less	Oil resistance test	ISO 1817 Oil:IRM903 (ASTM D471) Temperature (°C) : 100 Duration (h) : 72
	(4) Ageing resistance properties	Rate of stress change at 25% elongation	%	-10 to +100	Ageing test	ISO 188 Temperature (°C) : 100 Duration (h) : 72
		Elongation change rate	%	-50 or more		
	(5) Permanent compressive strain rate		%	35 or less	Permanent compressive strain test	IRC:83(Part II) Temperature (°C) : 100 Duration (h) : 24
	(6) Ozone resistance properties		-	No cracking detected by visual observation	Resistance to ozone cracking - static strain test	IRC:83(Part II) Ozone concentration (pphm) : 100 Strain (%) : 30 Temperature (°C) : 40±1



				Duration (h) : 96
<i>Bolts and eye bolts</i>	<i>Grade</i>	-	<i>See Table's Note 2</i>	<i>IS: 2062/JIS G 3101, JIS G3459, JIS B 1180, JIS B 1181</i>

*Note:*

- 1) *Steel plate grade shall be: (i) E250 B0 or SM400A/SS400; (ii) E250 B0 or SM400B; (iii) E250 C or SM400C; (iv) E350 B0 or SS490A/SM490B; (v) E350 C or SM490C.*
  - 2) *Threaded rod = CAC304; eyebolt = SS400 or E250 B0; set bolts = SUS30A and Hole-filling bolt = Ordinary bolts.*
- b) Stoppers shall be inspected during manufacture in accordance with the provisions under this clause, by the manufacturer in the presence of the Contractor, and a sample check by the Engineer. The Contractor shall report the inspection result to the Engineer.
- c) The Contractor shall furnish the test certificates to the Engineer for obtaining his approval.

#### 8.2.1.2 Damper Stoppers

- a) Damper stopper shall be either the “KP Stopper” (e.g. OILES DAMPER STOPPER) or, it’s equivalent. The viscous fluid of damper stopper is a high-viscosity high polymer material with excellent performance of high flame resistance, high weather proof, and durability. It maintains stable resistance without deterioration of viscosity after repetitive shearing. The design parameters for the damper stopper shall be as specified in the Drawings.
- b) Damper Stoppers shall be inspected while being manufactured by the manufacturer in the presence of the Contractor, and if they are being manufactured in India, then they are also witnessed by the Engineer (if imported, then sample check shall be done by the Engineer). The Contractor shall submit these records to the Engineer.
- c) *This Stopper shall consist of materials conforming to Table 8.1a and the Drawing:*



**Table 8.1a: Materials of Damper Stopper**

<b>Item</b>	<b>Physical Properties</b>	<b>Unit</b>	<b>Standard Value</b>	<b>Name of Test and Referred Standard</b>
<i>Steel plate</i>	<i>Grade</i>	-	<i>See Table's Note 1</i>	<i>IS: 2062/JIS G 3101, JIS G 3106</i>
<i>Post filling concrete</i>	<i>Grade</i>	-	<i>M50 or more, as per the Drawing</i>	<i>IS: 516</i>
<i>Bolts and eye bolts</i>	<i>Grade</i>	-	<i>See Table's Note 2</i>	<i>IS: 2062/JIS G 3101, JIS G3459, JIS B 1180, JIS B 1181</i>

*Note:*

- 1) Steel plate grade shall be: (i) E250 B0 or SM400A/SS400; (ii) E250 B0 or SM400B; (iii) E250 C or SM400C; (iv) E350 B0 or SS490A/SM490B; (v) E350 C or SM490C.*
- 2) Threaded rod = CAC304; eyebolt = SS400 or E250 B0; set bolts = SUS30A and Hole-filling bolt = Ordinary bolts.*





**Addendum No. 3, Item No. 21, Attachment No. 04**

3.2(c) (iii)	Bankruptcy/ Insolvency and Debt Restructuring	<p>The Bidder shall not have suffered bankruptcy/insolvency during the last three (3) years from the date of deadline of submission of this Bid,</p> <p>and</p> <p>1. The Bidder shall have neither obtained debt restructuring in the immediately preceding three (3) years from the date of deadline of submission of this bid nor have applied for it (as on the date of deadline of submission of this Bid) and shall not be currently in the process of corporate debt restructuring,</p> <p>Or if</p> <p>2. The Bidder has obtained debt restructuring in the immediately preceding three (3) years from the date of deadline of submission of this Bid or has applied for it or are currently in the process of corporate debt restructuring (as on the date of deadline of submission of this bid), the Bidder shall open a dedicated "Trust &amp; Retention account" (T &amp; R account) in consultation with the Employer. Contractor shall submit a certified list of vendors/suppliers/sub-contractors/ consultants, associated and</p>	Must meet requirement	N/A	Must meet requirement	N/A	Form FIN –3
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		<p>engaged for the execution of the contract work. Bank will make payments on instruction of the Contractors to pre-certified vendors/suppliers/sub-contractors/ consultants only. The funds will be paid in the designated currency to Trust and Retention account only. The Contractor shall not divert the funds for the purpose(s) other than the intended purpose(s).</p>					
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## Addendum, Item No. 22, Attachment No. 05

# Form FIN -3: Declaration on Bankruptcy/Insolvency and Debt Restructuring

Date: *[insert day, month, year]*

Bidder's Legal Name: *[insert full name]*

JV/Consortium Party Legal Name: *[insert full name]*

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Page *[insert page number]* of *[insert total number]* pages

*[The Bidder shall submit the following undertaking for bankruptcy/insolvency and debt restructuring and shall be filled in for the Bidder and for each member of a JV/Consortium]*

*(Undertaking as per Sub-Factor 3.2 (c) (iii), Section III, Evaluation and Qualification Criteria, Part 1)*

We do hereby undertake that we have not suffered bankruptcy/insolvency during the last three (3) years from the date of deadline of submission of our Bid.

And

1. We do hereby undertake that we have neither obtained debt restructuring in the immediately preceding three (3) years from the date of deadline of submission of our Bid nor have applied for it (as on the date of deadline of submission of the bid) and also are not currently in the process of corporate debt restructuring.”

Or

2. We do hereby declare that we have obtained debt restructuring in the immediately preceding three (3) years from the date of deadline of submission of our Bid or have applied for it (as on the date of deadline of submission of Bids) or are currently in the process of corporate debt restructuring (strikethrough the clause which is not applicable). We do hereby undertake that we shall open a dedicated ‘Contract Specific Bank Account’ for credit of advances and all other payments received from the Employer under this Contract and for expenditures/debits made/to-be-made for the purpose of execution of the Works pertaining to this Contract; and that we will not divert the funds for the purpose(s) other than the intended purpose(s). Also, we give mandate to the Employer or their representative to make inspection(s) of this account whenever so desired by them.



**Bidder's Representative:**

Signature: .....

Name: .....

Position: .....

Date: .....

Company: .....

Company stamp: .....

The Statement of the Bidder as stated above is verified and certified as true and correct.

Chartered Accountant /Company Auditor/ Statutory Auditor

Signature .....

Name: .....

Position: .....

Date: .....

Company: .....

Company stamp: .....

Membership No: .....

Address: .....

Contact No: .....

Email ID: .....

**Notes:**

1. The Bidder should strike-off either paragraph no. 1 (or) 2 as above which is not applicable.
2. Bidder is not required to submit any document as documentary evidence along with the Bidding Documents. All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor.