Department of Civil Engineering
COEP Technological University (COEP Tech)
A Unitary Public University of Government of Maharashtra
(Formerly College of Engineering Pune)
Wellesley Road, Shivajinagar, Pune-411005, Maharashtra, India

Phone: +91-20-25507206 Fax: +91-20-25507299

CONSULTANCY SERVICES

No. COEP Tech/Civil/CW/2025/VBD/2071/2136 Date: 29/05/2025

To,
The Principal,
PM Shri Kendriya Vidyalaya No. 1, Devlali
Rest Camp Road, Nashik

Subject: Structural audit of school buildings

Reference: Your letter No. F. No 27041/098/2024-25/केविदेव/, dated 07/11/2024.

Dear Sir,

As per the above reference, we have visited your Vidyalaya's existing buildings at Devlali, Nashik on Wednesday, 19th March 2025. The existing status of actual structures was thoroughly investigated. The observations have been recorded and enclosed herewith.

There are four building structures: (Ground+1 storied) main building, constructed in 1967, single storied Junior Science Laboratory, constructed in 1985, single storied primary section building constructed in 1978 and (Ground+1 storied) Nurse building constructed in 1996.

The distressed columns on ground and first floor of the main building need immediate attention and repairs as they may affect stability of the structure. The water proofing of terrace at certain locations shall be carried out immediately with proper repair techniques. Water seepage and leakages of toilet block shall be arrested to prevent further deterioration of the building. Pointing in exterior face of the masonry is also suggested.

Based on existing conditions, the main school building and the extension buildings of PM Shri Kendriya Vidyalaya No. 1, Devlali, Nashik, are declared safe for utilization as a school building.

Regards,

29/05/2025

Dr. (Mrs.) VAISHALI B. DAWARI
Associate Professor of Applied Mechanics
Department of Civil Engineering
COEP Technological University, Pune
(Formerly College of Engineering Pune)

COEP TECHNOLOGICAL UNIVERSITY ★ A Unitary Public University of Government of Maharashtra ★

Department of Civil Engineering
COEP Technological University (COEP Tech)
A Unitary Public University of Government of Maharashtra
(Formerly College of Engineering Pune)
Wellesley Road, Shivajinagar, Pune-411005, Maharashtra, India

Phone: +91-20-25507206 Fax: +91-20-25507299

CONSULTANCY SERVICES

No. COEP Tech/Civil/CW/2025/VBD/2071/2136 Date: 29/05/2025

Name of Work: - Structural safety audit of PM Shri Kendriya Vidyalaya No.1 Devlali Buildings

Date of Inspection: - 19th March 2025

Inspecting Officer: - Dr. V. B. Dawari, COEP Technological University, Pune

Inspection Method:- 1. Visual Inspection
2. Non-Destructive Testing

BASIC INFORMATION OF BUILDING

Sr No	DESCRIPTION	REMARK
1	Year of Construction	Main Building Reported to be constructed in 1967 Extension building: Junior Science Laboratory building: constructed in 1985 Primary section Building: constructed in 1978 Nurse Building: Constructed in 1996
2	Year of Occupation	1967, 1978, 1985 and 1996
3	Address	Devlali Rest Camp Road, Nashik
4	Number of Floors	Main Building: Ground+1 Junior Science Laboratory building: Ground storied Primary section Building: Ground storied Nurse (Medical) Building: Ground+1
5	Mode of Use	School Building
6	Whether General Arrangement Drawings / Architectural Drawings Available?	Yes/~~No~~

29/05/2025

Dr. (Mrs.) VAISHALI B. DAWARI
Associate Professor of Applied Mechanics
Department of Civil Engineering
COEP Technological University, Pune
(Formerly College of Engineering Pune)

COEP TECHNOLOGICAL UNIVERSITY * A Unitary Public University of Government of Maharashtra *

