

ABSTRACT FOR ALIZAPUR SITE						
Indus ID:	IN-1367034					
Site Name:	ALIZAPUR					
Opco Name:	AIRTEL					
Opco site ID:	HY5689					
Civil PO No:	31030047261					
District & Circle:	HYDERABAD & AP					
S. No.	Item Description	Unit	Qty	Rate	Amount	Remarks
1	Door & Window Fitting Charges - Lock 7-liver (link,plaza,harison make)	EA	2	265	530.00	
2	Plain Cement Concrete - M10 grade (1:3:6),(As per Indus Standards and Guidelines)	CUM	0.28	5800	1,624.00	
3	Reinforced Cement Concrete - M 20 grade (1:1.5:3) excluding reinforcement steel,(As per Indus Standards and Guidelines)	CUM	4.5	8569	38,560.50	
4	Chemical rebaring for M16 anchor rod,(As per Indus Standards and Guidelines)	EA	22	208	4,576.00	
5	Concrete Grouting below Tower base Plate.	EA	2	795	1,590.00	GP2 Grouting done
6	P&L 3-Coats of super Snowcem of required shade on exterior surface to give an even shade after throughly cleaning/brushing the surface free from cement sulury dropping & other foreign matter including preparing the surface even & smooth.	SMT	22.521	32	720.67	
7	P&L Tor steel , ISI marked and approved make ( circle specific make ) including cutting, bending & laying ,Including binding wires etc complete.	KG	804.6	55.91	44,985.19	
8	Providing & Fixing (including grouting) of ms stand for universal Outdoor PIU Cabinet	EA	5	5000	25,000.00	
9	Plastering Charges(12mm thk) with 1:3 (1 cement : 1.5 fine sand +1.5 coarse sand)	SMT	2.16	260	561.60	
10	Shuttering for RTT Sites - MS Sheet / Plywood (As per Indus Standards and Guidelines) - Capex	SMT	23.731	400	9,492.40	
11	P&L 2-top coats of Oil bound distemper of required shade(iner side of room) on undecorated wall/ceiling to give an even shade over including a base primer after cleaning of surface free from cement sulury dropping & other foreign matter.	SMT	5.226	48	250.85	
12	Cable Tray Pedestals(500X250X250MM)	EA	3	1200	3,600.00	PCC
<b>Total</b>					<b>1,31,491.21</b>	



### Certificate for Tower

Date :- 03-Oct-19

I, Ravikumar from M/s. Indus In-House Quality AP, certify that the Tower Erection for this Site Name :- Alizapur, Reference No :- R/NN-352718, Indus Id :- IN-1367034.  
 Site Address :- Ranga Reddy  
 Tower Type :- RTM, Opc Name :- Airtel, Opc Id :- HY5689

was checked and found OK in all respect with consideration of all post erection check points, specifications w.r.t to erection drawings.

Tower was erected by :- Salasar

TSP Name Ospes Telecom Services Pvt Ltd

**There is no erection deficiency and tower is suitable for loading antennas as per design & tower is final acceptan**

Stage	Inspection Date	Revisit Date if any
<u>T1</u>	<u>22-Sep-19</u>	-

#### **Key observations during 1st inspection:**

- 1.1,
- 2.2,
- 3.3,
- 4.4,
- 5.4,
- 6.5
- 7.7,
- 8.8,
- 9.9,

Thanks & regards,

Signatures :-

Prepared By :- M Arunkumar

Verified By :- M Sangameshwar

Certified By :- BVLN Murthy

Indus In-House Quality AP Representatives

**HO ID Number**

**AP-IH-0919-2492**

Certificate with out Indus In-House Quality AP HO seal, hologram sign and ID number is invalid

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<b>Total</b>					<b>1,31,491.21</b>	



Ref. Number	PI NO/N - 302718	Audit Date	24/9/19
Indus ID	IN - 1367034.	TSP Name	DSPS
Site Name	Alizapur 1	QA Name	Indus
Site ID	HYC689	Guest Opcn Name	AXTEL
Anchor Opcn Name	AXTEL	Guest Opcn ID	HYC689
Anchor Opcn ID	HYC689		
Sno.	Description	Utilization	UNIT
1	S/L 25 Sq.mm , 4 Core Aluminium conductor, armoured power cable including providing glands & thimbles	Meter Box to PIU	Mtr
2	S/L 50 Sq.mm , 2 Core Aluminium conductor, armoured power cable including providing glands & thimbles	DG to PIU	Mtr
3	S/L 2.5 Sq.mm , 2 Core Copper conductor, armoured power cable including providing glands & thimbles	PIU to AVL	Mtr
4	S/L 2.5 Sq.mm , 2 Core Copper conductor, armoured power cable including providing glands & thimbles	PIU to Yard Lights	Mtr
5	S/L 70 Sq.mm , single Core copper conductor, unarmoured flexible multistrand power cable including providing glands & thimbles	SMPS to Battery Bank	Mtr
6	S/L 95 Sq.mm , 4 Core copper conductor, unarmoured flexible multistrand power cable including providing glands & thimbles	PIU to PP	Mtr
7	1) PIU Body earthing	Earthing of Equipment	Mtr
8	2). PIU Neutral earthing	Earthing of Equipment	Mtr
9	3). PIU PE Earthing	Earthing of Equipment	Mtr
10	4) DG body earthing	Earthing of Equipment	Mtr
11	5) DG Neutral Earthing	Earthing of Equipment	Mtr
12	6) SMPS Positive bus bar earthing	Earthing of Equipment	Mtr
13	7) SMPS Body Earthing	Earthing of Equipment	Mtr
14	8) BB body Earthing	Earthing of Equipment	Mtr
15	9) Aircon body Earthing	Earthing of Equipment	Mtr
16	10) other Equipments Earthing	Earthing of Equipment	Mtr
17	S/L 25 Sq.mm , Green,single Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles	Earthing of Equipment	Mtr
18		Earthing of Equipment	Mtr
19		Earthing of Equipment	Mtr
20	S/L 95 Sq.mm , single Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles	Meter to HRC Fuse/MCCB	Mtr
21	S/L 6 Sq.mm , single Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles	as per requirement	Mtr
22	S/L 6 Sq.mm 9 Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles (4 Runes)	SMPS TO PS SMPS TO DDF	Mtr
23	S/L 6 Sq.mm , single Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles	as per requirement	Mtr
24	S/L 2.5 Sq.mm , single Core copper conductor, unarmoured flexible multistrand power cable including providing thimbles	as per requirement	Mtr
25	S/L 5 pair 0.5 sq mm copper cable		Mtr
26	S/L 10 pair 0.5 sq mm copper cable	SMPS to DDF	Mtr
27	P/F earthing strip down conductors with GI strip of 25X6mm including steel clamps/saddles at 2 ft distance with steel/plastic fasteners at min 2" C/C with steel screws, drilling, brazing, making strips straight, all scaffolding/or laying the strip 0.5mtr u	Earthing Strip Down Conductor	Mtr
28	P/F earthing strip down conductors with GI strip of 25X3mm including steel clamps/saddles at 2 ft distance with steel/plastic fasteners at min 2" C/C with steel screws, drilling, brazing, making strips straight, all scaffolding/or laying the strip 0.5mtr un	Earthing Strip Down Conductor	Mtr
29	P/F external grounding bus bar(EGB) made of GI plates of size 300X150X3mm incl providing insulators of 2 nos. fastners, nuts, bolts, washers, drilling of holes before galvanizing etc complete	External Grounding Bar	Nos
30	P/F of Tinned Copper Internal Bus Bar(IGB) (300mm (L)X75mm (H)X3mm (T)) with 16 Nos. of Holes (with 6mm nuts,bolts & washers) for termination of 25 sq. mm.(1 core) earthing cable. EGB to be fixed to shelter using insulators	Internal Grounding Bar	Nos
31	P/F GI strip 50x6 mm below the ground for shorting earth pit.		Mtr
32	P/F earthing strip down conductors with GI strip of 25X6 mm including insulators at 2 ft distance		Mtr

**EB Audit - Consolidated Joint measurement sheet - Indus Towers**

Indus Id:	EN-1367034	Site Name:	Aligarh	Date of Inspection :	24/09/19,		
Dist:	HED.	Site Id:	HY56B91,	Anchor Opcn:	Antela		
Type of EB:	New	EB Vendor:	OSPS.	OME :			
SITE DATA	LOAD	PHASE	TRANSFORMER	SUPPLY FEEDER (HT / LT)	EB AVAILABILITY IN 24 HOURS (1 DAY)		
PREVIOUS	—	—	—	—	—		
PRESENT	5 kVA	3Ø	N/A	LT	222H		
S.no	CATEGORY	BOQ.S.NO	ITEM DESCRIPTION	UNIT	EB VENDOR EXECUTED SCOPE AT SITE (mark Tick)		
					SUPPLY	ERCTION	
1	TRANSFORMERS	1	15KVA 1Phase LT Transformer	No			
		2	25KVA Distribution Transformer 11KVA/433V complete with all respects	No			
		3	25KVA 3 Star Rating Distribution Transformer 11KVA/433V complete with all respects	No			
		4	Erection of 15Kva transformer incuding structure(For pole mount)	No			
2	ISOLATORS & PROTECTION EQUIPMENTS	5	11KV AB Switch 200 AT Type	No			
		6	11KV HG Fuse Set	No			
		7	HT Lightning arrester	No			
		8	100 A fuse box with 3 no.of 100A HRC fuses	No			
3	POLES	9	8.1Mtrs PSCC Pole including concreting	No			
		10	9.1m RCC poles including concreting	No			
		11	160mmX170mmX9mtrs MS box pole	No			
		12	80mmX170mmX9mtrs MS pole	No			
4	INSULATORS	13	Disc insulators HT	No			
		14	HT polymer Disc Insulators	No			
		15	Pin insulators HT	No			
		16	Pin insulators LT	No			
		17	LT Shackil insulator	No			
5	CONDUCTOR	18	34 Sq.mm AAA Conductor	Mtr			
		19	55 Sq.mm AAA Conductor	Mtr			
		20	3+1AB Conductor	Mtr			
6	CABLES	21	35 Sq.mm 3 core HT XLPE (Bunched) Cable	Rmtr			
		22	50 Sq.mm 3 core HT XLPE (Bunched) Cable	Rmtr			
		23	25 Sq.mm , <del>4</del> Core Aluminium conductor, armoured power cable	Rmtr	30	✓	✓
		24	35 Sq.mm , 3 1/2 Core Aluminium conductor, armoured power cable	Rmtr			
		25	50 Sq.mm , 3 1/2 Core Aluminium conductor, armoured power cable	Rmtr			
		26	35 Sq. mm WPSC Service cable from pole to meter box as per IER specifications (considering 4 wires and supporting with GI wire & weather proof ties)	Rmtr			
		27	3phase service wire with 25Sqmm WPSC from EB pole to EBMeter as per I.E.R Specification.(considering 4wire,le supporting GI Wire pleats, lugs Rphase,Yphase,Bphase&Neutral are combined as one running Meter)	Rmtr			
		28	End terminations of armoured cables including lugs / glands / crimping	No			
		29	cross arms for both LT & HT	No			
		30	Top Clamps with cleat	No			

**EB Audit - Consolidated Joint measurement sheet - Indus Towers**

Indus Id:	DN1369034,	Site Name:	<i>Rajapur</i>	Date of Inspection :	<i>24/9/19</i>
7		31	Back Clamps (Only for stud/ support pole)	No	
		32	MS Clamps	Kgs	
8	TRANSFORMER PROTECTION	33	Civil Works for Transformer plinth with CRS, Bricks and smooth plastering & painting Dimensions H 1.5M X W1.2M X D1M	No	
		34	Providing Fencing around the transformer	Rmtr	
9	PIPES	35	GI pipe 1.5" - A Class	Rmtr	
		36	1) 50mm dia HDPE Pipe Heavy duty (Road Crossing, Protection - Laying and fixing)	Rmtr	
10	EARTHING	37	Construction of Pit earthing including excavation & refilling with water in any type of soil and rocky area, providing GI or CI pipe 50mm dia 2 mts length size, Coal 50 Kg, salt 30 Kg, chamber should be constructed.	No	
		38	8 gauge GI wire for earthing	No	
11	STAY SET	39	stay set as per SEB specification	No	
12	OTHERS (IF ANY)				

	OME Supervisor	EB vendor Engineer	QA Engineer
Signature :	<i>Surj</i>	<i>R. NARESH</i>	<i>R. NARESH</i>
Name :	<i>Bhalchandra</i>	<i>R. NARESH</i>	<i>996636238</i>
Mobile No:	<i>9830582736</i>	<i>996636238</i>	<i>996636238</i>
Date of Audit:	<i>24/9/19</i>	<i>24/9/2019</i>	<i>24/9/2019</i>
Organization:	<i>OSPS</i>	<i>Indus (IHM)</i>	



Ref. Number	QINN - 382718	Audit Date	24/07/19
Indus ID	TW-1367034	TSP Name	OEPS
Site Name	AP72A PWR	QA Name	Indus
Site ID	HY 56189	Guest Opco Name	Antel
Anchor Opco Name	Antel	Guest Opco ID	HYS689
Anchor Opco ID	HYS689		
33	Providing & fixing of Franklin Rod of 19 mm dia and 800 mm length with pointed on top.	Tower	Nos
34	Providing & fixing of GI Rod of 25 mm dia and 800 mm length with pointed on top.	Tower	Nos
35	P/F Aviation Light LED based -Type B, 32 cd intensity, 24 / 48 v DC operated, UV protected,-10 to 60 C, Cable entry IP65 polyamide gland suitable up to 2C X 2.5 sq.mm screened PVC shielding armoured cable, IP65 polyamide gland suitable up to 2C X 2.5 sq		Nos
36	P/F of 100 Amps MCCB With Nutral Link	After Meter	Nos
37	P/F GI Pipe B class of 2" dia	DG to Shelter	Mtr
38	P& making of power points - 1 nos and laying wiring for the same ( 2.5 sq mm. )		Nos
39	P/F Yard Lights		Nos
40	P/F tube light fittings - 2 nos and laying wiring for the same ( 1.5 sq mm )		Nos
41	Providing & Fixing of Fire and smoke detectors - 1 no	as per requirement	Nos
42	Supply & Fixing of door sensor	as per requirement	Nos
43	P/F 45*45 cable chute(duct)	as per requirement	Mtr
44	P/F 63 Amps 4 pole	as per requirement	Nos
45	P/F 63 Amps 2 pole	as per requirement	Nos
46	P/F 63 Amps 1 pole	as per requirement	Nos
47	P/F 16Amps 1 pole	as per requirement	Nos
48	P/F 32 Amps 1 pole	as per requirement	Nos
49	WDP pipe SITE OD BTS stand	as per requirement	Nos
50	Supply and Laying of GREEN FLEXIBLE PIPE-63MM	as per requirement	Mtr
51	Supply and Laying of GREEN FLEXIBLE PIPE-100MM	as per requirement	Mtr
52	Supply and Laying of GREEN FLEXIBLE PIPE-25MM	as per requirement	Mtr
53	GI Pipe 50mm Dia	As per requirement	Mtr
54	GI Pipe 40mm Dia	As per requirement	Mtr
55	Stikkers asper P1		Nos
56	JSI Rubber mat		Nos
57	50*50*6 Angular		Nos
58	3 Way weather proof modular box	IIPMS TO DG	Mtr
59	12Core 1.5Sqm Copper Armoured Cable		Nos
60	16Amps Socket		Nos
61	16Amps Switch		Nos
62	16Amps Switch		Nos
63	Knife Box Rock's		Nos
64	Meter Box		Nos
65	Scalant batte		Nos

TSP Representative

Name

Signature

Contact Number

Chalek Flynn  
985282236

QA Engineer

Name

Signature

Contact Number

B. NARESHI

B. Naresh

9966630238, 24/07/19

- 72) Civil pedestal's - 03 nos (600x300x300)mm
- 66) SI 12 way weather proof DCDB - 01 nos
- 67) SI 35 sq.m 1core cu.flexible power cable unarmoured - 03.9M
- 68) SI LA rad with 11KV insulator - 01 nos
- 69) SI D-25 pin connector - 01 nos
- 70) SI OFC duct with nylon rope & end cap's - 44M
- 71) OD cable ladder installation only - 17.5 M



## BUILDING STABILITY CHECKING AND FOUNDATION DESIGN REPORT FOR PROPOSED ROOF TOP MONOPOLE (RTM)

SITE ID : HY5689

INDUS ID: IN-1367034

CIRCLE: TELANGANA

CITY: HYDERABAD

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#### 1.0 INTRODUCTION

#### 2.0 SUMMARY

#### 3.0 BUILDING DESIGN CHECK

#### Attachments

1. Foundation Drawing.
2. Building survey check sheet & NDT results
3. Staad input and output.



M/s RAMBOLL INDIA PVT. LTD.,

Ramboll India Telecom, Hyderabad.

Level 5, Office 04 & 05, SLN Terminus Survey # 133, Gachibowli, Hyderabad

Hyderabad-500032. Tel : 040 40322000

Rev.	Doc. No.	Version Note	Checked by	Issued on
0	19RIT/004/S332	Initial submission	SP	1-Aug-19

**Site Id** : HY5689

**Indus Id** : IN-1367034

**Site Address** : H.No.9-10-72/1, Reshambagh,  
 Golconda, Hyderabad.

**Report No** : 19RIT/004/S332

**Site Name** : Alizapur

**Tower height** : 15m Monopole (RTM)

**Building height** : 10.5 m

**Building Type** : Framed / Load bearing

#### **Sub :** Building stability design checking summary

In our opinion based on visual inspection and past experiences, the existing building of above mentioned site have adequate strength to withstand the loads of 15m Monopole (RTM) & OD BTS proposed by M/s Indus Towers Limited, Hyderabad. Building stability design checking has been carried out on the basis of site inputs collected from visual inspection and details provided by M/s Indus towers Ltd.

#### **Proposed additional loads**

1) 15m Monopole (RTM) : G+2

#### **Recommendations/Observation :**

1) Existing kitchen at terrace shall be dismantle to construct new 15m monopole (RTM) foundation.

#### **Assumptions**

1. Grade of Rebar/reinforcement - Fe 415.
2. Existing building was designed and constructed in compliance with relevant standards.
3. D.G set is assumed as 1.5 T weight for load calculations, and existing pole/equipment are intact in safety and stability.

#### **Exclusions:**

1. Confirmation on integrity of tower/pole base fixing & anchor bolts.
2. Building foundation adequacy for RTT/RTP site and integrity of building with tower/pole foundation.
3. Structural confirmation against earthquake requires detailed inputs on detailing, and collection of this inputs is not possible with available NDT methods. Hence, analysis of the same is excluded in current scope.
4. Any miscellaneous fabrication / repairing works in site. like patch works, water leakage and crack repair etc.
5. Existing Tower/pole/ equipment at site (other than client) is excluded

**Note :** In case of roof top tower sites, analysis & design checks are made on the basis of several assumptions & approximate measurements. Hence the conclusion of this report is subjective.

Place : Hyderabad

Date : 1-Aug-2019

Client	M/s Indus Towers Limited, Hyderabad	Doc. No	19RIT/004/S332	Rev :	1
Project :	Building stability and foundation design for RTM sites.	Prep. By:	Zia Mohd	Date :	04/09/19
Site Name	Alizapur	Chk. By	SSR	Date:	04/09/19

### **IMPORTANT NOTE**

This report has been prepared for the exclusive use of **M/s Indus Towers Limited, Hyderabad**. And shall not be passed on to a third party without approval from **M/s Ramboll India Pvt. Ltd**, (Ramboll India Telecom) **Hyderabad, T.S.**

### **DISCLAIMER**

The responsibility of **M/s Ramboll India Telecom, Hyderabad, A.P** is limited only to the technical content of this report, co-relation of this report with site data, implementation, all the procedural/legal/operational matters would be the responsibility of the client. **M/s Ramboll India Telecom, Hyderabad, T.S** shall not in any way be responsible for the consequential effects (if any) due to the usage of this report content and shall not be liable to carry out any post implementation studies including damage studies (if any).

Client	M/s Indus Towers Limited, Hyderabad	Doc. No	19RIT/004/S332	Rev :	1
Project :	Building stability and foundation design for RTM sites.	Prep. By:	Zia Mohd	Date :	04/09/19
Site Name	Alizapur	Chk. By	SSR	Date:	04/09/19

## INTRODUCTION

This report furnishes the structural analysis & design checking of the existing Residential building at **Alizapur site (Site HY5689)**, Site Address, at H.No.9-10-72/1, Reshambagh, Golconda, Hyderabad. For **proposed 15m Monopole (RTM) & OD BTS** loading to M/s Indus Towers Limited, Hyderabad. The structural analysis & design checking were performed as per the design specifications supplied by M/s Indus Towers Limited, Hyderabad.

Indus ID	Calculation	
IN-1367034		

### **3.0 DESIGN SPECIFICATIONS**

The detail description of design specifications is as follows.

#### **STRUCTURAL DETAILS**

- I) No. of floors : G+2
- II) Slab thickness : 115mm
- III) Column size : 230 x 230/300 mm
- IV) Beam size thk.) : 230 x 300 mm (excluding slab
- V) Density of concrete : 25kN/m<sup>3</sup>
- VI) Density of brick : 19kN/m<sup>3</sup>
- VII) Loads
  - Live loads : 2.0 kN/m<sup>2</sup>
- VIII) Design code of practice : IS: 456 - 2000
- IX) Factor of Safety : As specified by IS: 456-2000
- X) Grade of Concrete (fck) : M20 (as per site survey report)
- XI) Grade of Steel (fy) : Fe415.
- XII) Existing Building drawings survey. : As per details collected from site

#### **Proposed Additional Loadings by Indus.**

- XIII) Height of the Pole : 15m MONOPOLE (RTM)

Max foundation forces in KN- KN-m

- |                  |   |        |
|------------------|---|--------|
| Moment           | : | 268.33 |
| Horizontal force | : | 24.2   |
| Vertical Force   | : | 25.01  |

Indus ID	Calculation	
IN-1367034		

## DESIGN CHECK FOR COLUMN

### **Due to Slab ( Dead Load)**

Total UDL on slab(ws)	3.38	KN/m^2
Slab area(A)	2.58	m^2
Load from slab from all floors	26.13	kN

### **Due to Slab ( Live Load)**

Slab area(A)	2.58	m^2
Load from slab from all floors	14.19	kN

Total Load on slab(ws) 40.32 kN

### **Due to column**

Self weight of column(wc)	1.73	KN/m
Total Load of Column(Wc)	13.38	kN

### **Due to Floor Beam**

Average Length of Floor Beam (La=Lx+Ly)	3.34	m
Total Load (W fb)	17.26	kN

### **Due to Brick Wall**

Average Length of Floor Beam (La=Lx+Ly)	3.34	m
Total Load due to Brick Wall (Ww)	75.35	kN

### **Due to water Tank**

Load due to self weight of tank	0.00	kN
Load due to water	0.00	kN

**Total Load due to tank(Wwt)** 0.00 kN

### **Due to Tower**

Load due to Tower (Wt)	24.20	kN
Tower Foundation Load contribution to one column(Wtf)	0.00	kN
Load due to Shelter (Wsh)	0.00	kN

**Total Concentrated Load (W)** 132.11 kN

(DL x 1.5) + (WL x 1.5)	229.18	kN
(DL x 1.5) + (LL x 1.5)	219.45	kN
(DL x 1.2) + (LL x 1.2) + (WL x 1.2)	200.38	kN

**Factor Load (Pu) = W\*O.L.F** 229.18 kN

Indus ID	Calculation	
IN-1367034		

### DESIGN OF COLUMN (BIAXIAL BM)

Column Breadth	230.00	mm
Column Depth	300.00	mm
Cover	40.00	mm
fck	20	N/mm <sup>2</sup>
fy	415	N/mm <sup>2</sup>
Total Axial Load (Kn)(Pu)	229.18	kN
Mux (Min ecc )	1.28	kN (From Staad)
Muy (Min ecc )	1.82	kN (From Staad)
Area of Concrete (Ac)	69000	mm <sup>2</sup>
Area of Steel (Asc)	678	mm <sup>2</sup>
Pt = ((As x 100) / bd )	0.98	
Puz =	832.03	
Pu/Puz	0.28	
d'	40.00	mm
D	300.00	mm
d'/D	0.13	
Pu/(fck x b x d)	0.17	
(Pt/fck)	0.05	
From (Pu /fck.b.d) & (Pt/fck) using SP:16		
Mux1/(fck x b x d <sup>2</sup> )	0.10	
Mux1	40.11	
Muy1	30.75	
Interaction ratio check (Mux/Mux1) <sup>n</sup> + (Muy/Muy1) <sup>n</sup> < 1.0 (as per IS:456)		
n	1.13	
(Mux/Mux1) <sup>n</sup> + (Muy/Muy1) <sup>n</sup>	0.06	

**<1.0, HENCE SAFE**

1. Maximum reaction after for Pole loading and all FOS at 1 : **170.98kN**
2. Maximum reaction without Pole loadings and all FOS at 1 : **146.30kN**

**Within limits as per codal provision, hence ok.**

Indus ID	Calculation	
IN-1367034		

### DESIGN VALIDATION

**Column member force comparison with alternate method:  
(For dead +live load)**

**Ground Floor Column force as per STAAD** = **230.51 KN**

**Ground Floor Column force as per Excel** = **219.451 KN**

**Percent of difference** = **4.83% Variation**

***IMPORTANT NOTE***

The structure is idealized as a space frame and analysis is carried out using Structural Analysis Software "STAAD Pro".

Tower Foundation loads are applied at respective locations of tower leg members connections to the supporting beams. In addition, a partial safety factor / factor of safety of 1.5 is considered for Dead Load + Wind load combination.

The self weight of the structure & supporting beams is calculated internally in STAAD software. The Tower & D.G set Loads are combined with the self-weight structure. The design calculations are performed as per IS: 456 – 2000 standard.

The Structural Analysis software results indicate that the structure can withstand for the following factors

- |                                       |                   |
|---------------------------------------|-------------------|
| 1.) Dead Load + Wind Load             | - 1.5 + 1.5       |
| 2.) Dead Load + Live Load + Wind Load | - 1.2 + 1.2 + 1.2 |
| 3.) Dead Load + Wind Load             | - 0.9 + 1.5       |

**Note:**

- a) Wind load in above combination shall read as maximum tower/pole support reaction caused at worst case and building wind load is excluded.
- b) Wind load on building is not evaluated in current analysis as this was not measured in early phase of structure requirement.
- c) Structural confirmation against earthquake requires detailed inputs on detailing, and collection of this inputs is not possible with available NDT methods. Hence, analysis of the same is excluded in current scope

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Indus ID	Calculation	
IN-1367034		

### **BUILDING DESIGN CHECK RESULT**

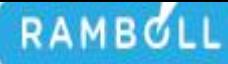
The building is modelled in STAAD V8i SS6 using Space Frame model. Size of columns / beam and load is assigned to model and slab is model as plate element. Appropriate load case are generated based on the geometry and occupancy of building, boundary condition is taken as fixed at bottom of column unless otherwise noted (i.e. at ground level) and other node/joints appropriate. Tower/pole/D.G/equipment's loads were applied on the model by joint/member load at respective location. The forces and moments in structural member are obtained by STAAD analysis engine for different load combinations as specified in IS 456. Based on the analysis results design check is performed in STAAD for reinforcement requirement (vs) provided to confirm safety in columns. Checking of other elements is excluded as the proposed loads are connected to column (unless otherwise specified).

The Primary loads assigned in STAAD model

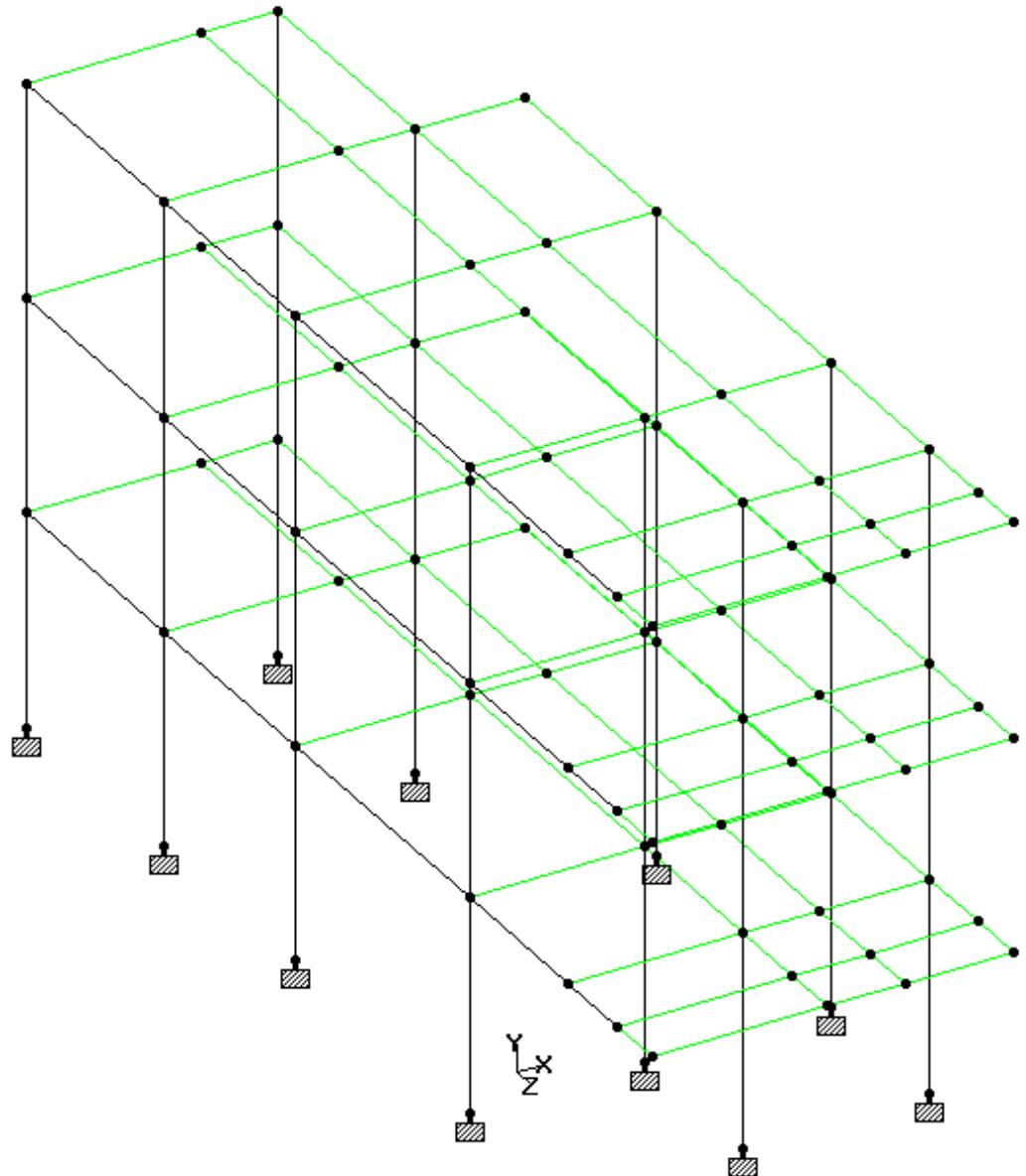
1. Self Weight of the structure.
2. Wall loads (calculated, from survey report)
3. Floor finishes/water proofing
4. Live Load
5. Tower / Pole reactions (0 deg. Wind)
6. Tower / pole reactions (45 deg. wind)
7. Load combinations as below
  - a) Dead Load + Live Load = 1.5 + 1.5
  - b) Dead Load + Wind Load = 0.9 + 1.5
  - c) Dead Load + Wind Load = 1.5+1.5
  - d) Dead Load + Live Load + Wind Load = 1.2+1.2+1.2

Indus ID
IN-1367034

## Calculation



### Building Model in STAAD



**Note:** Plate element are modelled, in assumption that local moment due to slab are transfer through infill walls.

( # - The behavior of infill walls is still under investigation.)

## **SECTION-2**

Indus ID	Calculation	
IN-1367034		

## **DESIGN SPECIFICATIONS**

The detail description of design specifications is as follows.

### **PROPOSED ADDITIONAL LOADINGS**

- I) Height of the Monopole : 15m Monopole (RTM)
- II) Design code of practice : IS: 456 - 2000
- III) Factor of Safety : As specified by IS: 456-2000
- IV) Grade of Concrete (fck) : M20
- V) Grade of Steel (fy) : Fe415.

Indus ID
IN-1367034

# Calculation



## SUPPORTING BEAM FOR TOWER

IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 179 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 1220.0 mm SIZE: 400.0 mm X 600.0 mm COVER: 30.0 mm

### DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				SHEAR			
		MZ	MX	ME	Load #	VY	MX	VE	Load #
0.0	0.00	5.33	4.85	12.46	9	130.65	13.10	183.03	7
	0.00	-26.68	21.27	-57.97	10				
101.7	0.00	2.92	5.38	10.83	14	129.73	13.10	182.12	7
	0.00	-17.05	21.27	-48.34	10				
203.3	0.00	10.75	13.10	30.01	7	128.82	13.10	181.20	7
	0.00	-7.51	21.27	-38.80	10				
305.0	0.00	23.80	13.10	43.06	7	127.90	13.10	180.29	7
	0.00	-22.06	13.03	-41.21	8				
406.7	0.00	36.76	13.10	56.02	7	126.99	13.10	179.37	7
	0.00	-27.68	13.03	-46.84	8				
508.3	0.00	49.62	13.10	68.88	7	126.07	13.10	178.46	7
	0.00	-33.40	13.03	-52.56	8				
610.0	0.00	62.40	13.10	81.66	7	125.16	13.10	177.54	7
	0.00	-39.22	13.03	-58.38	8				
711.7	0.00	75.07	13.10	94.33	7	124.24	13.10	176.63	7
	0.00	-45.12	13.03	-64.28	8				
813.3	0.00	87.66	13.10	106.92	7	123.33	13.10	175.71	7
	0.00	-51.12	13.03	-70.28	8				
915.0	0.00	100.15	13.10	119.41	7	122.41	13.10	174.80	7
	0.00	-57.22	13.03	-76.37	8				
1016.7	0.00	112.55	13.10	131.81	7	121.50	13.10	173.88	7
	0.00	-63.40	13.03	-82.56	8				
1118.3	0.00	124.86	13.10	144.12	7	120.58	13.10	172.97	7
	0.00	-69.68	13.03	-88.84	8				
1220.0	0.00	137.07	13.10	156.33	7	119.67	13.10	172.05	7
	0.00	-76.05	13.03	-95.21	8				

### SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	305.0 mm	610.0 mm	915.0 mm	1220.0 mm
TOP REINF.	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	493.85 (Sq. mm)
BOTTOM REINF.	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	627.56 (Sq. mm)	839.15 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 225 mm c/c				

Indus ID
IN-1367034

# Calculation



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IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 189 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 1220.0 mm SIZE: 400.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR		
		MZ	MX	ME	VY		MX	VE	Load #
0.0	0.00	0.00	0.00	0.00	7	149.51	-14.25	206.51	9
	0.00	-65.57	-14.25	-86.52	9				
101.7	0.00	0.00	0.00	0.00	7	148.60	-14.25	205.60	9
	0.00	-50.41	-14.25	-71.37	9				
203.3	0.00	10.85	-9.13	24.27	7	147.68	-14.25	204.68	9
	0.00	-51.96	-3.45	-57.03	8				
305.0	0.00	22.23	-9.13	35.65	7	146.77	-14.25	203.77	9
	0.00	-49.95	-3.45	-55.02	8				
406.7	0.00	33.52	-9.13	46.94	7	145.85	-14.25	202.85	9
	0.00	-48.04	-3.45	-53.11	8				
508.3	0.00	44.71	-9.13	58.13	7	144.94	-14.25	201.94	9
	0.00	-46.22	-3.45	-51.29	8				
610.0	0.00	55.81	-9.13	69.24	7	144.02	-14.25	201.02	9
	0.00	-44.49	-3.45	-49.56	8				
711.7	0.00	66.82	-9.13	80.25	7	143.11	-14.25	200.11	9
	0.00	-42.85	-3.45	-47.92	8				
813.3	0.00	77.74	-9.13	91.16	7	142.19	-14.25	199.19	9
	0.00	-41.31	-3.45	-46.38	8				
915.0	0.00	88.56	-9.13	101.99	7	141.28	-14.25	198.28	9
	0.00	-39.86	-3.45	-44.93	8				
1016.7	0.00	99.29	-9.13	112.72	7	140.36	-14.25	197.36	9
	0.00	-38.50	-3.45	-43.57	8				
1118.3	0.00	109.93	-9.13	123.35	7	139.45	-14.25	196.45	9
	0.00	-37.24	-3.45	-42.31	8				
1220.0	0.00	120.47	-9.13	133.90	7	138.53	-14.25	195.53	9
	0.00	-36.07	-3.45	-41.14	8				

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	305.0 mm	610.0 mm	915.0 mm	1220.0 mm
TOP REINF.	458.80 (Sq. mm)				
BOTTOM REINF.	0.00 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	530.91 (Sq. mm)	709.44 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 225 mm c/c				

Indus ID
IN-1367034

# Calculation



=====  
IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 190 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 1220.0 mm SIZE: 400.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR			
		MZ	MX	ME	VY		MX	VE	Load #	
0.0	0.00	142.22	-9.47	156.14	8	-126.55	-9.47	164.42	8	
	0.00	-68.07	-6.71	-77.94	7					
101.7	0.00	129.31	-9.47	143.23	8	-127.47	-9.47	165.34	8	
	0.00	-62.19	-6.71	-72.05	7					
203.3	0.00	116.30	-9.47	130.22	8	-128.38	-9.47	166.25	8	
	0.00	-56.40	-6.71	-66.27	7					
305.0	0.00	103.20	-9.47	117.13	8	-129.30	-9.47	167.17	8	
	0.00	-50.70	-6.71	-60.57	7					
406.7	0.00	90.01	-9.47	103.93	8	-130.21	-9.47	168.08	8	
	0.00	-45.10	-6.71	-54.97	7					
508.3	0.00	76.73	-9.47	90.65	8	-131.13	-9.47	169.00	8	
	0.00	-39.59	-6.71	-49.46	7					
610.0	0.00	63.35	-9.47	77.27	8	-132.04	-9.47	169.91	8	
	0.00	-34.17	-6.71	-44.04	7					
711.7	0.00	49.88	-9.47	63.80	8	-132.96	-9.47	170.83	8	
	0.00	-28.85	-6.71	-38.72	7					
813.3	0.00	36.31	-9.47	50.24	8	-133.87	-9.47	171.74	8	
	0.00	-23.62	-6.71	-33.49	7					
915.0	0.00	22.66	-9.47	36.58	8	-134.79	-9.47	172.66	8	
	0.00	-18.48	-6.71	-28.35	7					
1016.7	0.00	8.91	-9.47	22.83	8	-135.70	-9.47	173.57	8	
	0.00	-6.57	-14.50	-27.89	10					
1118.3	0.00	2.51	-1.68	4.98	9	-136.62	-9.47	174.49	8	
	0.00	-15.93	-14.50	-37.25	10					
1220.0	0.00	2.89	-1.68	5.36	9	-137.53	-9.47	175.40	8	
	0.00	-25.39	-14.50	-46.71	10					

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	305.0 mm	610.0 mm	915.0 mm	1220.0 mm
TOP REINF.	458.80 (Sq. mm)				
BOTTOM REINF.	838.06 (Sq. mm)	614.78 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 225 mm c/c				

Indus ID
IN-1367034

# Calculation



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IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 191 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3830.0 mm SIZE: 400.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR		
		MZ	MX	ME	VY		MX	VE	Load #
0.0	0.00	163.16	0.98	164.60	8	46.31	1.34	51.68	7
	0.00	-91.89	1.34	-93.86	7				
319.2	0.00	148.71	0.98	150.16	8	-46.70	0.98	50.63	8
	0.00	-77.57	1.34	-79.54	7				
638.3	0.00	133.35	0.98	134.79	8	-49.57	0.98	53.50	8
	0.00	-64.16	1.34	-66.13	7				
957.5	0.00	117.07	0.98	118.51	8	-52.45	0.98	56.38	8
	0.00	-51.67	1.34	-53.64	7				
1276.7	0.00	99.87	0.98	101.31	8	-55.32	0.98	59.25	8
	0.00	-40.10	1.34	-42.07	7				
1595.8	0.00	81.75	0.98	83.20	8	-58.19	0.98	62.12	8
	0.00	-29.44	1.34	-31.42	7				
1915.0	0.00	62.72	0.98	64.17	8	-61.06	0.98	64.99	8
	0.00	-19.70	1.34	-21.68	7				
2234.2	0.00	42.78	0.98	44.22	8	-63.94	0.98	67.87	8
	0.00	-10.88	1.34	-12.86	7				
2553.3	0.00	21.91	0.98	23.36	8	-66.81	0.98	70.74	8
	0.00	-2.98	1.34	-4.95	7				
2872.5	0.00	7.44	-0.07	7.54	10	-69.68	0.98	73.61	8
	0.00	-3.30	2.40	-6.82	9				
3191.7	0.00	10.08	1.34	12.06	7	-72.55	0.98	76.48	8
	0.00	-22.57	0.98	-24.01	8				
3510.8	0.00	15.24	1.34	17.21	7	-75.43	0.98	79.36	8
	0.00	-46.18	0.98	-47.63	8				
3830.0	0.00	19.47	1.34	21.45	7	-78.30	0.98	82.23	8
	0.00	-70.72	0.98	-72.16	8				

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	957.5 mm	1915.0 mm	2872.5 mm	3830.0 mm
TOP REINF.	486.51 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)
BOTTOM REINF.	887.94 (Sq. mm)	622.53 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)	458.80 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 225 mm c/c				

Indus ID
IN-1367034

# Calculation



=====  
IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 192 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 1565.0 mm SIZE: 600.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR			
		MZ	MX	ME	VY		MX	VE	Load #	
0.0	0.00	0.00	0.00	0.00	7	63.42	-218.27	645.49	8	
	0.00	-22.49	-218.27	-279.29	8					
130.4	0.00	0.00	0.00	0.00	7	61.66	-218.27	643.73	8	
	0.00	-14.34	-218.27	-271.13	8					
260.8	0.00	7.26	0.79	8.19	10	59.90	-218.27	641.97	8	
	0.00	-6.41	-218.27	-263.20	8					
391.2	0.00	1.29	-218.27	258.08	8	58.14	-218.27	640.20	8	
	0.00	-0.11	-173.86	-204.65	13					
521.7	0.00	8.75	-218.27	265.55	8	56.38	-218.27	638.44	8	
	0.00	-30.25	-13.93	-46.63	9					
652.1	0.00	15.99	-218.27	272.79	8	54.62	-218.27	636.68	8	
	0.00	-36.75	-13.93	-53.14	9					
782.5	0.00	23.00	-218.27	279.79	8	52.86	-218.27	634.92	8	
	0.00	-43.48	-13.93	-59.87	9					
912.9	0.00	29.78	-218.27	286.57	8	51.10	-218.27	633.16	8	
	0.00	-50.44	-13.93	-66.83	9					
1043.3	0.00	36.33	-218.27	293.12	8	49.34	-218.27	631.40	8	
	0.00	-57.63	-13.93	-74.02	9					
1173.7	0.00	42.65	-218.27	299.44	8	47.58	-218.27	629.64	8	
	0.00	-65.06	-13.93	-81.44	9					
1304.2	0.00	48.74	-218.27	305.53	8	45.82	-218.27	627.88	8	
	0.00	-72.71	-13.93	-89.10	9					
1434.6	0.00	54.60	-218.27	311.39	8	44.06	-218.27	626.12	8	
	0.00	-80.59	-13.93	-96.98	9					
1565.0	0.00	60.23	-218.27	317.02	8	42.30	-218.27	624.36	8	
	0.00	-88.70	-13.93	-105.09	9					

