



**Summary of Health Audit of Constructed Four Towers: T1, T2, T3 & T4 of
Verve Project at Greater Noida (U.P.)**

A. Structural health audit related observations

1. The health audit of already constructed four towers of Verve Project, Greater Noida shows acceptable results and thus the health of constructed structural members can be considered satisfactory. No serious structural distress has been observed in the buildings under reference and they are found to be largely alright.
2. The non-destructive tests for evaluating quality and integrity of concrete on the basis of pulse velocity and surface hardness results in various RC structural members of buildings show satisfactory results at most tested locations. Therefore, the quality of concrete construction is found to be quite satisfactory. However, there are a few isolated locations in beams and columns of towers, where doubtful quality and integrity of concrete have been noted. Corrective measures need to be taken up to restore quality and homogeneity of concrete in these members.
3. An assessment of in-situ strength of concrete and thereby evaluation of compliance with the specified grade of concrete show satisfactory results in all the building towers. In view of this it can be said that the in-situ concrete is in compliance with the specified concrete grades.
4. The durability vulnerability evaluation tests show satisfactory results and acceptable quality of construction with respect to the durability specifications in all the structures under reference. The chemical make-up of concrete with respect to the presence of chlorides, sulphates, carbonation and pH is found to be complying the acceptable standard values in almost all the structural members. Half-cell potential values did not show any active corrosion in the RCC. The thickness of concrete cover has been found to be largely fine.

5. Examination of compliance of construction of RC structural members in terms of their number, sizes, reinforcement detailing and maintenance of correct construction records during the construction show the construction of various structural member to be complying the design specifications in general.

B. Rectifiable construction related deficiencies/ defects

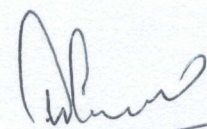
1. A few construction related defects have been noted based on the investigations undertaken in this study and same need to be rectified.
2. A thorough visual inspection & distress mapping has shown few construction workmanship deficiencies in some structural members of various structures as marked in this report in detail. These deficiencies are mainly seepage/leakage, honeycombing & incomplete section concreting, and few surface cracks, both structural and non-structural.
3. While taking UPV measurements, visibly honeycombed or cracked locations were not chosen for testing as these locations anyway would yield unsatisfactory results. Such locations are already declared unsatisfactory on the basis of visual inspection and distress mapping.
4. As regards the exposed bars hanging through partially built members, will only be reused if no pitting or loss in section are recorded.
5. The thickness of concrete cover has been found to be deficient though at few locations as pointed out in this report and all such locations would need appropriate corrective measures.
6. Recommendations have been made to repair those structural members where distresses and deficiencies have been reported in this report with respect to the health safety audit.

C. Concluding observations

It is expected that the client shall take due care in addressing the construction related deficiencies/ defects while taking finishing work of the buildings. The construction of Towers T1 to T4 of Verve Project is found to be in good health and in accordance with the design specifications, subject to rectification of construction related deficiencies wherever observed and mentioned in the detailed report

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Signature of P.I.

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