

Question

I am a railway engineer. I am retired Dy Chief Engineer. I am now a internal consultant for railway private sidings. Some bridges are also constructed. My question is what should be the frequency of testing of concrete?

Answer

To keep control on the quality of concrete produced, it is required to cast a number of specimens from random samples and test them at suitable intervals. Indian Standard IS: 450-2000 stipulates that random samples from fresh concrete shall be taken as specified in IS: 1199-1959 and cubes shall be made, cured and tested at 28 days as described in IS:516-1959. The test result of a sample should be the average of the strength of three specimens (constituting the sample). The individual variation should be no more than ± 15 percent of the average. If it is more the test result of the sample is invalid. The random sampling procedure is adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units.

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The Indian Code of Practice prescribes minimum frequency of sampling of 1,2,3 and 4 number of samples respectively, for 1-5, 6-15, 16-30 and 31-50 cubic meters of concrete being used in the job.

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For concrete quantity of 51 cubic meters and above, the number of samples shall be 4 plus one additional sample for every 50 cubic meter of concrete or part thereof. At least one sample should be taken from each shift. In case of continuous production e.g. ready mix concrete plant, the frequency of sampling may be as per agreement. Additional samples may be required for various purposes such as 7 days strength, accelerated tests, time of striking formwork etc.□□

Concrete Testing

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As far as the requirements of specifications with regard to the acceptance criteria is concerned, IS: 456-2000 stipulates that the mean strength be related to the grade and the standard deviation of any four non-overlapping□ consecutive test samples.

I hope this helps.

Regards

Dr Sharma