# Structural Stability Assessment of the Punit Park Cosmopolitan II CHSL, Plot No-182C, Sector 17, Nerul, Navi Mumbai

## STRUCTURAL AUDIT REPORT

**SUBMITED BY**


**YASH ENGINEERING CONSULTANTS PVT LTD.**

207, Foundation Tower, Sector-11, Plot No. 20, CBD Belapur,

Navi Mumbai - 400 614


**FOR**

## PUNIT PARK SOCIETY, COSMOPOLITAN II CHSL, PLOT NO-182C, SEC-17, NERUL(E), NAVI MUMBAI-400 706

## AUGUST 2022

# Contents



**List of Table**

# Structural audit report of residential building Punit Park

## INTRODUCTORY REMARKS

M/s. Yash Engineering Consultants Pvt. Ltd. (YECPL) is empaneled with NMMC for providing consultancy works in NMMC jurisdiction. In view of the disaster occurred on 11th June 2022 at Jimmy Park CHS an adjacent residential building, NMMC has issued notice to Punit Park CHS for carrying out structural audit vide NMMC letter dated 30.06.2022. M/s. Punit Park Cosmopolitan II CHSL approached YECPL for carrying out structural audit vide letter no Cosmo-II CHS/Structural Audit/2022/02, dated 11.07.2022.

Accordingly work of Structural Audit of Punit Park CHSL, Navi Mumbai, was awarded to YECPL vide Punit Park CHS's dated 21.07.2022.

In view of this, consultancy services for the structural audit of M/s. Punit Park CHS Ltd have been under-taken by the YECPL. This report is based on the Visual Observation Taken at site, field NDT, strength analysis in the laboratory (ALLIED RESEARCH CENTRE, GHANSOLI, NAVI MUMBAL) also intensity of corrosion of Exposed reinforcement.

METHODOLOGY

1. Study of plan, all Structural drawings, details.
2. Visual Inspection The building was investigated by Floor by Floor for observation and external area of the building some of the column, beam and slab within the structure were observed for a range of defects such as spalls, seepage cracks and crazing etc. All the defects were marked on the observation sheets with approximate repairs which formed the total data of the structure.
3. Tapping Observation Some of the column and beams inside the flats were subjected to Tapping by hammer. The hollow sound was recorded. This was evaluated for remedial measures.
4. Non-Destructive Testing [NDT] In addition to Visual Inspection and Tapping Observation the quality and strength of structural components can be determined by the use of various

Non-Destructive Test. There are various NDT instrument used in concrete members which determines the present Strength and quality of concrete. The result of these is useful in finding out the treatment to be given to the structural members and various types of the test available in the market those are as below

a) Carry out the visual inspection of the building to see the extent of distress in the Reinforced Concrete members in accessible areas.

b) For RCC components, perform Non-destructive Testing as per relevant IS Codes through (i) Rebound hammer Test, (ii) Ultrasonic Pulse Velocity, (iii) Half Cell Potentiometer tests, (iv) Carbonation Test, (v) Core extraction with test, as necessary, for their soundness and to investigate corrosion of steel reinforcements.

c) Investigating the possible reasons for deterioration of the structural health of the building based on the above NDT Test and visual inspection and suggest suitable remedial measures.

## 1. SITE INSPECTION

The site of residential building M/s. Punit Park CHS Ltd., Plot No. 182-C, Sector 17, Nerul, Navi Mumbai was visited on 25th July 2022 to assess the current structural condition.

**STRUCTURE DETAILS**

| SR NO. | DESCRIPTION | DETAILS |
|---|---|---|
| 1 | NAME &LOCATION | M/s. PUNIT PARK CHS LTD., SECTOR-17, NERUL, NAVI MUMBAI |
| 2 | Age of Building | Near about 25-30 years. |
| 3 | TYPE OF PREMISES | This is a G+7 (A, B, C & D Wings), Row House 27 Nos. (G+1) RCC framed structure. |
| 4 | OCCUPATION CERTIFICATE BY CIDCO | 15.12.1994 |
| 5 | ADDITION& ALTERATION IF ANY | Architectural and structural drawings were not available at the time of inspection. |

The Destructive and Non-Destructive (NDT) test of the RCC elements were carried out. The location of the points, where the NDT needed to be carried out was marked. The surface preparations at the selected locations were then carried out for testing. The details of various tests conducted, and their guiding principle are summarized below.

### 1.1 Rebound Hammer Test

Rebound hammer test is done to find out the likely compressive strength of concrete by using rebound hammer as per IS 13311 (part 2): 1992. The underlying principle of the rebound hammer test is "the rebound of an elastic mass depends on the hardness of the surface against which its mass strikes". When the plunger of the rebound hammer is pressed against the surface hardness of the concrete: The surface hardness and therefore, the rebound are taken to be related to the compressive strength of the concrete. The rebound value is read from a graduated scale and is designated as the rebound number or rebound index. The compressive strength can be read directly form the graph provided on the body of the hammer.

### 1.2 Ultrasonic pulse Velocity Test (UPV)

This test helps in assessing the quality of concrete. The time of travel for an ultrasonic pulse through a given path length of concrete is measure. For this purpose, two probes (transducers) are used one transmitting and the other receiving. Thus,

**Ultrasonic Pulse Velocity (UPV) = Path Length/ travel time**

It is best to have the two probes on opposite faces of concrete members. Thus, the signal passes through the entire thickness of the member. This is the direct (D) method of the test and the same was used for the investigations of the RCC elements.

On the other hand, when only one face of the structural element is available the two probes are kept on the same inspected face. This is the indirect (ID) method and the same was used when

both sides of the RCC member was not accessible. Indirect method is not as efficient as direct method due to reduced signal amplitude and the test results are greatly influenced by the surface layers of concrete which may have different properties form that of concrete inside the structural member. As per the IS 13311 (Part 1): 1992, the measured indirect velocity is invariably lower than the direct velocity on the same concrete element. This difference may vary from 5 to 20 percent depending largely on the quality of the concrete under test. The UPV depends on the quality of concrete and is affected by all its ingredients. The IS 13311 (Part 1): 1992 uses only qualitative interpretation as given in the Table 2.1.

**Table 2.1** Concrete Quality Grading Based on Ultrasonic Pulse Velocity Measurements as per ID 13311 (part 1): 1992

| Sr. No | Pulse velocity | Concrete Quality Grading |
|---|---|---|
| 1 | Above 4.5 km/s | Excellent |
| 2 | 3.5km/s to 4.5 km/s | Good |
| 3 | 3 km/s to 3.5 km/s | Medium |
| 4 | Below 3 km/s | Doubtful |

### 1.3 Half-Cell Potentiometer Test

The instrument measures the potential and the electrical resistance between the reinforcement and the surface to evaluate the corrosion activity as well as the actual condition of the cover layer during testing. The electrical activity of the steel reinforcement and the concrete leads them to be considered as one half of weak battery cell with the steel acting as one electrode and the concrete as the electrolyte. The name half-cell surveying derives from the fact that the one half of the battery cell is considered to be the steel reinforcing bar and the surrounding concrete. The electrical potential of a point on the surface of steel reinforcing bar can be measured comparing its potential with that of copper-copper sulphate reference electrode on the surface. Practically, this is achieved by connecting a wire from one terminal of a voltmeter to the reinforcement and another wire to the copper sulphate reference electrode. This method may be used to indicate the corrosion activity associated with steel embedded in concrete and can be applied to members regardless of their size

or the depth of concrete cover. It should be clearly noted that the test does not actual corrosion rate or whether corrosion activity has already started, but it indicates the probability of the corrosion activity depending upon the actual surrounding conditions.

This risk of corrosion is evaluated by means of the potential gradient obtained, the higher the gradient, the higher risk of corrosion. The test results can be interpreted based on the following table.

| **Half-cell potential (mv) relative to Cu-Cu sulphate Ref. electrode** | **% Chance of corrosion activity** |
|---|---|
| Less than- 200 | 10% |
| Between – 200 to – 350 | 50% (uncertain) |
| Above - 350 | 90% |

### 1.4 Carbonation Test (CT)

The measurement of carbonation depth in the cover zone of concrete is standard procedure in assessing reinforced concrete deterioration, particularly in respect of reinforcement corrosion problems. The carbonation test is carried out to determine the depth of concrete affected due to combined attack of atmospheric carbon dioxide and moisture causing a reduction in level of alkalinity of concrete. A spray of 0.2 % solution of phenolphthalein is used as pH indicator of concrete. The change of color of concrete to pink indicates that the concrete is in the good health, and where no changes in color take place, it is suggestive of carbonation-affected concrete. The test is conducted by drilling a hole on the concrete surface to different depths up to cover concrete thickness, removing dust by air blowing, spraying phenolphthalein with physician's injection syringe and needle on such freshly drilled broken concrete and observing changes in color. The depth of carbonation is estimated based on the change in color profile. \

### 1.5 Core Extraction Test:

Whereas UPV gives indirect evidence of Concrete quality, a more direct assessment on Strength of Concrete can be made by Core Sampling & Testing. Cores are usually cut by means of rotary cutting tools with diamond bits. In this manner a cylindrical specimen is obtained, usually with

ends being uneven, parallel and square and sometimes with embedded pieces of reinforcement. The core is soaked in water, capped with molten sulphur to make its ends plane, parallel at right angles and then tested for compression in moist condition as per IS.

The strength of Test Specimen depends on shape, proportion, and size i.e., H/D ratio. The H/D ratio should preferably 2. For values between 1 & 2, correction factor must be applied. As per Standard practice, specimen shall be 150 mm or 100 mm cores.

## 2. OBSERVATIONS

The probable causes of deterioration / fatigue failure of structure are as follows:

**Observation of Wing 'A, B, C & D'**: -

1. Low moisture and water coming in contact with the structural members which is a conducive environment for steel corrosion. The reinforcing steel present in the RCC members is affected. The reinforcing steel corrosion leads to cracking.
2. Major Crack are observed on column & beam in several area internally & externally.
3. Major undulation observed of flooring.
4. Overall, 80% tiles of flooring are damaged and shows undulation. Also, can be visually seen at flat no. A102, A002, A402, A404, 'B' wing 1st floor, 'C' wing 4th & 5th floor, 'D' wing 1st, 3rd & 4th floor including passages.
5. Hammer tests are showing non uniform strengths. (10 to 20 mpa).
6. USPV test is showing values around 0.3 to 5.00 km/s indicating doubtful to Excellent grading.
7. The staircase is minor distressed at various locations.
8. Ground floor to $7^{th}$ floor column, beam & slab is showing major & minor cracks.
9. Columns are the most critical components in a structural system. The hammer is giving low values due to local dampness of surfaces. Considering all the factors it is suggested to provide encasing of concrete to the severely affected columns for immediate relief**. (Critical)**
10. Vibration on floor of several flats & passages is observed during walking.
11. Leakages & Seepages marks were observed on RCC slab internally. Immediate attention is necessary to avoid the further deterioration.

