



ಸಿವಿಲ್ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗ / ಸಿವಿಲ್ ಅಭಿಯಾನ್ರಿಕಿ ವಿಭಾಗ
ರಾಷ್ಟ್ರೀಯ ತಂತ್ರಜ್ಞಾನ ಸಂಸ್ಥೆ ಕರ್ನಾಟಕ, ಸುರತ್ಕಲ್ / ರಾಷ್ಟ್ರೀಯ ಪ್ರೌಢೋಗಿಕಿ ಸಂಸ್ಥಾನ ಕರ್ನಾಟಕ, ಸುರತ್ಕಲ್
ಶ್ರೀನಿವಾಸನಗರ ಪೋಸ್ಟ್, ಮಂಗಳೂರು-೫೭೫೦೨೫, ಕರ್ನಾಟಕ, ಭಾರತ / ಪೋಸ್ಟ್ ಶ್ರೀನಿವಾಸನಗರ, ಮಂಗಳೂರು-೫೭೫೦೨೫, ಕರ್ನಾಟಕ, ಭಾರತ
DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL
POST SRINIVASNAGAR, MANGALURU – 575 025, KARNATAKA, INDIA

Ref. No. NITK/CED/T & C/2024/193

Date: 27.06.2024

To
The Principal
NITK English Medium School
NITK Campus
Srinivasnagar-575025.
Mangalore.

Dear Sir/Madam,

Subject : School Building Stability Certificate –reg.

Reference No.: Your letter No. NITK/EMS/2022-23/CBSE/03 dated 05.04.2024

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This is in response to the above referred letter wherein you have requested the undersigned for the Building Stability Certificate by inspecting the school building (G+1) RCC structure and submit the report.

Accordingly, the undersigned and Dr. M.C. Narasimhan, Professor, Civil Engineering Department have visited the above premises on 1st June 2024 and inspected the building. The report is enclosed herewith for your perusal and needful action.

Thanking you
Yours faithfully,

(Subhash C. Yaragal)
Professor & Head

Professor and Head
Department of Civil Engineering
National Institute of Technology Karnataka
Surathkal, Mangalore - 575 025, Karnataka, INDIA



ಸಿವಿಲ್ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗ / ಸಿವಿಲ್ ಅಭಿಯಾನ್ರಿಕಿ ವಿಭಾಗ
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Ref. No. NITK/CED/T & C/2024/193

Date : 27.06.2024

INSPECTION REPORT

Sub: Issue of Building Assessment Certificate – Conduct of Non-Destructive Tests for NITK English Medium School – reg.

Ref: Your letter No. NITK/EMS/2023-24/CBSE/03 dated 05.04.2024

Preamble:

As per the request of the Principal, N.I.T.K English Medium School, NITK Campus, Srinivasanagar, Mangalore – 575 025. D.K. Karnataka, Dr. Subhash Yaragal and Dr. M.C Narasimhan visited the premises of their school building, on the Saturday afternoon, 1st June 2024. Mr Suresh H, Senior Teacher of the School was present during the inspection and testing of the building components.

Buildings:

The school building is a Reinforced Concrete (RC) framed structure. The building is U shaped in plan, and has three wings, namely (i) Western wing (ii) Northern wing and (iii) Eastern wing. While the western wing is a ground plus one floor (G+1) RC framed construction, the eastern and northern wings were constructed as (G+2) RC framed structures. As per the school authorities, western wing of the school was constructed in the year 1992. Ground floor of northern wing was constructed in the year 1999 and, first and second floors of northern wing were constructed in the year 2009. Subsequently, construction of the eastern wing was completed in the year 2014-15. Figure 1 shows a panoramic view of the School.

The ground floor of the eastern wing houses the office, record room and kindergarden classrooms. A corridor of 1.5m width leads to the classrooms. Dog legged staircase is present at the corner for movement between the floors. Classrooms and laboratories are housed in various floors of all the three wings of the school building. The terrace of the eastern wing is covered with a steel-truss roofing with Galvanium sheet-covering.

Non-destructive tests, both Rebound hammer tests and Ultrasonic Pulse-Velocity (UPV) tests [Fig. 2 and 3] were conducted on structural elements, at number of selected locations in all the floors in each of the wings of the building. Test Readings were taken on a number of representative columns, beams and slabs of the Building. Results of the Rebound hammer tests conducted in these locations are listed in Table 1 and Results of the UPV tests are provided in Table 2.