Sr No	DESCRIPTION	REMARK
7	Whether Structural Drawings Available?	~~Yes~~/No
8	Mode of Inspections	1. Visual Inspection 2. Rebound Hammer testing
10	Brief Description of the Building / Structure	Main Building (Reported to be constructed in 1967): Ground+1 RC Structure; Extension building: Junior Science Laboratory building (constructed in 1985): Ground storied RC Structure Primary section Building (constructed in 1978): Ground storied RC Structure Nurse Building (Constructed in 1996): Ground+1 RC Structure
11	Construction History Data: available or Not ? • Previous Test Reports if any • Previous Bills paid to contractors (if any available)	Not Available Structural Audit report prepared by College of Engineering in 2019 is available
12	Year of Last Repairs of Structural components	No Repairs of Structural components
13	Repair History	The building has no history of repairs of Structural components.
14	Flood History	The building has no history of water logging in the premises of the building

OBSERVATIONS

MAIN BUILDING

1. INSPECTION UP TO PLINTH

Sr. No.	DESCRIPTION	REMARKS
1.	Visual inspection	Building condition is good
2.	Settlement of columns	No settlement is seen
3.	Settlement of walls	Not observed
4.	Cracks in col., walls, joint at plinth	No cracks in the columns or walls observed.

2. SUPER STRUCTURE INSPECTION

Sr. No.	DESCRIPTION	REMARKS
1.	Distressed Column	• Average Strength observed: 15.18 N/mm^2 for columns near Girls Toilet on First Floor and near Boy's Toilet on Ground Floor; also for the column nearby Classroom [14] of IX-C. • Heavy Cracking and Corroded reinforcement observed in these columns affecting their load carrying capacity. • Immediate strengthening is required for these columns.
2.	Columns	• Average Strength observed: 24.4 N/mm^2 • Columns are in good condition
3.	Beams	• Average Strength observed: 17.2 N/mm^2 • Beams are in good condition • Spalling off beam concrete and cracks due to corrosion as observed in Room no.s 25 [Class VI-C], 27[Class VI-A] and 28 [Class IX-B], passage near 41 [X-A]
4.	Slabs	• Slabs are in good condition • Bottom slab reinforcement got exposed at Ground Floor Boy's Toilet.
5.	Walls	• Cracks in the southern side parapet wall observed. • Vegetative growth observed on passage walls at few places • Structural cracks observed on the walls at slab level in Class X-A, Passage of Junior Science lab, 57 [AV room],
6.	Flooring	• Flooring is in good condition.
7.	Leakages & dampness in walls	• Seepage observed in Room no. 25 [Class VI-C] : slab corner, 27 [Class VI-A], 33 [VII C], 37 [IX-B], Passage of Junior Science lab
8.	Toilet leakages, cracks	• Ground Floor: Gents Washroom and Boy's toilet -heavy leakage from the sunken slab above, cracks in Dado • Ground floor Boy's Toilet: Bottom slab reinforcement got exposed • First Floor Girls toilet: diagonal masonry cracks observed; need urgent repairs. Seepage on walls and slab.
9.	Electrical line	• Good condition
10.	Exterior face of walls	• Vegetative growth observed on the exterior face of walls • Masonry wall cracks observed • Leakages observed through plumbing line
11	Miscellaneous	• Peeling off plaster in front of terrace near Class room

Sr. No.	DESCRIPTION	REMARKS
		[14] of IX-C. Near this column, strength of column 17.5MPa; need strengthening. • Waterproofing needs to be re-done on the terrace • Chajjas are in broken condition with spalling off concrete with exposed corroded reinforcement. • Cracks observed in the slab of the entrance porch

PRIMARY SECTION BUILDING and Nurse (Medical) Building [Constructed in 1978 and 1996]

1. INSPECTION UP TO PLINTH

Sr. No.	DESCRIPTION	REMARKS
1.	Visual inspection	Building condition is good
2.	Settlement of columns	No settlement is seen
3.	Settlement of walls	Observed in Nurse building
4.	Cracks in col., walls, joint at plinth	Cracks in the walls observed in toilet of Nurse building.