1. Concrete Core test carried out by society shows 9 to 24 N/mm2 compressive strength which is on lower side.

**Observation of Row House: -**

Access to row houses and shops was denied by the owners stating their structure is in good condition and need not be audited. In view of the test results of adjacent wings the row house structure may also show poor test hence detailed audit needs to be carried out.

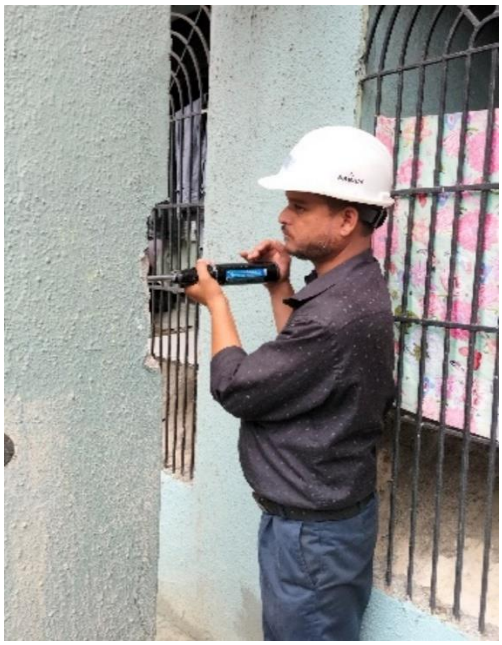
## Report on Non-Destructive Tests Carried

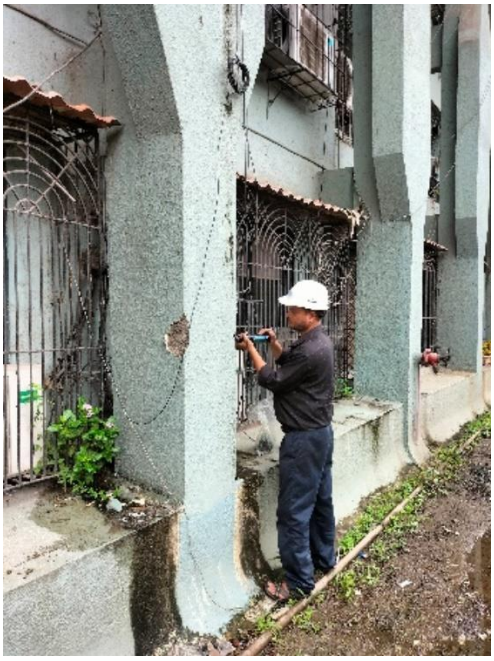
**Methodology & Observations –**

1) The aim of testing was to arrive at the general quality of concrete, rather than evaluating each RCC members in details. Hence, a few RCC members at random were tested & Ultra Sonic Pulse Velocity (USPV) measurement were taken on RCC members i.e., Column, Beam & Slab. The pulse velocity observations on relevant members are included in the report.
2) Rebound Hammer Test reading were taken on Columns, Beam etc. to assess the compressive Strength of these RCC members. Both horizontal and vertical up directions of testing were used. Accuracy of prediction of concrete strength by this method is + / - 25 % vide IS 13311 (part – 2) 1992. The Rebound reading observations on relevant members are also included in the report enclosed.
3) Half Cell Test of embedded reinforcement was taken to identify the corrosion in reinforcement steel. The HCT reading observations are included in the report enclosed.
4) Carbonation Test of concrete was taken to assess the quality of concrete and carbonation at cover. The carbonation Test observations on relevant members are included in the report enclosed


**Google Location of Punit Park CHS Ltd.**

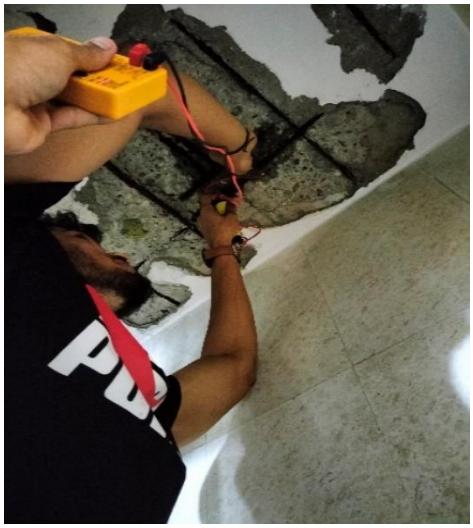
## Site Photos of Punit Park CHS Ltd.





