



# Fr. Agnel School

...together ...and always ahead.

(Aff. to CBSE - No. 2730108)



No. FASD/MCD/20-21/02

03<sup>rd</sup> March 2023

Municipal Corporation of Delhi  
Office of the Executive Engineer (Bldg)  
South Zone, Green Park  
New Delhi



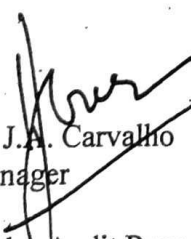
Sub : Structural Audit to make Building Seismically Compliant

Sir,

1. Kindly refer to your notice No D/2412/EE(B)-I/Bldg/SZ/2022 dated 01.09.2022.
2. We are glad to submit the report of the Structural Safety Audit carried out in October-November 2022 by MCD empaneled Structural Engineers Er. R.V. Kumar (MCD Regd. No SE/01) and Er. Vivek Kumar Pankaj (MCD Regd. No SE/0328), as desired vide your letter under reference.
3. As the report indicates some minor retrofitting, we have requested the contractors to carry out it as soon as possible and the same will be carried out as per norms.

Thanking you,

Yours faithfully

  
Fr. J.A. Carvalho  
Manager

Encl : Audit Report as indicated at Para 2 above.





**MUNICIPAL CORPORATION OF DELHI**  
**OFFICE OF THE EXECUTIVE ENGINEER (BLDG)**  
**SOUTH ZONE: GREEN PARK**  
**NEW DELHI**

No. D/ 2412 /EE(B)-I/Bldg/SZ/2022

Dated: 01/12/2022

**REMINDER-I**

**NOTICE**

**SUB: Structural Audit to make Building Seismically Compliant**

Whereas, notification vide No. F.7(87)/AD/LB/2016/CD 000389764/3355-64 dated 24.04.2019 followed by subsequent notification F.7(87)/AD/LB/2016/CD.000389764/314-323 dated 10.02.2020 was issued by GNCTD therein it was directed to ensure seismic safety of existing buildings by way of retrofitting, if required.

Whereas, in the matter of Arpit Bhargawa & Anr V/s North Delhi Municipal Corporation and other, WP(C) No. 4534/2015, Hon'ble High of Delhi directed all three Municipal Corporations of Delhi to implement the provisions of above mentioned notifications in a time bound manner in order to ensure the safety of public in the event of major earthquake.

Whereas, Municipal Corporation of Delhi had issued public notice in leading newspapers on 18.06.2020 for compliance of the notifications in respect of safety of building against earthquakes. The list of empanelled structural engineers is available on website @ [http://jmcdonline.nic.in/ieodb/RegisteredStructureEngineers30\\_07\\_2019%20at%2004\\_16\\_07%20PM.xls](http://jmcdonline.nic.in/ieodb/RegisteredStructureEngineers30_07_2019%20at%2004_16_07%20PM.xls) Structural audit can also be carried out from DTU, IIT Delhi, Engg. College under IP University & other Engineering College / Universities recognized by AICTE in Delhi/NCR.

**Whereas, it has come to the notice of the undersigned that the building i.e. Father Angel School, Gautam Nagar, New Delhi is old and may require retrofitting to make it seismic compliant in order to ensure safety of users in case of earthquake.**

Therefore, you are hereby directed by this notice to get the structural safety audit of the building from the above mentioned structural Engineer / Institutions and submit the structural audit report along with action plan within a period of 07 days from the date of the notice.

In case retrofitting/structural strengthening is recommended then the action plan should to be submitted indicating the time of completion of the same which should not be more than six months in any case. Thereafter complete report certified by structural Engineer/ institution be also furnished to this office.

Non-compliance will attract action as per law.

*Signature*

Asstt. Engineer (Bldg.)  
South Zone

Owner / Occupier  
Father Angel School

**CONDITIONAL ASSESMENT FOR FR. AGNEL  
SCHOOL AT GAUTAM NAGAR, PHASE III, NEW  
DELHI**

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SE  
Date 14/1/23  
M. 88100  
M/S. R. S.  
D. 100. (Basement) S.