2. SUPER STRUCTURE INSPECTION

Sr. No.	DESCRIPTION	REMARKS
1.	No of Floor	• Ground Story (1978); G+1(1996)
2.	Slabs	• Leakages in the slab seen for all Class-rooms of Primary wing
3.	Walls	• Walls are good in condition • Wall cracks observed in Classroom no. 53
4.	Beams & Columns	• Beams and columns are in good condition • Avg. Column strength 25.54 MPa for primary section and 26.95 MPa for Medical building • Avg. Beam strength 19.46 MPa for primary section and 16.67 MPa for Medical building • Structural cracks observed in Room no. 63 [IV-C]
5.	Flooring	• Flooring is good except Girls Toilet in Primary wing where floor tiles are settled.
6.	Cracks in internal walls	• No cracks observed in walls in primary section • Wall crack observed in Nurse building
7.	Leakages & dampness in walls	• Leakage observed in all roof slabs of Primary wing

Sr. No.	DESCRIPTION	REMARKS
8.	Toilet leakages, cracks	• Seepage observed in Girls toilet as well as in Boy's toilet of primary section • Vegetative growth observed on external wall of toilet block of primary section. • Seepage observed in Classroom 64 [V-B] in Nurse building
9.	Electrical line	• Good condition
10	Other	• Fall of concrete from Chajja. Reinforcement bars are open. Some reinforcement bars are also cut. • Construction joints are open • Water tank (unused) is corroded at bottom, spalling off concrete, cracks in container wall

SUMMARY OF STRUCTURAL AUDIT:

1. Three columns at Ground Floor near Gents and Boy's toilet and on first floor near Girl's toilet have been observed in distressed condition. They need urgent repair and strengthening at both Ground and First Floor level.
2. Major leakages due to rainwater (Primary Wing) shall be repaired.
3. Most chajjas are broken with fall off concrete and exposed corroded reinforcement. These need to be removed/repaired with proper techniques.
4. Dampness and leakages observed at most of the Toilet Blocks need urgent repairs.
5. Spalling of Beam concrete (Classroom 27 [VI-A]) needs repairing measures.
6. It is suggested that regular repairs of all toilet blocks need to be done in order to stop seepage.
7. All construction joints shall be properly filled in so as to stop leakages through them.
8. Stagnation of water above the entrance porch. Spalling of plaster and exposed bottom reinforcement is seen at patches. Cracks observed on the porch slab.
9. All buildings are safe for utilization as school building.

RESULTS FOR THE REBOUND HAMMER TEST ON CRITICAL LOCATIONS

Main Building:

Sr. No.	Level	Element Type	Direction	Mean Concrete Compressive Strength MPa
1	Ground floor	Column	Horizontal	33.7
2	Ground floor	Column	Horizontal	18.2
3	Ground floor	Column	Horizontal	24.1
4	Ground floor	Column	Horizontal	31.5
5	Ground floor	Column	Horizontal	21.6
6	Ground floor	Column	Horizontal	25.5

Sr. No.	Level	Element Type	Direction	Mean Concrete Compressive Strength MPa
7	Ground floor	Column (Distressed)	Horizontal	11.9
8	Ground floor	Column (Distressed)	Horizontal	16.9
9	Ground floor	Column (Distressed)	Horizontal	17.2
10	Ground floor	Beam	Horizontal	16.9
11	Ground floor	Beam	Horizontal	18.2
12	First storey	Column	Horizontal	35.1
13	First storey	Column	Horizontal	30.7
10	First storey	Column	Horizontal	25.4
11	First storey	Column	Horizontal	40.8
12	First storey	Column	Horizontal	17.7
13	First storey	Column	Horizontal	22.0
14	First storey	Column	Horizontal	37.1
15	First storey	Column (Distressed)	Horizontal	14.2
16	First storey	Column (Distressed)	Horizontal	15.7
17	First storey	Beam	Horizontal	10.9
18	First storey	Beam	Horizontal	16.9
19	First storey	Beam	Horizontal	23.1

Primary section Building:

Sr. No.	Level	Element Type	Direction	Mean Concrete Compressive Strength MPa
1	Ground floor	Column	Horizontal	27.2
2	Ground floor	Column	Horizontal	29.2
3	Ground floor	Column	Horizontal	22.6
4	Ground floor	Column	Horizontal	24.0
5	Ground floor	Column	Horizontal	24.7
6	Ground floor	Beam	Horizontal	21.3
7	Ground floor	Beam	Horizontal	21.3
8	Ground floor	Beam	Horizontal	15.8

