



**Ministry of Jal Shakti
(A Government of India undertaking)**

**1st Floor, JP Krishna Building, Pallimukku, Pettah
Trivandrum - 695024**

TENDER DOCUMENT FOR

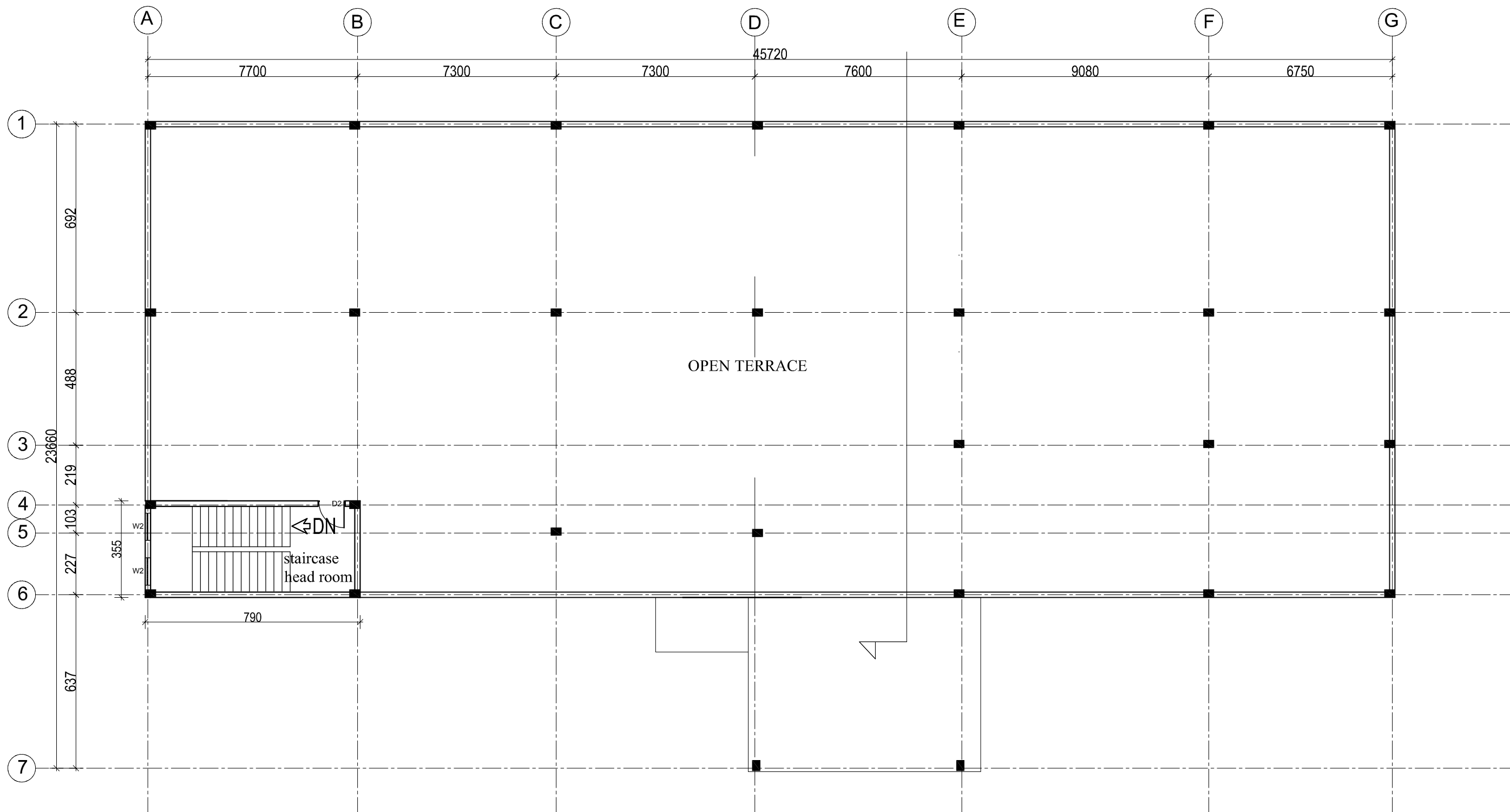
**Construction of Multi Storied Building Facilitate
Academic activities(Academic Complex, Translational
Research Laboratory and Academic Incubator Centre) at
Karyavattom Campus,Trivandrum**

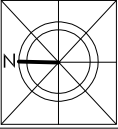
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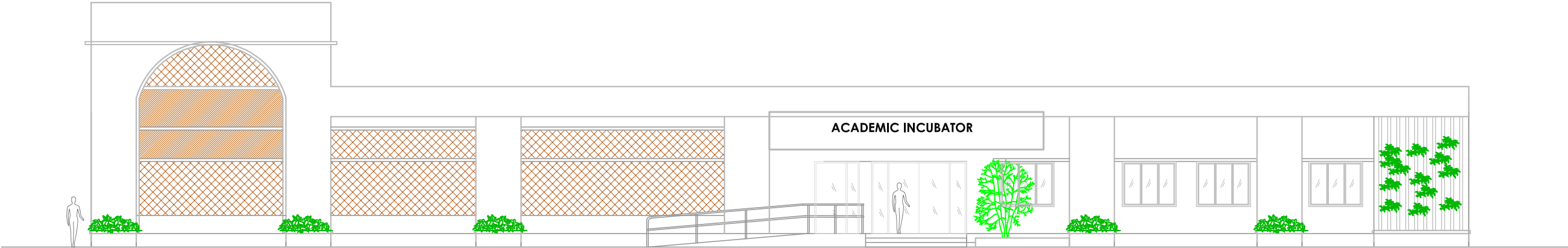
Date: 29-03-2025

Volume-II DRAWINGS

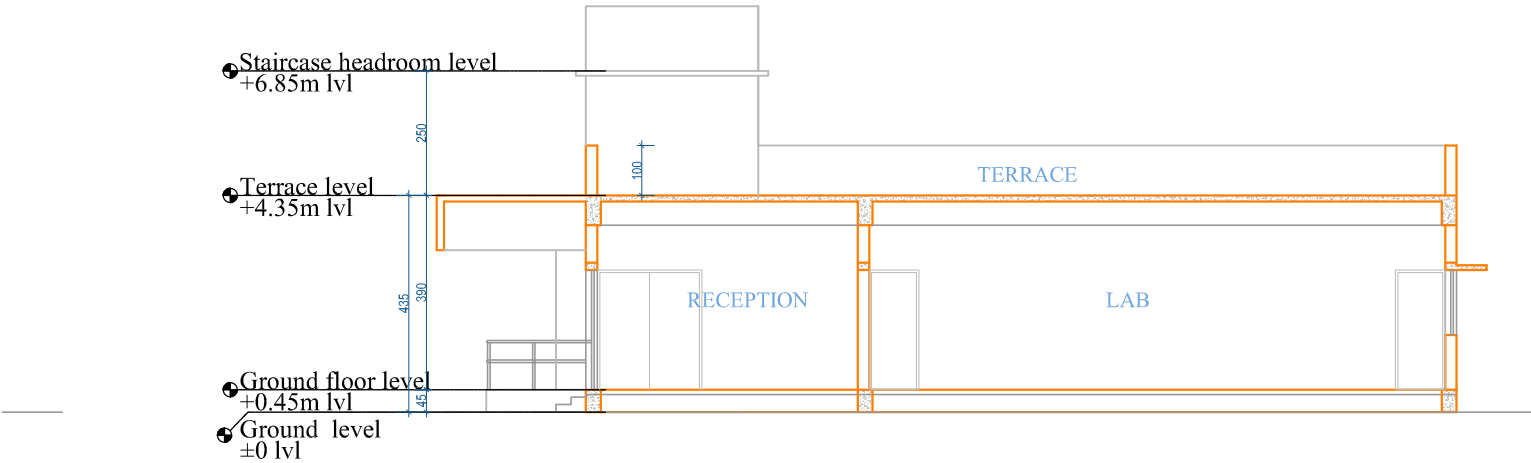
ARCHITECTURAL



NOTES : • ALL MEASUREMENTS ARE IN cm unless specified otherwise. • This drawing should not be scaled. • The measurements are to be checked on site before construction.	 WAPCOS LIMITED (A Government of India Undertaking) Ministry of Jal Shakti Regional Office (Kerala) 1st Floor, JP Krishna Building Pollimukku, Pettah Trivandrum 695024, Kerala	APPROVED BY -	CHECKED BY -	REVISIONS			PROJECT NAME : UNIVERSITY OF KERALA PM-USHA PROJECT FOR MULTI-DISCIPLINARY EDUCATION & RESEARCH UNIVERSITIES (MERU)	DATE : 29/03/2025	
								SCALE : NTS	
								SHEET SIZE : A3	
							SHEET TITLE : PROPOSED ACADEMIC INCUBATOR	SHEET NO :	
								DRAWN BY :	
								DRAWING NO :	
								DRAWING STATUS : FOR TENDER	



PROPOSED ACADEMIC INCUBATOR - FRONT ELEVATION



PROPOSED ACADEMIC INCUBATOR - SECTION

NOTES :
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WAPCOS LIMITED
(A Government of India Undertaking)
Ministry of Jal Shakti
Regional Office (Kerala)
1st Floor, JP Krishna Building
Pallimukku, Pettah
Trivandrum 695024, Kerala

APPROVED BY -

CHECKED BY -

REVISIONS		
NO.	DESCRIPTION	DATE

PROJECT NAME :

UNIVERSITY OF KERALA
PM-USHA PROJECT FOR MULTI-DISCIPLINARY
EDUCATION & RESEARCH UNIVERSITIES (MERU)

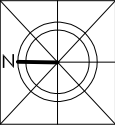
**SHEET TITLE : PROPOSED ACADEMIC INCUBATOR
SECTION & ELEVATION**

DATE : 29/03/2025

SCALE : NTS

SHEET SIZE : A3

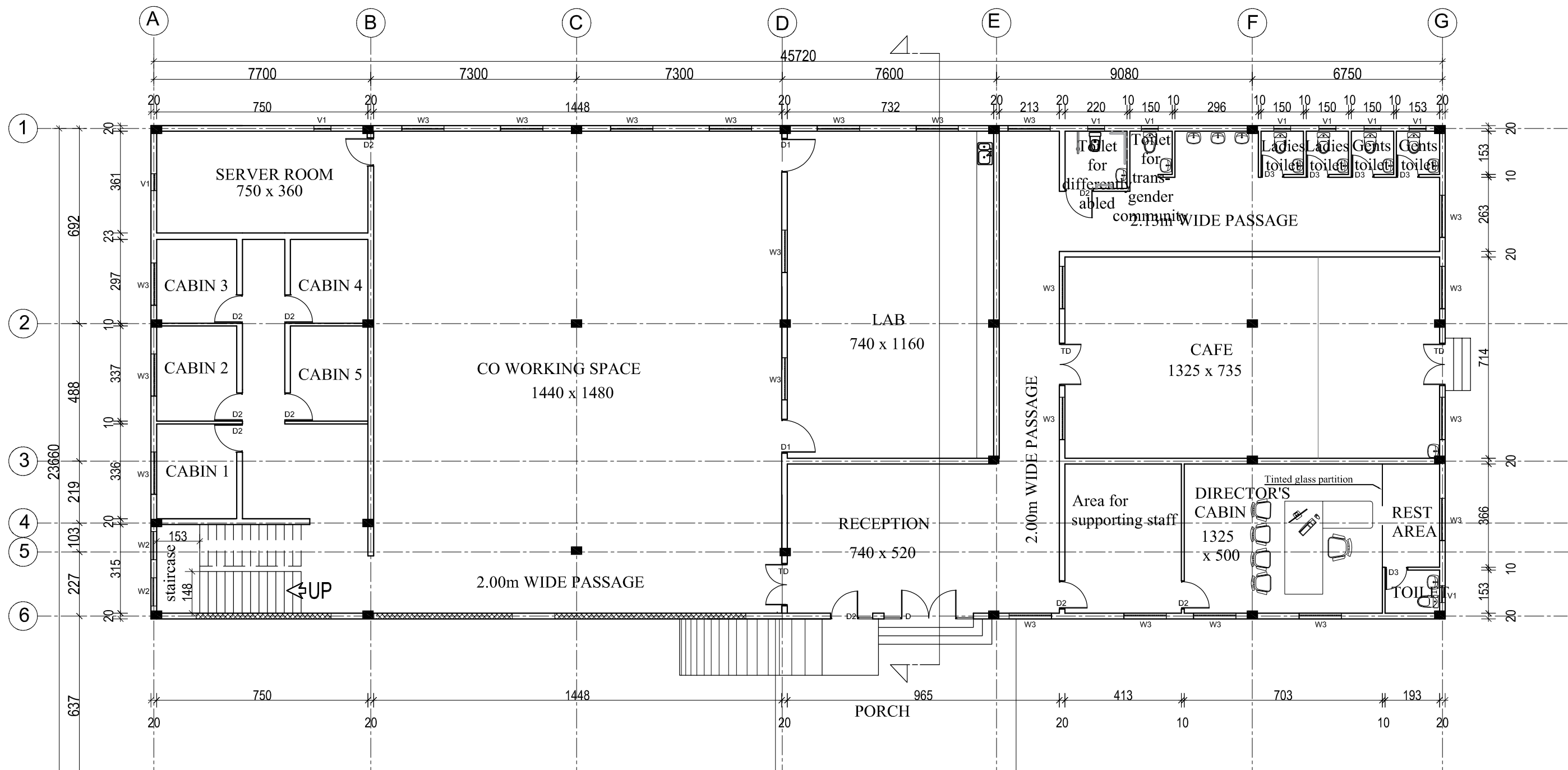
SHEET NO :



DRAWN BY :

DRAWING NO :

DRAWING STATUS : FOR TENDER



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EDUCATION & RESEARCH UNIVERSITIES (MERU)

SHEET TITLE : PROPOSED ACADEMIC INCUBATOR

DATE : 29/03/2025

SCALE : NTS

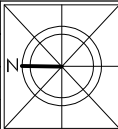
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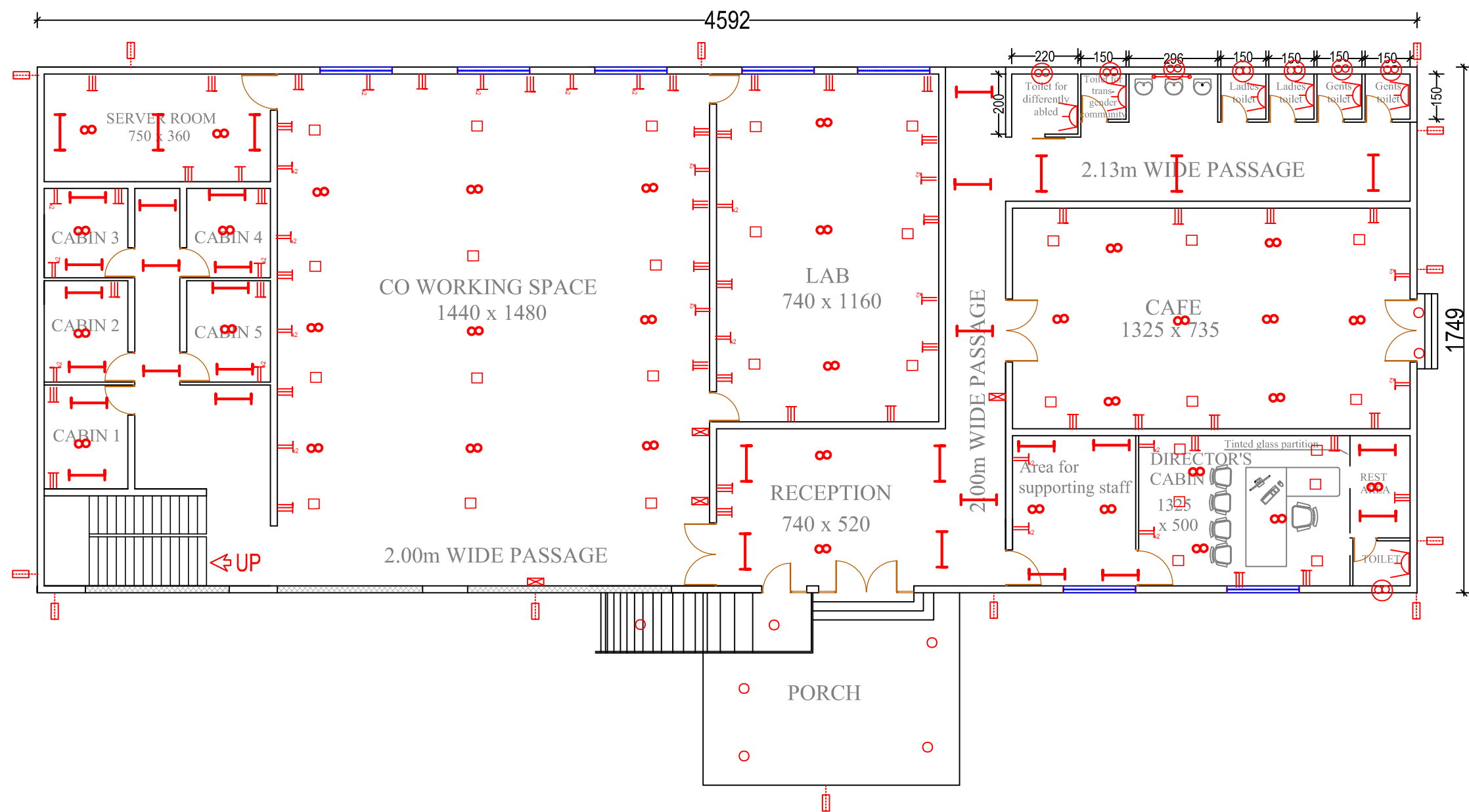
DRAWN BY :

DRAWING NO :

DRAWING STATUS : FOR TENDER



ELECTRICAL



PLINTH AREA-803.14 Sqm

LEGEND	
	Tube light
	Mirror lamp
	Down light
	Bulk head
	Batten
	Ceiling fan
	Exhaust fan
	5A plug
	Set of plug
	15A plug
	D B
	SMB
	Street light

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APPROVED BY -

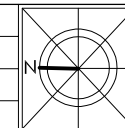
CHECKED BY -

REVISIONS		
NO.	DESCRIPTION	DATE

PROJECT NAME : UNIVERSITY OF KERALA
PM-USHA PROJECT FOR MULTI-DISCIPLINARY
EDUCATION & RESEARCH UNIVERSITIES (MERU)

SHEET TITLE : PROPOSED ACADEMIC INCUBATOR
-GROUND FLOOR ELECTRICAL LAYOUT

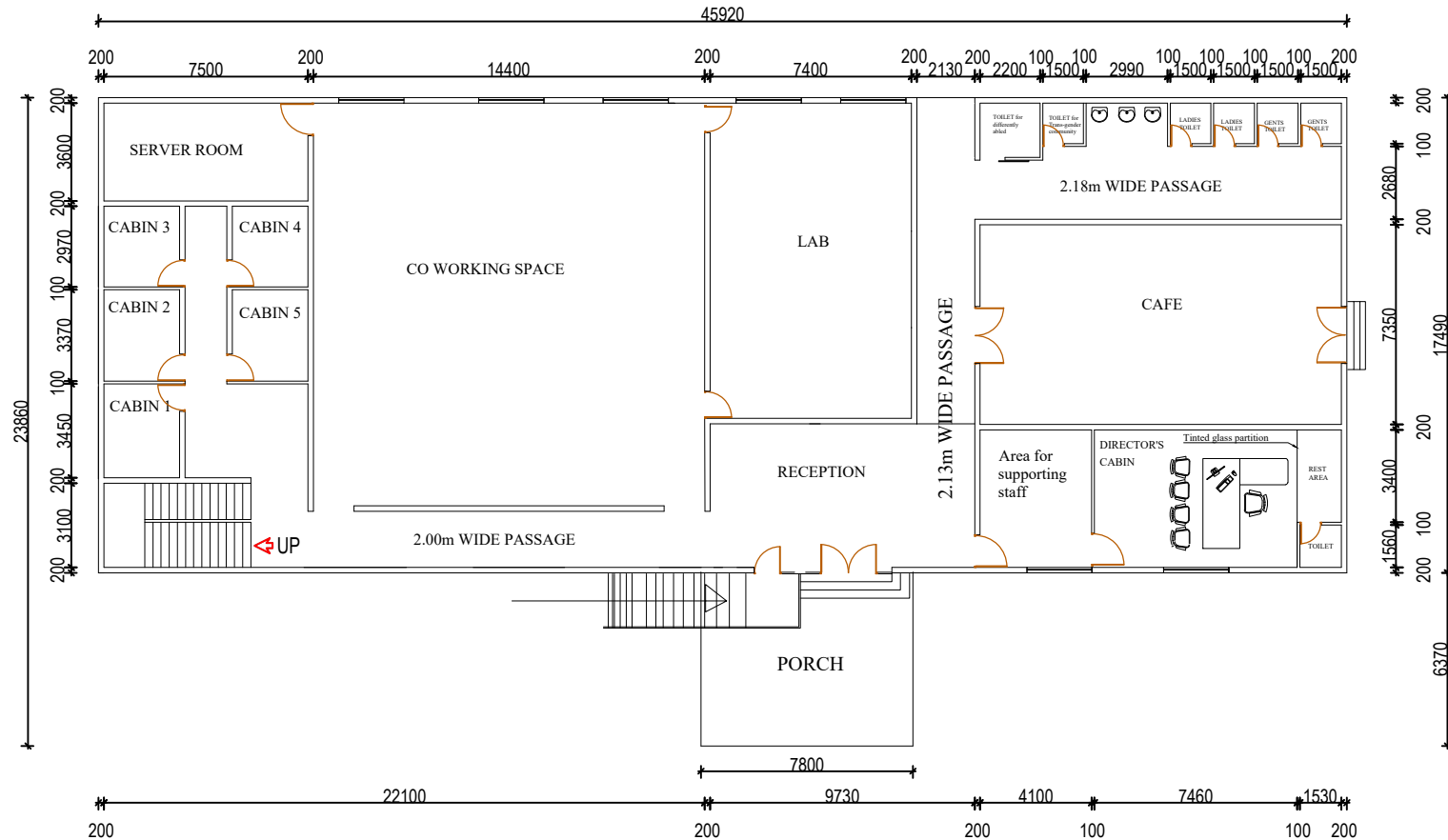
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SCALE : NTS
SHEET SIZE : A3
SHEET NO :
DRAWN BY :
DRAWING NO :
DRAWING STATUS :



STRUCTURAL

1. STRUCTURAL DRAWINGS OF THE PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS

1.1 ARCHITECTURAL PLAN OF GROUND FLOOR



GROUND FLOOR PLAN

PROJECT

PROPOSED ACADEMIC
INCUBATOR PROJECT.
STRUCTURAL DRAWING

DELINEATION

ARCHITECTURAL LAYOUT
OF GROUND FLOOR

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

Ground Floor : 803.14 Sqm

PROJECT NUMBER

3

GENERAL NOTE

1. Do not Scale Dimensions govern in drawings
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3. All dimensions shall be verified at site before proceeding the work.
4. All Levels are in Meters unless noted otherwise.

SIGNATURE

CLIENT

CONSULTANT

STRUCTURAL CONSULTANT

Y-Shakh
Project Management &
Consultancy Services

Y- Shakh, Nalanda Nagar-97
Thirumullavaram P.O. Kollam - 12
e-mail: yshakhpmcs@gmail.com
Ph: +91 9447126629
Office: 0474-2792700

Ref.No:

YSCASE,194/2025

DATE :

23- 02- 2025

DESIGNED:

Dr M.M KHAN. Ph.D

DRAWN:

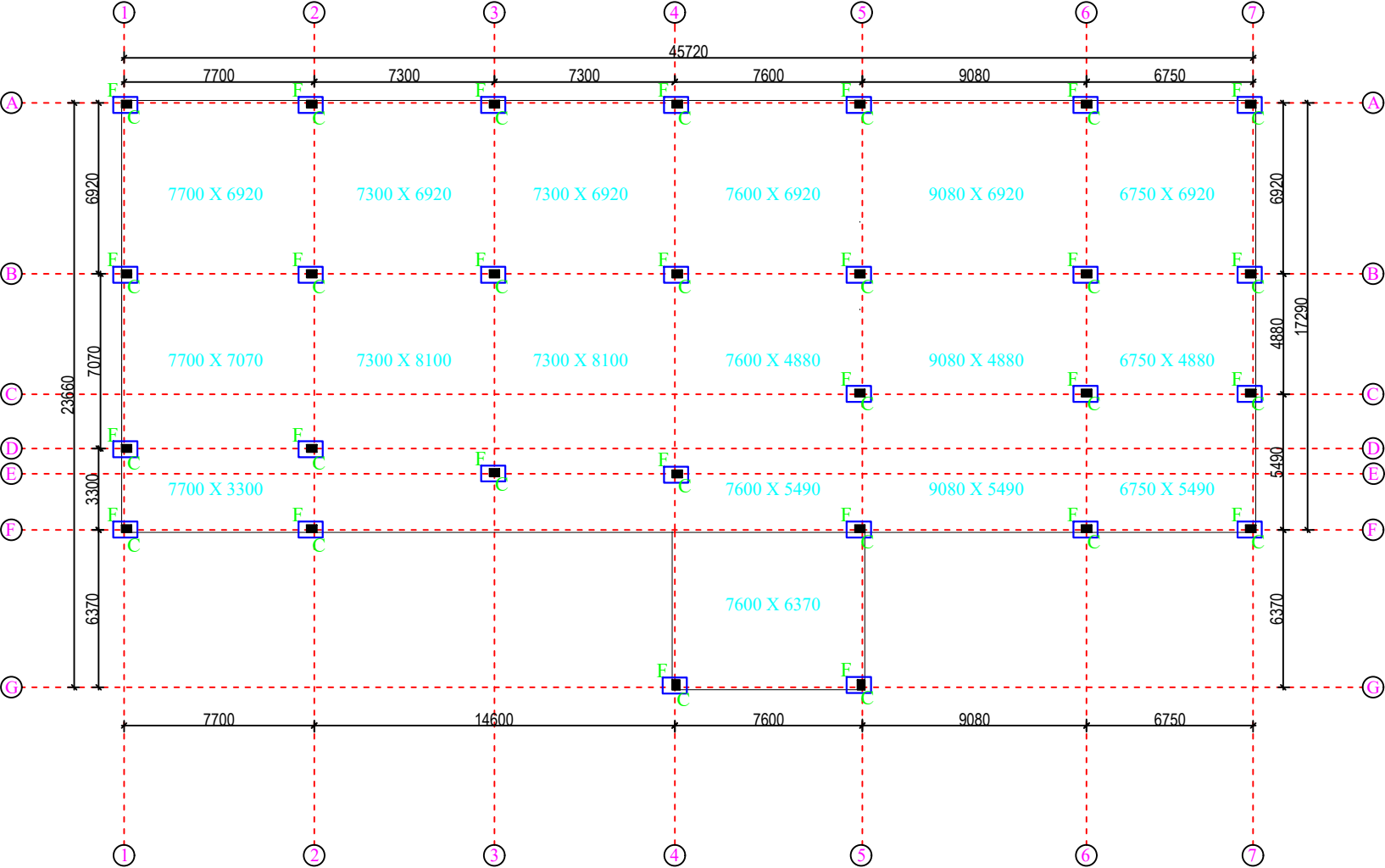
JASMINE.TOMY

PLATE NO: 01

SCALE-1:100,All Dimensions are in Millimeter

2. STRUCTURAL LAYOUT PLAN OF SUB-STRUCTURE

2.1 FOUNDATION DETAILS



GROUND FLOOR PLAN

PROJECT

PROPOSED ACADEMIC
INCUBATOR PROJECT.
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT PLAN
OF SUB-STRUCTURE
FOUNDATION

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

Ground Floor : 803.14 Sqm

PROJECT NUMBER

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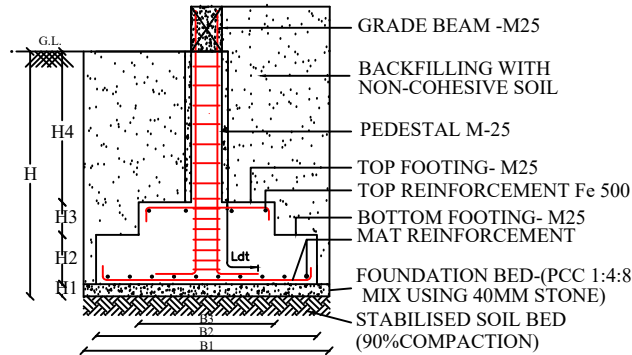
Y-Shakh
Project Management &
Consultancy Services

Y- Shakh, Nalanda Nagar-97
Thirumullavaram P.O. Kollam - 12
e-mail: yshakhpms@gmail.com
Ph: +91 9447126629
Office: 0474-2792700

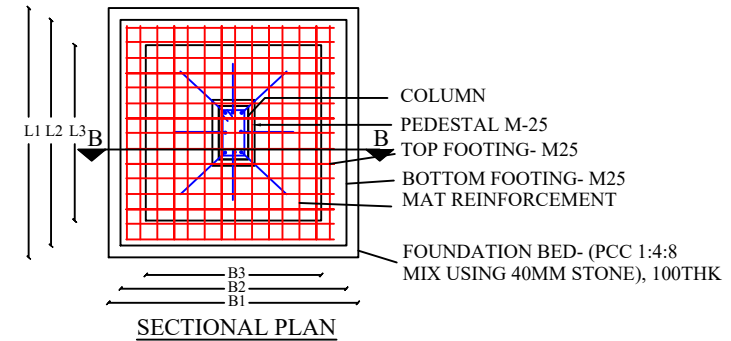
Ref.No:	DATE :	DESIGNED:	DRAWN:	PLATE NO: 02
YSCASE,194/2025	23- 02- 2025	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCALE-1:100,All Dimensions are in Millimeter

3. STRUCTURAL DETAILS OF FOUNDATION

ISOLATED STEPPED FOOTING -TYPICAL DESIGN



MAT REINFORCEMENT DETAILS



FOUNDATION DETAILS OF PROPOSED PROJECT

SL. NO	GROUP	FOUNDATION TRENCH			PCC BED			BOTTOM FOOTING			TOP FOOTING			REINFORCEMENT DETAILS			
		L1	B1	H	L1	B1	H1	L2	B2	H2	L3	B3	H3	MAT RODS	TOP RODS	DEV LENGTH Ld	LAP LENGTH Ls
1.	F	2500	2500	2000	2500	2500	100	2200	2200	250	1800	1800	350	Y12 @ 150 C/C BOTH WAYS	Y8 @ 250 C/C BOTH WAYS	600 mm for Y12 & 400 mm for Y8	600 mm for Y12 & 400 mm for Y8

SPECIAL NOTES

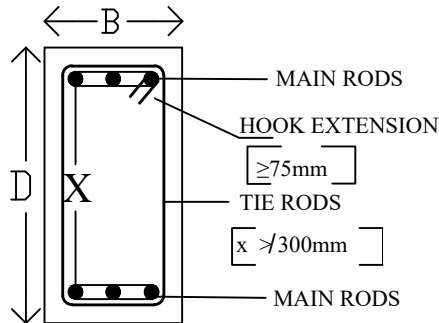
1. Heaviest loaded grid is 9080 x 6920 & 7300 x 8100
2. Lightest loaded grid is 7700 x3300 & 6750 x 4880
3. Longest span is 9080 & Shortest span is 6750
4. The design concept shall be by analysing 9080 x 6920.
5. The minimum depth of foundation -2.0M BGL.
6. The SBC is assumed-120 kn/m²

7. Grade of Concrete : M25
8. Grade of Steel : Fe500
9. Clear cover : 50mm

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT	
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700	
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF FOUNDATION		
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 03		

4. STRUCTURAL DETAILS OF COLUMN

4.1 C.S DETAILS OF COLUMNS



NOTE

GRADE OF CONCRETE : M25	
GRADE OF STEEL	: Fe500
CLEAR COVER	: 40 mm

4.2 INDEX

- Y = Diameter of reinforcement rods HYSD
 Ld = Development Length of rods 50d
 Ls = Splices/Lap length at joints of reinforcement rods 50 d for tension & 40 d for compression zone
 L0 = Confining region for ductility for seismic resistance
 H = Height of Column Between support faces
 H/4 = Region where joints of rods are to be avoided
 H/2 = Region where joints allowable but shall be restricted to maximum of 50 % of joints at a particular section
 S = Spacing of stirrups in region free from L0 & Ls
 S0 = Spacing of stirrups at L0 region
 Ss = Spacing of stirrups at Ls region
 X = Space between 2 adjacent main rods in column where shall not exceed 300 mm

4.3 STRUCTURAL DETAILS OF COLUMNS OF THE PROPOSED PROJECT

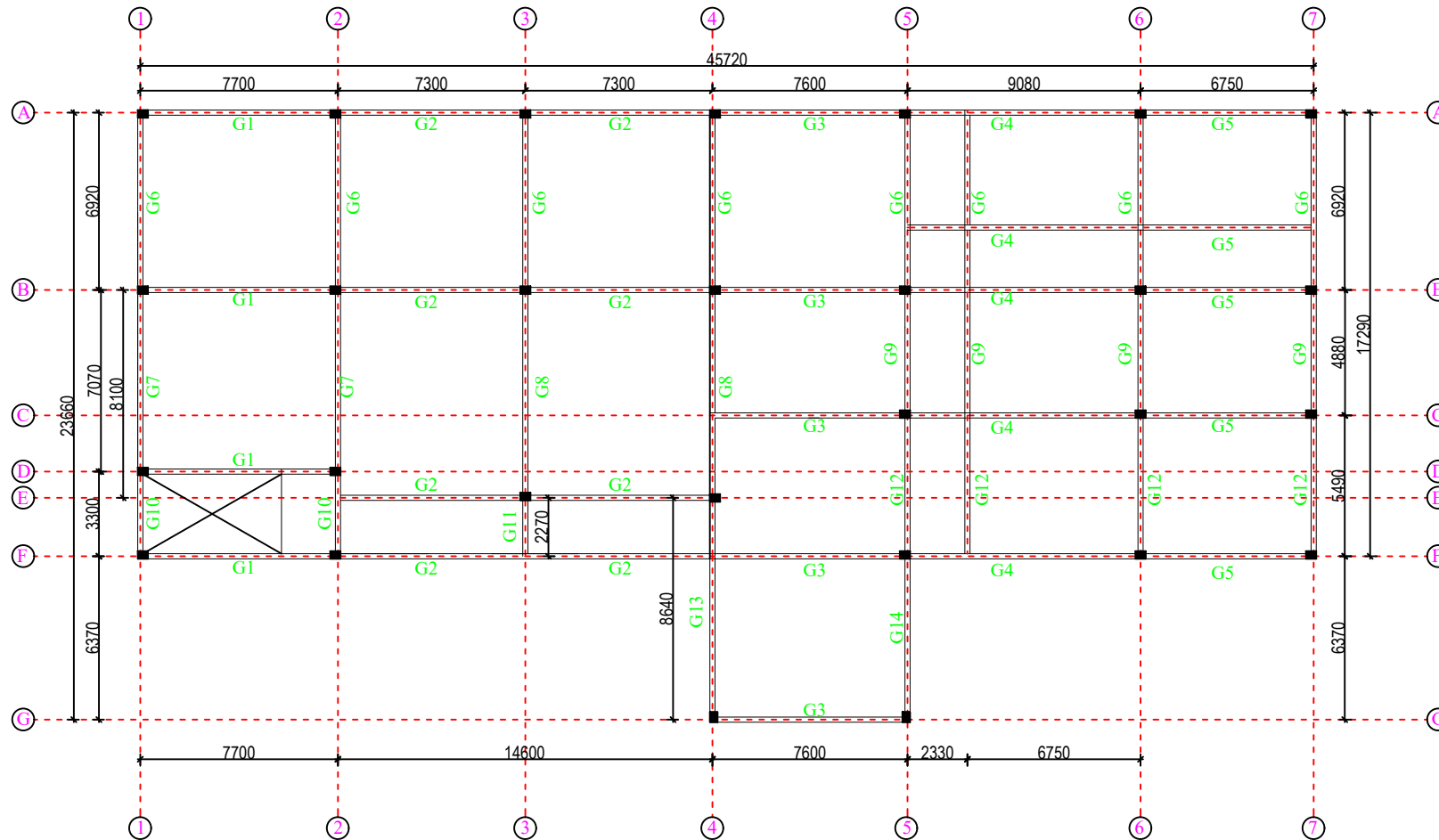
GROUP	C.S DIMENSION B X D	REINFORCEMENT		CRITICAL ZONES			SPACING OF TIES AT CRITICAL ZONE		CROSS SECTION DETAILS	TIE ARRANGEMENT
		MAIN	TIES	Dev: Length Ld (mm)	Lap length Ls (mm)	Confined Length L0 (mm)	Ss(mm)	SO(mm)		
C	300 x 500	4 Y 20 + 4 Y 16	Y 8 @ 150 C/C	1000 mm for Y 20 & 800 mm for Y16	800 mm for Y 20 & 640 mm for Y16	500 mm	Y8@ 100mm/ c/c	Y8@ 75mm/ c/c		4 Legged

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF COLUMNS	
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 04	

5. STRUCTURAL LAYOUT PLAN OF GRADE BEAMS



GROUND FLOOR PLAN

5-1 DETAILS OF GRADE BEAM

GROUP	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14
EFF:SPAN (IN MM)	7700	7300	7600	9080	6750	6920	7070	8100	4880	3300	2270	5490	8640	6370

PROJECT

PROPOSED ACADEMIC
INCUBATOR PROJECT.
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF GRADE BEAMS

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

Ground Floor : 803.14 Sqm

PROJECT NUMBER

3

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SIGNATURE

CLIENT

CONSULTANT

STRUCTURAL CONSULTANT



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Project Management &
Consultancy Services

Y- Shakh, Nalanda Nagar-97
Thirumullavaram P.O. Kollam - 12
e-mail: yshakhpmcs@gmail.com
Ph: +91 9447126629
Office: 0474-2792700

Ref.No:

DATE :

DESIGNED:

DRAWN:

PLATE NO: 05

YSCASE,194/2025

23- 02- 2025

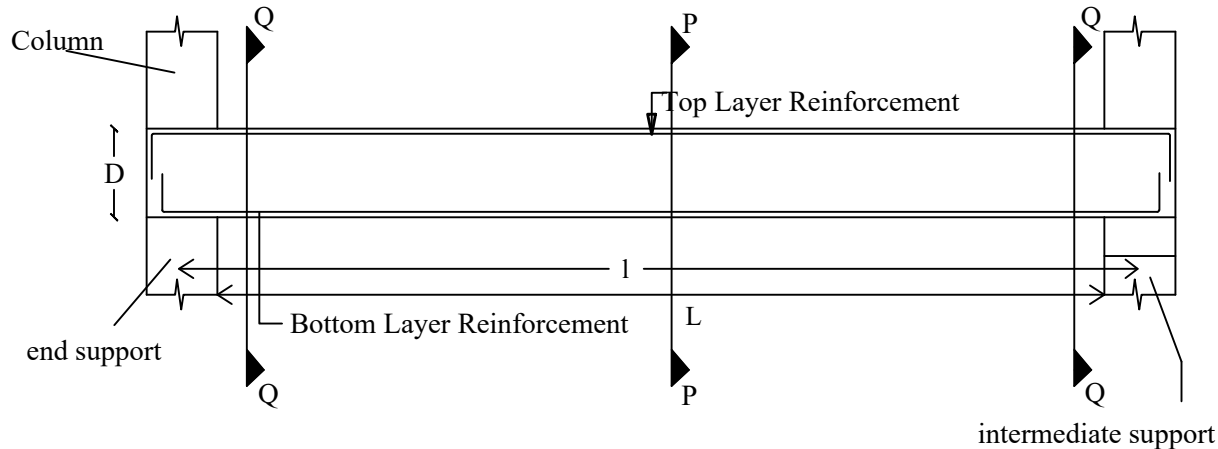
Dr M.M KHAN. Ph.D

JASMINE.TOMY

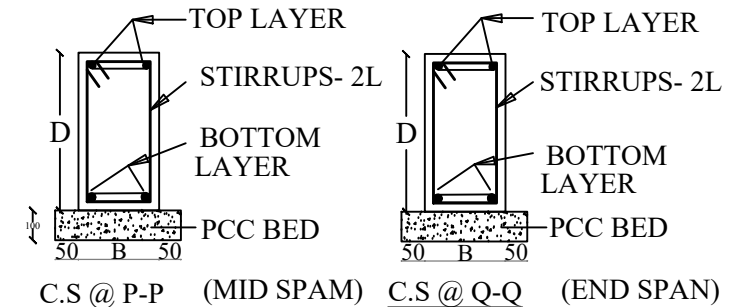
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6. STRUCTURAL DETAILS OF GRADE BEAMS - TYPICAL DESIGN CONCEPT

