

Project : “ TAKSHASHILA AIR “, **The Residential Multi storied Towers, located on F.P. No. 560/P, S.P. No. 560/1, T.P.S. No.3 (Ellis Bridge), Tal.: City, Dist. Ahmedabad, address : Gate No. 1 B/h M. J. Library, Ellis Bridge, Ahmedabad**

Structural Peer Review Report with ...

- Review Report
- Design Basis Report
- Undertaking from structural consultant
- Undertaking from PMC
- Str. Peer reviewer's certificate (Annexure-1)

PEER REVIEWER

Pankaj Patel & Associates

303, Chakravarty Complex, Opp. Kiran Park Circle,

Nava Vadaj, Ahmedabad-380013

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Peer Review for
TAKSHASHILA AIR

1.0 Executive Summary :

“ TAKSHASHILA AIR “, The Residential Multi storeyed Tower, located on F.P. No. 560/P, S.P. No. 560/1, T.P.S. No.3 (Ellis Bridge), Tal.: City, Dist. Ahmedabad, address : Gate No. 1 B/h M. J. Libraryh, Ellis Bridge, Ahmedabad and Gate No.2 B/h Town Hall, Ellis Bridge, Ahmedabad whose owner are Silver Arc Members Association, Silver Arc Flats, Flat No. 11 Block-D, b/h M. J. Library, Ellis Bridge, Ahmedabad 380006 , and the project developers are , Miraj Impex Pvt Ltd , Takshashila Air, b/h M. J. Library, Ellis Bridge, Ahmedabad 380006

Municipal Corporation, vide their letter no : 16814 , dated 05-06-15 have instructed to take structural design review, and structural audit report.

The Project developers have approached for Structural Peer review of the above project. They have submitted following for peer review.

1. Layout Plan of proposed Building. (Sheet No : 1)
2. Parking Layout (Sheet No : 2)
3. Basement Plan (Sheet no : 3)
4. Building Plan - Ground floor Plan (Sheet no : 4)
5. Building Plan - First floor plan (Sheet no : 5)
6. Building Plan - Second floor plan (Sheet no : 6)
7. Building Plan - Typical floor Plan (3rd Fl to 10th Fl) (Sheet no : 7)
8. Building Plan - 11th Floor (Sheet no : 8)
9. Building Plan - Stair cabin & Terrace (Sheet no : 9)
10. Section A-A (Sheet no : 10)
11. Front Elevation : Sheet no : 11
12. All Arch drawings, showing full building of 25 storey
13. For Tower-A & B, raft details, Column details, and Slab Details.
14. Design Basis Report , submitted by Structural Consultants.
15. Analysis file on ETABs, (Soft copy), prepared by structural consultants.
16. Design using software 'SAFE' (Soft copy) for raft etc.
17. Soil investigation report prepared by Geotech, Soil Investigation Lab.

We have reviewed the Design Basis report, Analysis, and the submitted drawings, issued by the structural Engineer of the Building. We have checked its data files, After due checking of Analysis files, we have found that, the structural consultants, have considered all design data, as they have mentioned in their design basis. The Analysis data file prepared on E-tabs was discussed in detailed during the period of last couple of weeks.

Peer Review for
TAKSHASHILA AIR

We have checked design loads considered, i.e Dead Loads, Live Loads, Wind Loads, Earth quake loads etc all. We have checked combinations of different load cases, and we have found that, the considered loads, and its combinations are as per codal provisions. During checking of prepared Data file on ETABs, some clarifications have been asked for, and the same were clarified by the structural consultants.

During checking process all the input data, all the load cases, all the load combinations were discussed in detail in person, and where ever found modifications have been suggested and modifications were carried out by the consultant.

The designs and detailing are carried out by consultant, based on finalized data. The Execution of Both towers buildings, and all the structural drawings will be based on checked, and finalized Analysis data file. The data is prepared on ETABs software of analysis and design using SAFE software.

