



भारतीय राष्ट्रीय राजमार्ग प्राधिकरण

(पोल परिवहन, सड़क परिवहन और राजमार्ग मंत्रालय)

National Highways Authority of India

(Ministry of Shipping, Road Transport and Highways)

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No. 11041/218/2007-Admn.

24th September 2008

POLICY MATTERS: TECHNICAL (18/2008)

[Decision taken on PQ division's file no. 11018/10/2006/PQ]

Sub: Testing of materials for Highway works.

Guidelines for Quality Assurance/Quality control tests/specifications for the works are provided in relevant IRC Codes, M/o SRT&H specifications, BIS Codes and particular specification for work in the contract document. NHAI has also issued Quality Assurance Manual elaborating procedures, responsibilities and acceptance criteria as a base document which the contractors/concessionaires and Supervision Consultants are called upon to improve upon while preparing their project specific Quality Assurance Plan.

2. Though there are adequately prescribed guidelines and procedures for quality assurance, it has been observed that in some of the works these are not being strictly adhered. Therefore, further instructions in this regard are issued for strict compliance.

- (i) Detailed Laboratory Testing Procedural Manual for field testing laboratory as part of the Quality Assurance Manual shall be maintained by all the contractors and concessionaires for each project.
- (ii) It will be duty of the supervision/independent consultant to ensure that the Laboratory Testing Procedure Manual covers all key activities for the field/off-site testing of materials/products such as sampling methods, marking, packing, sealing and transport of collected samples for testing by standard calibrated testing equipments, presentation and analysis of test results in standard formats, acceptance criteria, special tests, procedure for handling non-conforming material/products, calibration of plants and testing equipments etc.
- (iii) Consultants shall also ensure that the contractor/concessionaire has proper set up necessary for calibration and testing procedures to ensure conformity of material as per IRC BIS/ISO and MoSRT&H guidelines (as applicable) and provide regular report to NHAI in their monthly progress report.
- (iv) For source approval and independent testing of materials, the Supervision/Independent consultants shall send test samples to the external laboratories in the following order of priority:
 - (a) Nearby laboratories accredited by NABL in accordance with ISO/IEC 17025 and/or ISO 15189 standards.
 - (b) Indian Institute of Technology
 - (c) National Institute of Technology

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(v) Within 3 months of source approval or/change of source conformity tests for three basic input material viz. Aggregates, Steel and Water as described below shall be got carried out from the external laboratories in the above order of priority..

(a) **Aggregates:** Samples for tests shall be representative of the materials to be used and collected in accordance with the procedure set forth in IS: 2430 and conformity to IS: 2386 Part I to VIII, IS: 383, BS: 812 and Specification of Road & Bridge Works issued by M/o SRT&H be checked. Details of tests to be conducted are given below:

Test for Aggregates:

- (a.1) Petrographic examination
- (a.2) Aggregate Impact value
- (a.3) Los Angels Abrasion value
- (a.4) Flakiness Index and Elongation Index
- (a.5) Water absorption of Aggregates
- (a.6) Soundness
- (a.7) Determination of deleterious and organic impurities
- (a.8) Alkali Aggregate reactivity (in case of concrete work)

Additional tests for Aggregates (For Bituminous Road Work)

- (a.9) Stripping value of Aggregates
- (a.10) Water sensitivity – If minimum retained coating in stripping test is less than 95%.
- (a.11) Polished stone value

(b) **Steel:** Samples for tests shall be representative of the materials to be used and collected and checked for conformity in accordance with the procedure set forth in IS:1786 & IS:2062. Following tests shall be conducted before source approval.

Test for Steel:

- (b.1) Nominal mass
- (b.2) Proof stress
- (b.3) Elongation
- (b.4) Tensile strength
- (b.5) Bend test
- (b.6) Re bend test

Chemical test

- (b.7) % Carbon
- (b.8) % Sulphur
- (b.9) % Phosphorous
- (b.10) % Sulphur + % Phosphorous

Chemical constituents for corrosion Resistant steel etc. shall be tested as per manufacturer's specifications. However, these specifications should satisfy the minimum standards specified in IS: 1786.

(c) **Water:** Samples for tests shall be representative of the materials to be used and collected and checked for conformity in accordance with the procedure set forth in IS: 456. The construction and curing water shall meet following requirements:

- (c.1) Neutralization requirements for reactivity with sodium hydroxide as per IS: 456.
- (c.2) Neutralization requirements for reactivity with sulphuric acid as per IS: 456.

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- (c.3) The PH value of water shall be not less than 6.
(c.4) Permissible limits for solids as per IS: 456 for following:
- Organic
 - Inorganic
 - Sulphates
 - Chlorides
 - Suspended matter

3. The above policy shall come in force with immediate effect and all the PDs shall personally ensure compliance at their level. For ongoing projects conformity test be carried out within three (3) months of issue of the circular.


25/09

(V.K. Sharma)
General Manager (Admn.)

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