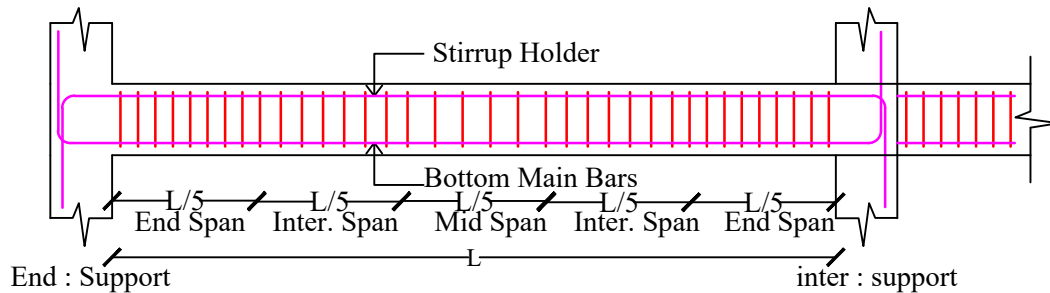
6.1 ARRANGEMENT OF MAIN BARS IN RAFT SLAB BEAMS



6.3 CROSS-SECTIONAL DETAILS



6.2 ARRANGEMENT OF STIRRUPS IN RAFT SLAB BEAMS



6.4 INDEX

- L = CLEAR SPAN
- l = EFFECTIVE SPAN
- D = DEPTH OF BEAM
- B = BREADTH OF BEAM
- GRADE OF CONCRETE : M25
- GRADE OF STEEL : Fe500
- CLEAR COVER : 25mm

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF COLUMNS	
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 06	

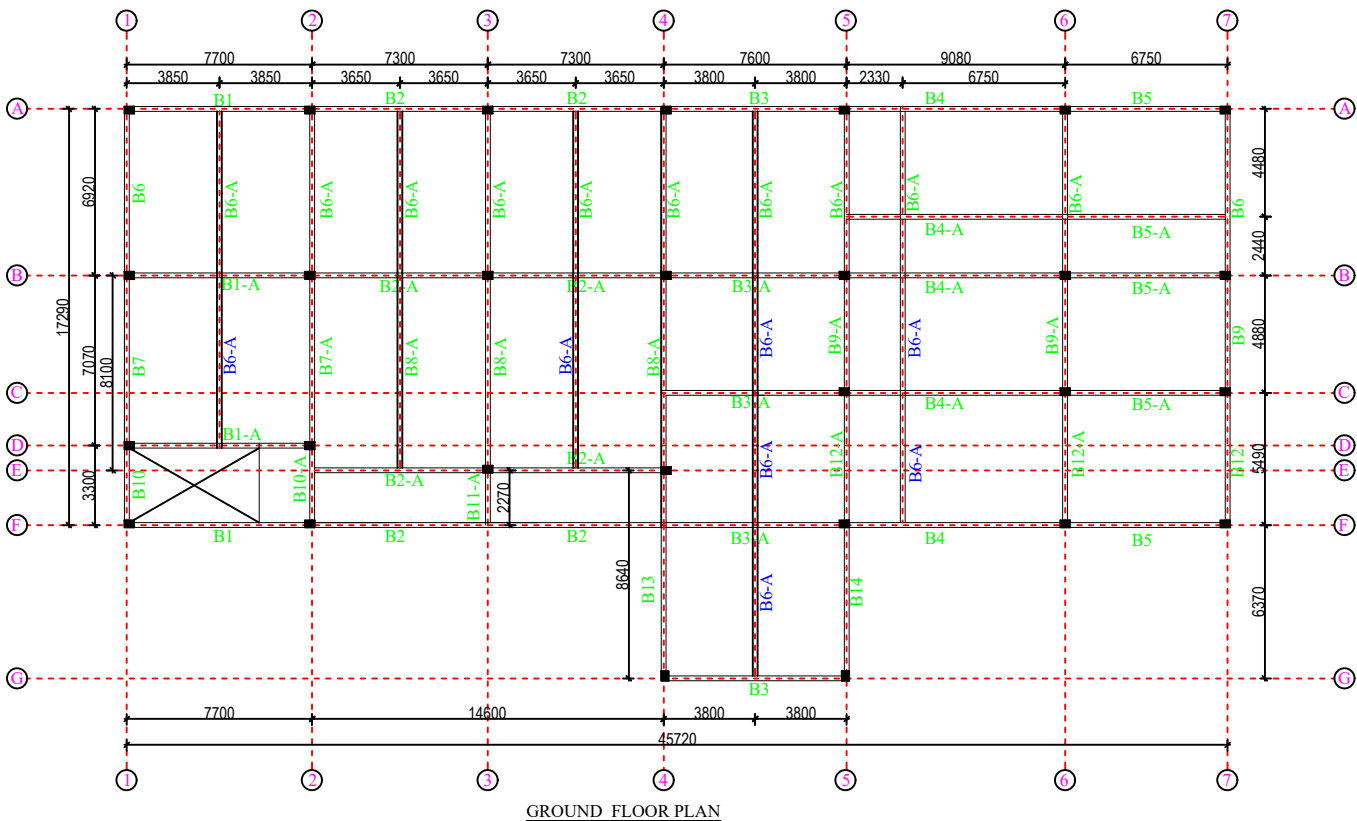
7 -SCHEDULE OF GRADE BEAMS OF THE PROPOSED PROJECT (C.S SIZE & REINFORCEMENT DETAILS)

GROUP	CLEAR SPAN L	C.S DIMENSION BXD	REINFORCEMENT DETAILS			CRITICAL ZONES			TYPICAL SECTION	
			BOTTOM MAIN BARS	TOP MAIN BARS	STIRRUP (GENERAL)	LAP Ls	DEVP: Ld	CONFINED L0	MID SPAN SECTION CS @ P-P	END SPAN SECTION CS @ Q-Q
G9 G10	3300 & 4880	250 x 350	4 Y 16	3 Y 12	Y8@130 to 180 c/c	800mm for Y 16 600mm for Y12	800mm for Y 16 600mm for Y12	700mm		
G1 G2 G3 G5 G6 G7 G11 G12 G14	5490 to 7700 2270	250 x 600	4 Y 20	3 Y 16	Y8@130 to 180 c/c	1000mm for Y 20 800mm for Y 16	1000mm for Y 20 800mm for Y 16	1200mm		
G4 G8 G13	8100 to 9080	250 x 700	5 Y 20	3 Y 16	Y8@130 to 180 c/c	1000mm for Y 20 800mm for Y 16	1000mm for Y 20 800mm for Y 16	1500mm		

SPECIAL NOTE: THE CROSS SECTION OF GRADE BEAM G11 SHALL BE THE EXTENSION OF G8

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpms@gmail.com Ph: +91 9447126629 Office: 0474-2792700
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF GRADE BEAMS	
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 07	

8.STRUCTURAL LAYOUT PLAN OF SUPERSTRUCTURE- (ROOF BEAMS - GROUND FLOOR)



ROOF BEAM DETAILS

R.C.C	STEEL	COVER	STRIPPING TIME	CURING
M-25	Fe-500	20 mm	Roof beam - 14 Days	7 DAYS

DETAILS OF ROOF BEAM

Group	EFF: Span (In mm)
B1	7700
B1-A	7700
B2	7300
B2-A	7300
B3	7600
B3-A	7600
B4	9080
B4-A	9080
B5	6750
B5-A	6750
B6	6920
B6-A	6920
B7	7070
B7-A	7070
B8-A	8100
B9	4880
B9-A	4880
B10	3300
B10-A	3300
B11-A	2270
B12	5490
B12-A	5490
B13	8640
B14	6370

PROJECT

PROPOSED ACADEMIC
INCUBATOR PROJECT.
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF GRADE BEAMS

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

Ground Floor : 803.14 Sqm

PROJECT NUMBER

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STRUCTURAL CONSULTANT



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DESIGNED:

Dr M.M KHAN. Ph.D

DRAWN:

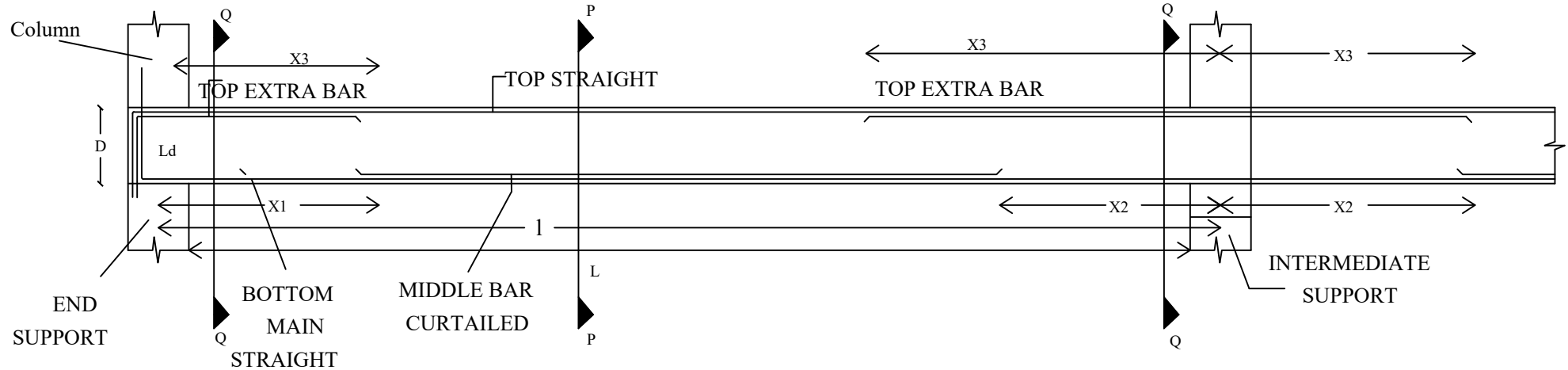
JASMINE.TOMY

PLATE NO: 08

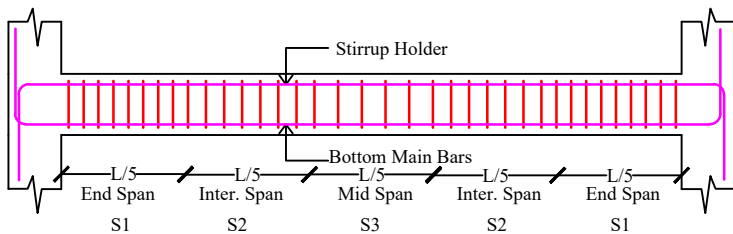
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9. STRUCTURAL DETAILS OF ROOF BEAMS - TYPICAL DESIGN CONCEPT

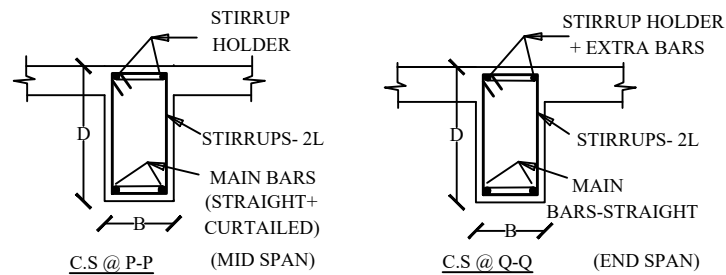
9-1 BEAMS - TYPICAL ARRANGEMENT OF REINFORCEMENTS IN BEAMS



9-2 ARRANGEMENT OF STIRRUPS IN BEAMS-TYPICAL



9-3. CROSS-SECTIONAL DETAIL



NOTE : For end beams the section shall be L- Beam as against T- Beam

9.4 INDEX

L = CLEAR SPAN OF BEAM
 L = EFFECTIVE SPAN OF BEAM
 X1 = CURTAILED DISTANCE FROM END SUPPORT
 X2 = CURTAILED DISTANCE FROM INTERMEDIATE SUPPORT
 X3 = LENGTH OF EXTRA BARS AT SUPPORTS
 Ls = LAP LENGTH AT JOINTS
 Ld = DEVELOPMENT LENGTH
 L0 = SPECIAL CONFINED LENGTH FOR SEISMIC LOAD
 D = DEPTH OF BEAM
 B = BREADTH OF BEAMS
 GRADE OF CONCRETE : M25
 GRADE OF STEEL : Fe500
 CLEAR COVER : 25mm

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	REINFORCEMENT DETAILS OF ROOF BEAMS	
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 09	

10-A. SCHEDULE OF ROOF BEAMS OF THE PROPOSED PROJECT
(C.S & REINFORCEMENT DETAILS OF GROUND FLOOR)

T - BEAM

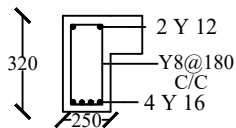
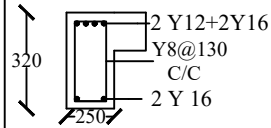
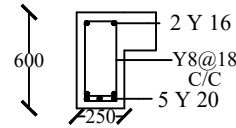
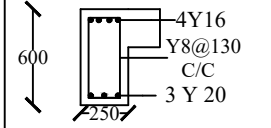
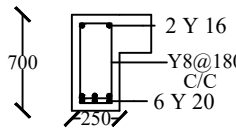
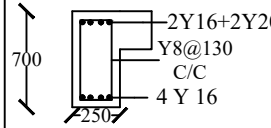
GROUP	CLEAR SPAN L	C.S SIZE B X D	REINFORCEMENT DETAILS					CRITICAL ZONE			C.S @ P.P MID SPAN	C.S @ Q.Q END SPAN
			BOTTOM MIDDLE STRAIGHT	BOTTOM MIDDLE CURT:	TOP STRT: STIRRUP HOLDER	TOP EXTRA	STIRRUPS	LAPS Ls	DEVE: LENGTH Ld	CONFINED L0		
B9-A B10-A	3300 & 4880	250 X 320	2 Y 16	2 Y 16	2 Y 12	2 Y 16	Y8@ 130 to 180 C/C	800 mm for Y 16 & 600 mm for Y 12	800 mm for Y 16 & 600 mm for Y 12	640 mm		
B1-A B2-A B3-A B5-A B6-A B7-A B11-A B12-A B14-A	5490 to 7700	250 X 600	3 Y 20	2 Y 20	2 Y 16	2 Y 16	Y8@ 130 TO 180 C/C	1000 mm for Y 20 & 800 mm for Y 16	1000 mm for Y 20 & 800 mm for Y 16	1200 mm		
B4-A B8-A	8100 to 9080	250 X 700	4 Y 20	2 Y 20	2 Y 16	2 Y 20	Y8@ 130 TO 180 C/C	1000 mm for Y 20 & 800 mm for Y 16	1000 mm for Y 20 & 800 mm for Y 16	1400 mm		

SPECIAL NOTE: THE CROSS SECTION OF GRADE BEAM B11 SHALL BE THE EXTENSION OF B8 & **B6-A - B6-A**

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS	
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 10	

10-B. SCHEDULE OF ROOF BEAMS OF THE PROPOSED PROJECT
(C.S & REINFORCEMENT DETAILS OF GROUND FLOOR)

L - BEAM

GROUP	CLEAR SPAN L	C.S SIZE B X D	REINFORCEMENT DETAILS					CRITICAL ZONE			C.S @ P.P MID SPAN	C.S @ Q.Q END SPAN
			BOTTOM MIDDLE STRAIGHT	BOTTOM MIDDLE CURT:	TOP STRT: STIRRUP HOLDER	TOP EXTRA	STIRRUPS	LAPS Ls	DEVE: LENGTH Ld	CONFINED L0		
B9 B10	3300 & 4880	250 X 320	2 Y 16	2 Y 16	2 Y 12	2 Y 16	Y8@ 130 to 180 C/C	800 mm for Y 16 & 600 mm for Y 12	800 mm for Y 16 & 600 mm for Y 12	640 mm		
B1 B2 B3 B5 B6 B7 B12 B14	5490 to 7700	250 X 600	3 Y 20	2 Y 20	2 Y 16	2 Y 16	Y8@ 130 TO 180 C/C	800 mm for Y 16 & 600 mm for Y 12	800 mm for Y 16 & 600 mm for Y 12	1200 mm		
B4 B8 B13	8100 to 9080	250 X 700	4 Y 20	2 Y 20	2 Y 16	2 Y 20	Y8@ 130 TO 180 C/C	800 mm for Y 16 & 1000 mm for Y 20	800 mm for Y 16 & 1000 mm for Y 20	1400 mm		

SPECIAL NOTE: THE CROSS SECTION OF GRADE BEAM B11 SHALL BE THE EXTENSION OF B8 & B6-A - B6-A

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER

CLIENT

AREA : (sq.m)

DESIGNED:

DRAWN:

DELINEATION

3

M/S WAPCOS LTD

Ground Floor : 803.14 Sqm

Dr M.M KHAN. Ph.D

JASMINE.TOMY

SCHEDULE
OF ROOF
BEAMS


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Office: 0474-2792700

Ref.No: YSCASE,194/2025

DATE : 23- 02- 2025

DRAWING ARE NOT IN SCALE

ALL DIMENSIONS ARE IN MM

PLATE NO: 11

11-A. STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

GROUP	C.S SIZE BXD	SPAN		CURTAILMENT DETAILS OF MAIN BARS			STIRRUPS SPACING			STIRRUPS AT CRITICAL ZONE	
		CLEAR	EFFECTIVE	FROM END SUPPORT X1	FROM INT: SUPPORT X2	EXTRA BARS X3	END SPAN S1	INT: SPAN S2	MID SPAN S3	LAP ZONE Ss	CONFINING ZONE S0
B1,B1A	250 X 600	7500	7700	770	1540	1880	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B2, B2A	250 X 600	7100	7300	730	1460	1780	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B3, B3A	250 X 600	7400	7600	760	1520	1850	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B4, B4A	250 X 700	8880	9080	1000	1820	2220	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B5, B5A	250 X 600	6550	6750	680	1350	1640	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING							STRUCTURAL CONSULTANT
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION	 Y-Shakh Project Management & Consultancy Services Y- Shakh, Nalanda Nagar-97 Thirumullavaram P.O. Kollam - 12 e-mail: yshakhpmcs@gmail.com Ph: +91 9447126629 Office: 0474-2792700	
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF GRADE BEAMS		
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 12		

11-B. STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

GROUP	C.S SIZE BXD	SPAN		CURTAILMENT DETAILS OF MAIN BARS			STIRRUPS SPACING			STIRRUPS AT CRITICAL ZONE	
		CLEAR	EFFECTIVE	FROM END SUPPORT X1	FROM INT: SUPPORT X2	EXTRA BARS X3	END SPAN S1	INT: SPAN S2	MID SPAN S3	LAP ZONE Ss	CONFINING ZONE S0
B6,B6A	250 X 600	6720	6920	700	1390	1680	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B7,B7A	250 X 600	6870	7070	710	1420	1720	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B8A	250 X 700	7900	8100	810	1620	1980	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B9,B9A	250 X 320	4680	4880	490	980	1170	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B10,B10-A	250 X 320	3100	3300	330	660	780	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN, Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 13