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	391.2 mm	782.5 mm	1173.7 mm	1565.0 mm
TOP REINF.	1526.73 (Sq. mm)	2743.92 (Sq. mm)	1351.36 (Sq. mm)	1235.54 (Sq. mm)	1133.53 (Sq. mm)
BOTTOM REINF.	1257.58 (Sq. mm)	1398.50 (Sq. mm)	1529.83 (Sq. mm)	1650.97 (Sq. mm)	1761.36 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 235 mm c/c	2 legged 10i @ 105 mm c/c	2 legged 10i @ 105 mm c/c	2 legged 10i @ 105 mm c/c	2 legged 10i @ 235 mm c/c

Indus ID
IN-1367034

# Calculation



=====  
IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 193 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 550.0 mm SIZE: 1000.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)					SHEAR			
		MZ	MX	ME	Load #	VY	MX	VE	Load #	
0.0	0.00	290.71	-13.93	303.82	9	-23.44	-212.36	363.23	7	
	0.00	-132.21	0.79	-132.96	10					
45.8	0.00	284.88	-13.93	297.99	9	-24.47	-212.36	364.26	7	
	0.00	-128.48	0.79	-129.23	10					
91.7	0.00	279.00	-13.93	292.11	9	-25.51	-212.36	365.29	7	
	0.00	-124.79	0.79	-125.54	10					
137.5	0.00	273.07	-13.93	286.19	9	-26.54	-212.36	366.32	7	
	0.00	-121.16	0.79	-121.91	10					
183.3	0.00	267.10	-13.93	280.21	9	-27.57	-212.36	367.35	7	
	0.00	-117.57	0.79	-118.32	10					
229.2	0.00	261.08	-13.93	274.19	9	-28.60	-212.36	368.38	7	
	0.00	-114.03	0.79	-114.77	10					
275.0	0.00	71.12	-212.36	270.99	7	-29.63	-212.36	369.41	7	
	0.00	-110.53	0.79	-111.28	10					
320.8	0.00	69.74	-212.36	269.61	7	-30.66	-212.36	370.44	7	
	0.00	-107.08	0.79	-107.83	10					
366.7	0.00	68.31	-212.36	268.18	7	-31.69	-212.36	371.48	7	
	0.00	-103.68	0.79	-104.43	10					
412.5	0.00	66.83	-212.36	266.70	7	-32.72	-212.36	372.51	7	
	0.00	-100.33	0.79	-101.08	10					
458.3	0.00	65.31	-212.36	265.18	7	-33.76	-212.36	373.54	7	
	0.00	-97.03	0.79	-97.77	10					
504.2	0.00	63.74	-212.36	263.61	7	-34.79	-212.36	374.57	7	
	0.00	-93.77	0.79	-94.51	10					
550.0	0.00	62.12	-212.36	261.99	7	-35.82	-212.36	375.60	7	
	0.00	-90.56	0.79	-91.30	10					

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	137.5 mm	275.0 mm	412.5 mm	550.0 mm
TOP REINF.	1146.99 (Sq. mm)				
BOTTOM REINF.	1598.64 (Sq. mm)	1499.96 (Sq. mm)	1415.60 (Sq. mm)	1391.91 (Sq. mm)	1365.92 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 125 mm c/c	2 legged 10i @ 120 mm c/c			

=====

Indus ID
IN-1367034

# Calculation



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IS-456 L I M I T S T A T E D E S I G N  
B E A M N O . 194 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 400.0 mm SIZE: 1000.0 mm X 1000.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR		
		MZ	MX	ME	VY		MX	VE	Load #
0.0	0.00	417.50	0.00	417.50	7	37.52	-0.00	37.52	8
	0.00	-417.50	-0.00	-417.50	8				
33.3	0.00	416.25	0.00	416.25	7	37.52	-0.00	37.52	8
	0.00	-416.25	-0.00	-416.25	8				
66.7	0.00	415.00	0.00	415.00	7	37.52	-0.00	37.52	8
	0.00	-415.00	-0.00	-415.00	8				
100.0	0.00	413.75	0.00	413.75	7	37.52	-0.00	37.52	8
	0.00	-413.75	-0.00	-413.75	8				
133.3	0.00	412.50	0.00	412.50	7	37.52	-0.00	37.52	8
	0.00	-412.50	-0.00	-412.50	8				
166.7	0.00	411.25	0.00	411.25	7	37.52	-0.00	37.52	8
	0.00	-411.25	-0.00	-411.25	8				
200.0	0.00	410.00	0.00	410.00	7	37.52	-0.00	37.52	8
	0.00	-410.00	-0.00	-410.00	8				
233.3	0.00	408.75	0.00	408.75	7	37.52	-0.00	37.52	8
	0.00	-408.75	-0.00	-408.75	8				
266.7	0.00	407.50	0.00	407.50	7	37.52	-0.00	37.52	8
	0.00	-407.50	-0.00	-407.50	8				
300.0	0.00	406.25	0.00	406.25	7	37.52	-0.00	37.52	8
	0.00	-406.25	-0.00	-406.25	8				
333.3	0.00	405.00	0.00	405.00	7	37.52	-0.00	37.52	8
	0.00	-405.00	-0.00	-405.00	8				
366.7	0.00	403.75	0.00	403.75	7	37.52	-0.00	37.52	8
	0.00	-403.75	-0.00	-403.75	8				
400.0	0.00	402.49	0.00	402.49	7	37.52	-0.00	37.52	8
	0.00	-402.49	-0.00	-402.49	8				

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	100.0 mm	200.0 mm	300.0 mm	400.0 mm
TOP REINF.	1966.27 (Sq. mm)				
BOTTOM REINF.	1966.27 (Sq. mm)				
SHEAR REINF.	2 legged 10i @ 140 mm c/c				

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Indus ID
IN-1367034

# Calculation



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IS-456 L I M I T S T A T E D E S I G N  
B E A M N O. 195 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 1565.0 mm SIZE: 600.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)					SHEAR			
		MZ	MX	ME	Load #	VY	MX	VE	Load #	
0.0	0.00	62.12	-212.36	311.96	7	-35.82	-212.36	602.12	7	
	0.00	-90.56	0.79	-91.49	10					
130.4	0.00	57.33	-212.36	307.17	7	-37.58	-212.36	603.88	7	
	0.00	-81.60	0.79	-82.54	10					
260.8	0.00	52.32	-212.36	302.16	7	-39.34	-212.36	605.64	7	
	0.00	-72.88	0.79	-73.81	10					
391.2	0.00	47.07	-212.36	296.91	7	-41.10	-212.36	607.40	7	
	0.00	-64.38	0.79	-65.31	10					
521.7	0.00	41.60	-212.36	291.44	7	-42.86	-212.36	609.16	7	
	0.00	-56.11	0.79	-57.05	10					
652.1	0.00	35.89	-212.36	285.73	7	-44.62	-212.36	610.93	7	
	0.00	-48.08	0.79	-49.01	10					
782.5	0.00	29.96	-212.36	279.80	7	-46.38	-212.36	612.69	7	
	0.00	-40.27	0.79	-41.20	10					
912.9	0.00	23.79	-212.36	273.63	7	-48.14	-212.36	614.45	7	
	0.00	-32.69	0.79	-33.63	10					
1043.3	0.00	17.40	-212.36	267.24	7	-49.90	-212.36	616.21	7	
	0.00	-25.35	0.79	-26.28	10					
1173.7	0.00	10.78	-212.36	260.62	7	-51.66	-212.36	617.97	7	
	0.00	-18.23	0.79	-19.16	10					
1304.2	0.00	3.92	-212.36	253.76	7	-53.42	-212.36	619.73	7	
	0.00	-11.34	0.79	-12.27	10					
1434.6	0.00	2.61	199.23	237.00	8	-55.18	-212.36	621.49	7	
	0.00	-3.16	-212.36	-253.00	7					
1565.0	0.00	2.27	1.40	3.91	15	-56.95	-212.36	623.25	7	
	0.00	-10.47	-212.36	-260.31	7					

## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	391.2 mm	782.5 mm	1173.7 mm	1565.0 mm
TOP REINF.	995.01 (Sq. mm)	1080.48 (Sq. mm)	1178.98 (Sq. mm)	1291.08 (Sq. mm)	1411.86 (Sq. mm)
BOTTOM REINF.	1729.36 (Sq. mm)	1635.24 (Sq. mm)	1529.85 (Sq. mm)	1413.71 (Sq. mm)	1297.07 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 235 mm c/c	2 legged 10i @ 100 mm c/c	2 legged 10i @ 100 mm c/c	2 legged 10i @ 100 mm c/c	2 legged 10i @ 235 mm c/c

Indus ID
IN-1367034

# Calculation



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IS-456 L I M I T S T A T E D E S I G N  
B E A M N O. 196 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 550.0 mm SIZE: 1000.0 mm X 600.0 mm COVER: 30.0 mm

## DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE P	(Maxm. Sagg./Hogg./Eqv. moments)				Load #	SHEAR		
		MZ	MX	ME	VY		MX	VE	Load #
0.0	0.00	60.23	-218.27	265.66	8	42.30	-218.27	391.53	8
	0.00	-88.70	-13.93	-101.81	9				
45.8	0.00	62.15	-218.27	267.58	8	41.26	-218.27	390.50	8
	0.00	-91.61	-13.93	-104.72	9				
91.7	0.00	64.01	-218.27	269.45	8	40.23	-218.27	389.47	8
	0.00	-94.57	-13.93	-107.68	9				
137.5	0.00	65.83	-218.27	271.27	8	39.20	-218.27	388.44	8
	0.00	-97.58	-13.93	-110.69	9				
183.3	0.00	67.61	-218.27	273.04	8	38.17	-218.27	387.41	8
	0.00	-100.64	-13.93	-113.75	9				
229.2	0.00	69.33	-218.27	274.77	8	37.14	-218.27	386.38	8
	0.00	-103.74	-13.93	-116.85	9				
275.0	0.00	71.01	-218.27	276.45	8	36.11	-218.27	385.35	8
	0.00	-106.89	-13.93	-120.00	9				
320.8	0.00	72.64	-218.27	278.08	8	35.08	-218.27	384.31	8
	0.00	-110.09	-13.93	-123.20	9				
366.7	0.00	74.23	-218.27	279.66	8	34.05	-218.27	383.28	8
	0.00	-113.33	-13.93	-126.45	9				
412.5	0.00	75.76	-218.27	281.20	8	33.01	-218.27	382.25	8
	0.00	-116.63	-13.93	-129.74	9				
458.3	0.00	77.25	-218.27	282.69	8	31.98	-218.27	381.22	8
	0.00	-119.97	-13.93	-133.08	9				
504.2	0.00	78.69	-218.27	284.13	8	30.95	-218.27	380.19	8
	0.00	-123.35	-13.93	-136.46	9				
550.0	0.00	285.29	0.79	286.04	10	29.92	-218.27	379.16	8
	0.00	-126.79	-13.93	-139.90	9				

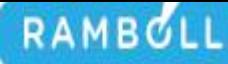
## SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	137.5 mm	275.0 mm	412.5 mm	550.0 mm
TOP REINF.	1146.99 (Sq. mm)				
BOTTOM REINF.	1386.18 (Sq. mm)	1417.14 (Sq. mm)	1445.82 (Sq. mm)	1472.21 (Sq. mm)	1499.14 (Sq. mm)
SHEAR REINF.	2 legged 10i @ 115 mm c/c	2 legged 10i @ 115 mm c/c	2 legged 10i @ 115 mm c/c	2 legged 10i @ 120 mm c/c	2 legged 10i @ 120 mm c/c

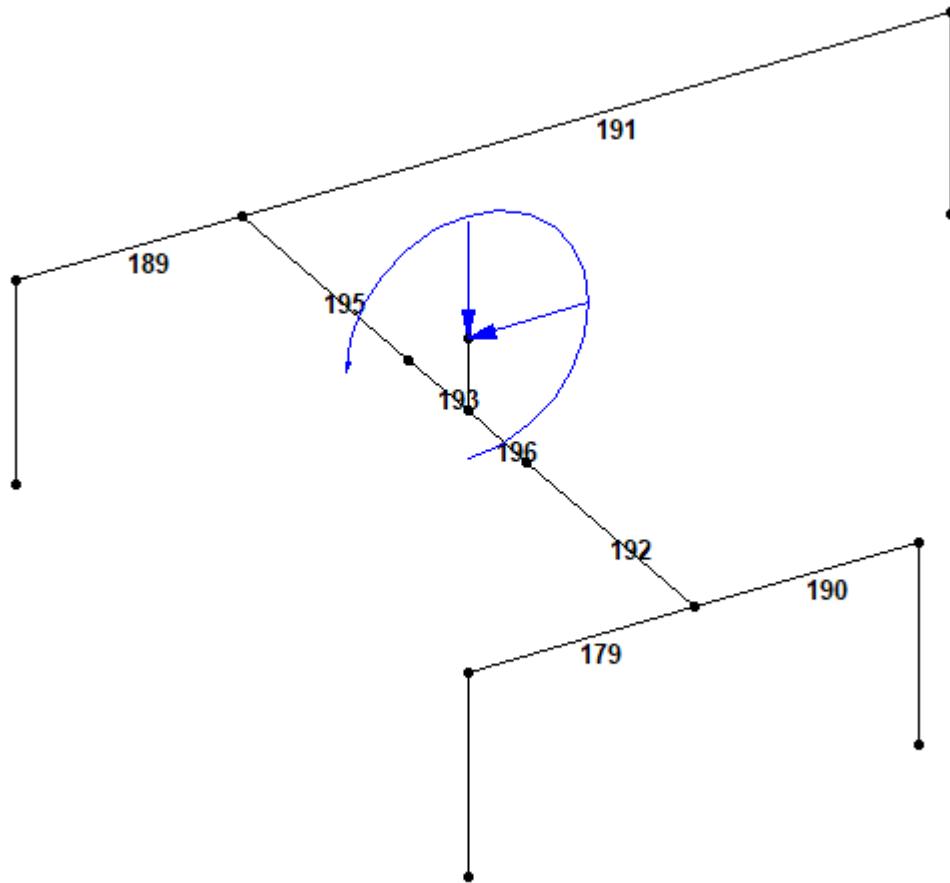
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Indus ID
IN-1367034