Nurse (Medical) Building:

Sr. No.	Level	Element Type	Direction	Mean Concrete Compressive Strength MPa
1	Ground floor	Column	Horizontal	17.9
2	Ground floor	Column	Horizontal	14.2
3	Ground floor	Column	Horizontal	30.9
4	Ground floor	Column	Horizontal	44.8
5	Ground floor	Beam	Horizontal	14.9
6	Ground floor	Beam	Horizontal	19.3
8	Ground floor	Beam	Horizontal	15.8

- These values refer only to the structural elements subjected to test and are valid at the time of and under the conditions specified herein.

Average Compressive Strength of Concrete is 22.83 MPa for main building, 23.26 MPa for Primary section and 22.54 MPa for Nurse/Medical Building, based on rebound hammer test

Note: *As per IS 516 (Part 5/ Section 4):2020, the estimation of strength of concrete by rebound hammer method may vary to lower side by 25%.*

CONCLUDING REMARKS:

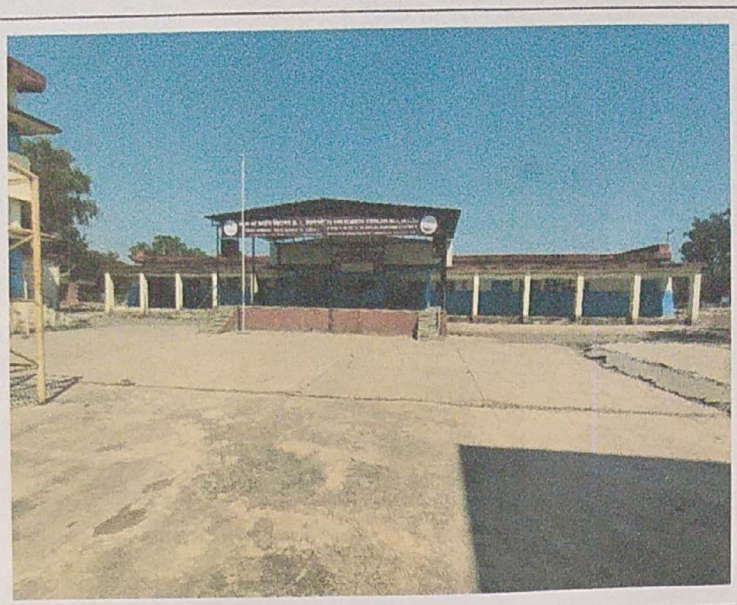
The buildings of PM Shri Kendriya Vidyalaya No.1 Devlali, Nashik are safe for utilization as school buildings. The distressed columns on ground and first floor need immediate attention and repairs as they may affect stability of the structure. The water proofing of terrace at certain locations shall be carried out immediately with proper repair techniques. Water seepage and leakages of toilet block shall be arrested to prevent further deterioration of the building. Pointing in exterior face of the masonry is also suggested.