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11-C. STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

GROUP	C.S SIZE BXD	SPAN		CURTAILMENT DETAILS OF MAIN BARS			STIRRUPS SPACING			STIRRUPS AT CRITICAL ZONE	
		CLEAR	EFFECTIVE	FROM END SUPPORT X1	FROM INT: SUPPORT X2	EXTRA BARS X3	END SPAN S1	INT: SPAN S2	MID SPAN S3	LAP ZONE Ss	CONFINING ZONE S0
B11-A	250 X 600	2070	2270	230	460	520	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B12,B12-A	250 X 600	5290	5490	550	1100	1320	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B13	250 X 700	8440	8640	870	1730	2110	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C
B14	250 X 600	6170	6370	640	1280	1550	Y8@ 130 mm C/C	Y8@ 160 mm C/C	Y8@ 180 mm C/C	Y8@ 100 mm C/C	Y8@ 80 mm C/C

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

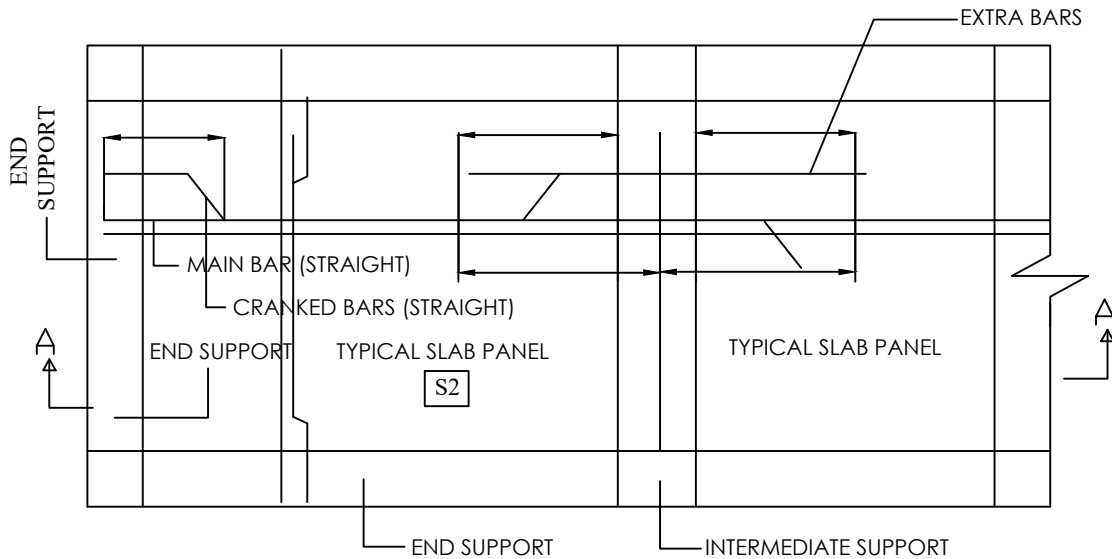
STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 14

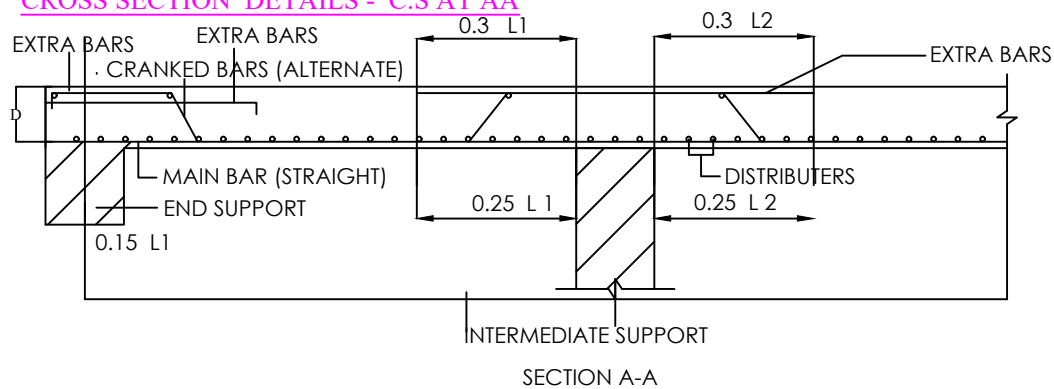

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12 . STRUCTURAL DETAILS OF ROOF SLABS

12.1 STRUCTURAL DETAILS OF TWO WAY SLAB-TYPICAL



12.2 CROSS SECTION DETAILS - C.S AT AA



12.3 DESIGN DETAILS OF ROOF SLAB OF PROPOSED PROJECT

- | | |
|------------------------------|--|
| 1. THICKNESS OF SLAB | - 120 MM |
| 2. DESIGN MIX CONCRETE | - M25 |
| 3. GRADE OF REINFORCEMENT | - Fe - 500 D |
| 4. CLEAR COVER | - 25 mm |
| 8. CRANKED BARS | - EVERY ALTERNATE BARS |
| 9. CRANKED DISTANCE | - 0.05L FROM CENTER OF END SUPPORTS
&
0.25L FROM INTERMEDIATE SUPPORTS |
| 10. LENGTH OF EXTRA BARS TOP | - 0.3L FROM EACH SUPPORT |

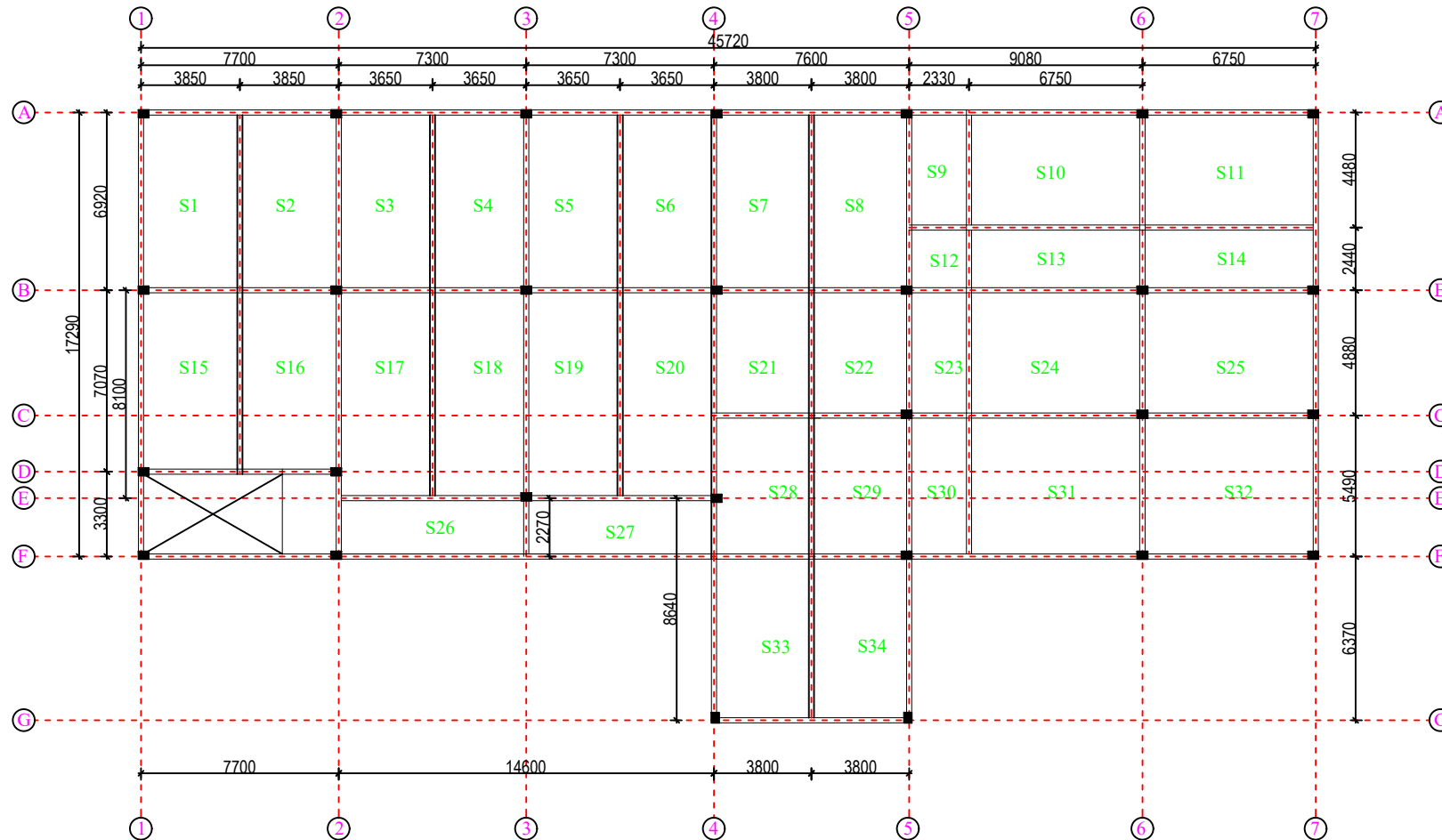
PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 15


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13. STRUCTURAL LAYOUT PLAN OF SUPERSTRUCTURE- (ROOF BEAMS & SLABS)



GROUND FLOOR PLAN

PROJECT

PROPOSED ACADEMIC
INCUBATOR PROJECT.
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF ROOF BEAMS

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

Ground Floor : 803.14 Sqm

PROJECT NUMBER

3

GENERAL NOTE

- 1.Do not Scale Dimensions govern in drawings
- 2.All Dimensions are in Millimeter unless noted otherwise.
- 3.All dimensions shall be verified at site before proceeding the work.
- 4.All Levels are in Meters unless noted otherwise.

