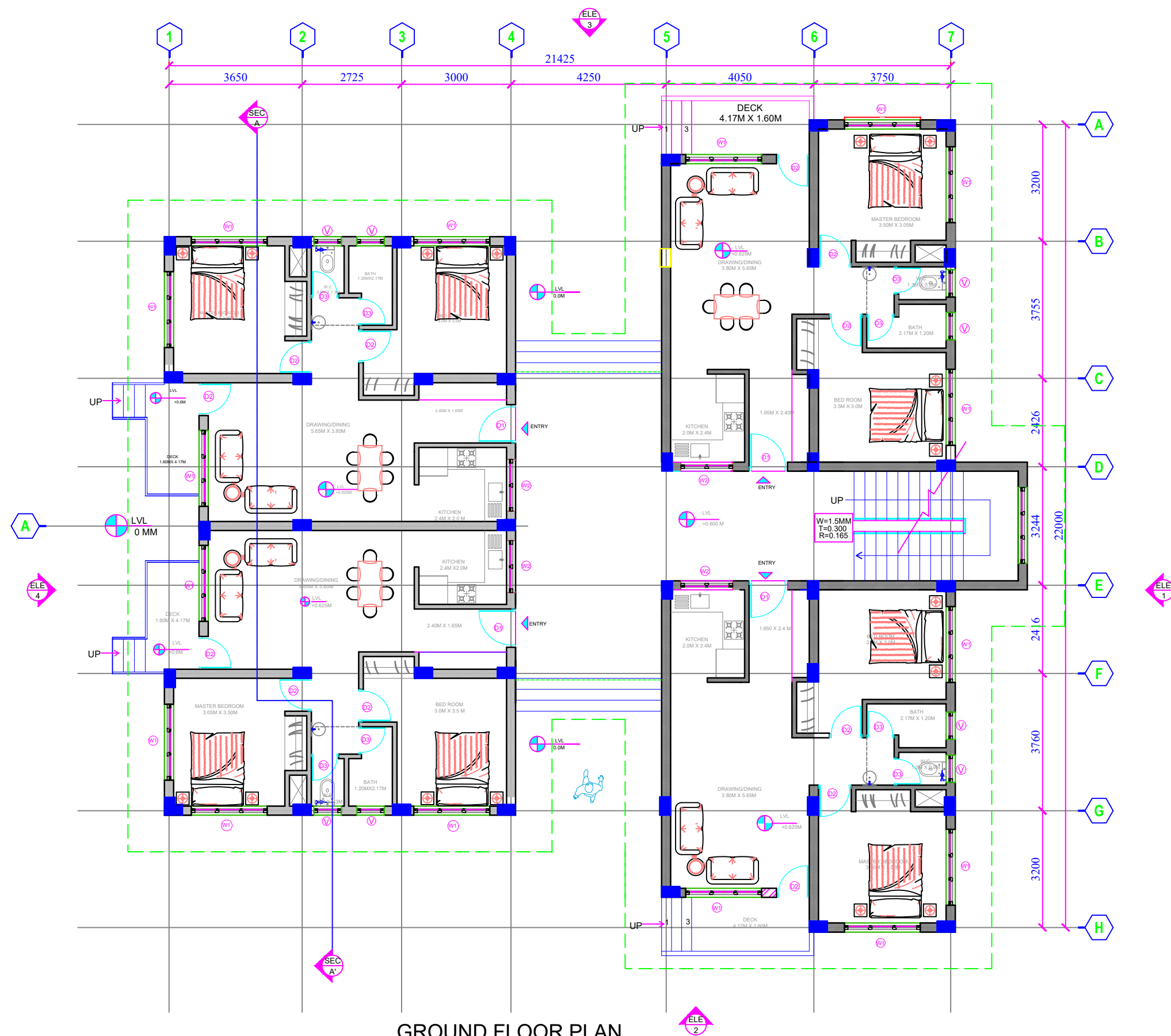




GROUND FLOOR PLAN

SCHEDULE OF OPENINGS

Sl.No.	Opening Type	Length	Height
1	D1	1200	2100
2	D2	1050	2100
3	D3	750	2100
4	V	750	1275
5	W1	2080	1560
6	W2	1200	1075