Salient features considered in Analysis and design are as below.

1. The structure consists of 2 towers A & B with connected 2 basements.
Tower A consists of 2 Basement + Ground + 25 typical floor + Terrace + LMR & OHT. The total height of the building is about 79.5m. from Ground level.
Tower B consists of 2 Basement + Ground + 25 typical floor + Terrace + LMR + OHT. The total height of the building is about 79.5m. from Ground level.

The building is meant for use as residential housing.

The Structural system for the Residential Building consists of RCC framed (columns, shear walls, beams & slabs) structure.

2.

DESIGN LOADS

a) Dead Loads

The self-weight of the various elements are computed based on size and density of materials as given below:-

Density of Reinforced Cement Concrete	= 25 kN/m ³
Density of Plain Cement Concrete	= 23.5 kN/m ³
Density of Steel	= 78.5 kN/m ³
Density of Soil	= 18 kN/m ³
Floor finish (75 mm)	= 1.5 kN/m ²

Weight of Wall:

External Wall (Full Glass Elevation)	
20mm thk glass of 3.0m typ flr height	= 2.00 kN/m
Internal Wall 75mm thick	= 7.00 kN/m ³
Internal wall between adjacent flats, External wall and common corridors 200mm thick	= 7.00 kN/m ³

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b) Live Loads

The live load is assessed based on the occupancy classifications as per IS:875 (Part – 2) – 1987 and are listed as below.

Floor type	Area	Load (KN/m ²)
Typical floor	All room	2.00
Typical floor	Toilets & Bath Rooms	2.00
Typical floor	Staircase & Corridors	3.00
Typical floor	Open Terrace	1.50
Typical floor	Refuge Area	4.00
Fire check floor	All	2.00
Service floor	All	2.00
Basements	Parking Area (Single Parking)	3.00
Basements	Parking Area (Stack Parking)	5.00
Silt floor	1000mm thick-not finalised	To be finalised
Brick bat coba on terrace (light weight filling)	150 thick	1.20
Toilets & balconies	Toilets & kitchen	No Sunk
Floor finish (75 mm thick)	Typical Floors, Basement & Ground Floor	1.50
Services	Typical Floors, Basement & Ground Floor	0.5

c) Wind Load

The wind pressure has been calculated based on the data furnished below and other provisions laid in IS875 (Part-3) – 1987.

Basic Wind Speed $V_b = 39$ m/sec

For Tower B,

Height=79.50m

Risk Coefficient $K_1 = 1.0$

Terrain Category = III

Structure Class = C

Terrain Category = 3

$K_2 = 1.07$

Topography Factor $K_3 = 1.0$

Design Wind Speed $V_{zmax} = V_b K_1 K_2 K_3$
 $= 39 \times 1.0 \times 1.07 \times 1.0$
 $= 41.73$ m/sec

Design Wind Pressure (max) $P_{zmax} = 0.6 V_z^2$

Gust Factor

Gust factor has been calculated as per clause 8.3 of IS : 875 (Part 3)–1987.

d) Earthquake Load

The loading due to earthquake is assessed based on the provisions of IS: 1893(Part-I):2002

Seismic Zone	=III
Table-2 Zone factor (Z)	=0.16
Table-6 Importance Factor (I)	=1.00
Table-7 Response Reduction Factor (R)	=4.0
Soil type	=Type I
Height of building (h)	=79.5 m.

Fundamental Natural Time Period (Ts) with brick infill walls

For Tower B,

H= 79.5 m , B=32.3 m , D=22.7 m

$$T_s = \frac{0.09H}{\sqrt{d}} \quad \text{from CL - 7.6.2 - IS 1893 (Part-I) 2002}$$

$$T_{sx} = 1.22 \text{ sec} \quad \text{For X}$$

$$T_{sy} = 1.48 \text{ sec} \quad \text{For Y}$$

$$S_a/g = 0.82 \quad \text{For X}$$

$$S_a/g = 0.68 \quad \text{For Y from FIG-2 IS 1893 (Part-I):2002}$$

Horizontal seismic coefficient

$$A_h = \frac{Z \times I \times S_a}{2 \times R \times g} = \frac{0.16 \times 1.0 \times 0.82}{2 \times 4} = 0.016 \text{ For X}$$

$$A_h = \frac{Z \times I \times S_a}{2 \times R \times g} = \frac{0.16 \times 1.0 \times 0.68}{2 \times 4} = 0.013 \text{ For Y}$$

Dynamic analysis is performed using response reduction as per IS-1893 (2002).

