



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

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

TENDER DOCUMENT FOR

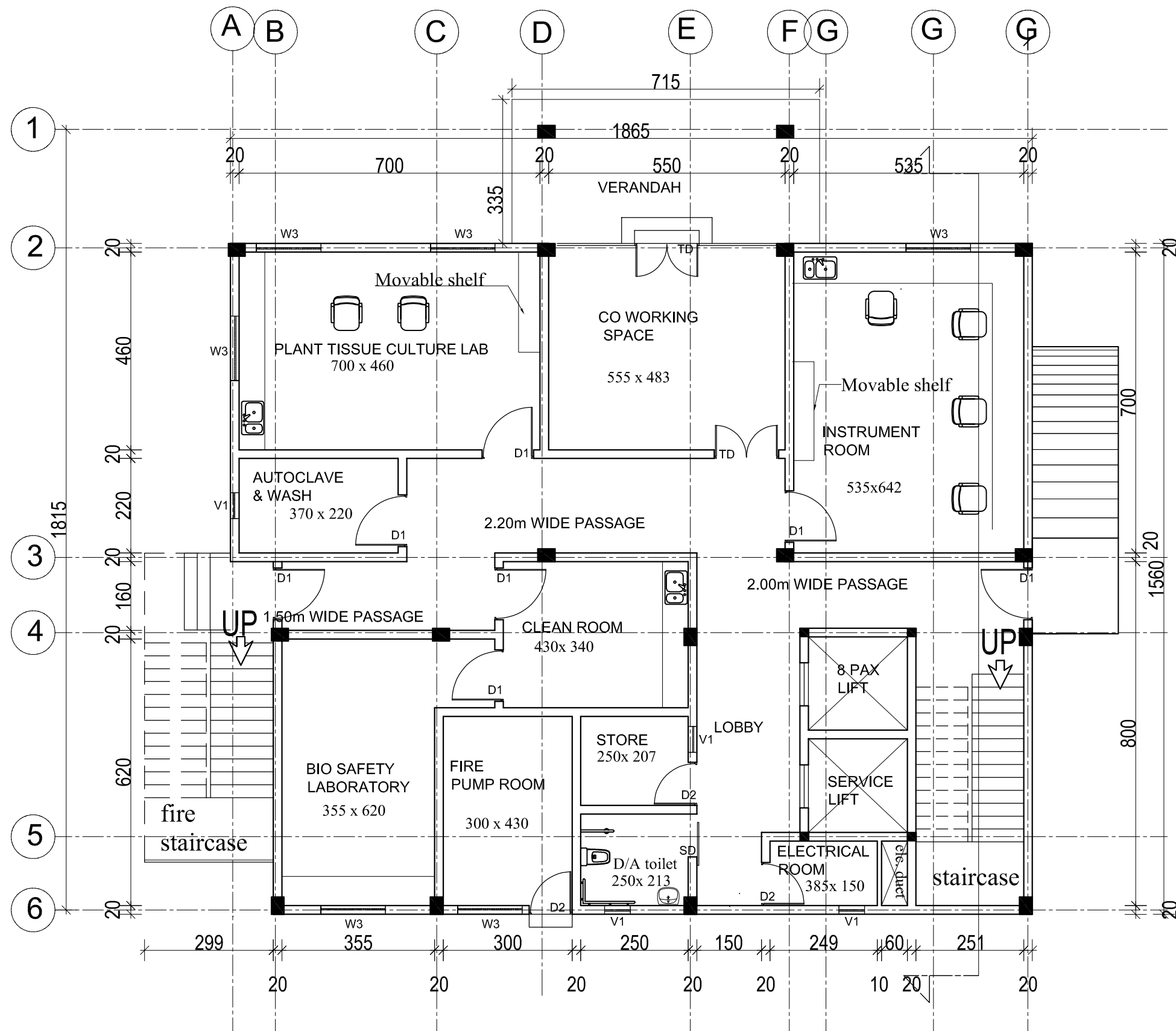
**Construction of Multi Storied Building Facilitate
Academic activities(Academic Complex, Translational
Research Laboratory and Academic Incubator Centre) at
Karyavattom Campus,Trivandrum**

WAP/INFRA/KERALA/2025/KUA/507

Date: 29-03-2025

Volume-II DRAWINGS

ARCHITECTURAL



DOOR & WINDOW SCHEDULE			
SNO.	NAME	DESCRIPTION	SIZE
1.	D	Main door	2x2.4m
2.	TD	Double door	1.5x2.4m
3.	D1	Door	1.2x2.4m
4.	D2	Door/ toilet door	1x2.1m
5.	D3	Toilet door	0.8x2.1m
6.	SD	Sliding door	1x2.1m
7.	W2	Window	1X1.5m
8.	W3	Window	1.5x1.5m
9.	V1	Ventilator	0.6x0.6m

AREA STATEMENT	
GROUND FLOOR	339.78 SQM
FIRST FLOOR	303.82 SQM
SECOND FLOOR	303.82 SQM
TERRACE	36.79 SQM
TOTAL B/UP AREA	985.01 SQM

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.



APPROVED BY -

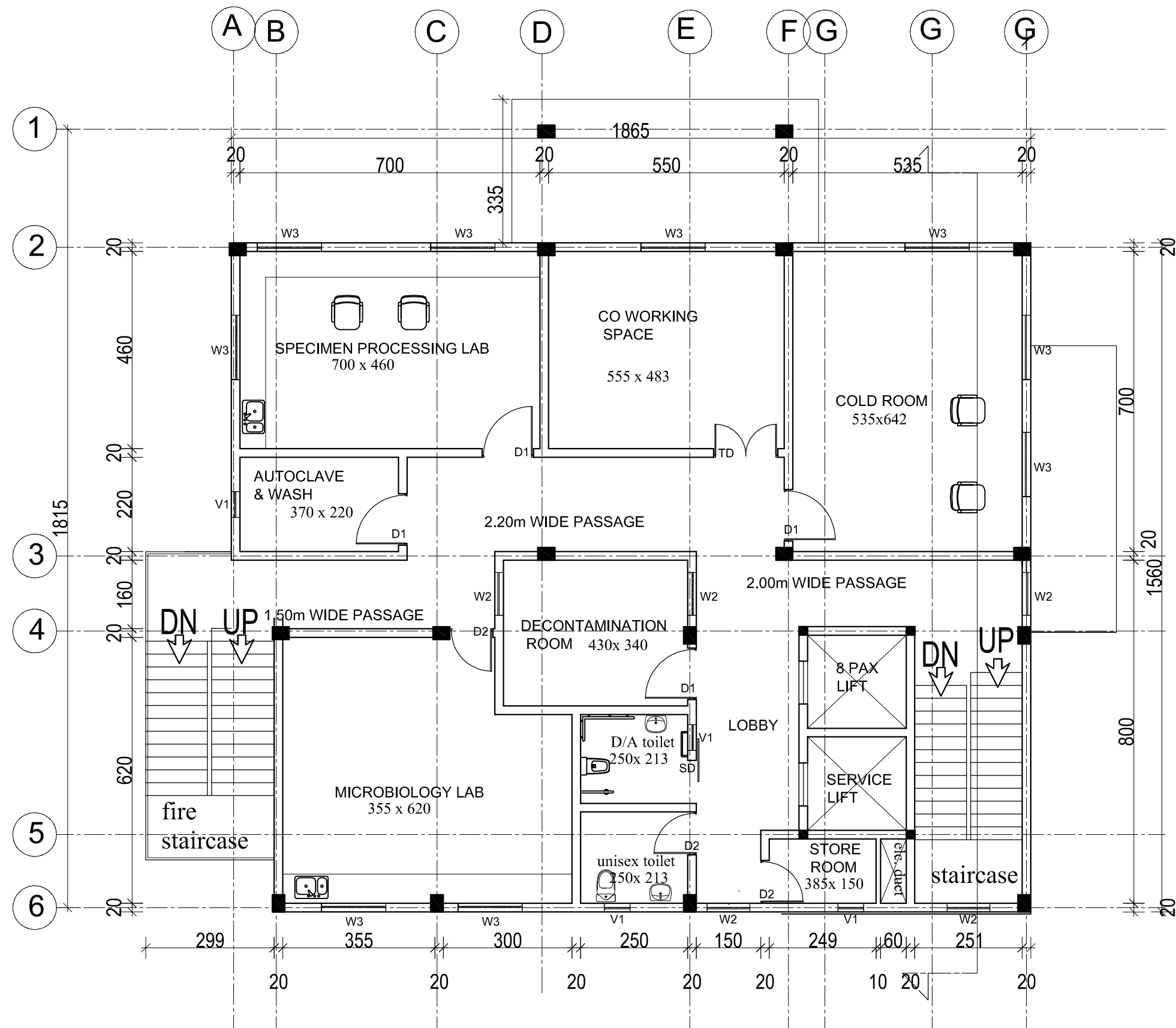
CHECKED BY -

REVISIONS		
NO.	DESCRIPTION	DATE

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

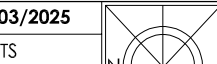
SHEET TITLE : PROPOSED TRANSLATIONAL RESEARCH LABORATORY
GROUND FLOOR PLAN

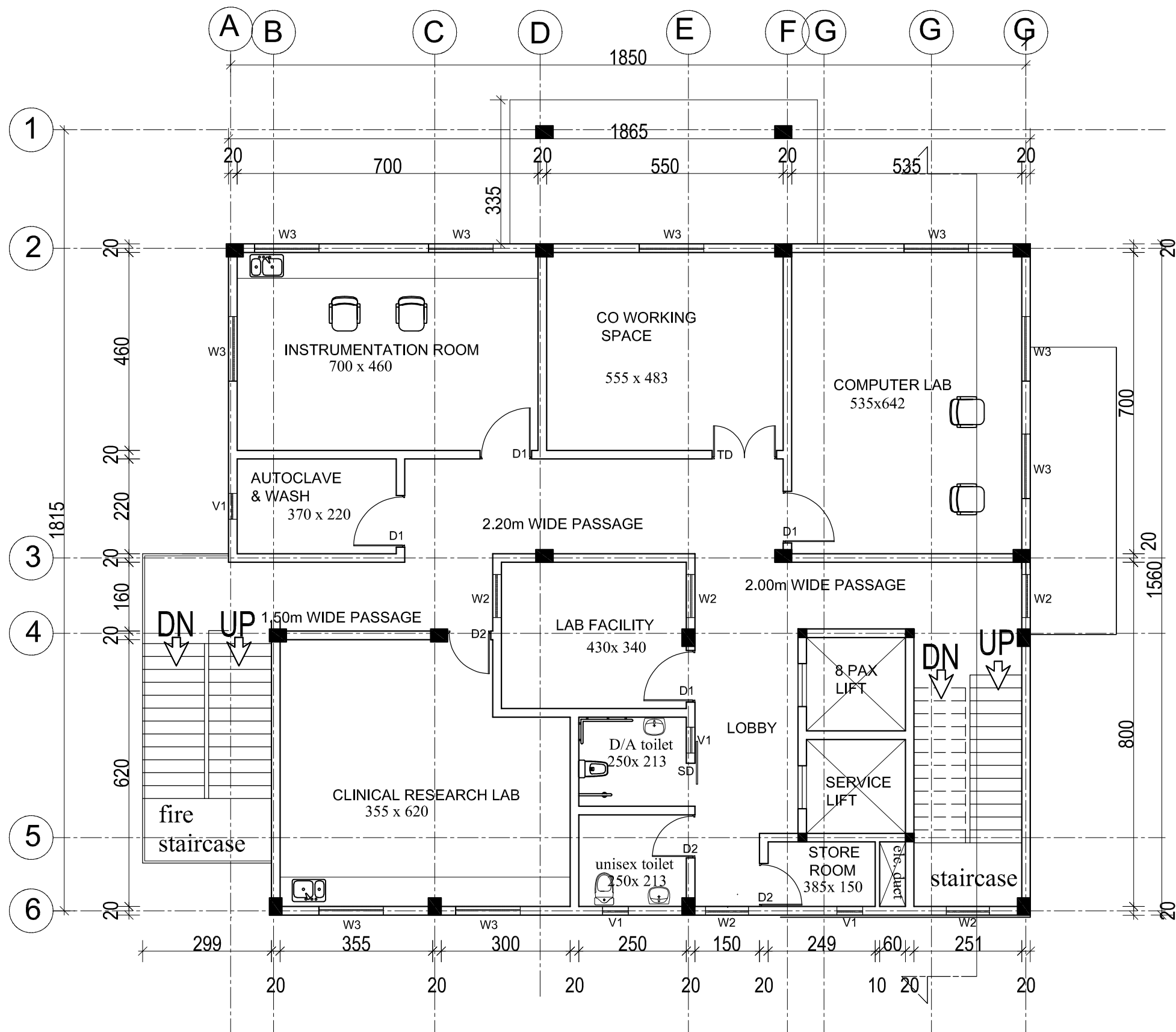
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SCALE : NTS	
SHEET SIZE : A3	
SHEET NO :	
DRAWN BY :	
DRAWING NO :	
DRAWING STATUS : FOR TENDER	