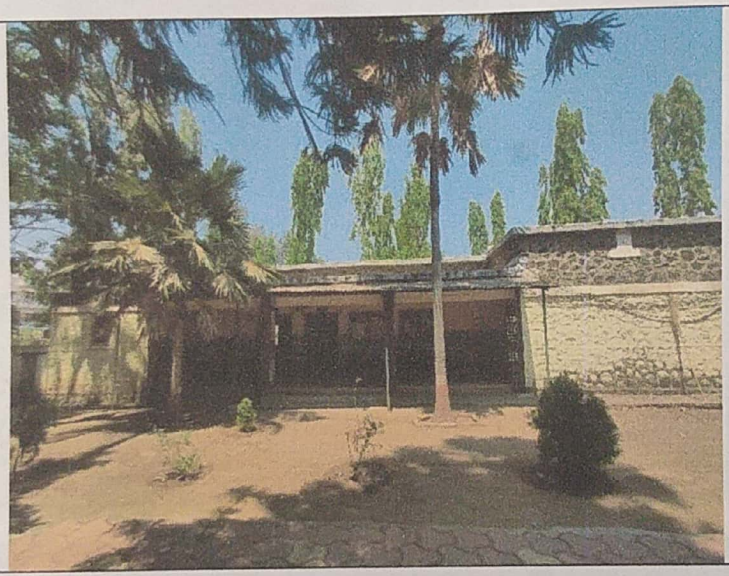
29/05/2025

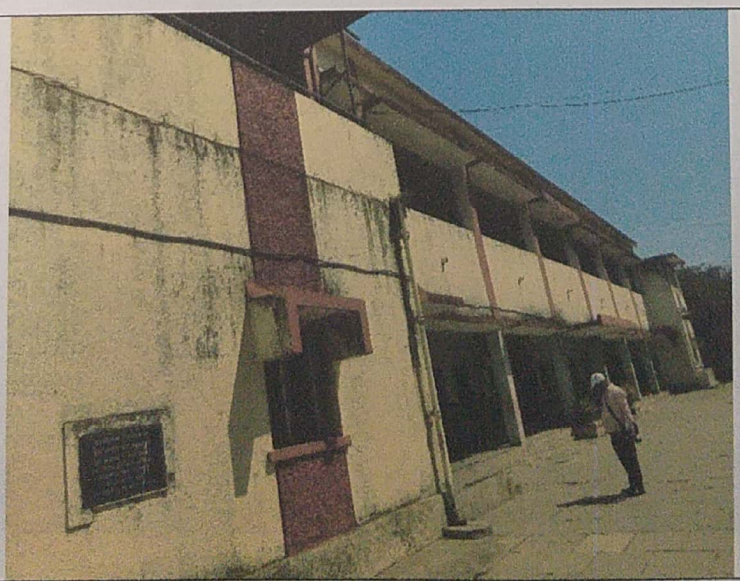
Dr. (Mrs.) VAISHALI B. DAWARI
Associate Professor of Applied Mechanics
Department of Civil Engineering
COEP Technological University, Pune
(Formerly College of Engineering Pune)

COEP TECHNOLOGICAL UNIVERSITY ★ A Unitary Public University of Government of Maharashtra ★

PHOTOGRAPHIC SURVEY:

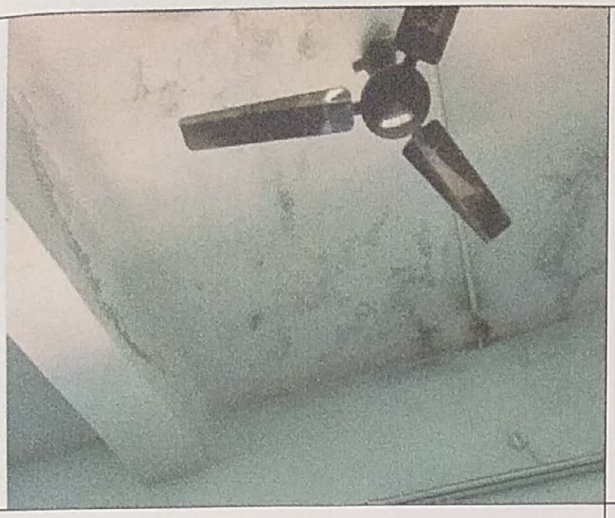




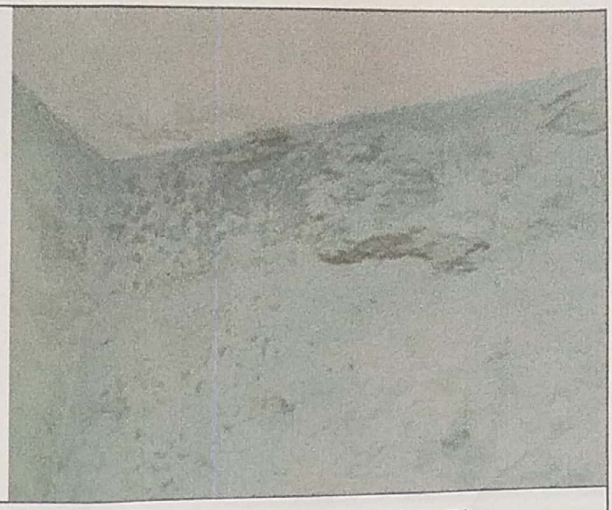


Buildings of Kendriya Vidyalaya 1

Buildings of Kendriya Vidyalaya 1



Classroom no. 33 (VII-C)

