



Technical Note – 1

Sub: - Andhra Pradesh Rural Roads Projects (APRRP)- Panchayat Raj Engineering Department (PRED)- PMC Services: V&QC Inspections- Package Nos 15&16 and 12 of WG and EG districts- Testing of CC roads by QC wing – Certain Issues- Reg.

Ref: - 1. Contract Agr. no: /2018-19 dated 20/02/2019 for Project Management Consultancy (PMC).

2. Lr No VI IPL/APRRP/WG/Pkg-15-16/2020/36 dt 27.06.2020 and VI IPL/APRRP/WG/Pkg-12/2020/22 Dt 27.06.20 of M/S Vrddhi Infratech India Private Ltd. Hyderabad.

3. IS:516(Part 4)-2018: Hardened Concrete- Method of Test (First Revision)

Dear Sir,

With ref to the 1st cited the Contractor has represented certain issues regarding QC inspection of CC roads and explained the present scenario of QC inspections as mentioned below.

1. At present QC team is inspecting the CC works after completion of 28 days for issuing necessary certificate in terms of quality.

2. If the road is having a length of 2 Kms it will take min 40 days for execution of CC road and further require 28 days for extraction of cores to issue necessary certificate by the QC authorities.

3. As a result of the above it will take 60-70 days to raise the bills for making payment in respect of CC roads which leads the contractor forcibly into financial Crunch. In light of the above, the following issues need attention of the Project Director to sort out, since the same was the problem of all the contractors in all the packages.

1. Cores can be extracted from Hardened Concrete after 14 days, for grades of concrete up to M25 and for higher grade, cores may be taken at any early stage. The true extract of IS:516(Part 4)-2018 (Hardened Concrete-Methods of Test) which relates to the age at which cores can be extracted for testing the strength of concrete. The clause appended herewith for perusal.



5 EXTRACTION OF CORES


5.1 Age of Concrete

Core to be tested for strength shall not be removed from the structure until the concrete has become hard enough to permit its removal without disturbing the bond between the mortar and the coarse aggregate. As a general guideline, for grades of concrete up to M25, the concrete shall be at least 14 days old before the cores are taken. For higher grades, cores may be taken at an earlier age.

2. Based on the above guidelines cores can be extracted from hardened **concrete at least after 14 days** and the results can be compared to the corresponding equivalent strength of cubes at 14 days to assess the quality of CC pavement instead of 28days which will shorten the duration of issuing QC certificate.
3. To arrive the exact strength of cubes at age other than 28 days may be obtained from Table 900-5 of MoRTH -Fifth Revision (Age-strength relation of concrete – Related to 100 % at 28 days). From this Table, the strength of cube at 14 days is found to be 87.5% of 28 days strength. This value can be taken for comparison of results obtained from core test for 14 days. True extract of above Table 900.5 is appended below for information (Annexure-I).
4. To mitigate the hard ship of contractors from financial problems, instructions may be given to V&QC staff to extract cores from CC pavement after 14 days as per ref 2nd cited as against 28days which the department follows at present. This facility will also improve the performance of the project in terms of expenditure instead of waiting for 60 to 70 days.

Hence necessary orders may be issued to the V&QC staff in this regard for better performance of the project in terms of expenditure.

Date: 24.07.2020


Design Engineer
PMC. APRRP



Annexure-1

Quality Control for Road Works

Section 900

**Table 900-5 : Age-Strength Relation of Concrete (Related to
100 percent at 28 Days)**

Days	0	2	4	6	8
0	—	41.0	60.0	71.0	77.5
10	81.5	85.0	87.5	90.0	92.0
20	94.0	96.0	97.5	98.5	100.0
30	101.0	102.0	103.5	104.5	105.5
40	106.5	107.0	108.0	109.5	110.0
50	110.5	111.0	112.0	112.5	113.0
60	114.0	114.5	115.0	115.5	116.0
70	116.5	117.0	117.5	118.0	118.5
80	119.0	119.5	119.5	120.0	120.5
90	121.0	121.5	122.0	122.0	122.5
100	123.5	123.5	123.5	124.0	124.5
110	125.0	125.0	125.5	125.5	126.0
120	126.0	126.0	127.0	127.0	127.5
130	127.5	128.0	128.5	128.5	129.0
140	129.0	129.5	129.5	130.0	130.0
150	130.5	130.5	131.0	131.0	131.5
160	131.5	131.5	132.0	132.0	132.5
170	132.5	132.5	133.0	133.0	133.5
180	133.5	134.0	134.0	134.5	134.5
190	135.0	135.0	135.0	135.5	135.5
200	135.5	135.5	136.0	136.0	136.5
210	136.5	136.5	137.0	137.0	137.0
220	137.0	137.5	137.5	137.5	138.0
230	138.0	138.5	138.5	138.5	138.5
240	139.0	139.0	139.0	139.5	139.5
250	139.5	140.0	140.0	140.0	140.0
260	140.5	140.5	140.5	140.5	141.0
270	141.0	141.0	141.5	141.5	141.5
280	142.0	142.0	142.0	142.0	142.0
290	142.5	142.5	142.5	142.5	142.5
300	143.0	143.0	143.0	143.0	143.5