**Rebound Hammer Test**

**Ultrasonic Pulse Velocity Test (UPV)**



**Half Cell Potentiometer Test (Corrosion Test)**

**Collapse of Slab**

**Cracks in Column**

**Collapse of Slab**

**Cracks in Beam and Slab**

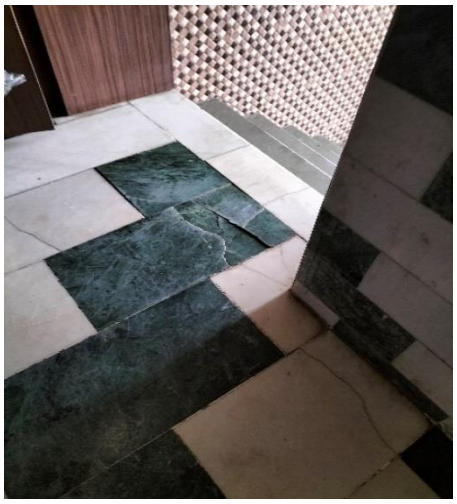
**Cracks in Beam and Slab**

**Cracks in Beam and Slab**

**Cracks in repaired Column**

**Leakages in Slab**

**Cracks in Slab**



**Cracks in Flooring**

Rebound Hammer test for determinate compressive strength, uniformity & quality of concrete.

**Table 3.1 Rebound hammer Testing**

| TEST REPORT | | | | | |
|---|---|---|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** | | | |
| Client Name | : | **Cosmopolitan Co.op Housing Society** | | | |
| Consultant Name | | **M/s Yash Eng. Consultancy Pvt Ltd.** | | | |
| Project/Site | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 | | | |
| Description | : | Rebound Hammer | | | |
| Quantity | : | 09 nos | **A- Wing** | | |
| Specification followed | : | IS 13311 part II | | | |
| Date of Testing | : | 25.07.2022 | | | |
| **SCHMIDT REBOUND HAMMER TEST** | | | | | |
| **Sr. No.** | **Location** | **Member** | **Position of the Hammer** | **Rebound No.** | **Average Compressive Strength (N/mm2)** |
| 1 | Ground Floor (Back Side) | Column | Horizontal | 10 | 10 |
| 2 | Ground Floor (Back Side) | Column | Horizontal | 26 | 20 |
| 3 | Ground Floor (Parking Area) | Column | Horizontal | 18 | 10 |
| 4 | Ground Floor (Parking Area) | Column | Horizontal | 26 | 20 |
| 5 | Terrace | Column | Horizontal | 22 | 15 |
| 6 | 6th Floor | Beam | Horizontal | 20 | 10 |
| 7 | 3rd Floor | Beam | Horizontal | 20 | 10 |
| 8 | 3rd Floor (A301/302) | Slab | Vertical | 28 | 20 |
| 9 | 2nd Floor | Slab | Vertical | 22 | 15 |

## TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Customer Name | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Project/Site | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Rebound Hammer |
| Quantity | : | 10 nos **B-Wing** |
| Specification followed | : | IS 13311 part II |
| Date of Testing | : | 25.07.2022 |

## SCHMIDT REBOUND HAMMER TEST

| Sr. No. | Location | Member | Position of the Hammer | Rebound No. | Average Compressive Strength (N/mm2) |
|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Horizontal | 26 | 20 |
| 2 | Ground Floor (Parking Area) | Column | Horizontal | 18 | 10 |
| 3 | 6th Floor (B-604) | Slab | Upward | 20 | 10 |
| 4 | 5th Floor (B-503) | Beam | Upward | 26 | 20 |
| 5 | 4th Floor | Beam | Horizontal | 20 | 10 |
| 6 | 3rd Floor | Beam | Horizontal | 22 | 15 |
| 7 | 2nd Floor | Beam | Horizontal | 20 | 10 |
| 8 | 1st Floor | Beam | Horizontal | 26 | 20 |
| 9 | Terrace | Column | Horizontal | 16 | 10 |
| 10 | Terrace | Column | Horizontal | 24 | 15 |

## TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Project/Site | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Rebound Hammer |
| Quantity | : | 12 nos **C-Wing** |
| Specification followed | : | IS 13311 part II |
| Date of Testing | : | 25.07.2022 |

## SCHMIDT REBOUND HAMMER TEST

| Sr. No. | Location | Member | Position of the Hammer | Rebound No. | Average Compressive Strength (N/mm2) |
|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Horizontal | 16 | 10 |
| 2 | Ground Floor (Parking Area) | Beam | Upward | 32 | 25 |
| 3 | Ground Floor (Parking Area) | Column | Horizontal | 20 | 10 |
| 4 | Ground floor (Back Side) | Column | Horizontal | 26 | 20 |
| 5 | Ground floor (Back Side) | Column | Horizontal | 16 | 10 |
| 6 | Terrace | Column | Horizontal | 16 | 10 |
| 7 | 6th Floor | Beam | Horizontal | 22 | 15 |
| 8 | 4th Floor | Beam | Upward | 24 | 15 |
| 9 | 3rd Floor | Beam | Horizontal | 26 | 20 |
| 10 | 2nd Floor | Beam | Horizontal | 22 | 15 |
| 11 | 2nd Floor | Slab | Upward | 16 | 10 |
| 12 | Ground Floor (C-003) | Beam | Horizontal | 16 | 10 |

# TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Project/Site | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Rebound Hammer |
| Quantity | : | 12 nos **D-Wing** |
| Specification followed | : | IS 13311 part II |
| Date of Testing | : | 25.07.2022 |