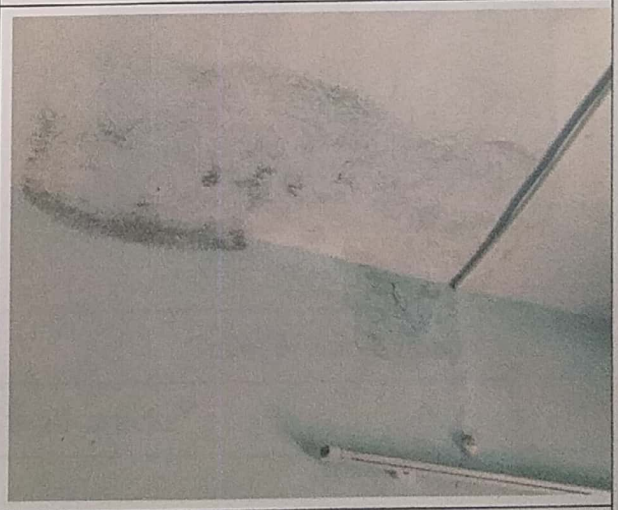


Classroom no. 37(IX-B)

Chemistry Lab

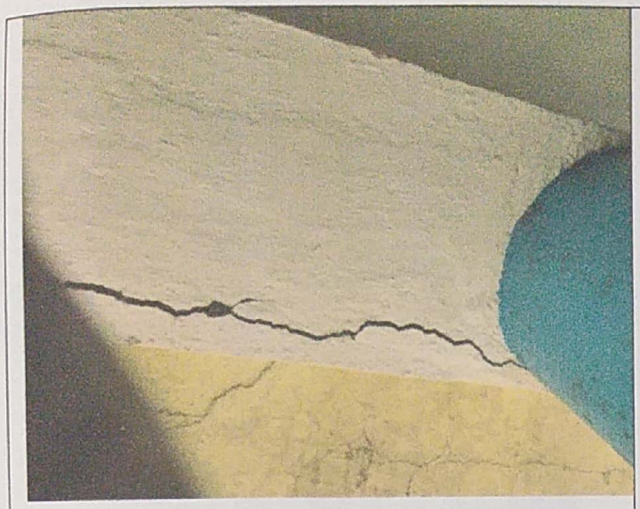
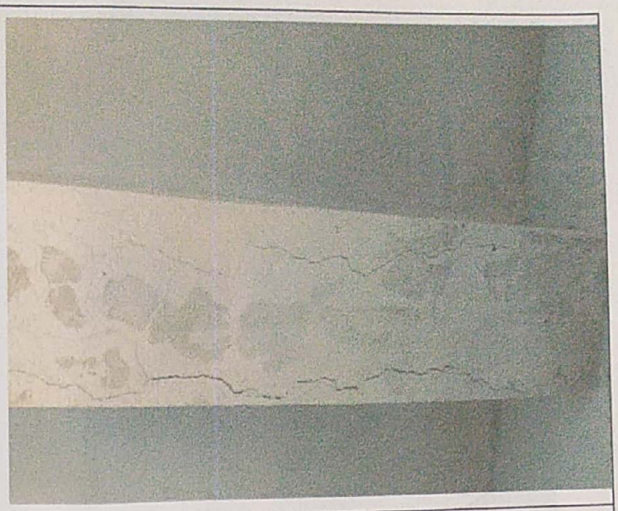
Passage of Junior Science lab

Classroom 55 [Headmaster room]



Classroom 64 [V-B]

Dampness and seepage observed in the walls and ceiling

	
Beam near Gents toilet on ground floor	Crcks in beam in Classroom no. 25 [VI-C]
Structural cracks observed in beams	