## Calculation



### Supporting Beams Layout with Beam Numbers



BEAM NUMBERS AS PER STAAD

Indus ID	NDT test results (Refer site survey check sheet )	<b>RAMBOLL</b>
IN-1367034		

**a) Reinforcement details**

Member Tested : R.C.Columns  
 Testing Instrument : **Pachometer /Profometer 5+**

S.No.	Floor	Column / Grid Identification	Estimated number & diameter of reinforcing bars	Remarks
1	Ground Floor	X1 & X3	6-12 $\Phi$	-
		X2 & X4	4-12 $\Phi$	-
2	First floor	X1 & X3	6-12 $\Phi$	-
		X2 & X4	4-12 $\Phi$	-
3	Second floor	X1 & X3	6-12 $\Phi$	-
		X2 & X4	4-12 $\Phi$	-
-	-	-	-	-
		-	-	-

**b) Grade of concrete**

Member Tested : R.C.Columns  
 Testing Instrument : **Hammer C- 380**  
 (Portable non digital hammer)

SL. NO.	Column/grid and Location	Average Rebound value	Estimated Compressive Strength (N/Sq.mm)	Remarks
1	Ground Floor	24-25	20	Grade of concrete considered as M20
2	First floor	24-25	20	Grade of concrete considered as M20
3	Second floor	24-25	20	Grade of concrete considered as M20
-	-	-	-	-

Indus ID
IN-1367034

**NDT test results**  
(Refer site survey check sheet )

**RAMBOLL**

**Site Key Photos**

**1.0 Overall Site Photograph**



**2.0 Terrace view**



**3.0 Terrace view (Other side view)**

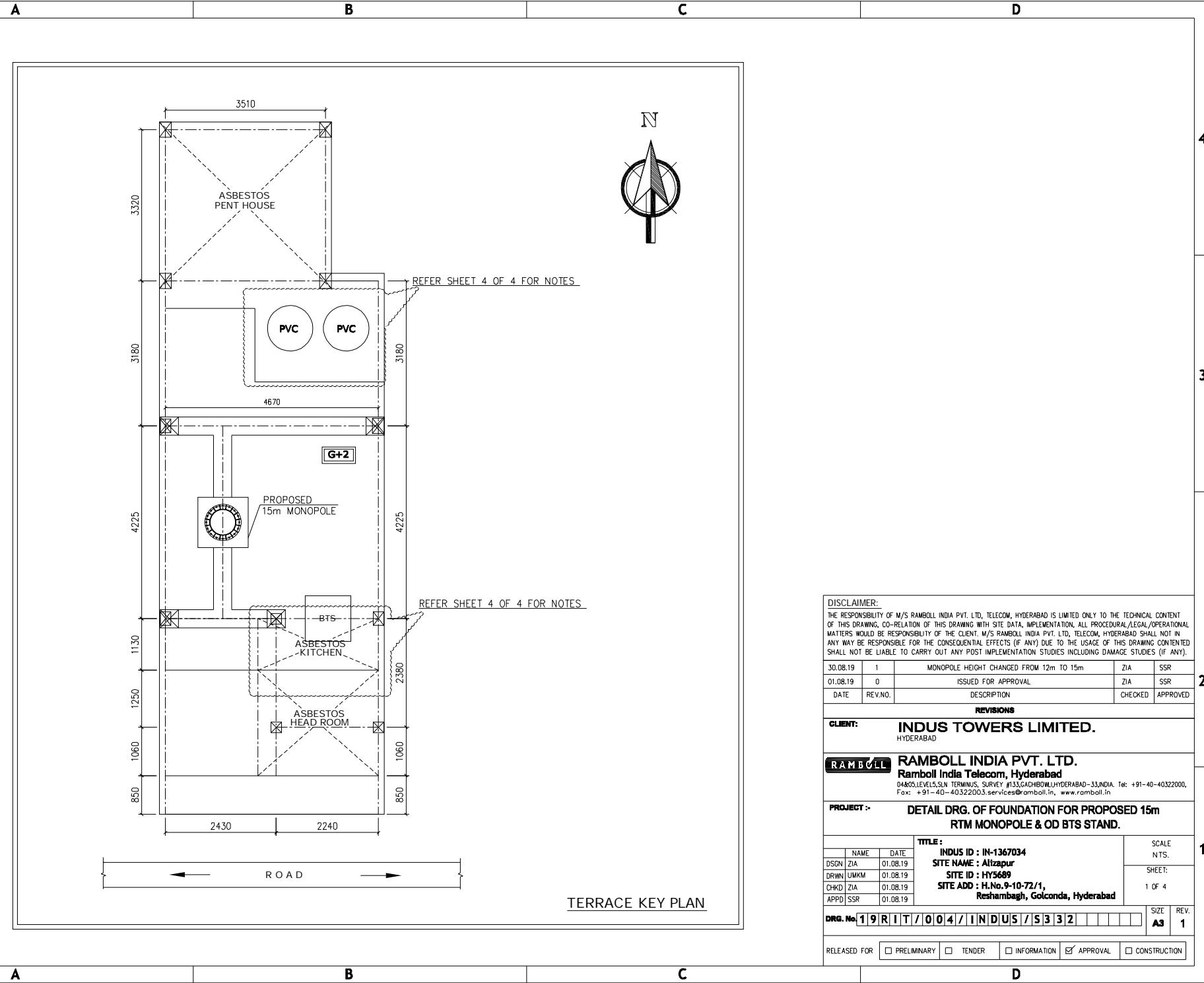


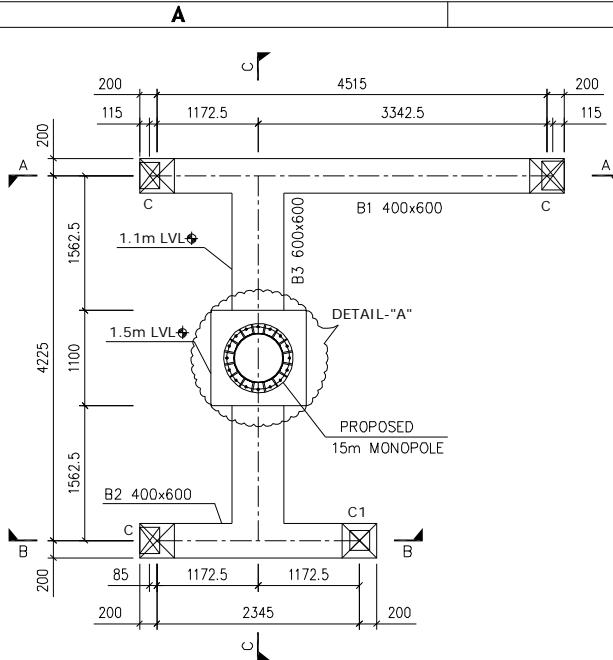
**4.0 Terrace view (Other side view)**



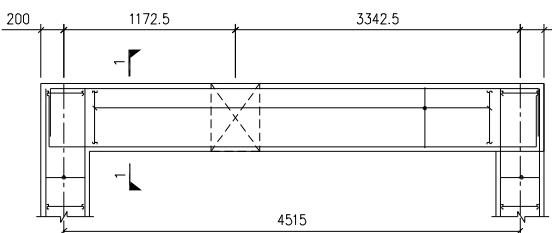
**Attachment -1**

**( FOUNDATION DRAWING )**



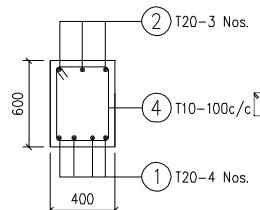


## PROPOSED BEAM LAYOUT FOR 15m RTM

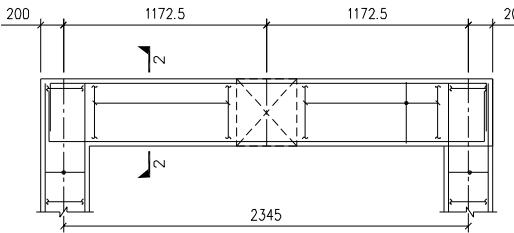


### SECTION A-A (BEAM B1 400x600)

(1 No.)

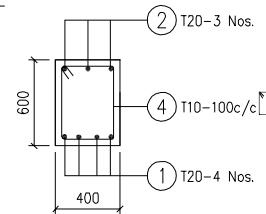


## SECTION 1-1



## SECTION B-B (BEAM B2 400x600)

(1 No.)

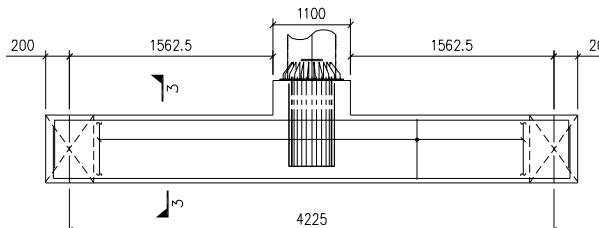


SECTION 2-2

A

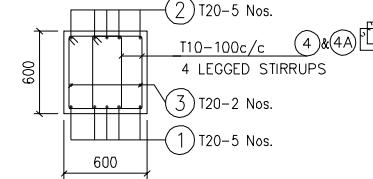
B

6

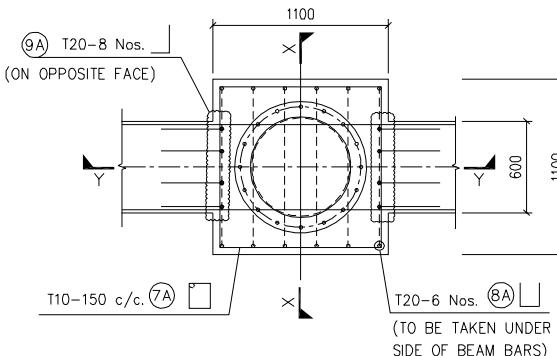


### SECTION C-C (BEAM B3 600x600)

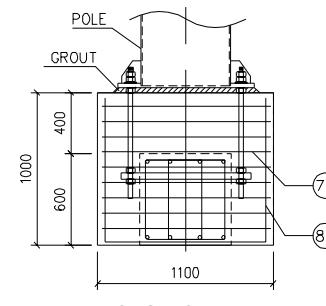
(1 No.)



SECTION 3-3



DETAIL - "A"  
(PLAN VIEW)



SECTION X-X

30.08.19	1	MONPOLE HEIGHT CHANGED FROM 12m TO 15m	ZIA	SSR
01.08.19	0	ISSUED FOR APPROVAL	ZIA	SSR
DATE	REV.NO.	DESCRIPTION	CHECKED	APPROVED
<b>REVISIONS</b>				

**CLIENT: INDUS TOWERS LIMITED,  
HYDERABAD**

**RAMBOLL INDIA PVT. LTD.**

Ramboll India Telecom, Hyderabad

04&05,LEVEL5,SLN TERMINUS, SURVEY #133,GACHIBOWLI,HYDERABAD-33,INDIA. Tel: +91-40-40322000.  
Fax: +91-40-40322003.services@ramboll.in, www.ramboll.in

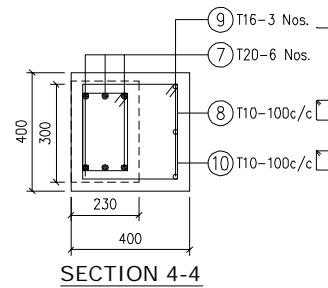
**PROJECT :- DETAIL DRG. OF FOUNDATION FOR PROPOSED 15m RTM MONOPOLE & OD BTS STAND.**

TITLE :			SCALE NTS.
NAME	DATE	INDUS ID : IN-1367034 SITE NAME : Altizapur SITE ID : HY5689 SITE ADD : H.No.9-10-72/1, Reshambagh, Golconda, Hyderabad	SHEET: 2 OF 4
DSCN ZIA	01/08/19		
DRWN UKMK	01/08/19		
CHKD ZIA	01/08/19		
APPD SSR	01/08/19		

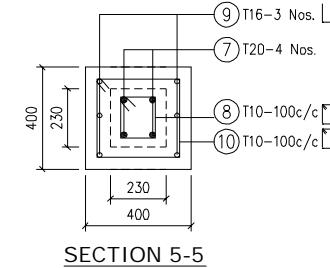
**DRG. No.** **19RIT/004/INDUS/S332** **SIZE** **A3** **REV.** **1**

RELEASED FOR  PRELIMINARY  TENDER  INFORMATION  APPROVAL  CONSTRUCTION

TYPICAL COLUMN ANCHORING DETAIL

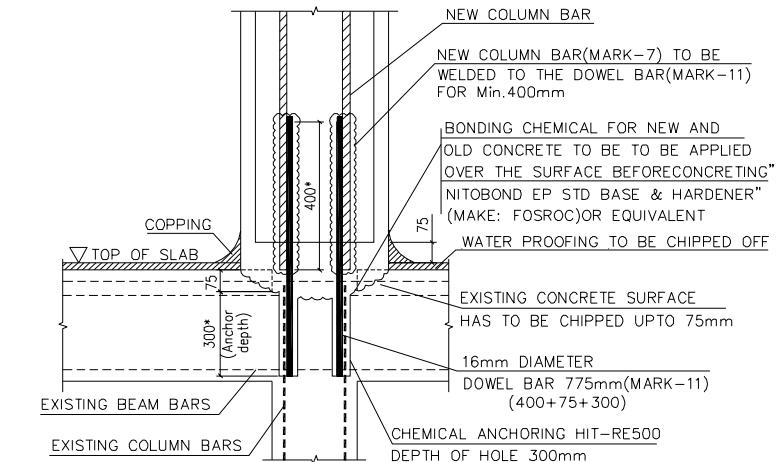


TYPICAL COLUMN ANCHORING DETAIL

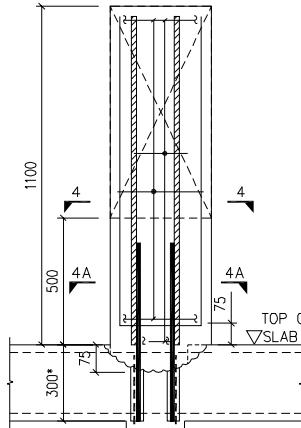


TYPICAL DOWEL BAR ANCHORING DETAIL

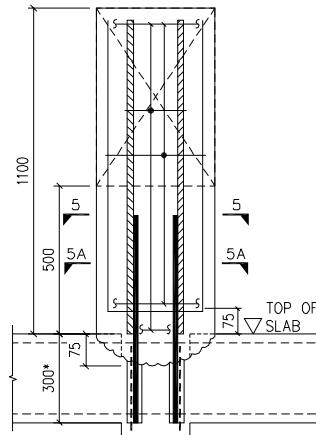
(SHOWING ANCHORING WITH DOWEL BAR FOR MARK '11')  
(\*TO BE VALIDATE BY CONSULTANT BASED ON SITE INPUT')



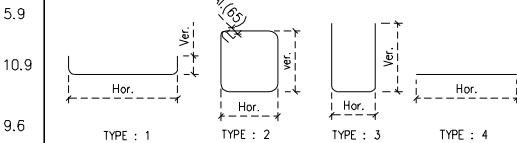
COLUMN DETAIL FOR "C"  
(3 Nos.)