## SCHMIDT REBOUND HAMMER TEST

| Sr. No. | Location | Member | Position of the Hammer | Rebound No. | Average Compressive Strength (N/mm2) |
|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Horizontal | 10 | 10 |
| 2 | Ground Floor (Parking Area) | Column | Horizontal | 18 | 10 |
| 3 | Ground floor (D-003) | Beam | Upward | 12 | 10 |
| 4 | Ground Floor (Back Side) | Column | Horizontal | 20 | 10 |
| 5 | 6th Floor | Beam | Horizontal | 22 | 15 |
| 6 | 5th Floor | Beam | Horizontal | 24 | 15 |
| 7 | 5th Floor (D-502) | Column | Horizontal | 26 | 20 |
| 8 | 4th Floor | Beam | Upward | 16 | 10 |
| 9 | 3rd Floor | Beam | Horizontal | 22 | 15 |
| 10 | 1st Floor | Slab | Upward | 28 | 20 |
| 11 | Terrace | Column | Horizontal | 20 | 10 |
| 12 | Terrace | Column | Horizontal | 18 | 10 |

Ultrasonic pulse velocity Test for determinate the quality and homogeneity of concrete materials

**Table 3.2 Ultrasonic Pulse Velocity Testing**

## TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name & Address | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | : | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Site/Project | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Ultrasonic Pulse Velocity Test |
| Quantity | : | 09 nos **A- Wing** |
| Specification followed | : | IS 13311 Part I |
| Period of Testing | : | 25.07.2022 |

### ULTRA SONIC PULSE VELOCITY TEST

| Sr. No. | Location | Member | Method | Distance (mm) | Time (ms) | Longitudinal Pulse Velocity (Km/s) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Indirect | 170 | 453.2 | 0.38 | Poor |
| 2 | Ground Floor (Parking Area) | Column | Direct | 300 | 177.6 | 1.69 | Poor |
| 3 | Ground Floor (Back Side) | Column | Indirect | 140 | 35.2 | 3.98 | Good |
| 4 | Ground Floor (Back Side) | Column | Direct | 120 | 52.1 | 2.30 | Poor |
| 5 | Terrace | Column | Indirect | 150 | 38.4 | 3.91 | Good |
| 6 | 6th Floor | Beam | Indirect | 150 | 39.5 | 3.80 | Good |
| 7 | 3rd Floor | Beam | Indirect | 150 | 86.3 | 1.74 | Poor |
| 8 | 3rd Floor (A301/302) | Slab | Indirect | 200 | 73.4 | 2.72 | Poor |
| 9 | 2nd Floor | Slab | Indirect | 200 | 57.0 | 3.51 | Doubtful |

Table 1: Velocity Criterion for Concrete Quality Grading (Clause 2.5.2)

IS 516 (Part 5/Sec 1) : 2018

| Sr. No. | Pulse Velocity by Cross Probing ( km/sec ) | Concrete Quality Grading |
|---|---|---|
| 1 | Above 4.40 | Excellent |
| 2 | 3.75 to 4.40 | Good |
| 3 | 3.0 to 3.75 | Doubtful |
| 4 | Below 3.0 | Poor |

# TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name & Address | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | : | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Site/Project | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Ultrasonic Pulse Velocity Test |
| Quantity | : | 10 nos **B- Wing** |
| Specification followed | : | IS 13311 Part I |
| Period of Testing | : | 25.07.2022 |

## ULTRA SONIC PULSE VELOCITY TEST

| Sr. No. | Location | Member | Method | Distance (mm) | Time (ms) | Longitudinal Pulse Velocity (Km/s) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Direct | 300 | 222.1 | 1.35 | Poor |
| 2 | Ground Floor (Parking Area) | Column | Direct | 300 | 110.7 | 2.71 | Poor |
| 3 | 6th Floor (B-604) | Slab | Indirect | 200 | 48.5 | 4.12 | Good |
| 4 | 5th Floor (B-503) | Beam | Indirect | 150 | 63.8 | 2.35 | Poor |
| 5 | 4th Floor | Beam | Indirect | 150 | 42.1 | 3.56 | Doubtful |
| 6 | 3rd Floor | Beam | Indirect | 200 | 67.1 | 2.98 | Poor |
| 7 | 2nd Floor | Beam | Indirect | 150 | 39.4 | 3.81 | Good |
| 8 | 1st Floor | Beam | Indirect | 250 | 87.0 | 2.87 | Poor |
| 9 | Terrace | Column | Indirect | 150 | 34.2 | 4.39 | Good |
| 10 | Terrace | Column | Indirect | 200 | 63.0 | 3.17 | Doubtful |

Table 1: Velocity Criterion for Concrete Quality Grading (Clause 2.5.2)

IS 516 (Part 5/Sec 1) : 2018

| Sr. No. | Pulse Velocity by Cross Probing ( km/sec ) | Concrete Quality Grading |
|---|---|---|
| 1 | Above 4.40 | Excellent |
| 2 | 3.75 to 4.40 | Good |
| 3 | 3.0 to 3.75 | Doubtful |
| 4 | Below 3.0 | Poor |

# TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name & Address | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | : | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Site/Project | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Ultrasonic Pulse Velocity Test |
| Quantity | : | 12 nos |
| Specification followed | : | IS 13311 Part I |
| Period of Testing | : | 25.07.2022 |