	
Classroom 57 [AV room]	Toilet of Nurse room
Masonry/ Wall cracks	

Columns near ground floor near Boys toilet

Distressed Ground floor Columns which need urgent repairs and strengthening

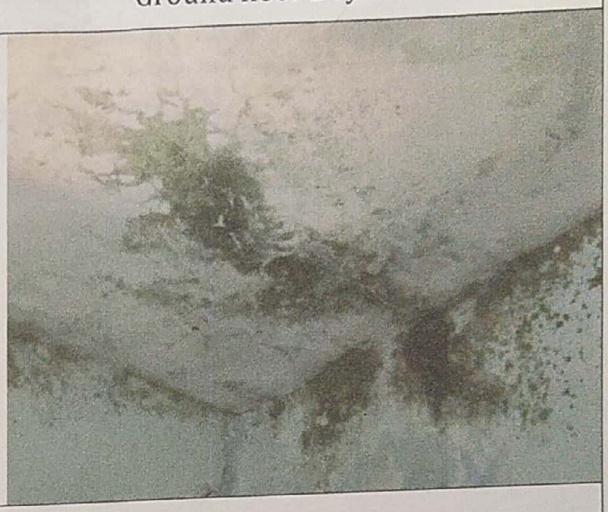
Distressed Columns on first floor near girl's toilet