COLUMN DETAIL FOR "C1"  
(1 Nos.)



30.08.19	1	MONOPOLE HEIGHT CHANGED FROM 12m TO 15m	ZIA	SSR
01.08.19	0	ISSUED FOR APPROVAL	ZIA	SSR
DATE	REV.NO.	DESCRIPTION	CHECKED	APPROVED
REVISIONS				
<b>CLIENT:</b> INDUS TOWERS LIMITED. HYDERABAD				
<b>RAMBOLL</b> RAMBOLL INDIA PVT. LTD. Ramboll India Telecom, Hyderabad 04605, LEVEL5, LTN TERMINUS, SURVEY #133, GACHIBOWLI, HYDERABAD - 500033, INDIA. Tel: +91-40-40322000, Fax: +91-40-40322003, services@ramboll.in, www.ramboll.in				
<b>PROJECT:-</b> DETAIL DRG. OF FOUNDATION FOR PROPOSED 15m RTM MONOPOLE & OD BTS STAND.				
<b>TITLE:</b> INDUS ID : IN-1367034 SITE NAME : Alizapur SITE ID : HY5689 SITE ADD : H.No.9-10-72/1, Reshambagh, Golconda, Hyderabad				
SCALE N.T.S.				
SHEET: 3 OF 4				
DRG. No 19RIT/004/INDUS/S332				
SIZE A3 REV. 1				
RELEASED FOR <input type="checkbox"/> PRELIMINARY <input type="checkbox"/> TENDER <input type="checkbox"/> INFORMATION <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> CONSTRUCTION				

A	B	C	D																																																																																																												
<b>GENERAL NOTES</b>			<b>TYPICAL BENDING NOTATION</b>																																																																																																												
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED. 2. CLEAR COVER TO MAIN REINF. - 30mm FOR BEAMS. - 40mm FOR COLUMNS. - 20mm FOR SLAB 3. GRADE OF STEEL - Fe412 4. GRADE OF CONC. - M20 5. ANY DISCREPANCY SHOULD BE BROUGHT TO THE CONSULTANTS ATTENTION. 6. EXISTING COLUMN STEEL TO BE VERIFIED AT SITE. 7. EXISTING COLUMN SURFACE TO BE CHIPPED OFF AND REINFORCEMENT TO BE EXPOSED WITH MINIMUM LENGTH OF 400mm. 8. SURFACE SHOULD BE FREE FROM ALL LOOSE MATERIALS. 9. BARS TO BE WELDED WITH MINIMUM LAP LENGTH OF 400mm TO THE EXISTING COLUMN REINFORCEMENT. 10. CONCRETING SHALL BE DONE AFTER TEMPLATE SETTING 11. LEAN CONCRETE SHALL BE REMOVED IN ALL THE PLACES. 12. LAP LENGTH OF BARS SHALL BE 450mm PER EACH BAR WITH 10mm THICK WELD ON BOTH SIDES. 13. CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE TO VARIOUS PROVISIONS LAID DOWN IN IS:456/IS:875 STANDARDS. 14. NO FURTHER CONSTRUCTION IS ALLOWED IN THE STRUCTURE WITHOUT PRIOR APPROVAL OF QUALIFIED STRUCTURAL ENGG. IF ANY DISCREPANCIES ARE FOUND THE SAME SHOULD BE INFORM. 15. THE TOTAL LENGTH (CUTTING LENGTH) SHALL BE CALCULATED ON THE BASIS OF THE APPROPRIATE BENDING DIMENSIONS WITH CORRECTIONS FOR BENDS AND ALLOWANCES FOR ANCHORAGES. 16. ALL DIMENSIONS SHALL BE VERIFIED AT SITE BEFORE BAR CUTTING AS PER BARBENDING SCHEDULE. 17. THE VENDOR/CONTRACTOR SHALL DESIGN THE TEMPORARY WORK SUCH AS SCAFFOLDING AND SHUTTERING TO HAVE ADEQUATE STRENGTH AND STABILITY TO SUIT THE DRAWING REQUIREMENTS IF ANY SPECIFIC CASE ARISE AT SITE A DETAILED DESIGN SHALL BE SUBMITTED FOR CONSULTANT VERIFICATION BEFORE USING AT SITE.	 TYPE : 1    TYPE : 2    TYPE : 3    TYPE : 4																																																																																																														
4			<b>BAR BENDING SCHEDULE</b>																																																																																																												
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1			<p><b>CLIENT:</b> INDUS TOWERS LIMITED. HYDERABAD</p> <p><b>RAMBOLL</b> RAMBOLL INDIA PVT. LTD. Ramboll India Telecom, Hyderabad 04405, LEVEL5LN, TERMINUS, SURVEY #133, GACHIBOWLI, HYDERABAD - 500033, INDIA. Tel: +91-40-40322000, Fax: +91-40-40322003, services@ramboll.in, www.ramboll.in</p> <p><b>PROJECT:-</b> DETAIL DRG. OF FOUNDATION FOR PROPOSED 15m RTM MONOPOLE &amp; OD BTS STAND.</p> <table border="1"> <tr> <td colspan="2"><b>TITLE:</b></td> <td>SCALE</td> </tr> <tr> <td>DSGN</td> <td>NAME</td> <td>DATE</td> <td>NITS.</td> </tr> <tr> <td>DRWN</td> <td>UMKM</td> <td>01.08.19</td> <td>SHEET:</td> </tr> <tr> <td>CHKD</td> <td>ZIA</td> <td>01.08.19</td> <td>4 OF 4</td> </tr> <tr> <td>APPD</td> <td>SSR</td> <td>01.08.19</td> <td></td> </tr> </table> <p><b>DRG. No:</b> 19RIT/004/INDUS/S332   <b>SIZE:</b> A3   <b>REV.:</b> 1</p> <p>RELEASED FOR: <input type="checkbox"/> PRELIMINARY <input type="checkbox"/> TENDER <input type="checkbox"/> INFORMATION <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> CONSTRUCTION</p>	<b>TITLE:</b>		SCALE	DSGN	NAME	DATE	NITS.	DRWN	UMKM	01.08.19	SHEET:	CHKD	ZIA	01.08.19	4 OF 4	APPD	SSR	01.08.19																																																																																										
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## **Attachment -2**

( Building Survey Data Sheet.)

IN-1358362  
HY5689

RAMBOLL

Job No:

Page No: of

BUILDING SURVEY DATA SHEET

Date: 23-6-19

Client  
Representative  
Survey Engineer

Sitel/Indus  
Er. Magrood

Site Name: Alijapur  
Address: Mr. Shakti Anwar -

H.NO: 9-10-7211  
Reshambagh, Golconda  
Hyderabad.

General observations of the building:

1. Type of the building : Load bearing / Framed / load bearing cum framed/ -----

2. Year of construction : 2014 All at once.

3. Number of floors: 6+2

4. Floor Heights:

Floor	Height	S.F	F.F	T.O. (O)
G.F	3m			
F.F	Each floor			
S.F				
Floor	Occupation	G.F	Road	
Total	Residential			

5. Type of occupation:  
(Specify separately)

6. Quality of construction : Good/ Average/ Poor

7. Plinth Beam Details : Provided / Not provided

Size: 9" x 9" Reinforcement:

as per owner.

8. G. L to plinth level height : 0.40

9. Water Tank location : P.V.C W.T 2nos Each 1000 lts over Taich

10. Lift Location : N/A

11. Staircase location : Asbestos head Room

12. Terrain Category: 3

13. Slab details

Thickness

Reinforcement

: 4 1/2"

:

14. Wall thickness

Exterior

Interior

: w = 9"

: w<sub>1</sub> = 4 1/2"

IN-1368362  
HY 5689

RAMBOLL

Page No: of

Job No:

15. Flooring details

Type



: Marble/ Ceramic Tiles / PCC

Thickness

:

16. Beam and Column details:

Floor

Sheet number (Key plan / Details)

$$C = 9'' \times 9'' \quad C_1 = 9'' \times 12'' \quad B = 9'' \times 12''$$

17. Grade of Concrete:

Mix

Grade

Footing

:

Columns

:

Readings are attached.

Beams

:

Slab

:

Other

:

18. Grade of reinforcement

fe 415

19. Cracks found in beam

Yes / No (If yes show location in key plan)

Crack width

:

20. Cracks found in columns

Yes / No (If yes mark this as CC key plan)

Crack width

:

21. Whether column reinforcement exposed at terrace level: Yes / No

If yes No. of bars

① 4 - 12φ

Diameter :

②

22. Any unusual heavy loading observed in the building?

Yes / No

If yes give details

:

23. Building is designed by considering how many floors: 6 + 2

#### Foundation Details:

24. Type of the soil

:

N.A

25. SBC of the soil

:

26. Type of foundation: Footing / Pile / Raft/ -----

Depth

:

Drawing

:

N.A

N.A

TN-1358362

**RAMBOLL**

Page No: of

Job No:

27 Proposed additional loadings : Tower / D.G set / Shelter / Pole / \_\_\_\_\_

28. Height Tower : 15 m<sup>es</sup> AGL: 25

29. Location : G<sub>r</sub> + 2

30. D G set Location : Non D<sub>r</sub>

31. Shelter Location : G<sub>r</sub> + 2

32 Have you marked the North Location: Yes/No

33. Any other remarks by the engineer and / or owner:

N. r

34 Attachments:

1: Documents received from Owner/ Structural Engineer/Architect:

N. A

2. Attachments enclosed in along with this Sheet.

N. A

#### **DECLARATION BY THE OWNER**

This is to certify that the location of tower, D G and shelter, pole, 15 m<sup>es</sup> are finalized by me and all the documents supplied by me are true up to my knowledge. I accept all the details given in this documents and NDT tests are done in my presence.

Signature of the owner with date

Total no. of pages:

Engineers Signature with date

#### **Contact Persons**

Building owner

Name

Phone

: Mr. Anwar  
: 9030522978

Structural Engineer/Architect

Name

Phone

Client

Name

Designation

Phone

# NON DESTRUCTIVE TEST RESULTS

**RAMBOLL**

Page no. Of

SITE NAME : Alizapur		SITE ID: IN-1352362.	Date : 23-6-19		
SL. No.	COLUMN/ BEAM ID	Size (mm)	REBOUND HAMMER VALUES	COLUMN ORIENTATION & READINGS	
	Floor :	9" x 12"	30.31.33.32.33.34 30.31.30.31.30.29.28	11.7      12.6	12.1      11.7
	X :		32.30.31.30.28.29. 29.31.33.34.33.32.30		
	Gf fl 5/f	9" x 12"			
	Floor :	9" x 12"	28.29.30.31.30.31.33 31.30.31.32.34.30	11.7      12.2	11.7      12.2
	X :		28.27.28.30.31.30		
		9" x 9"	29.30.31.31.32.34	Cover:	Cover:
	Floor :				
	X :				
	Floor :			Cover:	Cover:
	X :				
	Floor :			Cover:	Cover:
	X :				
	Floor :			Cover:	Cover:
	X :				
	Floor :			Cover:	Cover:
	X :				
	Floor :			Cover:	Cover:
	X :				
	Floor :			Cover:	Cover:
	X :				

IN-1358362, HY5689

Dilgapur, Etalconda, Hyd.

Common beams and columns layout.