DOOR & WINDOW SCHEDULE			
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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	
				NO.	DESCRIPTION	DATE		SCALE : NTS	
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								SHEET NO :	
								DRAWN BY :	
SHEET TITLE : PROPOSED TRANSLATIONAL RESEARCH LABORATORY FIRST FLOOR PLAN								DRAWING NO :	
								DRAWING STATUS : FOR TENDER	



DOOR & WINDOW SCHEDULE			
SNO.	NAME	DESCRIPTION	SIZE
1.	D	Main door	2x2.4m
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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 TRANSLATIONAL RESEARCH LABORATORY
SECOND FLOOR PLAN

DATE : 29/03/2025

SCALE : NTS

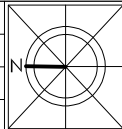
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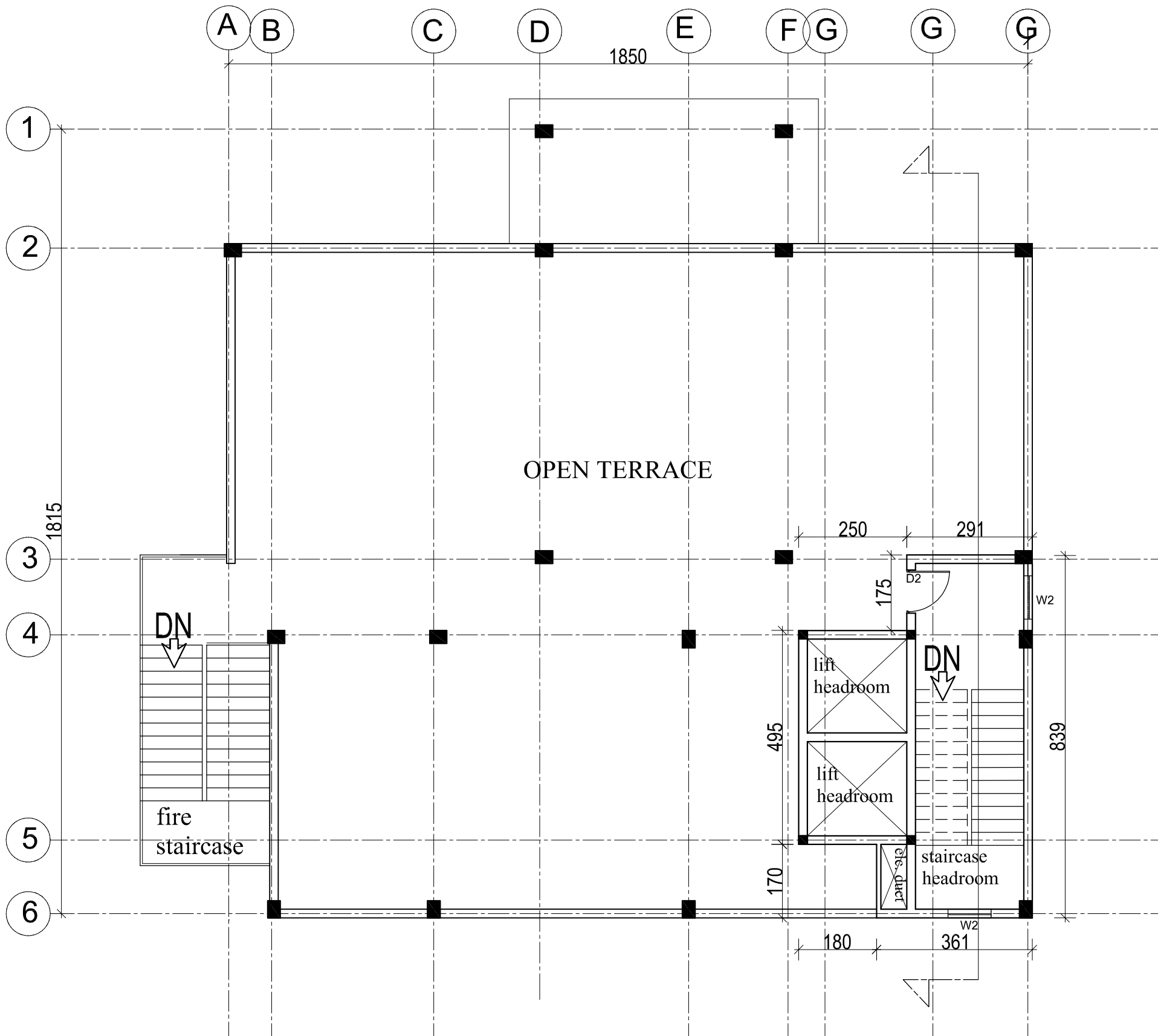
SHEET NO :

DRAWN BY :

DRAWING NO :

