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No.E-in-C/PWD/Works/2022/GC./ 4456

Dated:06.10.2022

**Subject: - Quality Circular (No.1/OM/2022-23/E-in-C/PWD/GNCTD.)**

Instances of deterioration in the structures of the buildings have been noticed in a very short period as compared to its designed life. It is very important to ensure desired quality of the structures so as to live its designed life as well as to reduce the future maintenance expenditure. Therefore directions are issued for strict compliance.

### **RCC/Structure Work**

1. The quality of water to be used in RCC/ construction work should be got tested before start of work. If required, the agency may be asked to get the municipal water or install a RO plant at site to treat ground water, to make it fit for construction, if it is not fit for construction. This is very-very important aspect to be implemented at all the sites.
2. It should be ensured that the structural design is based on soil investigation report of the site only and foundations are rested only on firm ground and not filled up soil.
3. The columns of various buildings should be casted up to a height/level so that top reinforcement of roof beams is bent downward with desired development length and the holding down bolts for steel structure are properly embedded, wherever required.
4. The calibration of the concrete mixture being used to produce the design mix concrete to be carried out at regular frequency as per norms. The grading of the coarse sand & coarse aggregate should be checked before allowing concreting. Grading of both size 20mm & 10mm aggregates should be regularly checked to ensure compliance of design mix approved for the site. Proper check on quantity and quality of ad-mixture being used should be exercised. The correction in water quantity in design mix should be carried out after regular checking of moisture



content in coarse sand/coarse aggregate. Trial mix should also be carried out at site at regular intervals.

5. The stirrups in columns and beams reinforcement are having proper hook length and are bent to 135 degrees as per drawings.
6. The confining reinforcement in all the column beam junctions should be ensured.
7. The confining reinforcement in all the columns/ beams in confining zone, near column beam junctions, to be provided as per structural drawings and relevant IS code of detailing.
8. The staggering of laps in the reinforcement should be ensured meticulously after preparing a bar binding schedule right from the beginning.
9. The confining reinforcement in all the columns/ beams to be provided in the length/area of lapping of reinforcement bars as per structural drawings and relevant IS code of detailing.
10. The confining reinforcement in all the columns to be provided, in certain height of column becoming a part of pedestal, from pedestal top down ward, as per structural drawings and relevant IS code of detailing.
11. Extra Niddle vibrator to be ensured at site before allowing concreting to take care of any situation of malfunctioning of niddle vibrator during concreting.
12. Proper cover to reinforcement should be ensured in all the structural elements. The cover blocks of different size with proper binding wire should be available at site in sufficient quantity, in advance, before allowing shuttering.
13. The joint of Shuttering plates of slab/ beams/ columns should be sealed by pasting of packing or other suitable tape on joints and in columns/beams, foam may be used to seal the corner joints to ensure that there is no leakage of slurry during concreting.
14. The steel plate of proper size may be welded with GI pipes to be embedded in RCC walls/slabs of overhead/underground tanks by making hole in the steel plate and place this assembly of steel plate welded with pipe at the center of RCC wall/slab before casting. This will avoid leakage of water through the joint of RCC element and outer surface of GI pipe. This arrangement is called puddle flange.
15. Proper curing should be ensured for all cement work (plaster, RCC/ concrete etc). For this purpose, date of completing the job should be written on the surface. In case of RCC slab, flooding with water should be ensured.
16. For repair of minor honey combing in concrete, wherever visible and dismantling is not advised, should be repaired after removing the loose portion, doing the injection grouting and repair the same with appropriate material of reputed companies like



FOSROC, BASF etc. In no case, honey combed area should be plastered before doing proper treatment.

### **Plumbing/ Sanitary Work**

1. As far as possible, floor trap, for drainage in toilets etc., should be located in a corner so that proper slope is achieved in the flooring easily.
2. All GI pipes should be properly applied with anti-corrosive bitumastic paint/ primer/paint at ground itself before cutting and fixing in position, in concealed or at surface as it is difficult to do priming/painting on whole surface after fixing in position. Any priming/painting, damaged during fixing, should be redone.
3. The pressure test of all the GI Pipe lines should be conducted after fixing in position. Similarly, Smoke tests of all the sanitary pipes should be conducted. No wall tiles and floor tiles should be allowed to be fixed before pressure test/smoke test. This is very much important so as to avoid seepage in future.
4. The levels of the flooring in wet areas may be kept lower than level of general floor.
5. The slope in the wet area (toilet, kitchen, bath etc.), varandah, roofs and canopies should be checked by flooding with water.
6. All internal plumbing, sanitary lines, firefighting, external drainage and sewer line etc. should be checked/ tested for smooth functioning. It is directed that in all the toilets and wash basins etc, water taps may be opened continuously for some time to test the water supply / sanitary lines to ensure that no line is choked and drainage of water till last point of disposal is smooth.

### **General points**

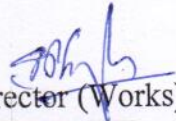
1. Proper compaction of earth should be ensured in plinth of various buildings so that there is no settlement of the floor at a later date.
2. If the area is termite infested, necessary action to be taken as per specifications.
3. All RCC tanks should be filled with water for some time to check any leakage before completion of work itself.
4. Mandatory tests of all the materials to be used in the work should be carried out in time as per prescribed frequency in accordance with agreement provisions & CPWD specifications.

EE/AE/JE & contractor should thoroughly inspect each building and other development works to prepare the list of deficiencies, if any, building wise during currency of work itself & ensure attending the same in a systematic manner along with other on-going activities.



**Copy For Information and necessary action to –**

1. Pr. C.E. (Project), 9<sup>th</sup> floor MSO Building.
2. Pr. C.E. (M&F), 12<sup>th</sup> floor MSO Building.
3. CE (East), 3<sup>rd</sup> floor MSO Building.
4. CE (North), 5<sup>th</sup> floor MSO Building.
5. CE (South), 7<sup>th</sup> floor MSO Building.
6. CE (Flyover), 4<sup>th</sup> floor MSO Building.
7. CE (Health), 2<sup>nd</sup> floor MSO Building.
8. CE (Projects), 1<sup>st</sup> floor MSO Building.
9. CE (O.P.), 13<sup>th</sup> floor MSO Building.
10. PWD Website.

  
Dy. Director (Works)  
P.W.D GNCTD.