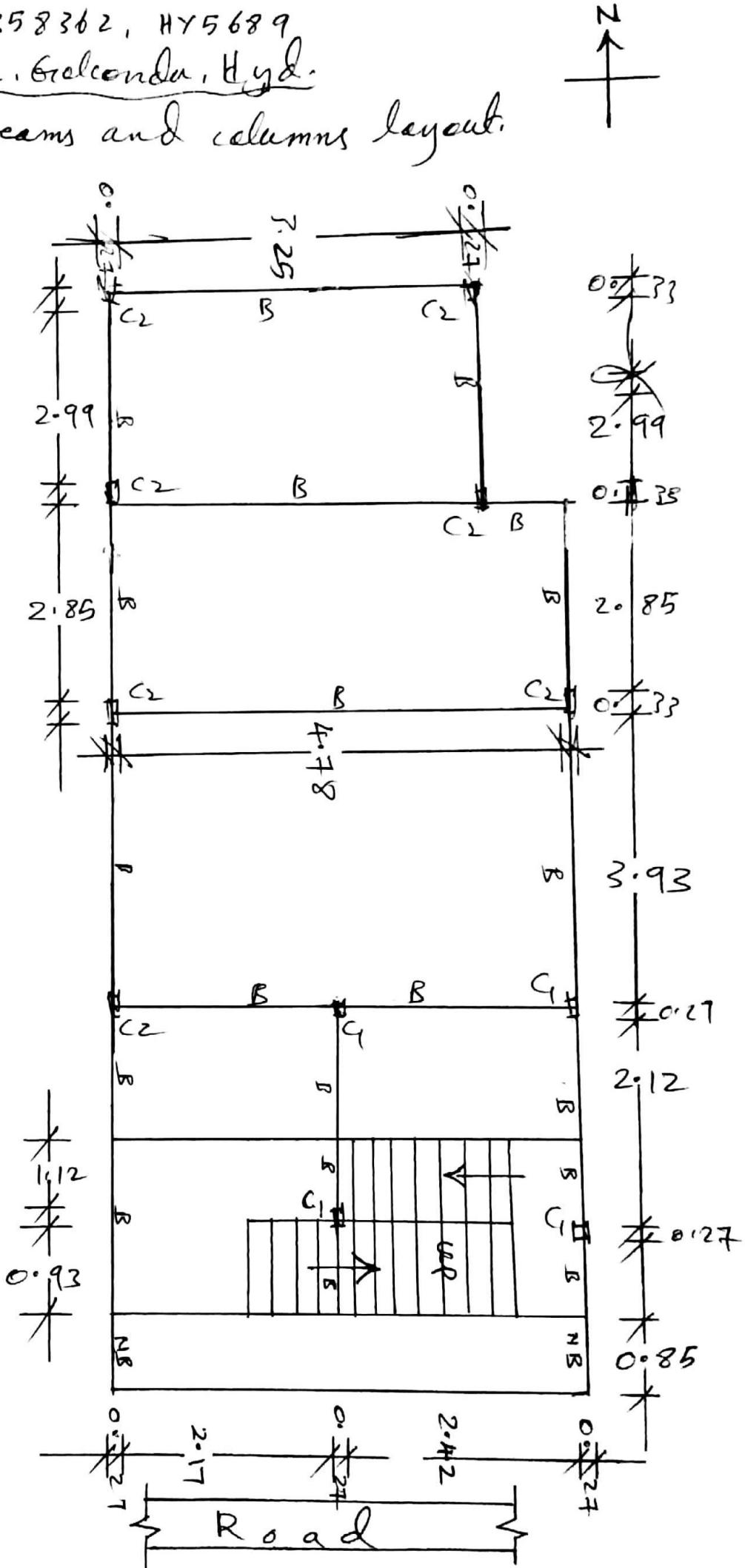
$$C_2 = 9'' \times 12''$$

6 - 12φ

$$C_1 = 9'' \times 9''$$

4 - 12φ

$$B = 9'' \times 12''$$

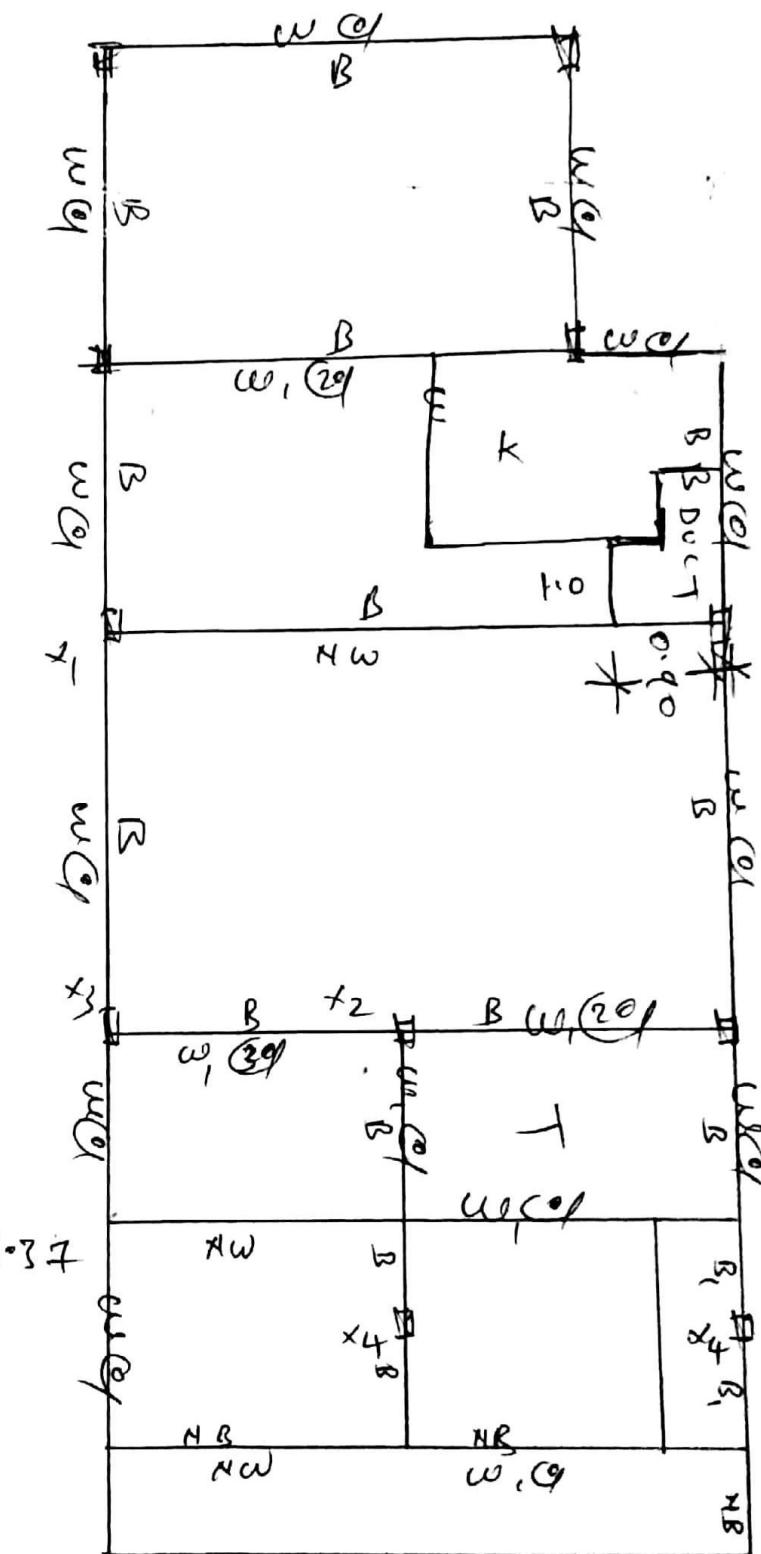


IN-1358362, HY5689

Bijapur, Golconda, Hyd.



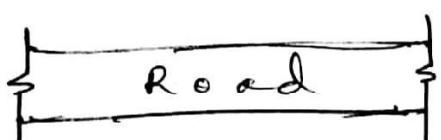
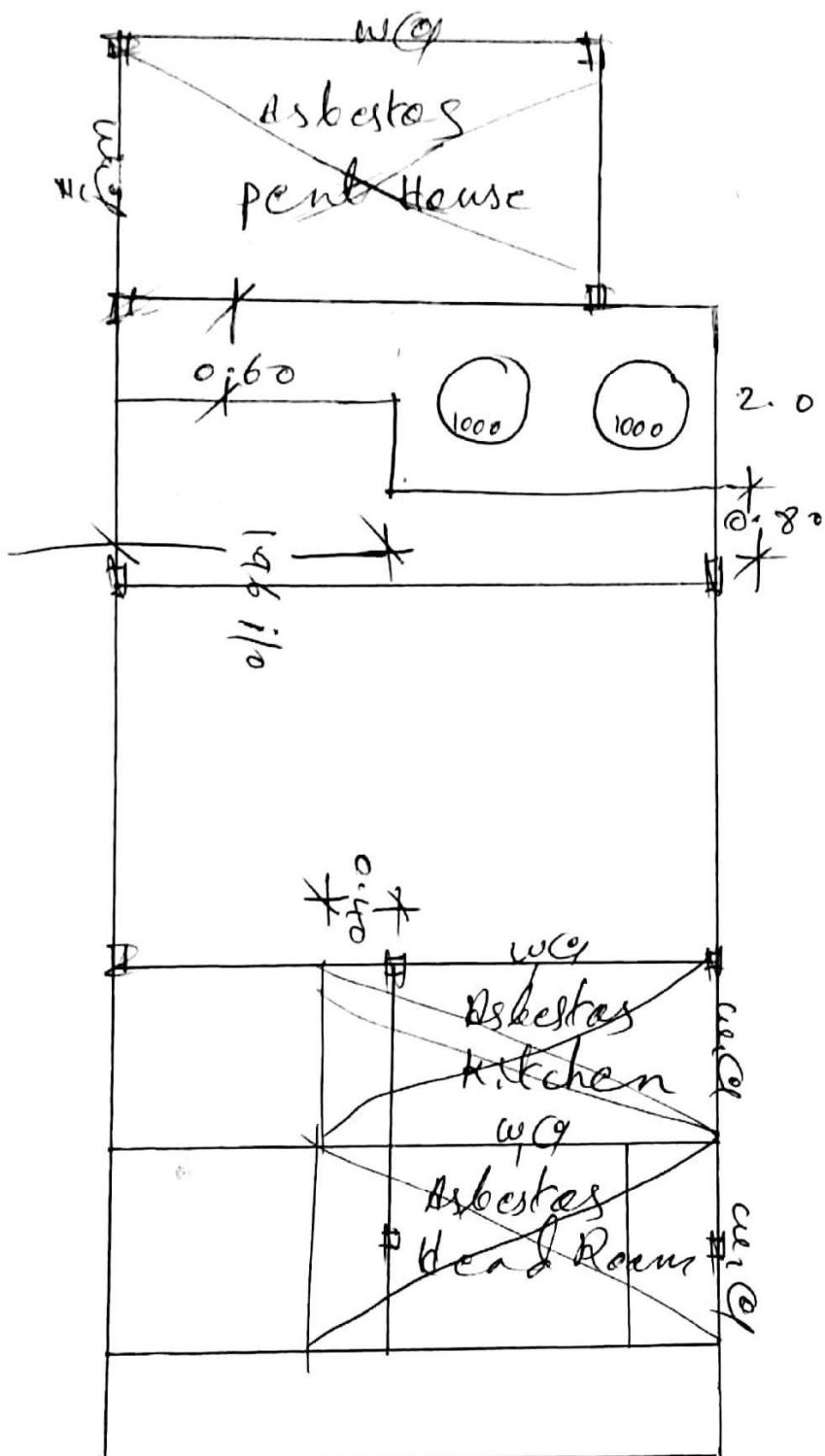
wall loading plan for ~~ff & sff~~



IN-1358362, HY5689  
Alizapur, Goleconda, Hyd.



Terrace: Notes owner agreed to remove kitchen if required.



## **Attachment –3**

(STAAD INPUT AND OUTPUT)

```
*****
*          STAAD.Pro V8i SELECTseries6
*          Version 20.07.11.90
*          Proprietary Program of
*          Bentley Systems, Inc.
*          Time= 13:16:56
*          USER ID: Ramboll
*****
```

```

1. STAAD SPACE
2. START JOB INFORMATION
3. ENGINEER DATE
4. END JOB INFORMATION
5. INPUT WIDTH 79
6. UNIT METER KN
7. JOINT COORDINATES
8. 1 0 0 0; 2 3.52 0 0; 4 0 0 3.32; 5 3.52 0 3.32; 6 5.05 0 3.32; 7 0 0 6.5
9. 8 3.52 0 6.5; 9 5.05 0 6.5; 10 0 0 10.73; 11 3.52 0 10.73; 12 5.05 0 10.73
10. 13 0 0 13.12; 14 3.52 0 13.12; 15 5.05 0 13.12; 16 0 0 14.32; 17 3.52 0 14.32
11. 18 5.05 0 14.32; 19 0 0 15.17; 20 3.52 0 15.17; 21 5.05 0 15.17; 22 2.44 0 0
12. 23 2.44 0 3.32; 24 2.44 0 6.5; 25 2.44 0 10.73; 26 2.44 0 13.12
13. 27 2.44 0 14.32; 28 2.44 0 15.17; 29 0 -3 0; 30 3.52 -3 0; 31 0 -3 3.32
14. 32 3.52 -3 3.32; 33 0 -3 6.5; 34 5.05 -3 6.5; 35 0 -3 10.73; 36 5.05 -3 10.73
15. 37 5.05 -3 13.12; 38 2.44 -3 10.73; 39 2.44 -3 13.12; 40 0 3 0; 41 3.52 3 0
16. 42 0 3 3.32; 43 3.52 3 3.32; 44 5.05 3 3.32; 45 0 3 6.5; 46 3.52 3 6.5
17. 47 5.05 3 6.5; 48 0 3 10.73; 49 3.52 3 10.73; 50 5.05 3 10.73; 51 0 3 13.12
18. 52 3.52 3 13.12; 53 5.05 3 13.12; 54 0 3 14.32; 55 3.52 3 14.32
19. 56 5.05 3 14.32; 57 0 3 15.17; 58 3.52 3 15.17; 59 5.05 3 15.17; 60 2.44 3 0
20. 61 2.44 3 3.32; 62 2.44 3 6.5; 63 2.44 3 10.73; 64 2.44 3 13.12
21. 65 2.44 3 14.32; 66 2.44 3 15.17; 67 0 6 0; 68 3.52 6 0; 69 0 6 3.32
22. 70 3.52 6 3.32; 71 5.05 6 3.32; 72 0 6 6.5; 73 3.52 6 6.5; 74 5.05 6 6.5
23. 75 0 6 10.73; 76 3.52 6 10.73; 77 5.05 6 10.73; 78 0 6 13.12; 79 3.52 6 13.12
24. 80 5.05 6 13.12; 81 0 6 14.32; 82 3.52 6 14.32; 83 5.05 6 14.32; 84 0 6 15.17
25. 85 3.52 6 15.17; 86 5.05 6 15.17; 87 2.44 6 0; 88 2.44 6 3.32; 89 2.44 6 6.5
26. 90 2.44 6 10.73; 91 2.44 6 13.12; 92 2.44 6 14.32; 93 2.44 6 15.17
27. 94 0 7.1 6.5; 96 0 7.1 10.73; 97 2.44 7.1 10.73; 104 5.05 7.1 6.5
28. 105 1.22 7.1 10.73; 106 1.22 7.1 6.5; 107 1.22 7.1 8.615; 108 1.22 7.5 8.615
29. 109 1.22 7.1 8.065; 110 1.22 7.1 9.165
30. MEMBER INCIDENCES
31. 1 1 29; 2 2 30; 3 4 31; 4 5 32; 5 7 33; 6 9 34; 7 10 35; 8 12 36; 9 15 37
32. 10 25 38; 11 26 39; 12 1 22; 13 22 2; 14 4 23; 15 23 5; 16 5 6; 17 7 24
33. 18 24 8; 19 8 9; 20 10 25; 21 25 11; 22 11 12; 32 1 4; 33 4 7; 34 7 10
34. 35 10 13; 36 13 16; 38 2 5; 44 6 9; 45 9 12; 46 12 15; 47 15 18; 52 25 26
35. 53 26 27; 72 40 1; 73 41 2; 74 42 4; 75 43 5; 76 45 7; 77 47 9; 78 48 10
36. 79 50 12; 80 53 15; 81 63 25; 82 64 26; 83 40 60; 84 60 41; 85 42 61; 86 61 43
37. 87 43 44; 88 45 62; 89 62 46; 90 46 47; 91 48 63; 92 63 49; 93 49 50; 94 40 42
38. 95 42 45; 96 45 48; 97 48 51; 98 51 54; 99 41 43; 100 44 47; 101 47 50
39. 102 50 53; 103 53 56; 104 63 64; 105 64 65; 123 67 40; 124 68 41; 125 69 42
40. 126 70 43; 127 72 45; 128 74 47; 129 75 48; 130 77 50; 131 80 53; 132 90 63
41. 133 91 64; 134 67 87; 135 87 68; 136 69 88; 137 88 70; 138 70 71; 139 72 89
42. 140 89 73; 141 73 74; 142 75 90; 143 90 76; 144 76 77; 145 67 69; 146 69 72
43. 147 72 75; 148 75 78; 149 78 81; 150 68 70; 151 71 74; 152 74 77; 153 77 80
44. 154 80 83; 155 90 91; 156 91 92; 174 72 94; 176 75 96; 177 90 97; 179 96 105
45. 188 74 104; 189 94 106; 190 105 97; 191 106 104; 192 105 110; 193 107 109
46. 194 107 108; 195 109 106; 196 110 107
47. ELEMENT INCIDENCES SHELL
48. 55 1 22 23 4; 56 22 2 5 23; 57 4 23 24 7; 58 23 5 8 24; 59 5 6 9 8
49. 60 7 24 25 10; 61 24 8 11 25; 62 8 9 12 11; 63 10 25 26 13; 64 25 11 14 26
50. 65 11 12 15 14; 66 13 26 27 16; 67 26 14 17 27; 68 14 15 18 17; 69 16 27 28 19
51. 70 27 17 20 28; 71 17 18 21 20; 106 40 60 61 42; 107 60 41 43 61
52. 108 42 61 62 45; 109 61 43 46 62; 110 43 44 47 46; 111 45 62 63 48
53. 112 62 46 49 63; 113 46 47 50 49; 114 48 63 64 51; 115 63 49 52 64
54. 116 49 50 53 52; 117 51 64 65 54; 118 64 52 55 65; 119 52 53 56 55
55. 120 54 65 66 57; 121 65 55 58 66; 122 55 56 59 58; 157 67 87 88 69
56. 158 87 68 70 88; 159 69 88 89 72; 160 88 70 73 89; 161 70 71 74 73
57. 162 72 89 90 75; 163 89 73 76 90; 164 73 74 77 76; 165 75 90 91 78
58. 166 90 76 79 91; 167 76 77 80 79; 168 78 91 92 81; 169 91 79 82 92
59. 170 79 80 83 82; 171 81 92 93 84; 172 92 82 85 93; 173 82 83 86 85
```

