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No 22749/ Misc/ 1072 /E2 (Design-3)

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ENGINEER-IN-CHIEF'S BRANCH
E2 DESIGN (D-1/D-3)

ADVISORY ON THE USAGE OF MANUFACTURED SAND
FINE AGGREGATES

A copy of this office letter No 22749/Misc/1072/E2 Des-3 dt 01 Aug 2017 on the subject matter is fwd herewith and you are requested to upload the same to mes website www.mes.gov.in for info of the environment.


(Narayana MT)
Lt Col
Offg Dir (Des)
For E-in-C

Encls: (As Above)

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No 22749/ Misc/ 1072 /E2 Des-3

01 Aug 2017

E-in-C's Br List 'A' & 'B'

ADVISORY ON THE USAGE OF MANUFACTURED SAND FINE AGGREGATES

1. There have been several queries from the environment with regard to the use of Manufactured Sand. A need was thus felt to issue these guidelines to remove any ambiguity, even though this HQ has not imposed any restriction on the use of Manufactured Sand or other fine aggregate in lean, plain and reinforced concrete works.

2. IS 386:2016-Coarse and Fine Aggregate for Concrete Specifications (Third Revision) describes in detail the specifications of aggregates obtained from other than natural sources. Fine aggregate is defined in IS 386:2016 as aggregate most of which passes through 4.75mm IS sieve and contains only so much coarser material as permitted in Clause 6.3 of the Code. Fine aggregate is further classified as under -

- (a) Natural Sand or Uncrushed Sand
- (b) Crushed Sand
 - (i) Crushed Stone Sand
 - (ii) Crushed Gravel Sand
- (c) Mixed Sand
- (d) Manufactured Sand or Manufactured Fine Aggregate

3. Manufactured Sand refers to fine aggregates manufactured from other than natural sources, by processing materials, using thermal or other process such as separation, washing, crushing and scrubbing. It includes Recycled Concrete Aggregate obtained from Construction & Demolition Waste.

4. Reduction in the availability of Natural sand which is the most preferred choice of fine aggregate material often delays the execution of works. Accepting officers may therefore permit use of other type of fine aggregates mentioned above including Manufactured Sand in their works as an alternative to the Natural Sand. Advantages which accrue from the use of Manufactured Sand are non presence of organic or deleterious materials and controlled shape and size which in turn assists in achieving desired result in the final product. However, the M-sand used should strictly conform to the provisions given in the relevant IS codes.

5. While using Manufactured Sand, following provision of IS codes will be borne in mind:-

- (a) IS 383:2016. Salient provisions to be followed are as under:-
 - (i) **Table 1 (Clause 4.2.1)**: utilization in lean, plain and reinforced concrete to the extent as a percent of total mass of fine aggregates.
 - (ii) **Clause 5.7**: Additional requirement for all Manufactured Aggregates as per Table 3 to 6
 - (iii) **Clause 6.3 & Table 9**: Gradation requirement of Manufactured Sand.
- (b) IS 2430. Method of sampling of fine aggregates.

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- (c) IS 2383 (Part 1 to Part 8), Testing of aggregates.
- (d) IS 4032 & IS 14959, Chemical tests for aggregates.

6. Where Manufactured Sand is used, instead of Natural Sand, BIS certification will be insisted from the supplier and following information shall be obtained from the manufacturer /supplier and kept on record -

- (a) Source of parent material and brief manufacturing process.
- (b) Special characteristics having bearing on concrete properties such as presence of adhered coating in case of Recycled Concrete Aggregate.
- (c) Service history if any especially name of projects where used and performance.
- (d) Special precautions to be observed during concrete production.

7. Manufactured Sand shall not be permitted for use in prestressed concrete.

8. Contract documents shall be prepared according to the provisions given in the IS Codes referred above.



(Girish Joshi)
Brig
DDGW (Des)
For E-in-C

E2W (PPC) : For info please
E8 (CONTRACT MANAGEMENT) : For info and necessary action please.



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