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3. CHECK FOR LATERAL SWAY AS PER IS 456-2000

lateral sways to limits of approximately Overall Height/500 under the 50 year return period wind loads.

4. BASIC LOADS AND LOAD COMBINATIONS

The various loads are combined in accordance with the stipulations in IS:875 (Part 5)-1987. Wherever imposed load is combined with earthquake load the appropriate part of the imposed load as specified in IS:1893-2002 is adopted both for evaluating earthquake effect and for combined load effects, used in such combination.

Description of Load Combination	Load Factor for Primary Load Cases				
	Dead Load	Live Load	Wind Load	Seismic Load	Temp Load
Dead load	1.5	0.0	0.0	0.0	0.0
Dead load + Live load	1.5	1.5	0.0	0.0	0.0
Dead load+Wind load	1.5	0.0	±1.5	0.0	0.0
Dead load+Seismic load	1.5	0.0	0.0	±1.5	0.0
Dead load+Live load+Wind load	1.2	1.2	±1.2	0.0	0.0
Dead load+Live load+Seismic load	1.2	1.2	0	±1.2	0.0
Dead Load + Wind Load	0.9	0.0	±1.5	0.0	0.0
Dead Load + Seismic Load	0.9	0.0	0.0	±1.5	0.0
Dead load + Temp	1.4	0.0	0.0	0.0	±1.4
Dead load + Live load + Temp	1.05	1.28	0.0	0.0	±1.05
Dead load+Wind load+ Temp	1.05	0.0	±1.28	0.0	±1.05
Dead load+Seismic load+Temp	1.05	0.0	0.0	±1.28	±1.05
Dead load+Live load+Wind load+Temp	1.05	1.28	±1.28	0.0	±1.05
Dead load+Live load+Seismic load+Temp	1.05	1.28	0	±1.28	±1.05
Dead Load + Wind Load+Temp	0.9	0.0	±1.28	0.0	±1.05
Dead Load + Seismic Load+Temp	0.9	0.0	0.0	±1.28	±1.05

6. ANALYSIS METHOD

The structure is analysed for Static loads (both dead and live loads) and Lateral loads due to Earthquake/Wind loads and its combinations

Peer Review for
TAKSHASHILA AIR

7. DESIGN METHODOLOGY

All structures have been designed according to the Limit State Method as specified in IS:456-2000. Appropriate loads and its combinations, as per relevant clauses in Code IS 456:2000 Code IS 875 (Part-5) 1987, for the most unfavorable effects are chosen for design. IS 13920 shall be referred for ductile detailing.

8. CONSTRUCTION DETAILS

1. Raft Foundation - Concrete Mix M: 25 & Steel Fe 500
2. Columns & shear walls - Concrete Mix M: 40, M:30, M: 25 & Steel Fe 500
3. Beams & Slabs - Concrete Mix M: 30 , M:25 & Steel Fe 500

09. EXPOSURE CONDITION

Structural elements below Plinth level and Exterior External faces of walls are designed for severe exposure condition and internal faces of walls & floor beams are designed for moderate exposure condition as per Table 16 of IS 456-2000

2.0 List of documentation reviewed. :

We have reviewed following documentation.

- a. Arch. Plans.
- b. Str. Drawings for the complex
- c. ETABS input files.
- d. Output results of data files
- e. Structural detailing of components.
- f. Soil investigation report.
- g. Structural Engineer's undertaking. : Structural engineer have given undertaking, for correctness, Soundness, and that, structure is safe and sound.

