JSCE-SF3 METHOD OF MAKING SPECIMENS FOR STRENGTH AND TOUGHNESS TESTS OF SHOTCRETED STEEL FIBER REINFORCED CONCRETE

1. SCOPE

This standard specifies the method of making specimens for compressive strength tests, flexural strength tests, shear strength tests, compressive toughness tests and flexural toughness tests of shotcreted steel fiber reinforced concrete[1)].

Note 1) The number, dimensions and dimensional accuracy of specimens shall be in accordance with the Japan Society of Civil Engineers standard, JSCE-SF 2 (Method of Making Specimens for Strength and Toughness Tests of Steel Fiber Reinforced Concrete).

2. SPECIMENS OF SHOTCRETED CONCRETE

Specimens of shotcreted concrete shall be cut out from concrete shotcreted onto large panels prepared in advance[2)].

Note 2) Specimens made by directly shotcreting into small molds (10 x 10 x 40 cm) generally employed for quality control shall not be used.

3. APPARATUS FOR MAKING SPECIMEN

3.1 The cutter shall be a concrete cutter or a concrete core drill capable of cutting specimens to specified dimensions

3.2 The large-sized panel which is to be shotcreted shall be of dimensions in accordance with the objective of the tests, and the dimensions shall be at least 5 cm larger in cross section and length than the dimensions of the specimen to be cut out.

4. MAKING OF SPECIMENS

4.1 Shotcreting of concrete shall be perpendicular to the large-sized panel, and the method of shotcreting shall be selected in accordance with the objectives[3)].

Note 3) For quality control of the actual structure, the method shall be identical to that used for the actual structure.

4.2 As a rule, the direction in which the specimen is to be cut out shall be selected in accordance with the objectives.

Remarks: Generally, in the case of tunnel lining projects, cutting out is done in the direction as indicated in Fig. 1.

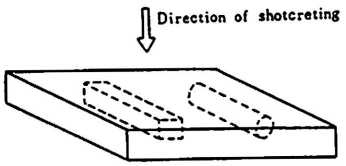

Fig. 1 Direction of cutting out

4.3 Cutitng out shall be performed at a time when concrete has sufficiently hardened and bond of fibers, coarse aggregate, etc. with mortar will not be damaged by cutting out operations[4]. Further, cutting out shall be performed in a manner that coarse aggregate and fibers will not be loosened.

Note 4) In general, minimum age of 14 days will be recommended.

4.4 Specimens which have been damaged at the time of cutting out, or with fibers or coarse aggregates loosened, shall not be used for testing.

4.5 When cutting out, the direction of shotcreting shall be inscribed on the surface of the specimen without fail, and considerations should be given to make possible loading in accordance with the objectives.

4.6 As a rule, specimens shall be cut to be within the specified dimensions, but especially, in case there are irregularities at the cut surfaces or the degree of parallelism is poor, either capping[5] or grinding of the surfaces shall be done.

Note 5) Sulfur or gypsum may be used as capping material, and the capped portion shall not break first.

5. REPORT

The report shall include necessary items from the following:

1) Objective of test,
2) Location of placement,
3) Method of shotcreting (equipment, conditions, etc.)
4) Types and properties of materials used,
5) Mix proportions of concrete,
6) Date and time of making specimen, age, date and time of strength test,
7) Direction of cutting out of specimen and shape and dimensions of panel,
8) Configuration and dimensions of specimens,
9) Number of specimens,
10) Curing method and curing temperature,
11) Others.