SIGNATURE

CLIENT

CONSULTANT

STRUCTURAL CONSULTANT



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Ref.No:

YSCASE,194/2025

DATE :

23- 02- 2025

DESIGNED:

Dr M.M KHAN. Ph.D

DRAWN:

JASMINE.TOMY

PLATE NO: 16

SCALE-1:100,All Dimensions are in Millimeter

14-A-STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

Sl.no	Size of the slab (L x B)	Catogory	Main Bar (Shorter span)	Distribution Bar (Longer Span)	Remarks
S1	3850 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S2	3850 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S3	3650 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S4	3650 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S5	3650 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S6	3650 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S7	3800 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S8	3800 x 6920	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S9	2330 x 4480	Two Way Slab	10 Y @ 130 C/C	8 Y @ 140 C/C	
S10	6750 x 4480	Two Way Slab	10 Y @ 130 C/C	8 Y @ 140 C/C	
S11	6750 x 4480	Two Way Slab	10 Y @ 130 C/C	8 Y @ 140 C/C	
S12	2330 x 2440	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S13	6750 x 2440	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 17


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14-B-STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

Sl.no	Size of the slab (L x B)	Catogory	Main Bar (Shorter span)	Distribution Bar (Longer Span)	Remarks
S14	6750 x 2440	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S15	3850 x 7070	Two Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S16	3850 x 7070	Two Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S17	3650 x 8100	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S18	3650 x 8100	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S19	3650 x 8100	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S20	3650 x 8100	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S21	3800 x 4880	Two Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S22	3800 x 4880	Two Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S23	2330 x 4880	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S24	6750 x 4880	Two Way Slab	10 Y @ 130 C/C	10 Y @ 140 C/C	
S25	6750 x 4880	Two Way Slab	10 Y @ 130 C/C	10 Y @ 140 C/C	
S26	7300 x 2270	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

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14-C-STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

Sl.no	Size of the slab (L x B)	Catogory	Main Bar (Shorter span)	Distribution Bar (Longer Span)	Remarks
S27	7300 x 2270	One Way Slab	8 Y @ 130 C/C	8 Y @ 180 C/C	
S28	3800 x 5490	Two Way Slab	8 Y @ 150 C/C	8 Y @ 150 C/C	
S29	3800 x 5490	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S30	2330 x 5490	One Way Slab	8 Y @ 130 C/C	8 Y @ 160 C/C	
S31	6750 x 5490	Two Way Slab	10 Y @ 130 C/C	10 Y @ 140 C/C	
S32	6750 x 5490	Two Way Slab	8 Y @ 150 C/C	8 Y @ 150 C/C	
S33	3800 x 6370	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S34	3800 x 6370	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

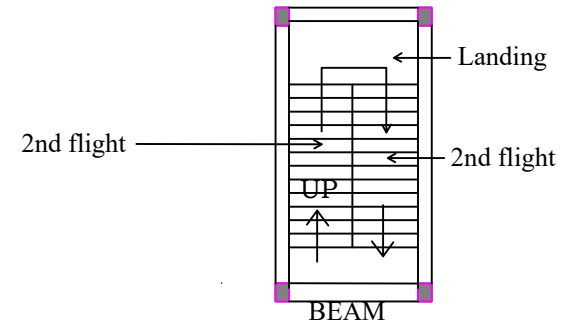
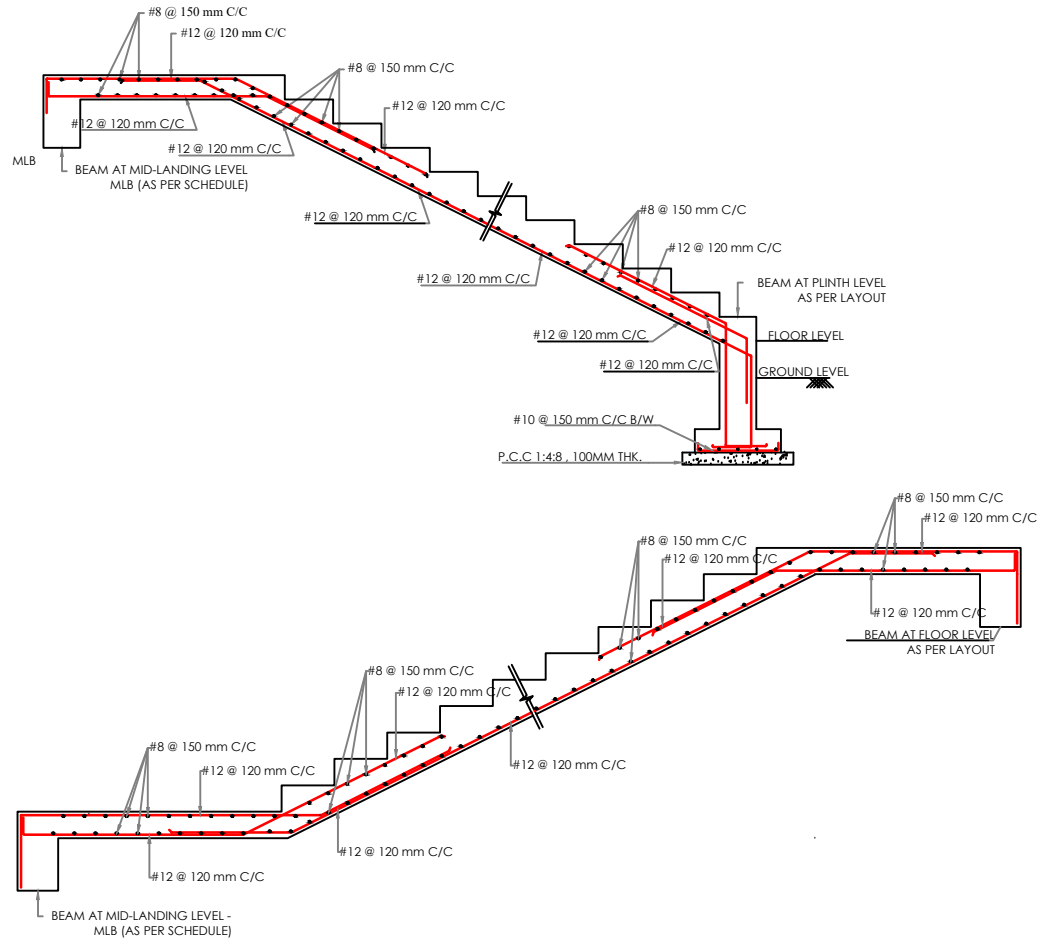
STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 19


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15 . STRUCTURAL DETAILS OF DOG-LEGGED STAIR

STRUCTURAL DETAILS OF DOG-LEGGED STAIR



DESIGNED DETAILS

1. THICKNESS OF SLANDING SLAB	150 mm
2. THICKNESS OF LANDING SLAB	150 mm
3. RISE OF THREAD	150 mm
4. THREAD OF STEP	300 mm
5. WIDTH OF LANDING	1350 mm
6. GRADE OF CONCRETE	M-25
7. GRADE OF STEEL	Fe 500 D
8. CLEAR COVER	20 mm
9. TRAVEL	CLOCK WISE

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER

CLIENT

AREA : (sq.m)

DESIGNED:

DRAWN:

DELINEATION

3

M/S WAPCOS LTD

Ground Floor : 803.14 Sqm

Dr M.M KHAN. Ph.D

JASMINE.TOMY

SCHEDULE
OF ROOF
SLABS

Y-Shakh
Project Management &
Consultancy Services
Y- Shakh, Nalanda Nagar-97
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Office: 0474-2792700

Ref.No: YSCASE,194/2025

DATE : 23- 02- 2025

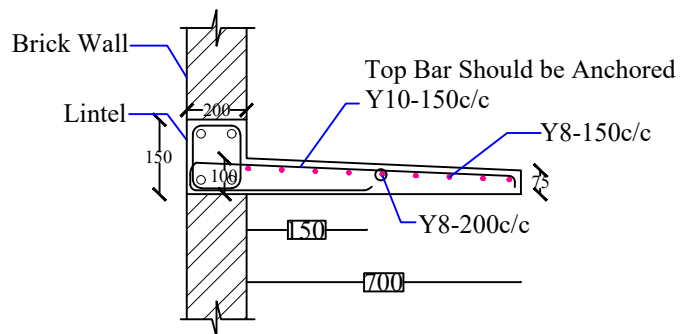
DRAWING ARE NOT IN SCALE

ALL DIMENSIONS ARE IN MM

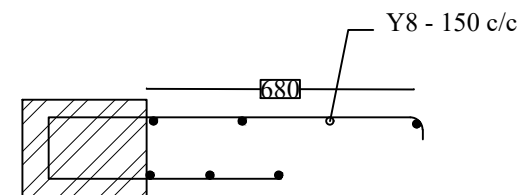
PLATE NO: 20

16. STRUCTURAL DETAILS OF MISCELLANEOUS PARAMETERS

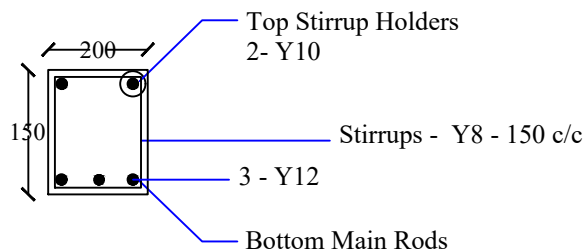
1 STRUCTURAL DETAILS OF SUN SHADE



3 STRUCTURAL DETAILS OF SUN SHADE



2 STRUCTURAL DETAILS OF LINTEL



SPECIAL NOTE

GRADE OF CONCRETE - M25
GRADE OF STEEL - Fe 500
CLEAR COVER - 20 MM

PROJECT : PROPOSED ACADEMIC INCUBATOR PROJECT AT KARIYAVATTOM CAMPUS, UNIVERSITY OF KERALA, THIRUVANANTHAPURAM. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
3	M/S WAPCOS LTD	Ground Floor : 803.14 Sqm	Dr M.M KHAN. Ph.D	JASMINE,TOMY	STRUCTURAL DETAILS OF SUNSHADE & LINTEL
Ref.No: YSCASE,194/2025	DATE : 23- 02- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 21

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