



COEP Technological University (COEP Tech)

A Unitary Public University of Government of Maharashtra
(Formerly College of Engineering Pune)
Wellesley Road, ShilvaJnagar, Pune-411005, Maharashtra, India

Prof. Mrs. Y. T. Lomte Patil

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COEP/Civil/YTL/2025/2467

To,

Date: 01/07/2025

Principal
PM SHRI KV- 2,
MIRC Ahmednagar

Sub: The structural audit report KV MIRC school building at Solapur road, Darewadi, Ahmednagar.

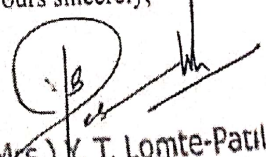
Ref: Your letter No. F.N.27029/KV MIRC/2024-25, Date-18.10.2024

Sir,

With reference to the above subject, a letter is received from your office for the structural audit and safety certificate of Kendriya Vidyalaya MIRC school building at Solapur road, Darewadi, Ahmednagar. In this regard a site visit was made by faculty of Civil Engineering Department, COEP Technological University, on 26/04/2025 along with the representatives from your school. Based on the visual inspection, and the information received from your office representative a detailed report along with photographs is prepared which is attached herewith.

Thanking you

Yours sincerely,


Prof. (Mrs.) Y. T. Lomte-Patil
Assistant Professor
Civil Engineering Department
COEP Technological University, Pune-05

Report of Kendriya Vidyalaya MIRC at Darewadi, Ahilayanagar





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4. Plinth level: 0.3 m above ground level.
5. Floor to floor height: 3.6 m
6. Architectural drawings of building: A photograph of the approved plan of the building as provided by the school authorities, is included for reference
7. Structural drawings of building: Not available.
8. Year of Construction: The building was constructed in the year 1992 and is approximately 28 years old.
9. Repair history in last year: Technical records or detailed information regarding structural repairs carried out in the past year are not available. However, internal painting and external painting on the front elevation have been carried out recently. As a result, it is difficult to visually identify any existing cracks or distress in the structural members that may have developed earlier. Additionally, plinth protection is not fully provided around the building, which may contribute to potential issues related to water seepage or foundation deterioration.
10. Observations:
 - i. A visual inspection of the building was carried out during the site visit. Photographs taken during the inspection, along with relevant comments, are attached to this report for detailed reference and documentation.
 - ii. Considering the RCC structure is approximately 28 years old, the concrete grade used is likely to be M15 or M20. The building remains stable with no signs of major deformation, significant cracks, or settlement. However, minor settlement cracks have been observed in some masonry walls, along with minor cracks in flexural members such as beams. A few columns exhibit cracks that needs closer monitoring and remedial action to ensure structural integrity.
 - iii. The slab and beams in the laboratory were found to be ok. However, up-heaving of the tile flooring was observed at some locations. This is likely due to the expansion of plinth filling material in the presence of moisture or intrusion of tree roots beneath the flooring.

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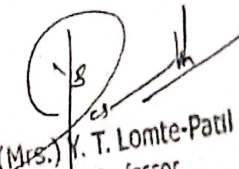
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Sr. No.	Name of the member and its location	Pulse velocity observed in km/sec	Remark on quality of concrete
1	External column front side 4 th column on right side	2.05	Poor
2	External column front side 7 th column on right side	2.89	Poor
3	C wing external column near expansion joint	2.89	Poor
4	A wing External 2 nd column near gate	2.17	Poor

UPV velocity criteria as per IS 13311 (Part 1) 1992

Sr. No	Pulse velocity by Cross Probing (km/sec	Concrete quality Grading
1	Above 4.5	Excellent
2	3.5 to 4.5	Good
3	3.0 to 3.5	Medium
4	3.0	Doubtful

UPV test on concrete is qualitative test for the concrete to assess the quality of concrete in terms of uniformity, incidence or absence of internal flaws, cracks and segregation etc. indicative of workmanship employed. Since number of sample taken in this case are less and all the sample reading are showing poor quality that does not mean the concrete of the existing columns should be rejected. The lower values may be due to deterioration of the exposed column over the period.


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11. In accordance with IS 13311 (Part 1 & 2):1992, Non-Destructive Tests such as the Rebound Hammer Test and Ultrasonic Pulse Velocity (UPV) Test were conducted at selected locations on sample columns and beams to assess the quality of concrete. The results of these tests are presented below for record purposes. It is important to note that NDT methods provide indicative values and are not entirely conclusive. The accuracy of results can vary between 15% to 30%, influenced by several factors including the age of the structure, quality of workmanship, presence and distribution of reinforcement, surface conditions, moisture content, internal voids, and curing history. Therefore, the test results should be interpreted cautiously and used primarily as a supporting reference for overall structural assessment.

