



**INDIAN INSTITUTE OF TECHNOLOGY, DELHI**  
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Date: April 15, 2016

**TO WHOMSOEVER IT MAY CONCERN**

**Sub.: Proof Checking of Structural Design of Residential Buildings  
in Group Housing Scheme Cloud 9 at Hindon Green Valley of  
Rishabh Buildwell Pvt. Ltd. at Indirapuram, Ghaziabad**

**Ref.: Structural Design calculations and drawings submitted by Design  
Consultants Gian P. Mathur & Associates Pvt. Ltd.**

This is to certify that the structural design calculations and design drawings for the residential building mentioned in the subject matter above have been checked and corrected in accordance with the relevant Indian Standard Criteria for design of R/C structures IS:456 – 2000, IS: 1893-2002 and IS: 13920 –1993. The structural design drawings stamped by IIT Delhi as submission drawings showing framing plan, foundation plan, general arrangement, concrete member sizes and reinforcement are duly approved for submission (documentation) purposes only.

The responsibility of the Indian Institute of Technology Delhi shall be limited to technical advice only. All procedural / legal / operational matters and architectural / functional details will be the responsibility of the Company.

Sincerely,

*Alok Madan*  
(Alok Madan)

# Design Report For Cloud-9

## Clint-RISHABH BUILDWELL Pvt. Ltd.

Document consists:-

1. DESIGN BASIS REPORT
2. EWS/LIG Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
3. Jasmine Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
4. Meadows-1 Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
5. Meadows-2 Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
6. Meadows-3 Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
7. Skylish-1 Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.
8. Skylish-2 Building :- Structural Drawings, Typical Floor Beam Reinforcement detail and Column/Shear Wall Reinforcement detail from Etabs.

## 1. INTRODUCTION

### 1.1 GENERAL PROJECT INFORMATION

**PROJECT TITLE**  
" PROPOSED GROUP HOUSING "

**LOCATION OF PROJECT**  
VILLAGE- MAHIUDDINPUR, KANAWANI,(INDRAPURAM)  
PARAGANA LONI,TEHSIL- DADRI, DISTRICT.- GAUTAM  
BUDH NAGAR (U.P.)

### DESCRIPTION OF PROJECT

The project consists One commercial building and 7 residential building. The commercial building consist of 2 Basements, Ground and 4 Story. Lower Basement is reserved for Parking. Upper basement and Ground for reserved for Shops, Storage and Reception purpose. Upper floors are reserved for School and Living purpose. 7 Residential buildings are EWS/LIG, Jasmine, Meadows-1, Meadows-2, Meadows-3, Skylish-1, and Skylish-2 respectively. EWS/LIG has 3 basement+Stilt+28 Story. Jasmine, Meadows-1, Skylish-1 has 3Basement+2Stilt+Service+32Story respectively. Meadows-2, Meadows-3 and Skylish-2 has 3 Basements+Stilt+Service+31Story. Height for all the basements is 4.5m. Height for First Stilt is 3.25m and Second Stilt is 3.85m Service floor has 3.5m height and Typical floor consist of 3.1m height. All the basements are used for parking. Typical floor are used for residential. Total height of building is 119.45m to 122.55m



### PROJECT NAME

"PROPOSED GROUP HOUSING"

M/S RISHABH BUILDWELL PVT. LTD.

AT LAND KHASARA NO. 519,530,532,536,540/1,2,541,  
543,602,603/2,3

VILLAGE- MAHIUDDINPUR, KANAWANI,(INDRAPURAM)  
PARAGANA LONI,TEHSIL- DADRI, DISTRICT.- GAUTAM  
BUDH NAGAR (U.P.)

### CLIENT

RISHABH BUILDWELL PVT. LTD.

### ARCHITECTS

GIAN P. MATHUR AND ASSOCIATES (P) LTD.

C-55, EAST OF KAILASH

NEW DELHI - 110065

TEL:- 011- 46599599, 46599512

Email: [gpmma@airtelmail.in](mailto:gpmma@airtelmail.in)

### STRUCTURE DESIGN CONSULTANT

CHORDIA ENGINEERING CONSULTANCY SERVICES

I-1738, LOWER GROUND FLOOR

CHITTRANJAN PARK NEW DELHI-110019

PH: - 011-41644915, 4164416

Email: [chordiatech@gmail.com](mailto:chordiatech@gmail.com)



IS 4326 – 1993	Earthquake resistant Design and construction of Buildings
IS 1904	Code and Practice for design and Construction of Foundations in Soils
IS 2911(Part1/Sec-2):2010	Code and Practice for Design and Construction of Pile Foundations
IS 800-1980	Code of Practice for general Construction in Steel.
IS 1343-1980	Code of Practice for Prestressed Concrete.