Distressed first floor Columns which need urgent repairs and strengthening

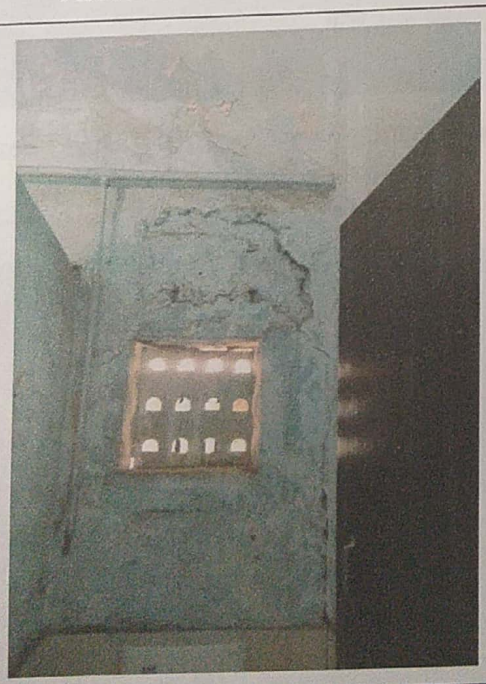
Ground floor Gents washroom

Ground floor Boy's toilet

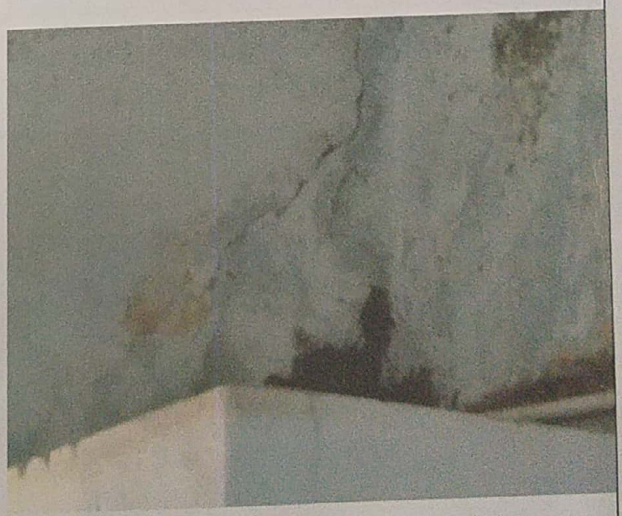
First floor Girls washroom



First floor Girls washroom



First floor Girls washroom

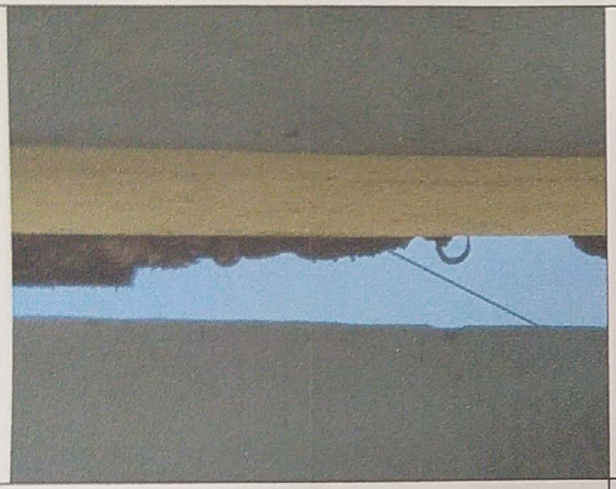


Cracks in first floor Girls washroom

Seepage/Dampness in toilets

Seepage in toilet of primary section

Seepage/Dampness in toilets

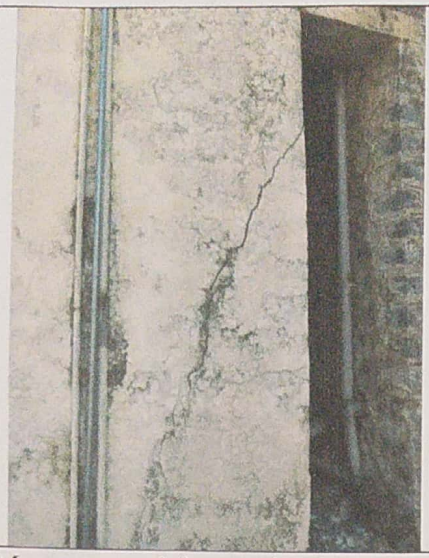


Broken chajja with spalling off concrete and exposed corroded reinforcement

Broken chajja with spalling off concrete and exposed corroded reinforcement

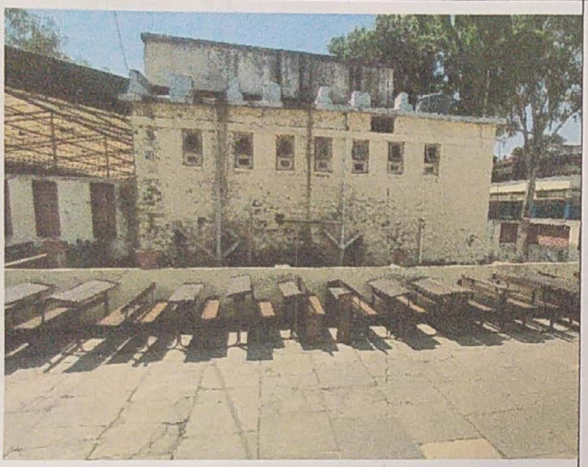
Spalling off concrete and exposed corroded reinforcement

Vegetative growth and leakages through plumbing lines



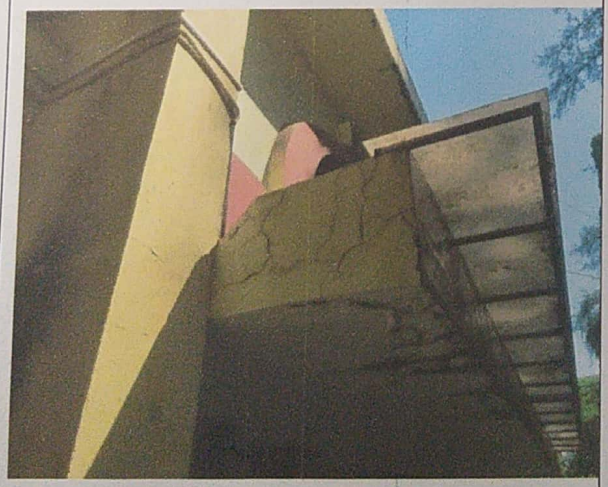
Masonry crack in exterior face of wall

Masonry cracks in exterior face of wall



Vegetative growth and leakage in plumbing lines

Spalling off concrete and Exposed corroded reinforcement of water tank (not in use)



Cracks in the slab of the entrance porch

Open construction joint

Miscellaneous

29/05/2015

Dr. (Mrs.) VAISHALI B. DAWARI
Associate Professor of Applied Mechanics
Department of Civil Engineering
COEP Technological University, Pune
(Formerly College of Engineering Pune)

COEP TECHNOLOGICAL UNIVERSITY ★ A Unitary Public University of Government of Maharashtra ★