DRAWING STATUS : FOR TENDER

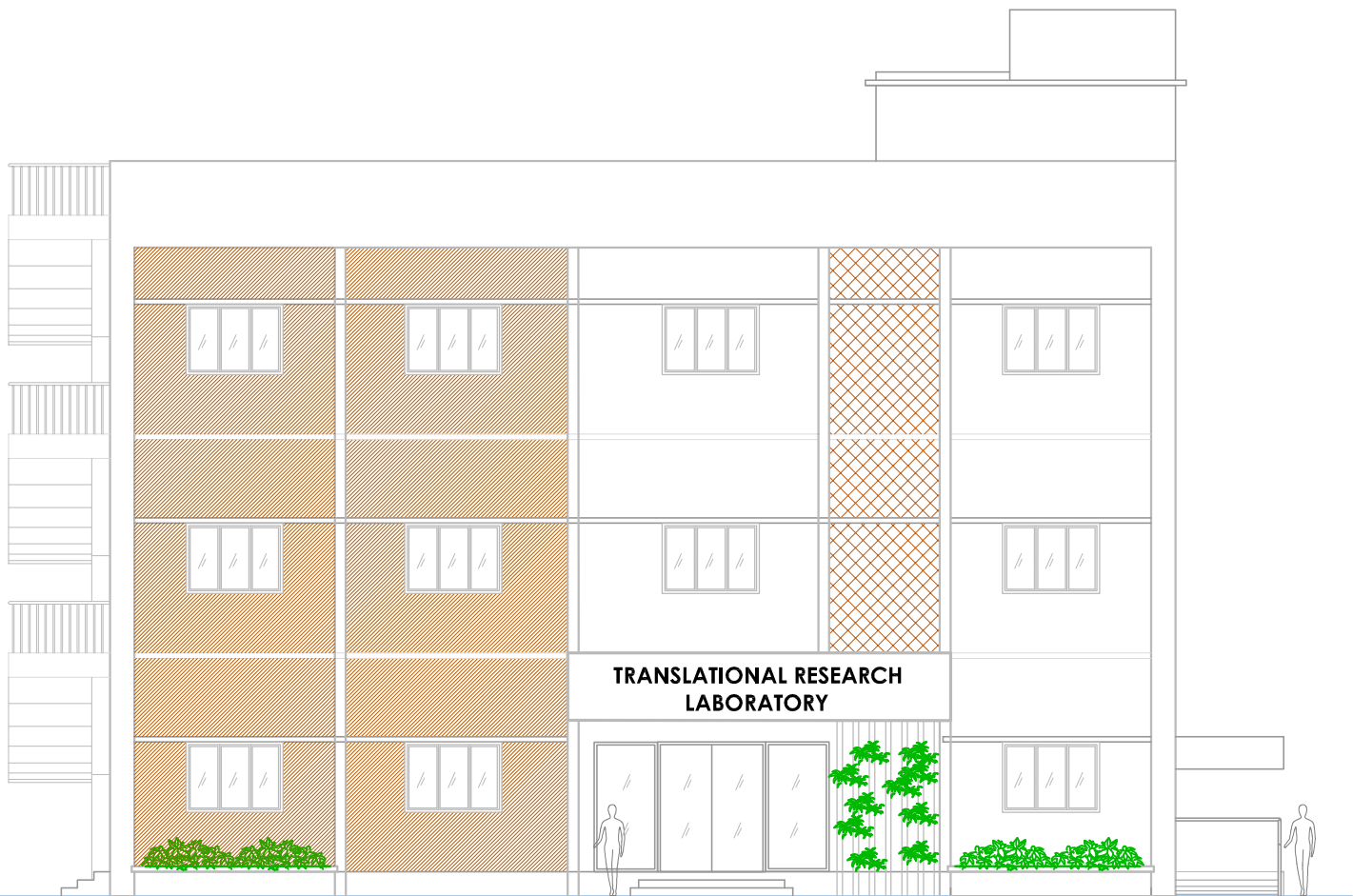




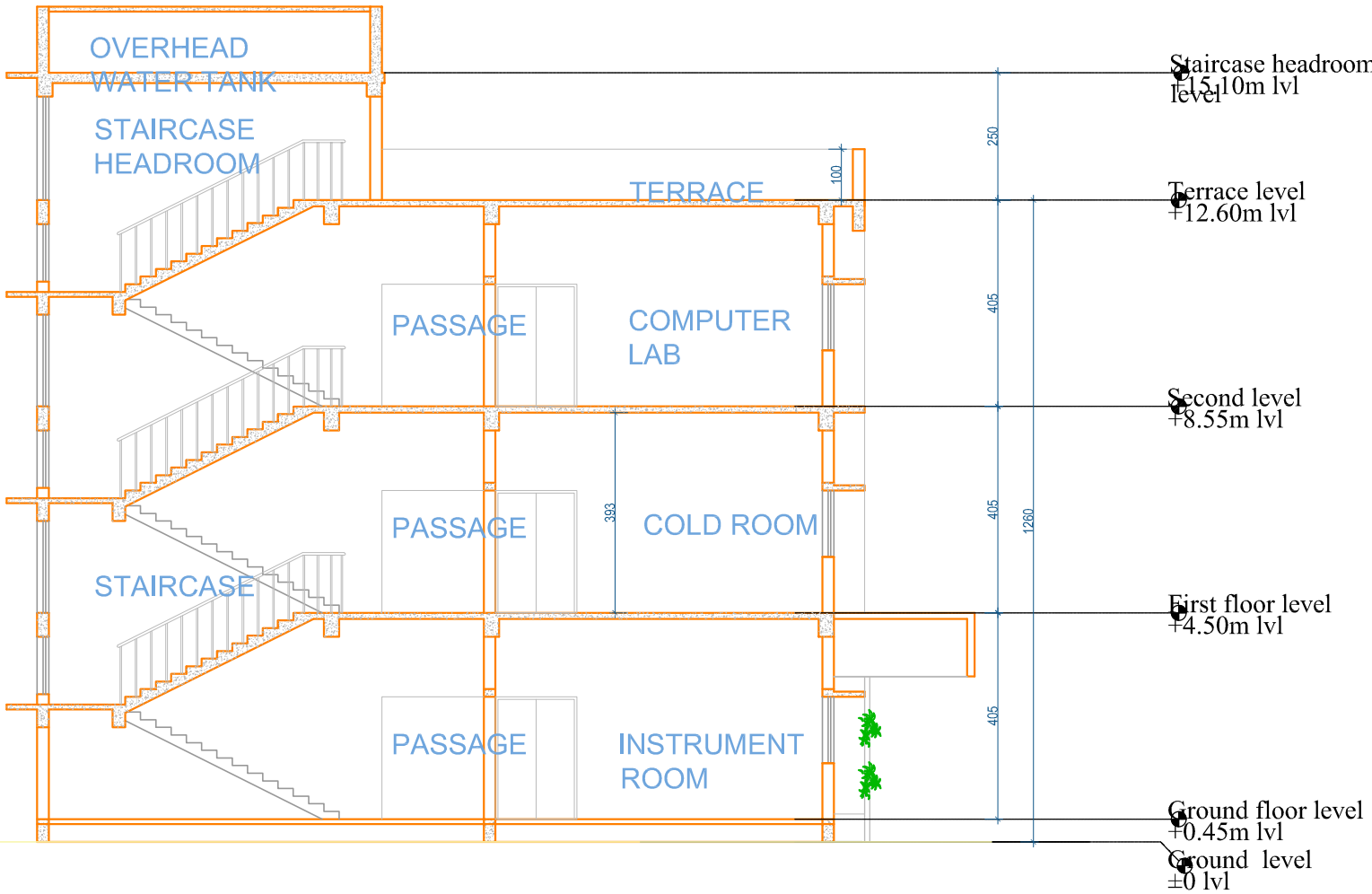
DOOR & WINDOW SCHEDULE			
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				NO.	DESCRIPTION	DATE		SCALE : NTS		
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								SHEET NO :		
								DRAWN BY :		
				SHEET TITLE : PROPOSED TRANSLATIONAL RESEARCH LABORATORY						
TERRACE PLAN							DRAWING STATUS : FOR TENDER			



PROPOSED TRANSLATIONAL RESEARCH LABORATORY
- FRONT ELEVATION



PROPOSED TRANSLATIONAL RESEARCH LABORATORY - SECTION

NOTES :
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APPROVED BY -

CHECKED BY -

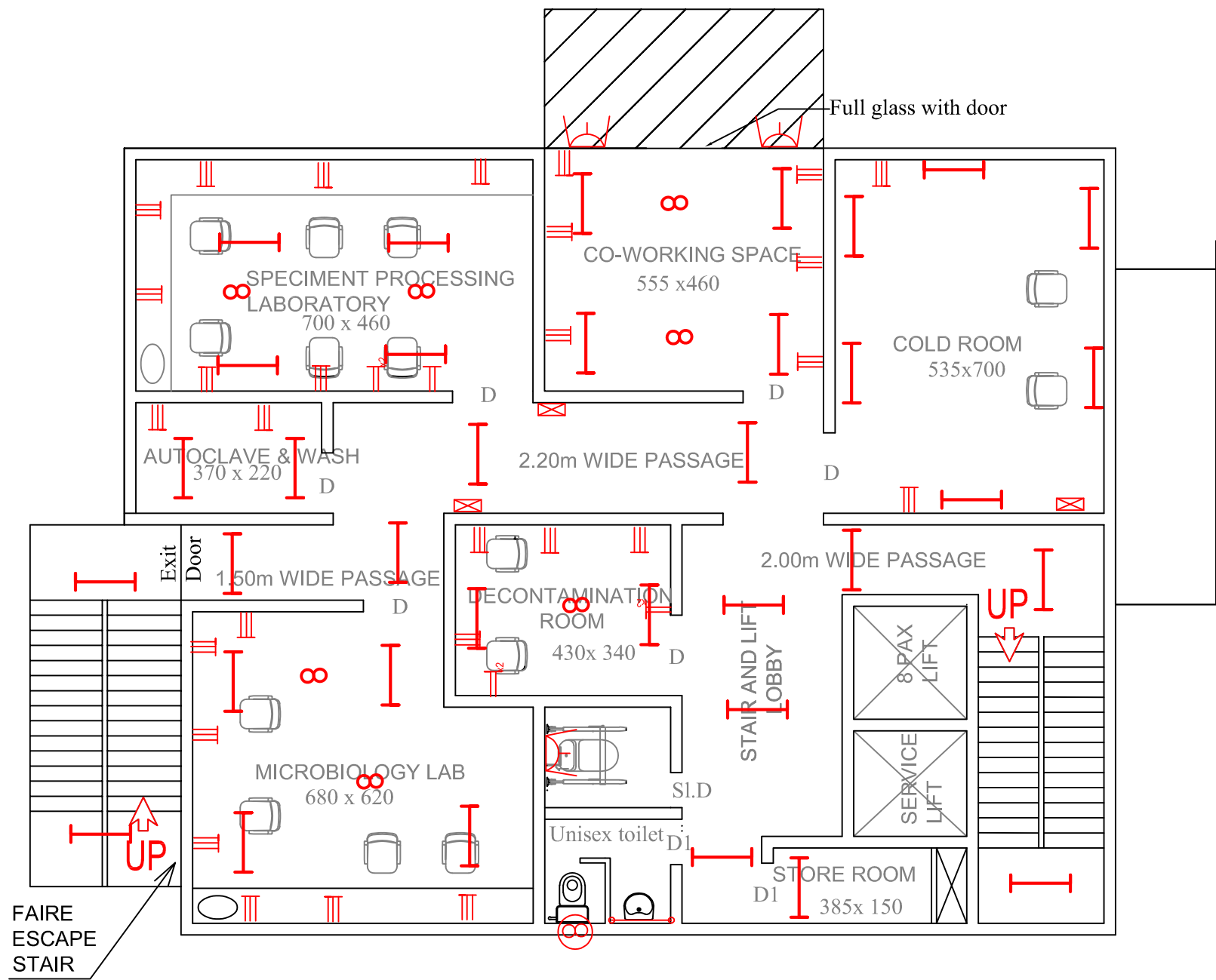
REVISIONS		
NO.	DESCRIPTION	DATE

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

**SHEET TITLE : PROPOSED TRANSLATIONAL RESEARCH LABORATORY
SECTION & ELEVATION**

DATE : 29/03/2025	
SCALE : NTS	
SHEET SIZE : A3	
SHEET NO :	
DRAWN BY :	
DRAWING NO :	
DRAWING STATUS : FOR TENDER	

ELECTRICAL



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

NOTES :

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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 TRANSLATIONAL RESEARCH LABORATORY
- FIRST FLOOR ELECTRICAL LAYOUT

DATE : 10/03/2025

SCALE : NTS

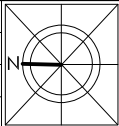
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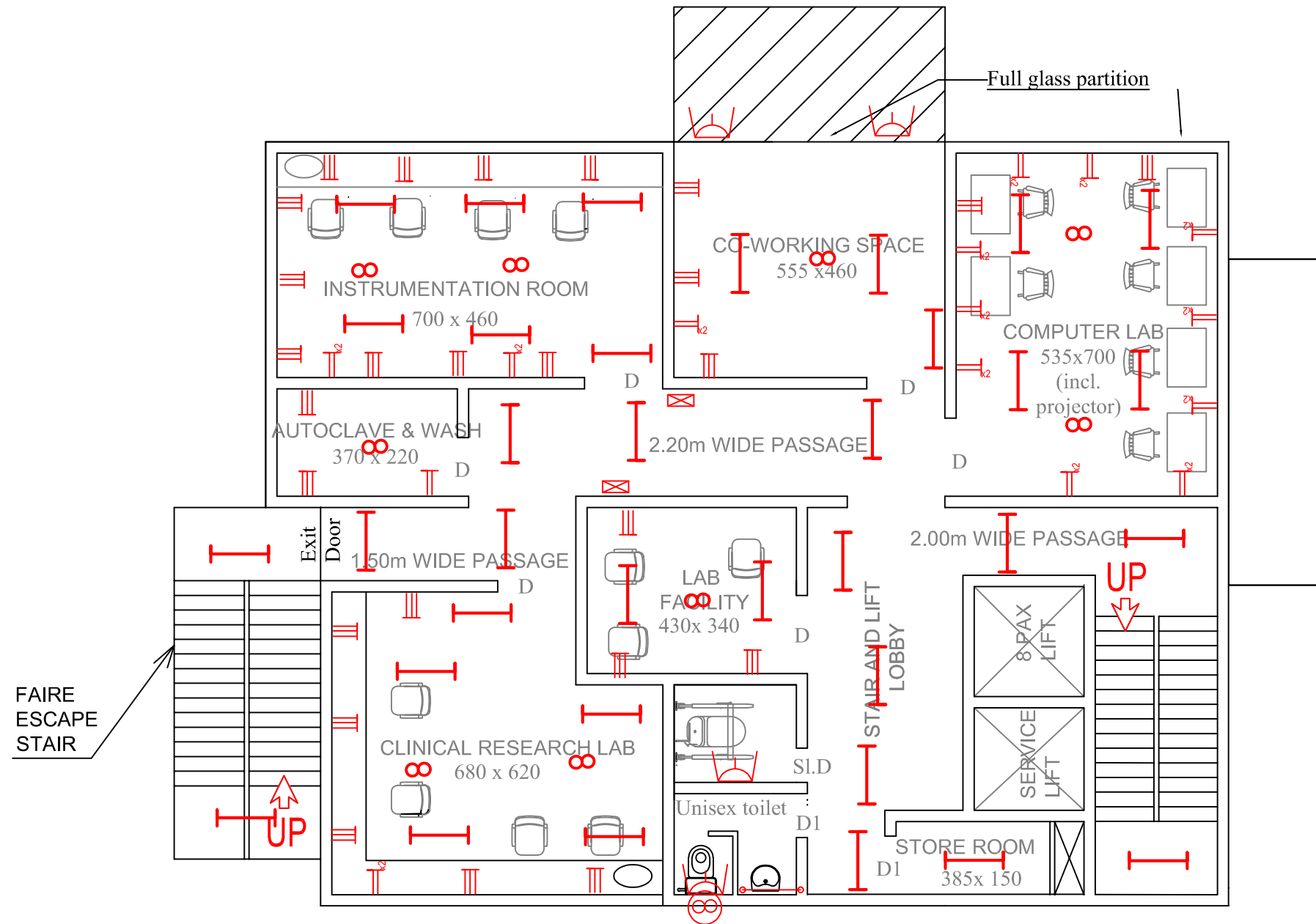
SHEET NO :

DRAWN BY :

DRAWING NO :

DRAWING STATUS :





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

NOTES :

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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 TRANSLATIONAL RESEARCH LABORATORY
- SECOND FLOOR ELECTRICAL LAYOUT