INSPECTION REPORT PERIOD: NOVEMBER 2022

REPORT FOR: Fr. Agnel School At Gautam Nagar, New Delhi

PURPOSE: Strength Assessment of Fr. Agnel School

NAME OF TESTING PERSONNEL:

Mr. R.V. Kumar B E Civil

TYPES OF EQUIPMENTS USED :

1. Rebound Hammer

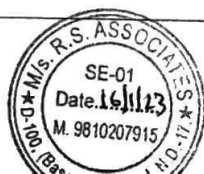
NAME OF SOFTWARES USED :

- a. Etabs
- b. Excel
- c. Auto cad



## FINAL IMPRESSION

S. No	Name of The Test/ Scope	Limitation	Observation
1	Rebound Hammer Test	Rebound Hammer (IS 13311 (Part-2)-1992.) : - Surface Hardness indices should be evaluated as per given: Concrete quality : Average rebound number above 40 — Very good layer, Between 30 to 40 — Good layer, Between 20 to 30 — Fair, less than 20 — Poor, Less than 10— Delaminated	Estimated strength is based on correlation graph between core strength v/s corresponding rebound hammer values. Statistical data shows that dominating percentage of quality of concrete is M25 for all types of RCC sections. Concrete surfaces are not suffering from surface hardness problem and there are no indications of blistering of concrete surface as per IS 13311(Part-2)-1992.
2	Column Reinforcement as Per Etabs Analysis	Permissible Percentage of reinforcement in terms of cross sectional area is 6.0%. But it is advisable to restrict the reinforcement to 4.0%.	It has been observed that reinforcement requirement in Etabs analysis isn't within the permissible limits. Hence retrofitting is required.
3	Beam Reinforcement as Per Etabs Analysis	Permissible Percentage of reinforcement in terms of cross sectional area as per ductile detailing code IS13920 -2016 is 2.5%.	It has been observed that reinforcement requirement in etabs analysis isn't well within the permissible limits. . Hence retrofitting is required.
4	Ultra sonic pulse velocity Test	Based on velocity in km/sec. If velocity $V > 4.5$ km/sec, quality is excellent. If velocity $V 3.5 < V < 4.5$ km/sec, quality is good. If velocity $V 3.0 < V < 3.5$ km/sec, quality is medium. If velocity $V < 3.0$ km/sec, quality is poor.	Maximum locations quality of concrete is found poor.




## 10. CONCLUSION

Based on the visual inspection and Test results of the members of the existing

Structure we conclude that:

- Test results analysis of the Rebound Number values is based on test conducted over concrete surfaces. Obtained test results explain about pattern of concrete equality of whole structure sections in terms of surface hardness. As per statistical data the value of Rebound number varies from 20 to 25. The grade of concrete for structure is found of **M25 as per rebound hammer values**. Concrete surfaces are not suffering from surface hardness problem. However, no indication of cracks, reinforcement exposed, Seepage & spoiling are observed on concrete surface.
- Histogram of USPV test results is analysed and found doubtful concrete quality in terms of density. As per test conducted on different locations and at maximum locations the quality of concrete is found doubtful.
- During walk over survey there is no major damage found in slabs, load bearing brick walls, columns and outer RCC work.
- There is no thickness reduction/corrosion observed, hence steel bars are not corroded.
- As per structural analysis, we found that columns and beam stresses are well within permissible limits.
- Some of the provided column of sizes 230x450 mm in basement part of building gets over stressed .Hence retrofitting required. This part of the building is the oldest and constructed in the year 1990 (as per Owner of the building).
- The inspection of the structure shall be done every year by the structural engineer.

Approved by   
Er. R.V. Kumar B E Civil  
MCD Regd.No- SE/01

Checked by  
Er. Vivek Kumar Pankaj  
(M.tech (Str)) MCD Regd. No. SE/0328

*Vivek K. Pankaj*

16/01/23