60. ELEMENT PROPERTY  
61. 55 TO 71 106 TO 122 157 TO 173 THICKNESS 0.115  
62. DEFINE MATERIAL START  
63. ISOTROPIC CONCRETE  
64. E 2.17185E+007  
65. POISSON 0.17  
66. DENSITY 25  
67. ALPHA 1E-005  
68. DAMP 0.05  
69. TYPE CONCRETE  
70. STRENGTH FCU 27579  
71. END DEFINE MATERIAL  
72. MEMBER PROPERTY AMERICAN  
73. 1 TO 7 72 TO 78 123 TO 129 PRIS YD 0.23 ZD 0.3  
74. 8 TO 11 79 TO 82 130 TO 133 PRIS YD 0.23 ZD 0.23  
75. 12 TO 22 32 TO 36 38 44 TO 47 52 53 83 TO 105 134 TO 156 PRIS YD 0.3 ZD 0.23  
76. MEMBER PROPERTY AMERICAN  
77. 174 176 177 188 PRIS YD 0.4 ZD 0.4  
78. 179 189 TO 191 PRIS YD 0.6 ZD 0.4  
79. 192 195 PRIS YD 0.6 ZD 0.6  
80. 193 196 PRIS YD 0.6 ZD 1  
81. 194 PRIS YD 1 ZD 1  
82. CONSTANTS  
83. MATERIAL CONCRETE ALL  
84. SUPPORTS  
85. 29 TO 39 FIXED  
86. LOAD 1 LOADTYPE NONE TITLE DEAD LOAD  
87. SELFWEIGHT Y -1  
88. ELEMENT LOAD  
89. 55 TO 71 106 TO 122 157 TO 173 PR GY -0.5  
90. LOAD 6 LOADTYPE NONE TITLE LIVE LOAD  
91. ELEMENT LOAD  
92. 55 TO 71 106 TO 122 PR GY -2  
93. 157 TO 173 PR GY -1.5  
94. \*\*\*\*\*  
95. LOAD 2 LOADTYPE NONE TITLE LOAD CASE 2  
96. JOINT LOAD  
97. 108 FX -25.01 FY -24.2 MZ 268.33  
98. \*\*\*\*\*  
99. LOAD 3 LOADTYPE NONE TITLE LOAD CASE 3  
100. JOINT LOAD  
101. 108 FX 25.01 FY -24.2 MZ -268.33  
102. \*\*\*\*\*  
103. LOAD 4 LOADTYPE NONE TITLE LOAD CASE 4  
104. JOINT LOAD  
105. 108 FY -24.2 FZ -25.01 MX -268.33  
106. \*\*\*\*\*  
107. LOAD 5 LOADTYPE NONE TITLE LOAD CASE 5  
108. JOINT LOAD  
109. 108 FY -24.2 FZ 25.01 MX 268.33  
110. \*\*\*\*\*  
111. LOAD COMBINATION 7  
112. 1 1.5 2 1.5  
113. LOAD COMBINATION 8  
114. 1 1.5 3 1.5  
115. LOAD COMBINATION 9  
116. 1 1.5 4 1.5  
117. LOAD COMBINATION 10  
118. 1 1.5 5 1.5  
119. \*\*\*\*\*  
120. LOAD COMBINATION 11  
121. 1 0.9 6 1.5  
122. LOAD COMBINATION 12  
123. 1 1.2 6 1.2 2 1.2  
124. LOAD COMBINATION 13  
125. 1 1.2 6 1.2 3 1.2  
126. LOAD COMBINATION 14  
127. 1 1.2 6 1.2 4 1.2  
128. LOAD COMBINATION 15  
129. 1 1.2 6 1.2 5 1.2  
130. PERFORM ANALYSIS

P R O B L E M   S T A T I S T I C S

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131. LOAD LIST 7 TO 15
132. *****
133. START CONCRETE DESIGN
134. CODE INDIAN
135. ELY 0.8 MEMB 1 TO 11 72 TO 82 123 TO 133
136. ELZ 0.8 MEMB 1 TO 11 72 TO 82 123 TO 133
137. FC 20000 ALL
138. FYMAIN 415000 ALL
139. FYSEC 415000 ALL
140. TRACK 1 MEMB 1 TO 11 72 TO 82 123 TO 133 174 176 177 179 188 TO 196
141. DESIGN COLUMN 5 TO 7 10 76 TO 78 81 127 TO 129 132
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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 5 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 9 END JOINT: 33 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	322.12	
INITIAL MOMENTS	:	About Z 3.49	About Y 6.72
MOMENTS DUE TO MINIMUM ECC.	:	6.44	6.44
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	6.44	6.72
REQD. STEEL AREA :	288.90 Sq.mm.		
REQD. CONCRETE AREA:	36112.05 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 6 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 8 END JOINT: 34 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	292.28	
INITIAL MOMENTS	:	About Z 9.34	About Y 0.40
MOMENTS DUE TO MINIMUM ECC.	:	5.85	5.85
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	9.34	5.85
REQD. STEEL AREA :	262.14 Sq.mm.		
REQD. CONCRETE AREA:	32766.99 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456      L I M I T      S T A T E      D E S I G N  
C O L U M N      N O.      7      D E S I G N      R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm    CROSS SECTION: 300.0 mm X 230.0 mm    COVER: 40.0 mm

\*\* GUIDING LOAD CASE:    7 END JOINT:    35    SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	331.83	
INITIAL MOMENTS	:	About Z 8.75	About Y 2.75
MOMENTS DUE TO MINIMUM ECC.	:	6.64	6.64
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	8.75	6.64
REQD. STEEL AREA :	297.61 Sq.mm.		
REQD. CONCRETE AREA:	37201.03 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456      L I M I T      S T A T E      D E S I G N  
C O L U M N      N O.      10      D E S I G N      R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm    CROSS SECTION: 230.0 mm X 230.0 mm    COVER: 40.0 mm

\*\* GUIDING LOAD CASE:    8 END JOINT:    38    SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	251.68	
INITIAL MOMENTS	:	About Z 5.86	About Y 1.66
MOMENTS DUE TO MINIMUM ECC.	:	5.03	5.03
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	5.86	5.03
REQD. STEEL AREA :	225.72 Sq.mm.		
REQD. CONCRETE AREA:	52674.29 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 76 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 15 END JOINT: 7 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	131.10	
INITIAL MOMENTS	:	About Z 13.40	About Y 9.42
MOMENTS DUE TO MINIMUM ECC.	:	2.62	2.62
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	13.40	9.42
REQD. STEEL AREA :	399.77 Sq.mm.		
REQD. CONCRETE AREA:	49971.51 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 77 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 15 END JOINT: 47 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	146.16	
INITIAL MOMENTS	:	About Z 12.56	About Y 7.19
MOMENTS DUE TO MINIMUM ECC.	:	2.92	2.92
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	12.56	7.19
REQD. STEEL AREA :	235.95 Sq.mm.		
REQD. CONCRETE AREA:	29493.54 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 78 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 7 END JOINT: 10 SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	264.38	
INITIAL MOMENTS	:	About Z 7.86	About Y 7.03
MOMENTS DUE TO MINIMUM ECC.	:	5.29	5.29
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	7.86	7.03
REQD. STEEL AREA :	237.11 Sq.mm.		
REQD. CONCRETE AREA:	29639.06 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 81 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 230.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 7 END JOINT: 25 SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	76.51	
INITIAL MOMENTS	:	About Z 10.89	About Y 4.24
MOMENTS DUE TO MINIMUM ECC.	:	1.53	1.53
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	10.89	4.24
REQD. STEEL AREA :	340.64 Sq.mm.		
REQD. CONCRETE AREA:	52559.36 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 127 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 15 END JOINT: 45 SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	62.33	
INITIAL MOMENTS	:	About Z 10.20	About Y 7.97
MOMENTS DUE TO MINIMUM ECC.	:	1.25	1.25
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	10.20	7.97
REQD. STEEL AREA :	372.13 Sq.mm.		
REQD. CONCRETE AREA:	46516.20 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 128 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 15 END JOINT: 47 SHORT COLUMN

## DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	83.17	
INITIAL MOMENTS	:	About Z 9.00	About Y 7.70
MOMENTS DUE TO MINIMUM ECC.	:	1.66	1.66
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	9.00	7.70
REQD. STEEL AREA :	257.20 Sq.mm.		
REQD. CONCRETE AREA:	32149.73 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 129 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 300.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 7 END JOINT: 48 SHORT COLUMN

DESIGN FORCES (KNS-MET)

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DESIGN AXIAL FORCE (Pu)	:	197.03	
INITIAL MOMENTS	:	About Z 7.13	About Y 6.15
MOMENTS DUE TO MINIMUM ECC.	:	3.94	3.94
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	7.13	6.15
REQD. STEEL AREA :	176.71 Sq.mm.		
REQD. CONCRETE AREA:	22088.44 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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IS-456 L I M I T S T A T E D E S I G N  
C O L U M N N O . 132 D E S I G N R E S U L T S

M20

Fe415 (Main)

Fe415 (Sec.)

LENGTH: 3000.0 mm CROSS SECTION: 230.0 mm X 230.0 mm COVER: 40.0 mm

\*\* GUIDING LOAD CASE: 7 END JOINT: 63 SHORT COLUMN

DESIGN FORCES (KNS-MET)

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DESIGN AXIAL FORCE (Pu)	:	18.07	
INITIAL MOMENTS	:	About Z 9.55	About Y 3.74
MOMENTS DUE TO MINIMUM ECC.	:	0.36	0.36
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	9.55	3.74
REQD. STEEL AREA :	407.49 Sq.mm.		
REQD. CONCRETE AREA:	52492.52 Sq.mm.		

TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

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कर्मचारी भविष्य निधि संगठन  
Employees' Provident Fund Organization

भविष्य निधि भवन, १४, भीकाजी कामा प्लेस, नई दिल्ली - ११००६६  
Bhavishya Nidhi Bhawan, 14, Bhikaji Cama Place, New Delhi - 110066

Generated On 14/11/2019 11:33:

**Payment Confirmation Receipt**

TRRN No :	1201911013134
Challan Status :	Payment Confirmed
Challan Generated On :	12-NOV-2019 14:19:05
Establishment ID :	APHYD0042194000
Establishment Name :	OSPS TELECOM SERVICES PVT. LTD.
Challan Type :	Monthly Contribution Challan
Total Members :	54
Wage Month :	OCT-2019
Total Amount (Rs) :	1,06,539
Account-1 Amount (Rs) :	71,285
Account-2 Amount (Rs) :	2,136
Account-10 Amount (Rs) :	31,243
Account-21 Amount (Rs) :	1,875
Account-22 Amount (Rs) :	0
Payment Confirmation Bank :	HDFC Bank
CRN :	240141119003920
Payment Date :	14-NOV-2019
Payment Confirmation Date :	14-NOV-2019





# Insurance

0

[Monthly Contribution > Online Challan Form](#)

Transaction Details		* Required Fields
<b>Transaction status:</b>	Completed Successfully	
<b>Employer's Code No:</b>	52000202200001099	
<b>Employer's Name:</b>	O S P S TELECOM SERVICES	
<b>Challan Period:</b>	Oct-2019	
<b>Challan Number :</b>	05219138487495	
<b>Challan Created Date</b>	14-11-2019 11:39:50	
<b>Challan Submitted Date</b>	14-11-2019 11:40:01	
<b>Amount Paid:</b>	15612.00	
<b>Transaction Number:</b>	193183130250	

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