**C- Wing**

## ULTRA SONIC PULSE VELOCITY TEST

| Sr. No. | Location | Member | Method | Distance (mm) | Time (ms) | Longitudinal Pulse Velocity (Km/s) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Indirect | 200 | 155.2 | 1.29 | Poor |
| 2 | Ground Floor (Parking Area) | Beam | Indirect | 180 | 52.9 | 3.40 | Doubtful |
| 3 | Ground Floor (Parking Area) | Column | Direct | 300 | 142.3 | 2.11 | Poor |
| 4 | Ground Floor (Back Side) | Column | Direct | 300 | 68.2 | 4.40 | Good |
| 5 | Ground Floor (Back Side) | Column | Direct | 300 | 60.5 | 4.96 | Excellent |
| 6 | Terrace | Column | Indirect | 150 | 35.2 | 4.26 | Good |
| 7 | 6th Floor | Beam | Indirect | 150 | 227.2 | 0.66 | Poor |
| 8 | 4th Floor | Beam | Indirect | 200 | 48.6 | 4.12 | Good |
| 9 | 3rd Floor | Beam | Indirect | 150 | 42.0 | 3.57 | Doubtful |
| 10 | 2nd Floor | Beam | Indirect | 200 | 56.4 | 3.55 | Doubtful |
| 11 | 2nd Floor | Slab | Indirect | 250 | 87.4 | 2.86 | Poor |
| 12 | Ground Floor (C-003) | Beam | Indirect | 200 | 66.4 | 3.01 | Doubtful |

Table 1: Velocity Criterion for Concrete Quality Grading (Clause 2.5.2)

IS 516 (Part 5/Sec 1) : 2018

| Sr. No. | Pulse Velocity by Cross Probing ( km/sec ) | Concrete Quality Grading |
|---|---|---|
| 1 | Above 4.40 | Excellent |
| 2 | 3.75 to 4.40 | Good |
| 3 | 3.0 to 3.75 | Doubtful |
| 4 | Below 3.0 | Poor |

# TEST REPORT

| | | |
|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** |
| Client Name & Address | : | **Cosmopolitan Co.op Housing Society** |
| Consultant Name | : | **M/s Yash Eng. Consultancy Pvt Ltd.** |
| Site/Project | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 |
| Description | : | Ultrasonic Pulse Velocity Test |
| Quantity | : | 12 nos **D- Wing** |
| Specification followed | : | IS 13311 Part I |
| Period of Testing | : | 25.07.2022 |

## ULTRA SONIC PULSE VELOCITY TEST

| Sr. No. | Location | Member | Method | Distance (mm) | Time (ms) | Longitudinal Pulse Velocity (Km/s) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Ground Floor (Parking Area) | Column | Indirect | 150 | 78.5 | 1.91 | Poor |
| 2 | Ground Floor (Parking Area) | Column | Direct | 300 | 82.2 | 3.65 | Doubtful |
| 3 | Ground floor (D-003) | Beam | Indirect | 200 | 56.0 | 3.57 | Doubtful |
| 4 | Ground Floor (Back Side) | Column | Direct | 300 | 87.4 | 3.43 | Doubtful |
| 5 | 6th Floor | Beam | Indirect | 200 | 67.0 | 2.99 | Poor |
| 6 | 5th Floor | Beam | Indirect | 150 | 38.4 | 3.91 | Good |
| 7 | 5th Floor (D-502) | Column | Indirect | 250 | 68.0 | 3.68 | Doubtful |
| 8 | 4th Floor | Beam | Indirect | 150 | 39.4 | 3.81 | Good |
| 9 | 3rd Floor | Beam | Indirect | 200 | 43.1 | 4.64 | Excellent |
| 10 | 1st Floor | Slab | Indirect | 250 | 94.3 | 2.65 | Poor |
| 11 | Terrace | Column | Indirect | 200 | 57.6 | 3.47 | Doubtful |
| 12 | Terrace | Column | Indirect | 150 | 47.1 | 3.18 | Doubtful |

Table 1: Velocity Criterion for Concrete Quality Grading (Clause 2.5.2)

IS 516 (Part 5/Sec 1) : 2018

| Sr. No. | Pulse Velocity by Cross Probing ( km/sec ) | Concrete Quality Grading |
|---|---|---|
| 1 | Above 4.40 | Excellent |
| 2 | 3.75 to 4.40 | Good |
| 3 | 3.0 to 3.75 | Doubtful |
| 4 | Below 3.0 | Poor |

Half-cell potentiometer test for detect the corrosion of reinforcement

**Table 3.3 Half Cell Potentiometer**

| TEST REPORT | | | |
|---|---|---|---|
| **Certificate No.** | : | **ARC/206/25.07.2022/TC-902** | |
| Client Name | : | **Cosmopolitan Co.op Housing Society** | |
| Consultant Name | : | **M/s Yash Eng. Consultancy Pvt Ltd.** | |
| Project/Site | : | 'PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 | |
| Description | : | Half Cell Potential Meter | |
| Quantity | : | 1 No. | |
| Specification followed | : | ASTM C876 | **(A-Wing)** |
| Date of Testing | : | 25.07.2022 | |

| HALF CELL POTENTIOMETER TEST | | | | | |
|---|---|---|---|---|---|
| **Sr.No.** | **Location/ID** | **Reading in (mv)** | | | **Average (mv)** |
| | | 1 | 2 | 3 | |
| 1 | Slab (Flat No. 604) | -200 | -220 | -178 | -199 |

| ***Half – cell potential ( mv) relative to Cu-Cu sulphate Ref. electrode*** | ***% chance of corrosion activity*** |
|---|---|
| Less than - 200 | 10% |
| Between – 200 to – 350 | 50% (uncertain) |
| Above – 350 | 90% |