NDT Test results of some sample structural members tested

Rebound Hammer Test

Sr. No.	Name of the member and its location	Estimated compressive strength of concrete	Remark
1	Ground floor Column of sport Room	16.55	Existing Concrete Grade may be considered as M15.
2	Ground floor Column of class room 10 B wing C	16.09	
3	First floor class room No. 6B wing C Beam	21.37	
4	First floor class room No. 6 B wing C column	23.82	
5	First floor class room No. 3 B wing A Beam	21.37	
6	First floor class room No. 3 B wing A column	16.26	
7	External column front side 4 th column on right side	26.50	Higher strength results may be due to carbonation of concrete in external environment
8	External column front side 7 th column on right side	29.13	
9	C wing external column near expansion joint	28.33	
10	A wing External 2 nd column near gate	27.45	

Note: The variation in strength indicates variation of quality of concrete may be due to workmanship. The Average compressive strength of concrete may be considered as 22.69 N/mm². It is reasonable to assume the grade of concrete as M20.

UPV Test

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Structural audit report of Kendriya Vidyalaya



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Overall Remarks:

Based on the visual inspection of the structural members of the school building, it is observed that the overall performance under the existing loading conditions is satisfactory. No major structural defects were noted, except for a few columns that show signs of distress.

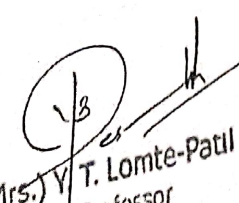
Minor repair works are recommended, including plastering of damaged chajjas, waterproofing of toilet blocks, and proper treatment of expansion joints to prevent potential leakage.

In certain areas of the building, horizontal cracks (gaps) between beams and walls, as well as shear cracks in the masonry walls, were observed. These are likely due to settlement or shrinkage. It is advised to repair these cracks using high-quality mortar to restore integrity and prevent further deterioration.

However, some structural members such as cracked columns, front-facing beams, and chajjas exhibit serious deterioration, including visible cracks and exposed reinforcement susceptible to corrosion. These elements should be strengthened and retrofitted using appropriate reinforcement techniques and high-quality repair mortar.

Additionally, the flooring in the laboratory area has been damaged due to up-heaving. This should be removed and replaced after proper treatment of the plinth filling area. Measures should be taken to prevent water ingress and eliminate root intrusion from nearby trees beneath the flooring.

To enhance the durability of the structure, external painting with waterproof paint and complete plinth protection around the building are also recommended.


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Technical Inspection Report of Kendriya Vidyalaya MIRC School Building at Solapur road, Darewadi, Ahilayanagar

Date of inspection: 26.04.2025

Introduction:

In reference to Letter No. F.N.27029/KV MIRC/2024-25 dated 18.10.2024, received from the Principal of Kendriya Vidyalaya MIRC, Ahilayanagar, a site visit was conducted on 26.04.2025 to assess the current condition of the school building located at Darewadi, Solapur Road, Ahilayanagar. The following individuals were present during the visit:

Sr. No.	Name of Person	Post	Organization
1	Prof. Mrs. Y. T. Lomte Patil,	Assistant Professor	COEP Technological University, Pune (Formerly College of Engineering Pune, Shivajinagar, Pune)
2	Mr. Machindra Gaikwad	Exam In-charge and senior clerk	Kendriya Vidyalaya MIRC School Ahilayanagar
3	Mr. Shaikh	Teacher	Kendriya Vidyalaya MIRC School Ahilayanagar

This technical inspection report has been prepared based on the information provided by the Principal of Kendriya Vidyalaya, the available documents, visual inspection of the structure, and Non-Destructive Testing (NDT) conducted on selected columns and beams.

Details of the school building and observations:

1. Name of Building and address: Kendriya Vidyalaya MIRC School Building Ahilayanagar
2. Use of Building: Primary and Secondary School.
3. Type of Building: The building is a Reinforced Cement Concrete (RCC) structure with a "C"-shaped plan configuration. It comprises a Ground Floor and First Floor, topped with an RCC slab used as a terrace, which has a mild slope for drainage. Notably, no parapet wall has been provided along the terrace perimeter.

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Structural audit report of Kendriya Vidyalaya MIRC at Darewadi, Ahilayanagar