### 3.2 DESIGN REFERENCES AND GUIDES

- Reinforced Concrete Design – W.H.Mosley
- Foundation Analysis & Design (4th Edition) – Bowles
- Foundation Design and Construction – Tomlinson
- Concrete Structures - Warner, Rangan, Hall & Faulkes (Longman, 1998)
- Reinforced Concrete Designers Handbook - Fourth Edition, Reynolds & Steedman
- Reinforced Concrete Design (Second Edition) -S Unnikrishna Pillai, Devdas Menon
- Reinforced Concrete : Mallick & Gupta
- Reinforced Concrete : Syal & Goyal
- Prestressed concrete : Krishna Raju
- Design of steel structure : S. Ramamurtha

### 3.3 COMPUTER PROGRAMS

Name	Purpose	Producer
E-Tab 9.7.4	Analysis and Design of Building Structure	CSI
SAFE V12.3.2	Analysis and design of substructure and floor plates	CSI
AUTOCAD	Drafting package	AUTO DESK

Approved for submission  
purpose

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Dr. ALOK MADAN  
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Indian Institute of Technology, Delhi  
Hauz Khas, New Delhi-110016



#### 4.2 EARTHQUAKE LOADING

The structure is to be designed for the minimum static seismic base shear set out by IS 1893 (Part 1): 2002 using the parameters shown in the table below. These forces are treated as ultimate forces.

Design Earthquake	10% chance of being exceeded within a 50 year return period
Seismic Zone	Zone IV
Seismic Zone Factor, Zone IV	$Z = 0.24$
Soil Profile Type	As per Soil Report.
Occupancy Category	Residential Building
Seismic Importance Factor I	$I = 1.0$
System Co-efficient R	$R = 5.0$ , Refer to Table 7, IS 1893
Fundamental Period of Vibration	With infill i.e., $0.09 XH/V_0$ H – building height D-Least lateral dimension of building at plinth level
Seismic Building Weight	To include all components of Self Weight, Superimposed Dead Load, permanent equipment and 25% of LL or 50% of LL as applicable.

#### 4.3 WIND LOADING

The structure is to be designed for the minimum static wind base shear set out by IS 875 (Part 3): 1987 using the parameters shown in the table below. These forces are treated as ultimate forces.

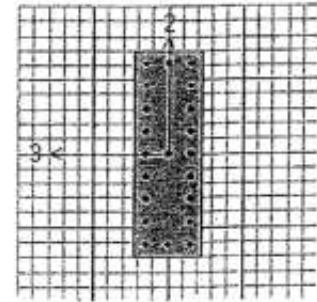
Design Wind	10% chance of being exceeded within a 50 year return period
Basic Wind Speed	$V_b = 47 \text{ m/s}$
Design Wind Speed	$V_z = V_b * K_1 * K_2 * K_3$
K1	Risk coefficient (Table-1, Page-11)
K2	Class C and Category 1. (Table-2, Page-12)
K3	Topography Factor,
Design Wind Pressure	$P_z = 0.6 * V_z^2$ (Clause No-5.4, Page No.-12)

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Submission  
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Story Level: 2NDFLR  
 Element: C127  
 Section Name: C-300X900M50  
 Frame Type: Ductile Frame



L=310.000  
 B=30.000 D=90.000 dc=5.500  
 E=3535.534 fc=4.500 Lt.Wt. Fac.=1.000  
 fy=50.000 fys=41.500  
 RLLF=0.500

Axial Force & Biaxial Moment Reinforcement for Pu-Mu2-Mu3 Interaction

Column End	Rebar Area	Rebar %
Top	45.972	1.703
Bottom	61.945	2.294

Column End	Design Pu	Design Mu2	Design Mu3	Station Loc	Controlling Combo
Top	5514.129	10980.125	-19464.876	265.000	UDCON41
Bottom	5540.960	-16013.383	19559.590	0.000	UDCON41

Shear Reinforcement for Major Shear (V2)

Column End	Rebar Asv/s	Design Vu	Station Loc	Controlling Combo
Top	0.033	72.354	265.000	UDCON44
Bottom	0.033	72.354	0.000	UDCON44

Shear Reinforcement for Minor Shear (V3)

Column End	Rebar Asv/s	Design Vu	Station Loc	Controlling Combo
Top	0.100	57.489	265.000	UDCON44
Bottom	0.100	57.489	0.000	UDCON44

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