Peer Review for
'Takshashila Air'

3.0 Peer reviewer's observations. :

We have found the data file finalized, generally in order. The space frame data file considering provisions given in IS-456, IS-875, IS-1893-2002, and detailing as per IS-13920.

Execution of both the tower buildings, shall be carried out using all structural drawings, which are prepared using the finalized analysis data file, and detailing based on output of this finalized data file.

With the above, in our opinion, the building will be safe, and stable.

At site, the execution of foundation work of Tower-B is in progress. It has been advised to execute the work as per codal provisions, and finalized drawings, with proper records of testing.

4.0 The following has been attached with this report.

1. Layout Plan of proposed Building. (Sheet No : 1)
2. Parking Layout (Sheet No : 2)
3. Basement Plan (Sheet no : 3)
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10. Section A-A (Sheet no : 10)
11. Front Elevation : Sheet no : 11
12. Design Basis Report, submitted by Structural Consultants.
13. Undertaking of structural Engineer
14. Under taking of Project Management Consultants.

5.0 Structural peer review certificate.

The structural preview certificate has been attached as per Annexure : I.



mahimtura consultants pvt. ltd.

consulting engineers

Mg. Dir.: R. H. MAHIMTURA B.E., F.I.E.
Dir.: H. R. MAHIMTURA B.E., M.S.(U.S.A.), F.I.E.
Tel.: 91-22-4366 5000 / 2266 1212
Fax: 91-22-2266 2227

C/7512/2015

Date: 8th July, 2015

TO WHOM SO EVER IT MAY CONCERN

Dear Sir,

**Sub. : Proposed Residential Tower 'Takshashila AIR' at FP no : 560/P,
Sur no : 560/1, TPS no : 3, located at Village: Ellis Bridge,
Tal.: City, Dist.: Ahmedabad.**

I hereby certify that the structural design and drawing work of the above proposal has been designed for two Basements + Ground + 25 upper floors as per Architectural drawings supplied to me.

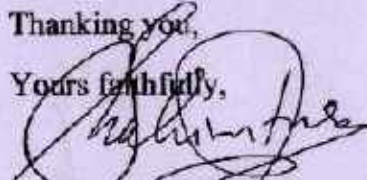
The Buildings have been designed and detailed with due consideration to seismic forces as per prevalent I. S. Code No. 4326-1993, IS Code 1893-2002, (The code for Earthquake Resistant Structure), 13920-1993 (Ductile Detailing of Reinforced Concrete Structures subject to Seismic forces, 456-2000 (Code of practice for Plain and Reinforced Concrete) and 875 -1987 (Code of Practice for Design Loads).

We will be responsible towards correctness, soundness, strength of the structure and its design as per structural approved drawings.

The said structure will be safe and stable for the purpose for which it is intended for, to the best of our knowledge and belief today.

Thanking you,

Yours faithfully,


S. R. Mahimtura
Consulting Structural Engineer
Registration No. SD 0468070620.

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SHILP SHREE
PROJECT MANAGEMENT
CONSULTANTS

Date :- 11th July 2015

To, whom so it may concern

Subject : Undertaking for Supervision of the Work for Takshashila AIR Project, at Ahmedabad.

Dear Sir,

We will execute the project as per the design and detailing given by Structural Designer's Drawings and supervise as per IS – 456 & IS 13920 and other respective IS code Provisions.

We shall get the complete records of Testing of Concrete, Steel and any other Material as per IS codes from contractor and maintain the same.

Thanking you,

Regards,

Shalish Shah
Shalish Shah
Proprietor.