DATE : 10/03/2025

SCALE : NTS

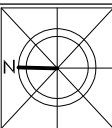
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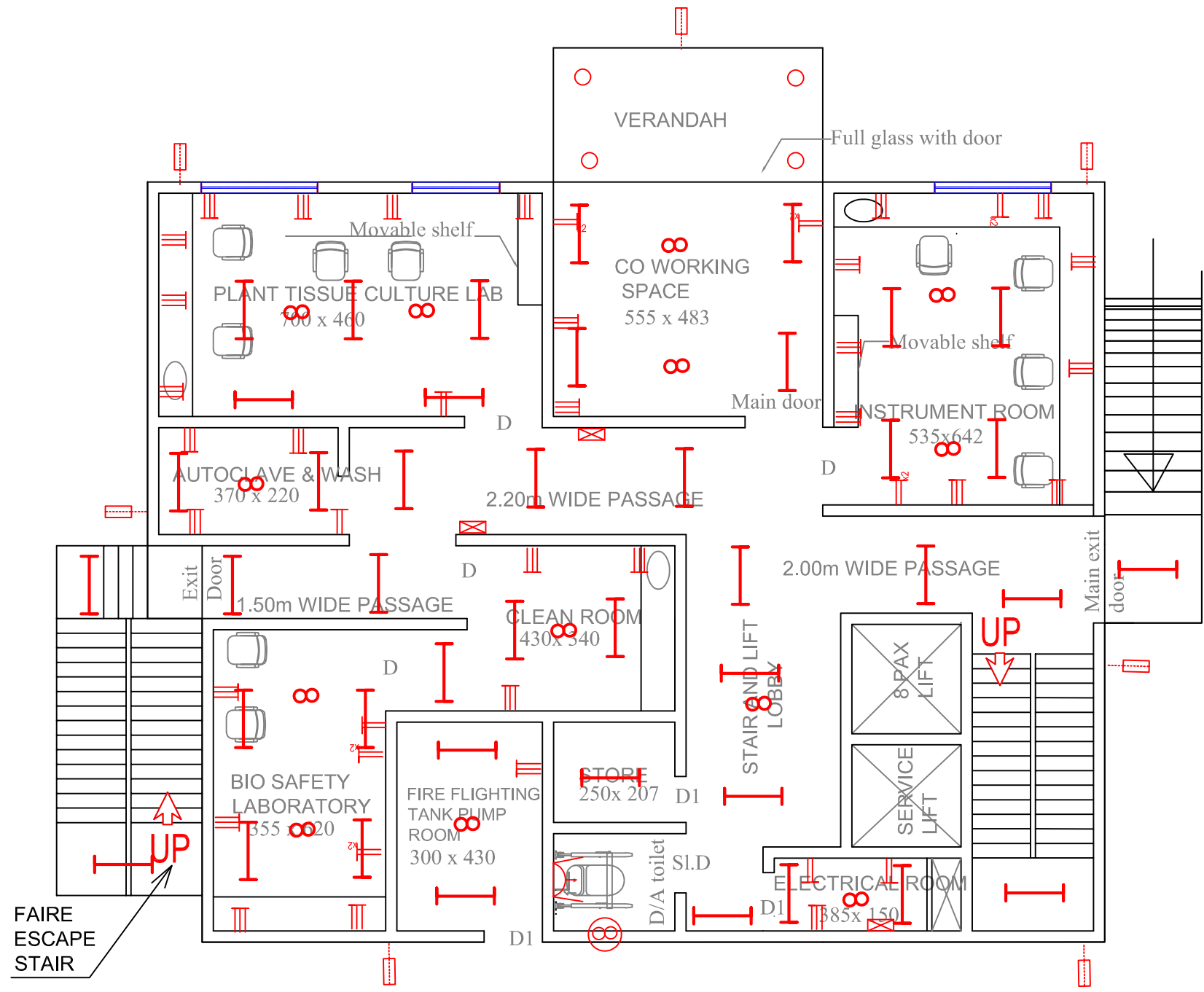
SHEET NO :

DRAWN BY :

DRAWING NO :

DRAWING STATUS :





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

NOTES :
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APPROVED BY -

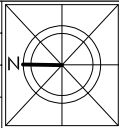
CHECKED BY -

REVISIONS		
NO.	DESCRIPTION	DATE

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

SHEET TITLE : PROPOSED TRANSLATIONAL RESEARCH LABORATORY
- GROUND FLOOR ELECTRICAL LAYOUT

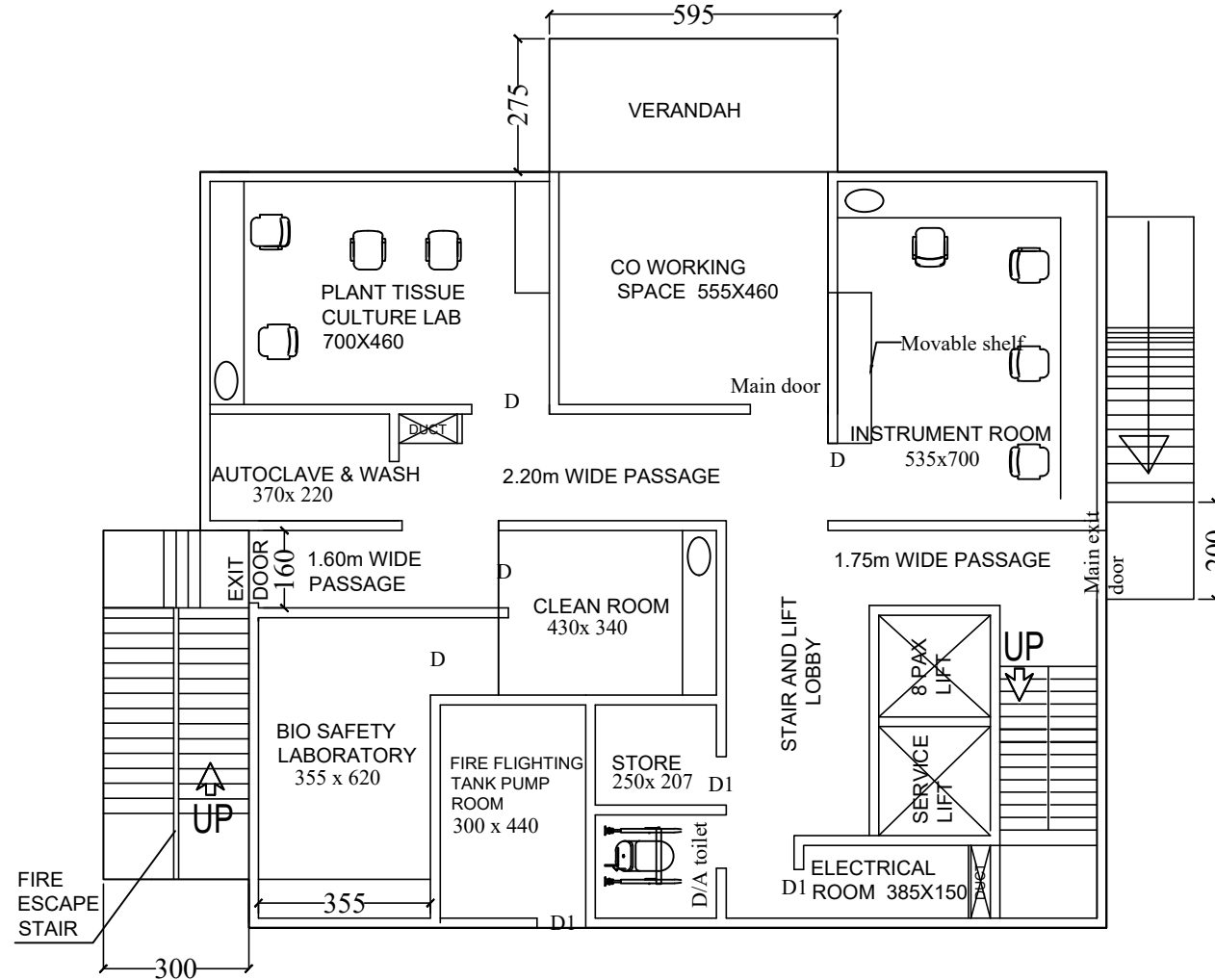
DATE : 10/03/2025
SCALE : NTS
SHEET SIZE : A3
SHEET NO : **DRAWN BY :** **DRAWING NO :** **DRAWING STATUS :**



STRUCTURAL

1. STRUCTURAL DRAWINGS OF THE PROPOSED TRANSLATIONAL RESEARCH LABORATORY AT KARIYAVATTOM CAMPUS

1.1 ARCHITECTURAL PLAN OF GROUND FLOOR



GROUND FLOOR PLAN -321.48 sqm

PROJECT

PROPOSED TRANSLATIONAL
RESEARCH LABORATORY.
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 : 321.48 Sqm
First Floor : 305.12 Sqm
Second Floor : 305.12 Sqm
Total : 931.72 Sqm

PROJECT NUMBER

2

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



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 :

19- 03- 2025

DESIGNED:

Dr M.M KHAN. Ph.D

DRAWN:

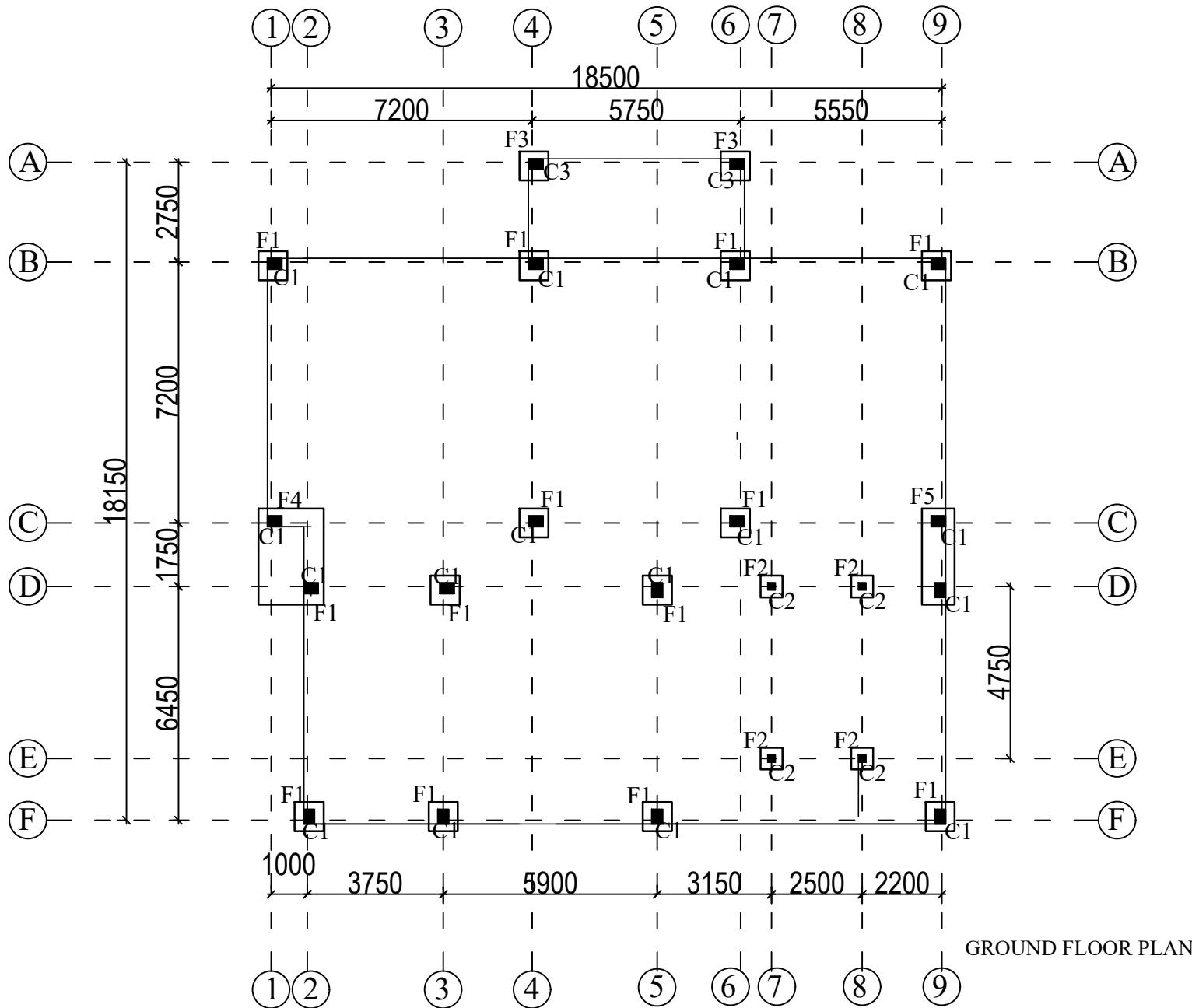
JASMINE.TOMY

PLATE NO: 01

SCALE-1:100,All Dimensions are in CM

2. STRUCTURAL LAYOUT PLAN OF SUB-STRUCTURE

2.1 FOUNDATION DETAILS



GROUND FLOOR PLAN

PROJECT

PROPOSED TRANSLATIONAL
RESEARCH LABORATORY .
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 : 321.48 Sqm
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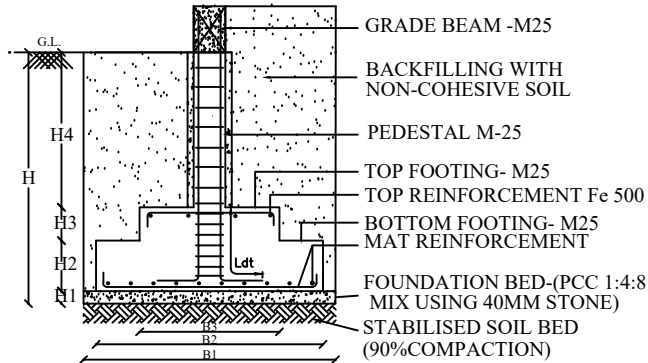
JASMINE.TOMY

PLATE NO: 02

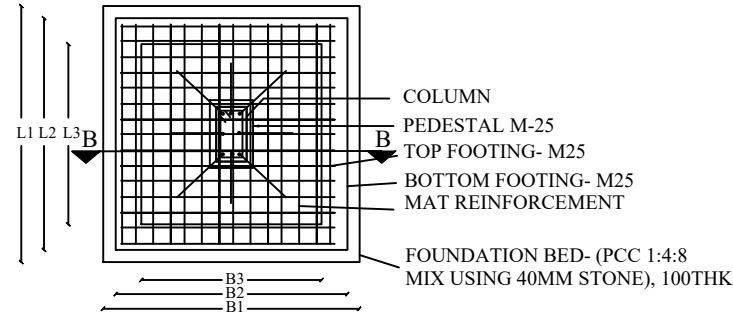
SCALE-1:100,All Dimensions are in Millimeter

3. STRUCTURAL DETAILS OF FOUNDATION

ISOLATED STEPPED FOOTING -TYPICAL DESIGN



MAT REINFORCEMENT DETAILS



SECTIONAL PLAN

SPECIAL NOTES

1. THE MINIMUM DEPTH OF FOUNDATION :1.5M BGL
2. S.B.C OF THE SOIL ASSUMED : 25 t/M²
3. GRADE OF CONCRETE : M25
4. GRADE OF STEEL : Fe500
5. CLEAR COVER : 50mm

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.	F1	2000	2000	1500	2000	2000	100	1800	1800	300	1500	1500	400	Y12 @ 150 C/C BOTH WAYS	Y10 @ 250 C/C BOTH WAYS	600 mm for Y12 & 500 mm for Y10	600 mm for Y12 & 500 mm for Y10
2.	F2	1400	1400	1500	1400	1400	100	1200	1200	300	1000	1000	400	Y12 @ 150 C/C BOTH WAYS	Y10 @ 250 C/C BOTH WAYS	600 mm for Y12 & 500 mm for Y10	600 mm for Y12 & 500 mm for Y10
3.	F3	1500	1500	1500	1500	1500	100	1200	1200	600	-	-	-	Y12 @ 150 C/C BOTH WAYS	Y10 @ 250 C/C BOTH WAYS	600 mm for Y12 & 500 mm for Y10	600 mm for Y12 & 500 mm for Y10
4.	F4	3750	3000	1500	3750	3000	100	3500	2800	300	3200	2600	400	Y12 @ 150 C/C BOTH WAYS	Y10 @ 250 C/C BOTH WAYS	600 mm for Y12 & 500 mm for Y10	600 mm for Y12 & 500 mm for Y10
5.	F5	3750	2000	1500	3750	2000	100	3600	1800	300	3200	1600	400	Y12 @ 150 C/C BOTH WAYS	Y10 @ 250 C/C BOTH WAYS	600 mm for Y12 & 500 mm for Y10	600 mm for Y12 & 500 mm for Y10

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

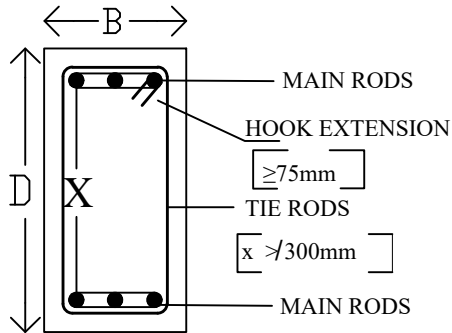
PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF FOUNDATION
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 03

Y-Shakh
Project Management &
Consultancy Services

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Thirumullavaram P.O. Kollam - 12
e-mail: yshakhpmcs@gmail.com
Ph: +91 9447126629
Office: 0474-2792700

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

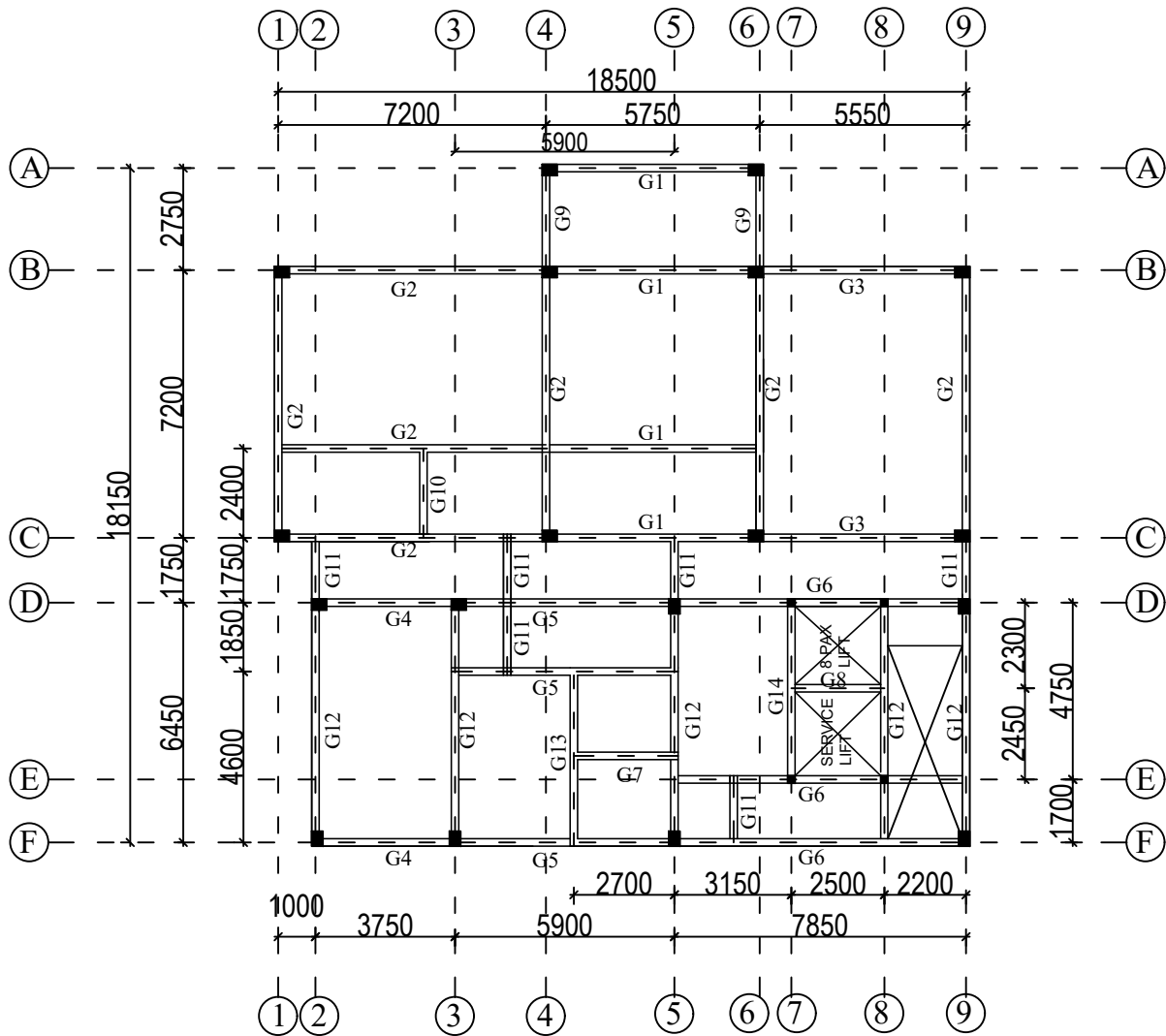
GROUP	C.S DIMENSION B X D	REINFORCEMENT		CRITICAL ZONES			SPACING OF TIES AT CRITICAL ZONE		CROSS SECTION DETAILS	TIE ARRANGEMENT
		MAIN	TIES	Dev: Length Ld (mm)	Lap length Ls (mm)	Confined Length L0 (mm)	Ss(mm)	SO(mm)		
C1	300 x 600	4 Y 20 + 8 Y 16	Y 8 @ 150 C/C	1000 mm for Y 20 & 800 mm for Y16	800 mm for Y 20 & 640 mm for Y16	1200 mm	Y8@ 100mm/ c/c	Y8@ 75mm/ c/c		4 Legged
C2	250 x 250	6 Y 12	Y 8 @ 150 C/C	600 mm for Y12	500 mm for Y12	500 mm	Y8@ 100mm/ c/c	Y8@ 75mm/ c/c		2 Legged
C3	300 x 300	4 Y 16 + 4 Y 12	Y 8 @ 150 C/C	800 mm for Y16 & 600 mm for Y12	640 mm for Y16 & 500 mm for Y12	600 mm	Y8@ 100mm/ c/c	Y8@ 75mm/ c/c		4 Legged

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. 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
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF COLUMNS	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 04	

5. STRUCTURAL LAYOUT PLAN OF GRADE BEAMS



5-1 DETAILS OF GRADE BEAM

GROUP	EFF:SPAN (IN MM)
G1	5750
G2	7200
G3	5550
G4	3750
G5	5900
G6	7850
G7	2700
G8	2500
G9	2750
G10	2400
G11	1700,1750,1850
G12	6450
G13	4600
G14	4750

PROJECT

PROPOSED TRANSLATIONAL
RESEARCH LABORATORY .
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF GRADE BEAMS

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

PROJECT NUMBER

2

GENERAL NOTE

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drawings
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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