M. Narasimhan



Page 1 of 4



Fig. 1 – NITK English Medium School

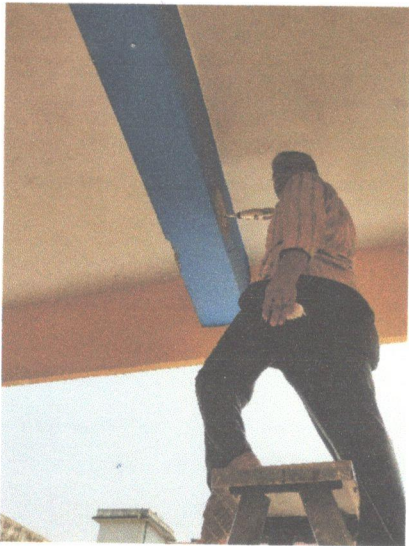


Fig 2: Rebound Hammer Test on roof slab



Fig. 3. Ultrasonic Pulse Velocity Test on beam



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Table 1 Average compressive strength by Rebound Hammer Test

Wing/Floor-ID/ Structural member /Position of Hammer	Test Readings, RHN	Average RHN	Average Compressive strength (N/mm ²)
West wing/Ground Floor Corridor. column C1-A Horizontal Direction	30,34,30,28,30,36	31	26
West wing/ Ground Floor / Corridor. column C1-B Horizontal Direction	32,28,38,28,30,38,28,28	31	26
West wing/ Ground a Floor/ Floor Slab b Vertical-upward	38,38,38,36,34,38 38,40,40,38,34,34	33	29
West wing/ First a Floor/ Floor beam b Horizontal Direction	46,36,34,42,42,48,42,40	41	42
North wing/ II Floor a Corridor beam b Horizontal Direction	40,38,38,36,40,40,32,34 36,40,40,38,34,38,40,40	37	36
North wing/ second a Floor/ Corridor b Column Horizontal Direction	40,38,42,40,40,40,40 38,36,42,38,36,32,32,28	37	36
North wing/ Ground a Floor/ Floor Slab Vertical upward	54,54,52,48,52,48,44,48	50	46
East wing/ First a Floor/Floor Beam b Horizontal Direction	36,34,40,38,34,38,36,36 38,38,36,36,42,38,38,36	37	36
East wing/ Second a Floor Slab b Vertically Upward	42,48,50,48,48,50,32,38,48,48 48,42,40,48,44,40,44,46,52	45	43

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Table:2. Quality of the concrete by UPV Tests

Wing/Floor-ID/ Structural member, Position of transducers	Velocity (m/s)	Average Velocity (km/s)	Quality of the concrete
West wing/Ground Floor Corridor column C1 - Direct Method Column thickness=250 mm	3650,3065,3130,2800, 3745, 3639,3255,3345	3.33	Satisfactory
West wing/ First Floor/ Floor.Beam Direct Method Beam Thickness = 250mm	3700,3280,2914,3001, 2660. 2931,2874,2847	3.04	Satisfactory
North wing/ Second Floor / Floor.column Direct Method Distance between points =250mm	3330,3329,2818,3218, 2894,3414,2952	3.28	Satisfactory
North.wing/Second Floor/ Corridor beam Direct Method Column Thickness = 250mm	3016,2762,3075,3064,302 3,3186,3017, 3158	3.04	Satisfactory

The cube strengths of concrete in the structural elements tested using the Rebound Hammer Tests (Table 1) are assessed to be in the range of 26-46 MPa. Thus the structural elements of the school building tested exhibit satisfactory strength in the range of M20 grade or more. Ultrasonic Pulse Velocities [UPV] obtained in the range of 3.04 – 3.33 km/s, [Table 2] suggest that quality of concrete in all these structural components can be identified to be “Satisfactory” in general.

Observations and Recommendations:

The inspection team visited all the rooms of the school building. The members of the team did not observe any type of structural distress in any part of the building and general health of the school building has been quite satisfactory. **The building is fit for continued use as an academic building.**

M. Narasimhan M.C.

Dr. Narasimhan M.C
Consultant in-charge, & Faculty, CED



S. Subhash C. Yaragal

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