SPECIALIZED CONSULTANTS FOR

- ◆ BRIDGES (RCC, PRESTRESS, STEEL)
- ◆ BOX PUSHING SCHEMES, MICROTUNNELING
- ◆ HARBOUR STRUCTURES
- ◆ INDUSTRIAL
- ◆ IRRIGATION WATER SUPPLY, DRAINAGE
- ◆ MULTISTORIED BUILDINGS
- ◆ PROJECT MANAGEMENT & SUPERVISION
- ◆ SURVEY WORKS (USING TOTAL STATION)



Pankaj Patel & Associates

303, CHAKRAVARTY COMPLEX, OPP. KIRAN PARK CIRCLE,
NAWA VADAJ, AHMEDABAD-380 013, GUJARAT, INDIA.
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Annexure 1:

Structural Peer Reviewer's Certificate

Project Name: Takshashila AIR
Project Address: F.P. No. 560/P, S.P. No. 560/1, T.P.S. No.3 (Ellis Bridge), Tal.: City, Dist. Ahmedabad
Gate No. 1 B/h M. J. Library, Ellis Bridge, Ahmedabad
Gate No.2 B/h Town Hall, Ellis Bridge, Ahmedabad

Project Owner Information:

Name: Silver Arc Members Association
Address: Silver Arc Flats, Flat No. 11 Block-D, b/h M. J. Library, Ellis Bridge, Ahmedabad 380006
Telephone Number: 88666 22555
Email:

Project Developer Information:

Name: Miraj Impex Pvt Ltd
Address: Takshashila Air, b/h M. J. Library, Ellis Bridge, Ahmedabad 380006
Telephone Number : 9377110022
Email: info@takshashilaair.com

Registered Structural Engineer Information

Name: Mahimtura Consultants Pvt Ltd
Address: 25 Unique House, S.A. Brelvi Road, For Mumbai - 400 001
Telephone Number : 022 43685000/22661212
Email: Desk@mahimtura.net Sailesh.rm@gmail.com
Name: Mr. Shailesh Mahimtura

Structural Peer Reviewer Information:

Name: Pankaj Patel & Associates.
Address: 303, Chakravarty Complex, Opp Kiran Park, Nawa Wadaj, Ahmedabad-13
Telephone Number : 9825024024
Email: paai_99@yahoo.co.in
Name: Pankaj M Patel, Str Engg Lic No : SD 0071060816 R2 26-3-15

- SPECIALIZED CONSULTANTS FOR
- ◆ BRIDGES (RCC, PRESTRESS, STEEL)
 - ◆ BOX PUSHING SCHEMES, MICROTUNNELING
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Project Management Consultant's Information:

Name: Shilp Shree, Project Management Consultant
Address: 908, Span Trade Centre, Opp. Kochrab Ashram, Paldi, Ahmedabad
Telephone Number : 92276 35155, 9824911158
Email: ruchir@shilpshree.com
Name: Mr. Ruchir Shah

I hereby certify that :

1. I am a Practicing Structural Engineer and practices in the field of Structural and that I have been prequalified by AUDA to provide Structural Peer Review services.
2. I have carried out a peer review and have checked the structural design calculations for the above project for Building shown in drawing. the structural design is reviewed and found in order and after construction as per structural drawings which are prepared based on finalized data file for analysis and design, the structure will be safe and stable.
3. The above mentioned building work has been designed in accordance with applicable codes and sound engineering practice, and if constructed reasonably in accordance with the documents reviewed, shall be capable of sustaining the most adverse combinations of loads to which it will be subjected in accordance with the design intent.
4. I have exercised a professional standard of care in reviewing the project and am aware that Ahmedabad Urban Development Authority will rely upon the truth and accuracy of this statement as a basis for issuing a Development Permit for this project.

For Pankaj Patel & Associates.

PANKAJ M. PATEL

B.E.(CIVIL), M.E.(CASAD)

303, Chakravarty Complex,
Opp. Kiran Park Circle, Nawa Wadaj,
Ahmedabad - 380 013.

AMC : SD 0071080816R₂ 26/3/2015

AUDA : SD-1/117, 8/4/2012

Place : Ahmedabad

Date : 14-07-2015

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