CLIENTCONSULTANT

STRUCTURAL CONSULTANT

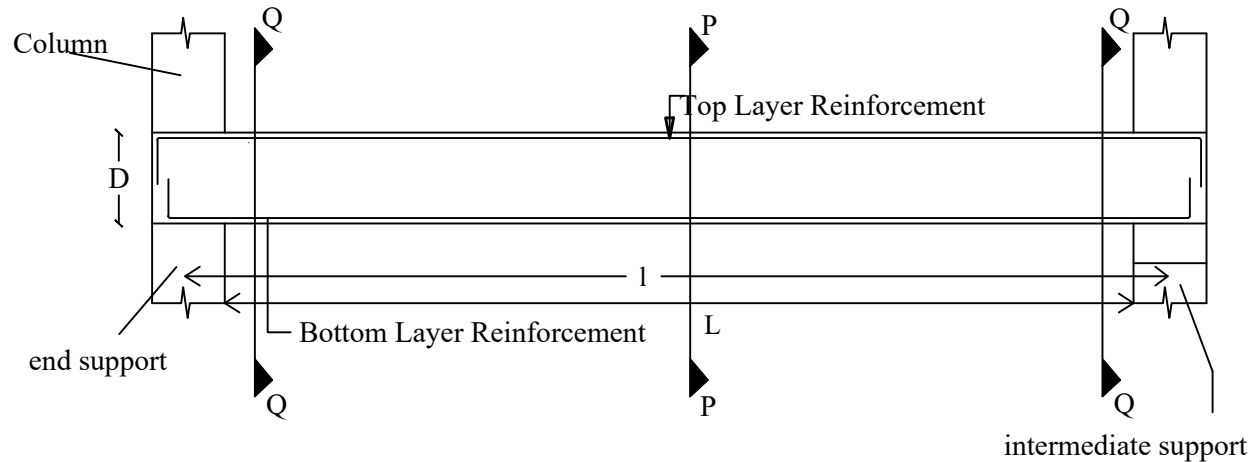


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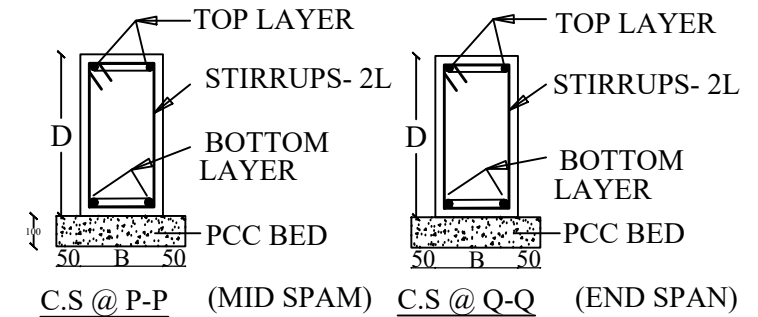
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Ph: +91 9447126629
Office: 0474-2792700

6. STRUCTURAL DETAILS OF GRADE BEAMS - TYPICAL DESIGN CONCEPT

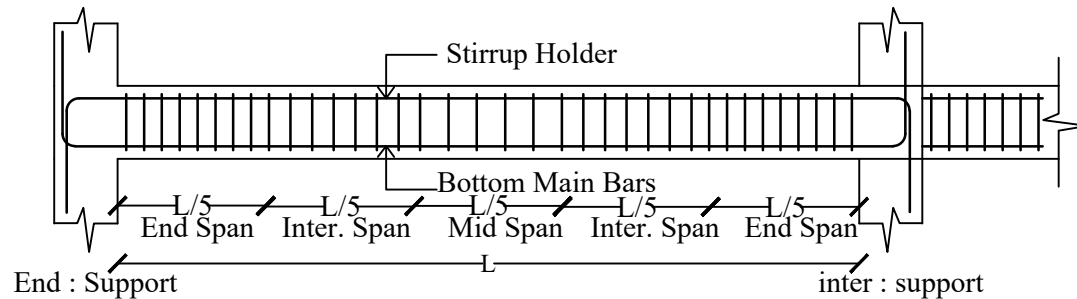
6.1 ARRANGEMENT OF MAIN BARS IN RAFT SLAB BEAMS



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

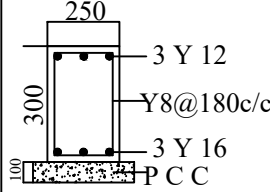
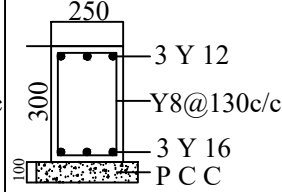
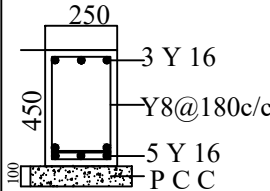
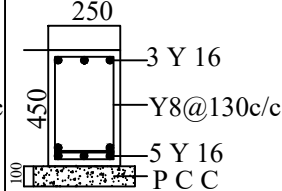
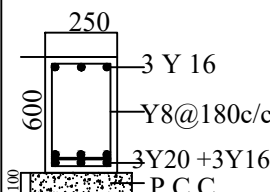
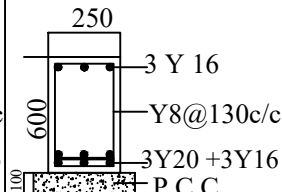
PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF GRADE BEAMS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 06

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

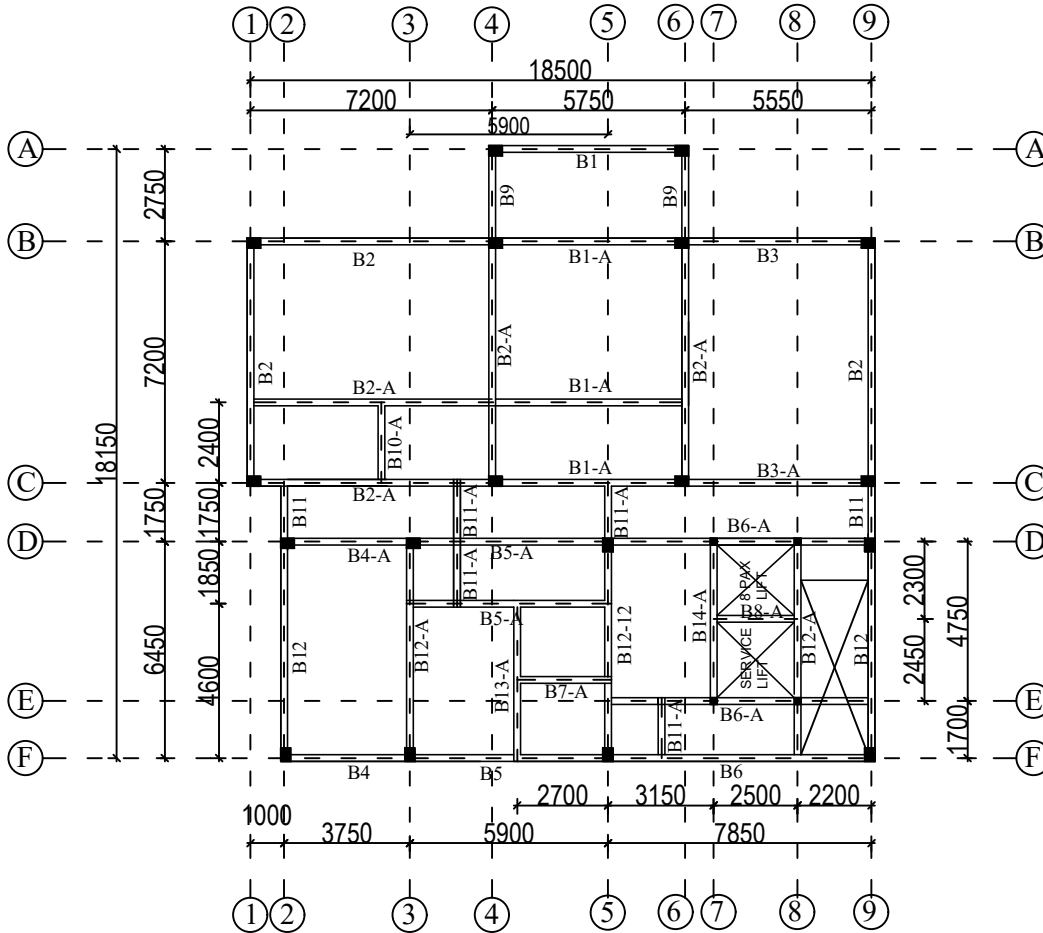
GROUP	CLEAR SPAN L	C.S DIMENSION BXD	REINFORCEMENT DETAILS			CRITICAL ZONES			TYPICAL SECTION	
			BOTTOM MAIN BARS	TOP MAIN BARS	STIRRUP (GENERAL)	LAP Ls	DEVP: Ld	CONFINED L0	MID SPAN SECTION CS @ P-P	END SPAN SECTION CS @ Q-Q
G4 G7 G8 G9 G10 G11	1700 to 3750	250 x 300	3 Y 16	3 Y 12	Y8@130 to 180 c/c	800mm for Y 16 600mm for Y12	800mm for Y 16 600mm for Y12	600mm		
G1 G3 G5 G13 G14	4600 to 5900	250 x 450	5 Y 16	3 Y 16	Y8@130 to 180 c/c	800mm for Y 16	800mm for Y 16	800mm		
G2 G6 G12	6450 to 7850	300 x 600	3 Y 20 + 3 Y 16	4 Y 16	Y8@130 to 180 c/c	800mm for Y 16	800mm for Y 16	1000mm		

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. 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
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF GRADE BEAMS	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 07	

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



DETAILS OF ROOF BEAM

Group			EFF: Span (In mm)
1.	B1 L-Beam	B1-A T-Beam	5750
2.	B2 L-Beam	B2-A T-Beam	7200
3.	B3 L-Beam	B3-A T-Beam	5550
4.	B4 L-Beam	B4-A T-Beam	3750
5.	B5 L-Beam	B5-A T-Beam	5900
6.	B6 L-Beam	B6-A T-Beam	7850
7.	—	B7-A T-Beam	2700
8.	—	B8-A T-Beam	2500
9.	B9 L-Beam	—	2750
10.	—	B10-A T-Beam	2400
11.	B11 L-Beam	B11-A T-Beam	1700,1750,1850
12.	B12 L-Beam	B12-A T-Beam	6450
13.	—	B13-A T-Beam	4600
14.	—	B14-A T-Beam	4750

ROOF BEAM DETAILS

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

SPECIAL NOTES:

1. BEAMS HAVE BEEN DESIGNED INDIVIDUALLY BASED ON THEIR STRUCTURAL BEHAVIOUR AND DIFFERENT SECTION ARE PROVIDED FOR EACH BEAM. FOR PRACTICAL PURPOSE BIGGEST SECTION MAY BE PROVIDED FOR CONTINUOUS BEAMS .