Chemical Analysis test for detect the Quality of Concrete

**Table 3.4 Chemical Analysis of Concrete**

| Test Report (Chemical ) | | | | | |
|---|---|---|---|---|---|
| **Certificate No.** | | **:ARC/206/28.07.2022/TC-902** | | Sheet 1 of 1 | |
| **Client name and address** | : | **Cosmopolitan Co.op Housing Society** | | | |
| **Contractor Name** | | **M/s Yash Eng. Consultancy Pvt Ltd.** | | | |
| **Project/Site** | : | PUNIT PARK SOCIETY ,COSMOPOLITAN II CHSL,PLOT NO-182C, SEC-17,NERUL(E) , NAVI MUMBAI-400 706 | | | |
| **Description** | : | Concrete Material | | | |
| **Quantity** | : | 1 kg | | | |
| **Specification followed** | : | IS 3025 | | | |
| **Date of Testing** | : | 28.07.2022 | | | |

| Sr. No. | Test | Unit | Results | Requirement as per IS 456 - 2000 | TEST METHOD |
|---|---|---|---|---|---|
| 1 | pH value | -- | 6.80 | Not Less than 6 | IS 3025 1983 Part 11 R-2012 |
| 2 | Chlorides as $Cl^-$ | mg/L | 45 | max. 2000 for concrete not containing embedded steel and Max. 500 for reinforced concrete work | IS 3025 1988 part 32 R-2014 |
| 3 | Sulphates as $SO_4$ | mg/L | 30 | Maximum 400 mg/L | IS 3025 1986 Part 24 R-2014 |

**Table 3.5 Concrete Core Test**

# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11 Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:**LOCATION-01: VASAI LAB (TEST)**
TEST REPORT NO. VST-15015-TR-414381
ULR NO. TC571321000014853F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:**LOCATION-01: VASAI LAB (TEST)**
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 03/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: B - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm 2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B - Wing, Gr. Floor C - 5 | 94.8 | 68.4 | 0.828 | 3680.4 | 46 | 1.38 | 0.93 | 11.7 | 14.6 | 148.7 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11

Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST)
TEST REPORT NO.
ULR NO.
TEST REPORT DATE
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST)
VST-15045-TR-414744
TC571321000014863F
10/07/2021
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 08/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: B - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm 2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B - Wing, Gr. Floor C - 8 | 75.4 | 68.4 | 0.631 | 3664.3 | 42.5 | 1.1 | 0.9 | 10.5 | 13.1 | 133.6 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

*Compressive strength test carried out of above specimen(s) as per request of customer. The Curing condition prior to test is not complying to the requirement of Standard.

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# GLOBAL LAB
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TC - 5713

Format No 01 / 11 Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST)
TEST REPORT NO. VST-15045-TR-414745
ULR NO. TC571321000014862F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST)
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 08/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: C - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer
GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm 2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) | Equivalent Cube Comp. Strength (kg/cm2) | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | C - Wing, Gr. Floor C - 9 | 85.4 | 68.4 | 0.692 | 3673.9 | 36.4 | 1.25 | 0.92 | 9.6 | 12 | 122.4 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

*Compressive strength test carried out of above specimen(s) as per request of customer. The Curing condition prior to test is not complying to the requirement of Standard.

Format No 01 / 11 Rev. No.03

# TEST REPORT

TEST REPORT ISSUED BY:**LOCATION-01: VASAI LAB (TEST)**
TEST REPORT NO. VST-15045-TR-414742
ULR NO. TC571321000014865F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:**LOCATION-01: VASAI LAB (TEST)**
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 08/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: B - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B - Wing, Gr. Floor C - 6 | 105.8 | 68.4 | 0.89 | 3677.2 | 28.2 | 1.55 | 0.95 | 7.3 | 9.1 | 93 | Usual |

Curing Declaration: Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

*Compressive strength test carried out of above specimen(s) as per request of customer. The Curing condition prior to test is not complying to the requirement of Standard.

# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11 Rev. No.03

## TEST REPORT

| | |
|---|---|
| TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST) | SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST) |
| TEST REPORT NO. | VST-15015-TR-414380 |
| ULR NO. | TC571321000014855F |
| TEST REPORT DATE | 10/07/2021 |
| DISCIPLINE : MECHANICAL TEST | GROUP NAME : BUILDING MATERIALS |

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

| | |
|---|---|
| QUANTITY: | 1 No(s) |
| DATE OF RECEIPT: | 03/07/2021 |
| CUSTOMER REF. NO & DATE: | Letter Dated : 03/07/2021 |
| CONDITION OF SAMPLE ON RECEIPT: | Satisfactory |
| SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: | C - Wing, Gr. Floor |
| TEST METHOD: | IS 516: 1959 RA 2018 Amd-2 |

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

**DATE OF TESTING: 09/07/2021**
**DATE OF CASTING: Detail Not Furnished by customer**
**CURING CONDITION: Detail Not Furnished by customer**

**GRADE OF CONCRETE: Detail Not Furnished by customer**
**AGE OF SPECIMEN (DAYS): Not Known**

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm 2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | C - Wing, Gr. Floor C - 4 | 80.8 | 68.4 | 0.648 | 3675 | 70.2 | 1.18 | 0.91 | 17.4 | 21.8 | 222 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

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# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11

Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST)
TEST REPORT NO.
ULR NO.
TEST REPORT DATE
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST)
VST-15015-TR-414379
TC571321000014856F
10/07/2021
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY:
DATE OF RECEIPT:
CUSTOMER REF. NO & DATE:
CONDITION OF SAMPLE ON RECEIPT:
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER:
TEST METHOD:

1 No(s)
03/07/2021
Letter Dated : 03/07/2021
Satisfactory
C - Wing, Gr. Floor
IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: 31/05/2021
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): 39

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm 2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | C - Wing, Gr. Floor C - 3 | 85.6 | 68.4 | 0.708 | 3684.7 | 77.2 | 1.25 | 0.92 * | 19.3 | 24.1 | 245.4 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11

Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST)
TEST REPORT NO. VST-15015-TR-414377
ULR NO. TC571321000014858F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST)
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 03/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: D - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D - Wing, Gr. Floor C - 1 | 108.4 | 68.4 | 0.904 | 3681.5 | 51.7 | 1.58 | 0.96 | 13.4 | 16.8 | 170.9 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

—

# GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11

Rev. No.03

## TEST REPORT

TEST REPORT ISSUED BY:**LOCATION-01: VASAI LAB (TEST)**
TEST REPORT NO. VST-15045-TR-414746
ULR NO. TC571321000014859F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:**LOCATION-01: VASAI LAB (TEST)**
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 06/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: D - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D - Wing, Gr. Floor C - 10 | 106.2 | 68.4 | 0.897 | 3680.4 | 36.6 | 1.55 | 0.95 | 9.5 | 11.8 | 120.6 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

*Compressive strength test carried out of above specimen(s) as per request of customer. The Curing condition prior to test is not complying to the requirement of Standard.

—

GLOBAL LAB
A World of Quality Testing & Calibration

TC - 5713

Format No 01 / 11

Rev. No.03

# TEST REPORT

TEST REPORT ISSUED BY:LOCATION-01: VASAI LAB (TEST)
TEST REPORT NO. VST-15015-TR-414378
ULR NO. TC571321000014857F
TEST REPORT DATE 10/07/2021
DISCIPLINE : MECHANICAL TEST

SAMPLE TESTED BY/AT:LOCATION-01: VASAI LAB (TEST)
GROUP NAME : BUILDING MATERIALS

**CUSTOMER NAME & ADDRESS:**
M/s Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

**PROJECT SITE ADDRESS:**
Cosmopolitan - II CHSL,
Punit Park, Sector 17, Nerul,
Navi Mumbai.

QUANTITY: 1 No(s)
DATE OF RECEIPT: 03/07/2021
CUSTOMER REF. NO & DATE: Letter Dated : 03/07/2021
CONDITION OF SAMPLE ON RECEIPT: Satisfactory
SOURCE OF SAMPLE AS GIVEN BY CUSTOMER: D - Wing, Gr. Floor
TEST METHOD: IS 516: 1959 RA 2018 Amd-2

## CONCRETE CORE COMPRESSIVE STRENGTH TEST RESULTS

DATE OF TESTING: 09/07/2021
DATE OF CASTING: Detail Not Furnished by customer
CURING CONDITION: Detail Not Furnished by customer

GRADE OF CONCRETE: Detail Not Furnished by customer
AGE OF SPECIMEN (DAYS): Not Known

| Sr. No | ID Mark of Specimen as given by customer | Core Height (h)(mm) * | Core Dia (d) (mm) | Core Wt.(kg) * | Cross sectional Area,mm2 | Max. Load (kN) | h/d Ratio | Correction Factor for(h/d) ratio $ | Corrected Comp. Strength (After h/d Ratio) (N/mm2) | Equivalent Cube Comp. Strength (N/mm2) ! | Equivalent Cube Comp. Strength (kg/cm2) ! | Type of Fracture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D - Wing, Gr. Floor C - 2 | 89.4 | 68.4 | 0.768 | 3673.9 | 36.5 | 1.31 | 0.93 | 9.2 | 11.5 | 117.1 | Usual |

**Curing Declaration:** Curing of sample (s) submitted to laboratory for testing was in customer's scope till successful registration of test request.

* Compressive strength test done on (1) Specimen/s as requested by customer

## 3. CONCLUDING REMARKS AND RECOMMENDAITONS

The structural audit of Punit Park CHS Ltd. was carried out. Based on the visual inspection and NDT results, recommendations for various structures that were audited are provided as under.

**In present case of the building, based on the investigation and various tests carried out it is observed that all the components of structural frame are weak.**

1. The A, B, C & D Wing is structurally distressed and dilapidated and not recommended for habitation.
2. Rebound Hammer Test results of the Columns and beams of the A and B wings indicate the average concrete strength of the structure is not adequate (10-20 MPA).
3. Average UPV results of A & B wing indicate that most of the concrete has average structural integrity.
4. Average Carbonation test results shows more than 50% corrosion in reinforcement.

**For Row Houses**

Access to row houses and shops was denied by owners stating their structures are in good condition and need not be audited. In view of the test results of adjacent wings the row house structure may also show poor test hence detailed audit needs to be carried out.

Based on the carbonation test results more than 50% corrosion in reinforcement it's an alarming situation. The Concrete strength is also on lower side as compared to current standards. The repairs to structure may not guarantee the future strength and life of structure. It will be prudent to Demolish these buildings.

## 4. REFERENCES


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