PROJECT

PROPOSED TRANSLATIONAL
RESEARCH LABORATORY .
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF ROOF BEAMS

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

PROJECT NUMBER

2

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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Office: 0474-2792700

Ref.No:

YSCASE,194/2025

DATE :

19- 03- 2025

DESIGNED:

Dr M.M KHAN. Ph.D

DRAWN:

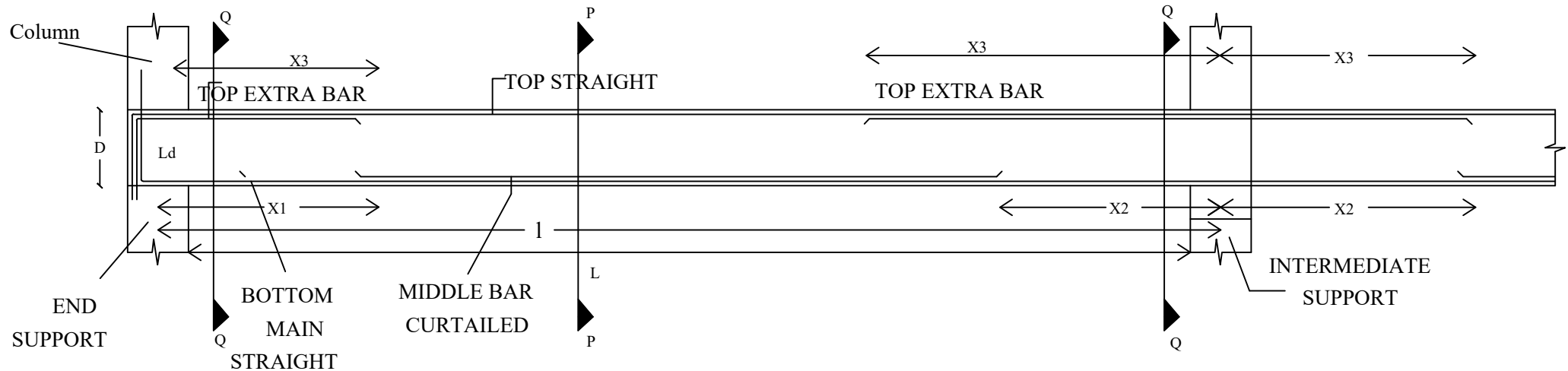
JASMINE.TOMY

PLATE NO: 08

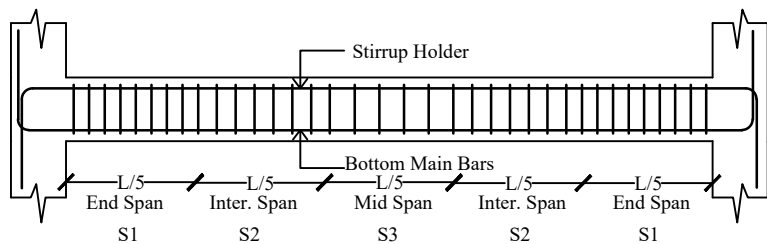
SCALE-1:100,All Dimensions are in Millimeter

9. STRUCTURAL DETAILS OF ROOF BEAMS - TYPICAL DESIGN CONCEPT

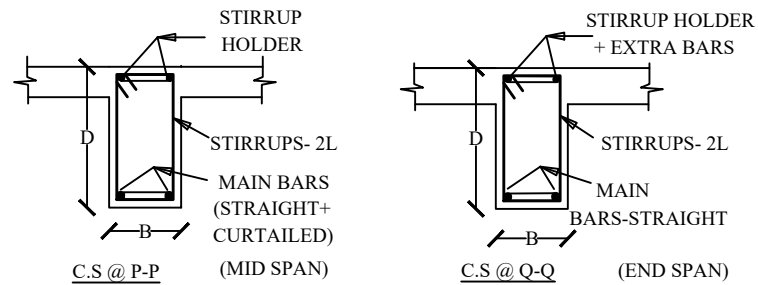
9-1 BEAMS - TYPICAL ARRANGEMENT OF REINFORCEMENTS IN BEAMS



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
 I = 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 TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

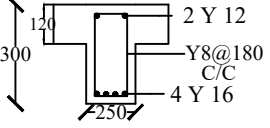
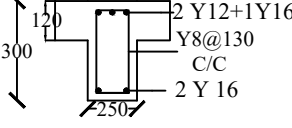
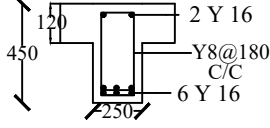
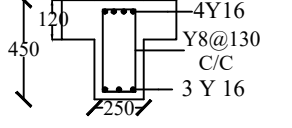
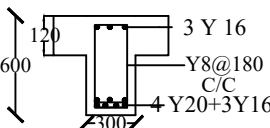
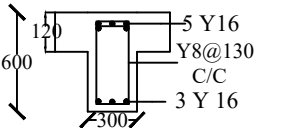
STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	REINFORCEMENT DETAILS OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 09

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

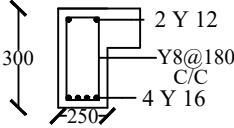
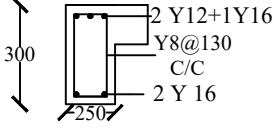
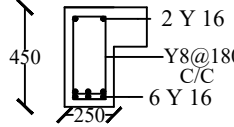
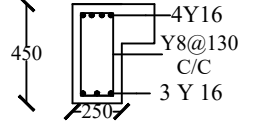
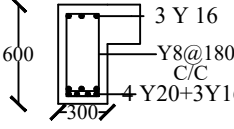
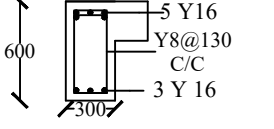
T - BEAM

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		
B4 B7 B8 B10 B11	1700 to 3750	250 x 300	2 Y 16	2 Y 16	2 Y 12	1 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	600mm		
B1 B3 B5 B13 B14	4600 to 5900	250 x 450	3 Y 16	3 Y 16	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	900mm		
B2 B6 B12	6450 to 7850	300 x 600	3 Y 16	4 Y 20	3 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	1200mm		

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. 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
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 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		
B4 B7 B8 B9 B11	1700 to 3750	250 x 300	2 Y 16	2 Y 16	2 Y 12	1 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	600mm		
B1 B3 B5	4600 to 5900	250 x 450	3 Y 16	3 Y 16	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	900mm		
B2 B6 B12	6450 to 7850	300 x 600	3 Y 16	4 Y 20	3 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	1200mm		

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. 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
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS	
f.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 11	



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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 450	5550	5750	680	860	1390	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	7000	7200	720	1080	1750	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 450	5350	5550	560	840	1340	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 300	3550	3750	380	570	890	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 450	5700	5900	590	890	1430	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 TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 12



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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	7650	7850	790	1180	1920	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
B7A	250 x 300	2500	2700	N.A	N.A	N.A	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 80 mm C/C
B8A	250 x 300	2300	2500	N.A	N.A	N.A	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 80 mm C/C
B9	250 x 300	2550	2750	N.A	N.A	N.A	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 80 mm C/C
B10-A	250 x 300	2200	2400	N.A	N.A	N.A	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 80 mm C/C

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 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,B11A	250 x 300	1500 to 1650	1700 to 1850	N.A	N.A	N.A	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 150 mm C/C	Y8@ 80 mm C/C
B12,B12A	250 x 600	6250	6450	650	970	1570	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
B13A	250 x 450	4400	4600	460	690	1100	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
B14A	250 x 450	4550	4750	480	720	1140	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 TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF BEAMS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 14

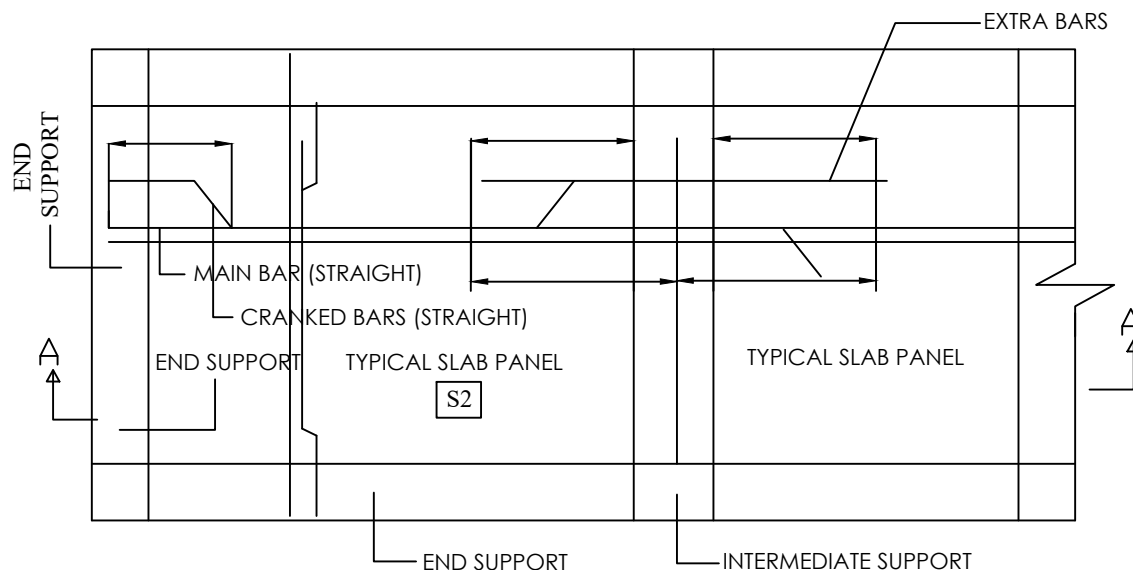


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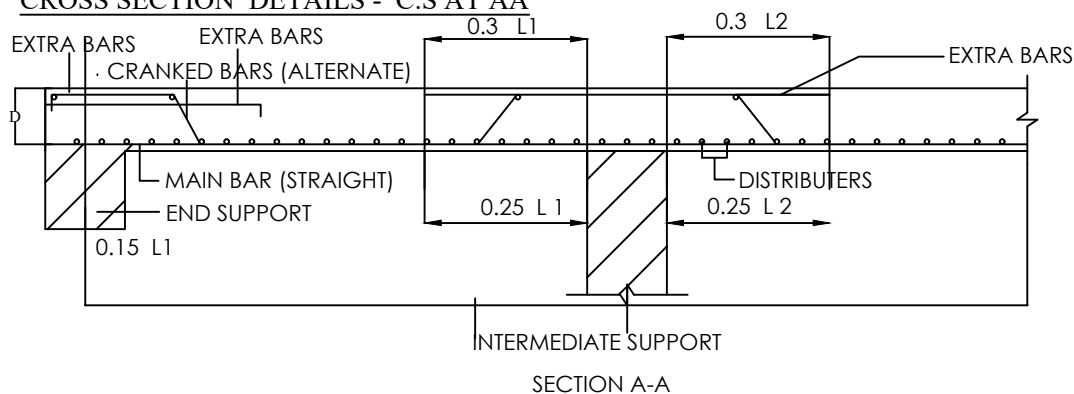
Y- Shakh, Nalanda Nagar-97
Thirumullavaram P.O. Kollam - 12
e-mail: yshakhpmcs@gmail.com
Ph: +91 9447126629
Office: 0474-2792700

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 | - 130 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 |

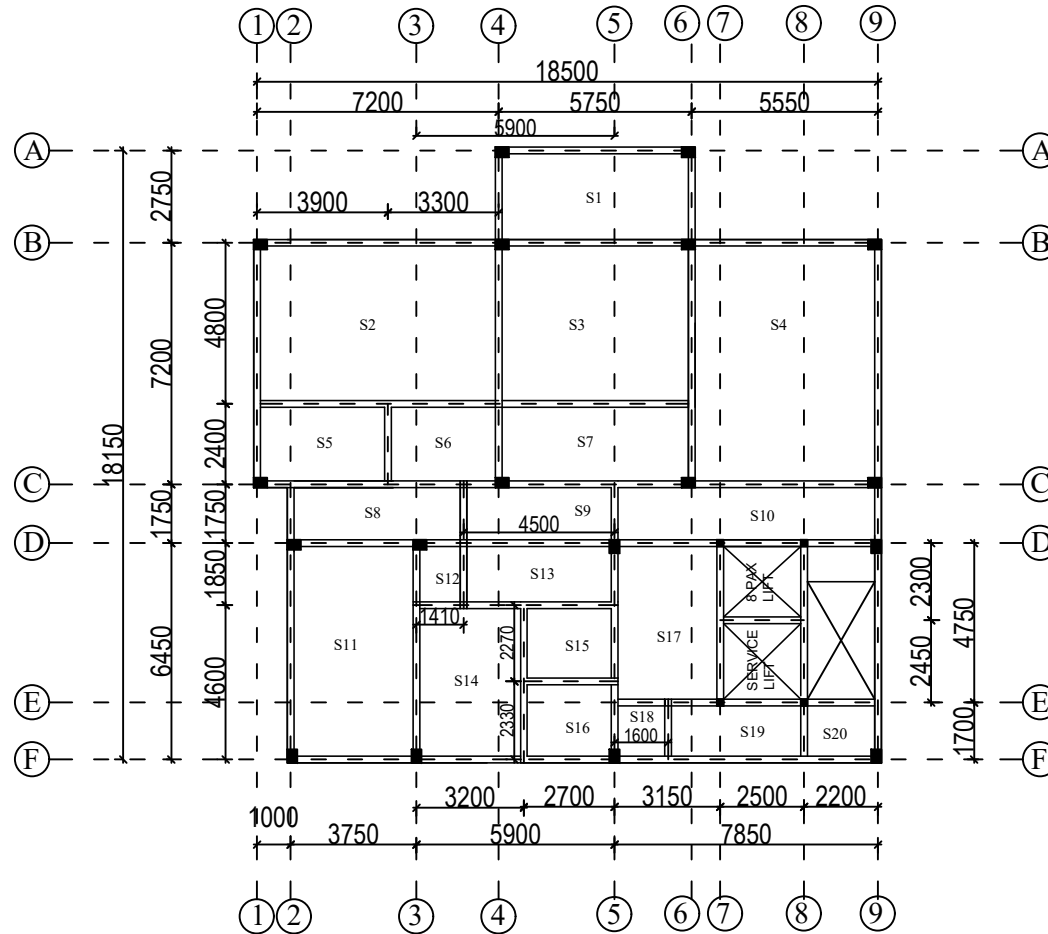
PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

PROJECT NUMBER	CLIENT	AREA : (sq.m)	DESIGNED:	DRAWN:	DELINEATION
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS
Ref.No: YSCASE,194/2025	DATE : 19- 03- 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 SLABS - GROUND FLOOR)



PROJECT

PROPOSED TRANSLATIONAL
RESEARCH LABORATORY .
STRUCTURAL DRAWING

DELINEATION

STRUCTURAL LAYOUT
PLAN OF ROOF SLAB

CLIENT

M/S WAPCOS LTD

LOCATION

KARIYAVATTOM CAMPUS
UNIVERSITY OF KERALA,
THIRUVANANTHAPURAM

AREA : (sq.m)

PROJECT NUMBER

2

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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Office: 0474-2792700

Ref.No:

YSCASE,194/2025

DATE :

19- 03- 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	5750 x 2750	One Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S2	7200 x 4800	Two Way Slab	10 Y@ 130 C/C	10 Y@ 150 C/C	
S3	5750 x 4800	Two Way Slab	10 Y@ 130 C/C	10 Y@ 150 C/C	
S4	5550 x 7200	Two Way Slab	10 Y@ 130 C/C	10 Y@ 150 C/C	
S5	3900 x 2400	Two Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S6	3300 x 2400	Two Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S7	5750 x 2400	One Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S8	5160 x 1750	One Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S9	4500 x 1750	One Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	
S10	7850 x 1750	One Way Slab	8 Y@ 130 C/C	8 Y@ 140 C/C	

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
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2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 17	

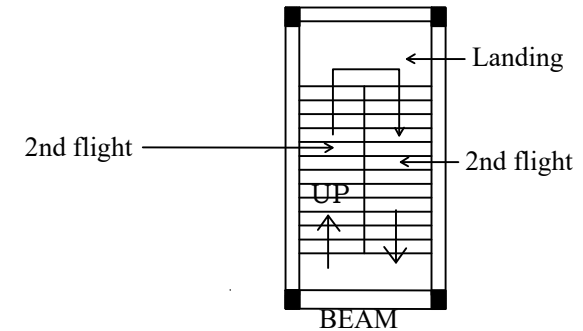
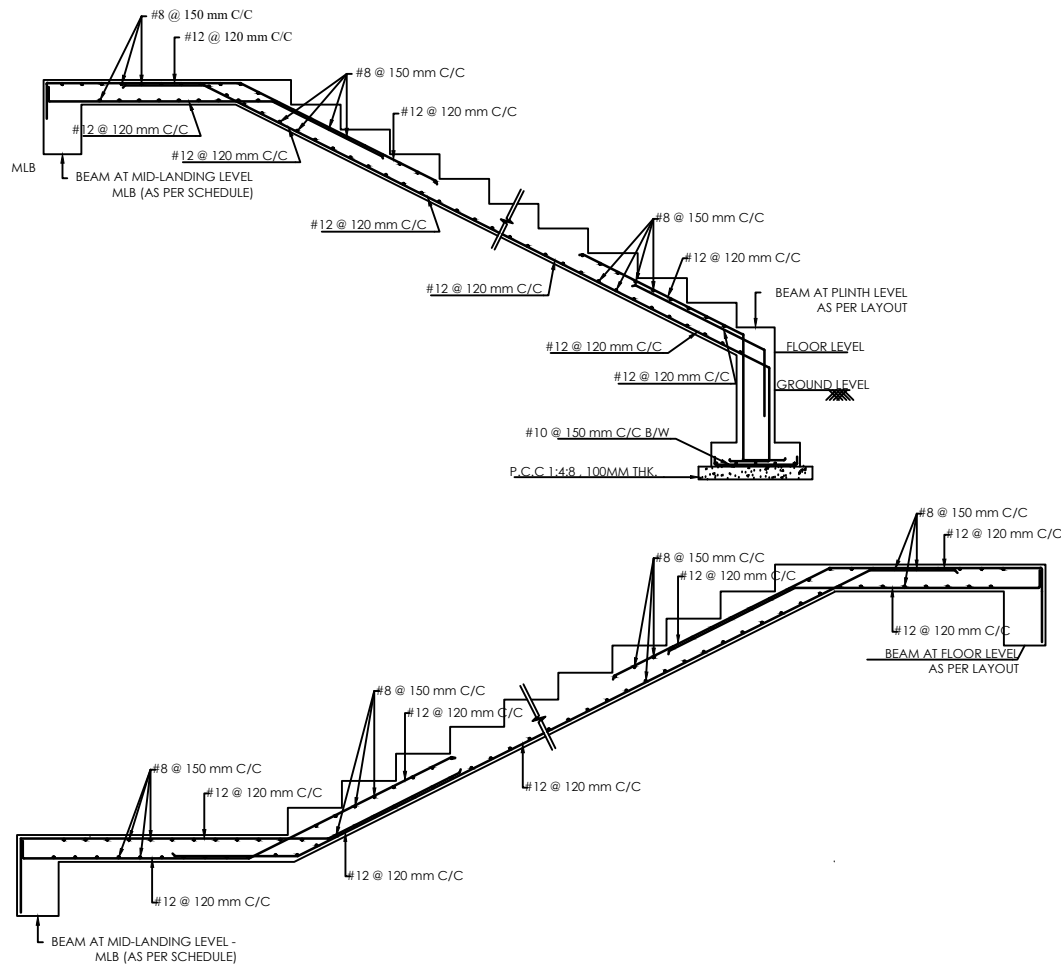
14-B-STRUCTURAL DETAILS OF ROOF BEAM - SPACE MANAGEMENT OF REINFORCEMENT

Sl.no	Size of the slab (L x B)	Catogory	Main Bar (Shorter span)	Distribution Bar (Longer Span)	Remarks
S11	3750 x 6450	Two Way Slab	10 Y @ 130 C/C	10 Y @ 150 C/C	
S12	1410 x 1850	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S13	4500 x 1850	One Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S14	3200 x 4600	Two Way Slab	10 Y @ 130 C/C	10 Y @ 150 C/C	
S15	2700 x 2270	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S16	2700 x 2330	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S17	3150 x 4750	Two Way Slab	10 Y @ 130 C/C	10 Y @ 150 C/C	
S18	1600 x 1700	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S19	4050 x 1700	One Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	
S20	2200 x 1700	Two Way Slab	8 Y @ 130 C/C	8 Y @ 140 C/C	

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING						STRUCTURAL CONSULTANT
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2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF ROOF SLABS	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 18	

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 TRANSLATIONAL RESEARCH LABORATORY. STRUCTURAL DRAWING

STRUCTURAL CONSULTANT

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2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	SCHEDULE OF STAIR


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 Office: 0474-2792700

Ref.No: YSCASE,194/2025

DATE : 19- 03- 2025

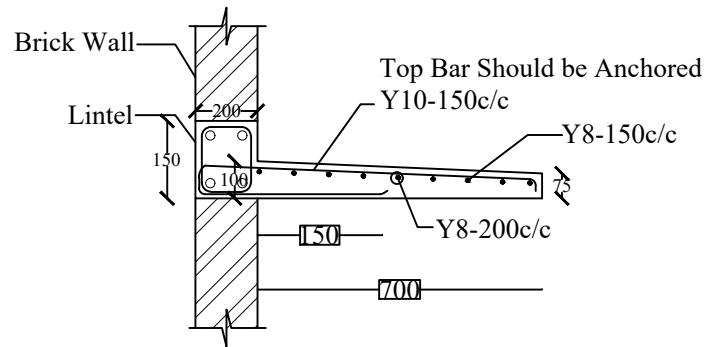
DRAWING ARE NOT IN SCALE

ALL DIMENSIONS ARE IN MM

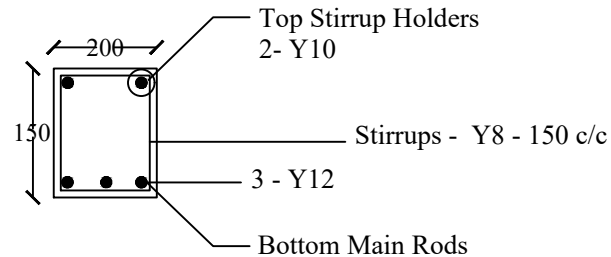
PLATE NO: 19

16. STRUCTURAL DETAILS OF MISCELLANEOUS PARAMETERS

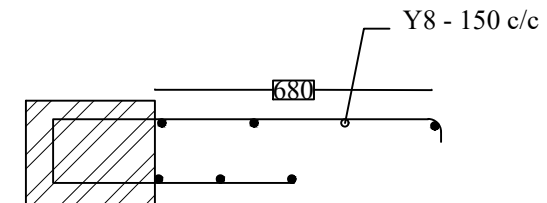
1 STRUCTURAL DETAILS OF SUN SHADE



2 STRUCTURAL DETAILS OF LINTEL



3 STRUCTURAL DETAILS OF SUN SHADE



SPECIAL NOTE

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

PROJECT : PROPOSED TRANSLATIONAL RESEARCH LABORATORY. 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
2	M/S WAPCOS LTD	Ground Floor : 321.48 Sqm First Floor : 305.12 Sqm Second Floor : 305.12 Sqm Total : 931.72 Sqm	Dr M.M KHAN. Ph.D	JASMINE.TOMY	STRUCTURAL DETAILS OF SUNSHADE & LINTEL	
Ref.No: YSCASE,194/2025	DATE : 19- 03- 2025	DRAWING ARE NOT IN SCALE	ALL DIMENSIONS ARE IN MM		PLATE NO: 20	