SHEET 1 OF 15

DETAILED PROJECT REPORT FOR

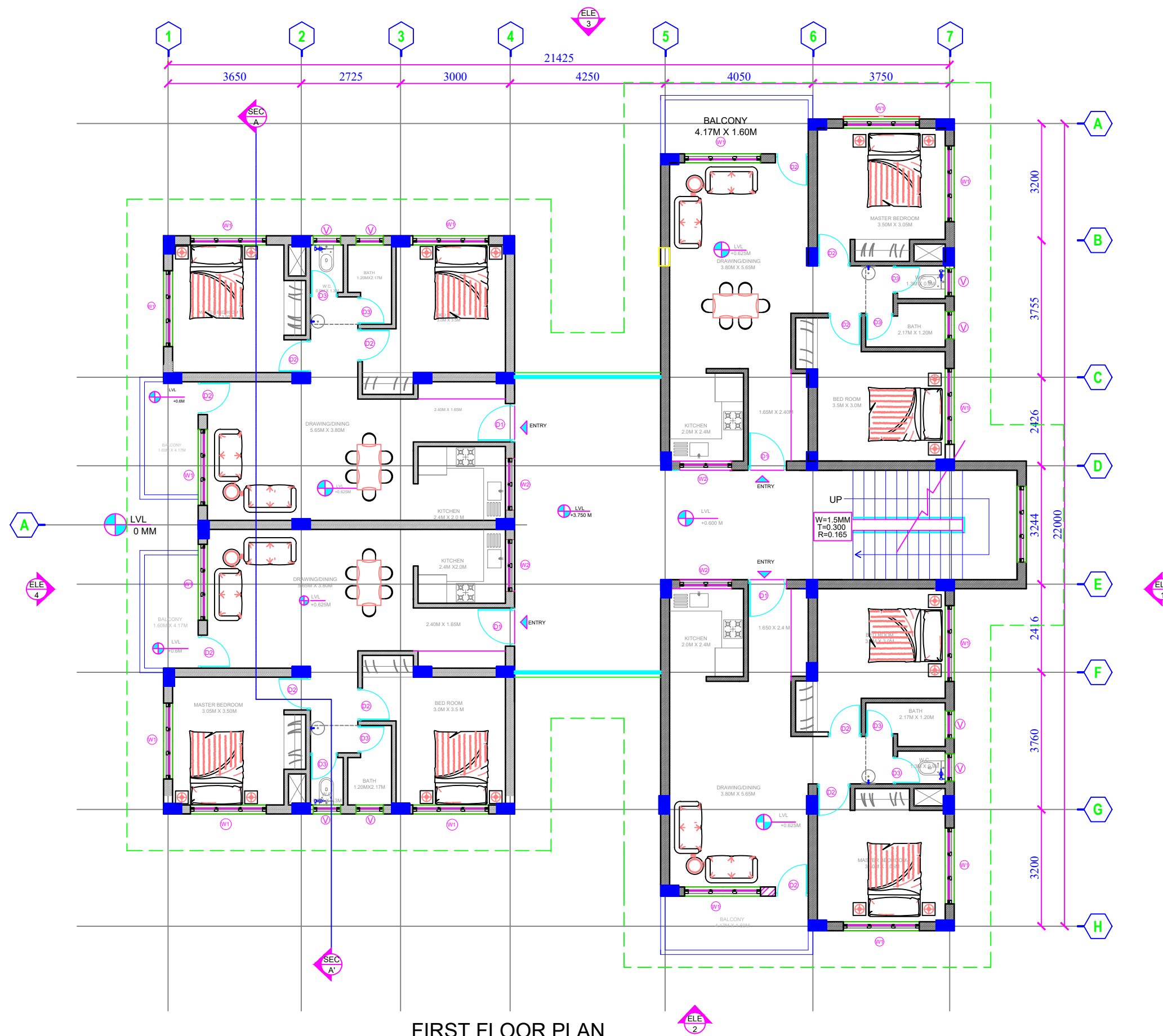
DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

CONSULTANTS: **WAPCOS LTD.**

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER - GROUND FLOOR PLAN

M.M. VERMA TEAM LEADER	P.P. CHIBBER ELECTRICAL ENGINEER
ANURAG VARMA ARCHITECT	S.S. GOUDRA SURVEY OFFICER
ANIL KISHOR TRIPATHI CIVIL ENGINEER	K.P. CHAKRABORTY ENVIRONMENT OFFICER
DECEMBER: 2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



FIRST FLOOR PLAN

NOTE:

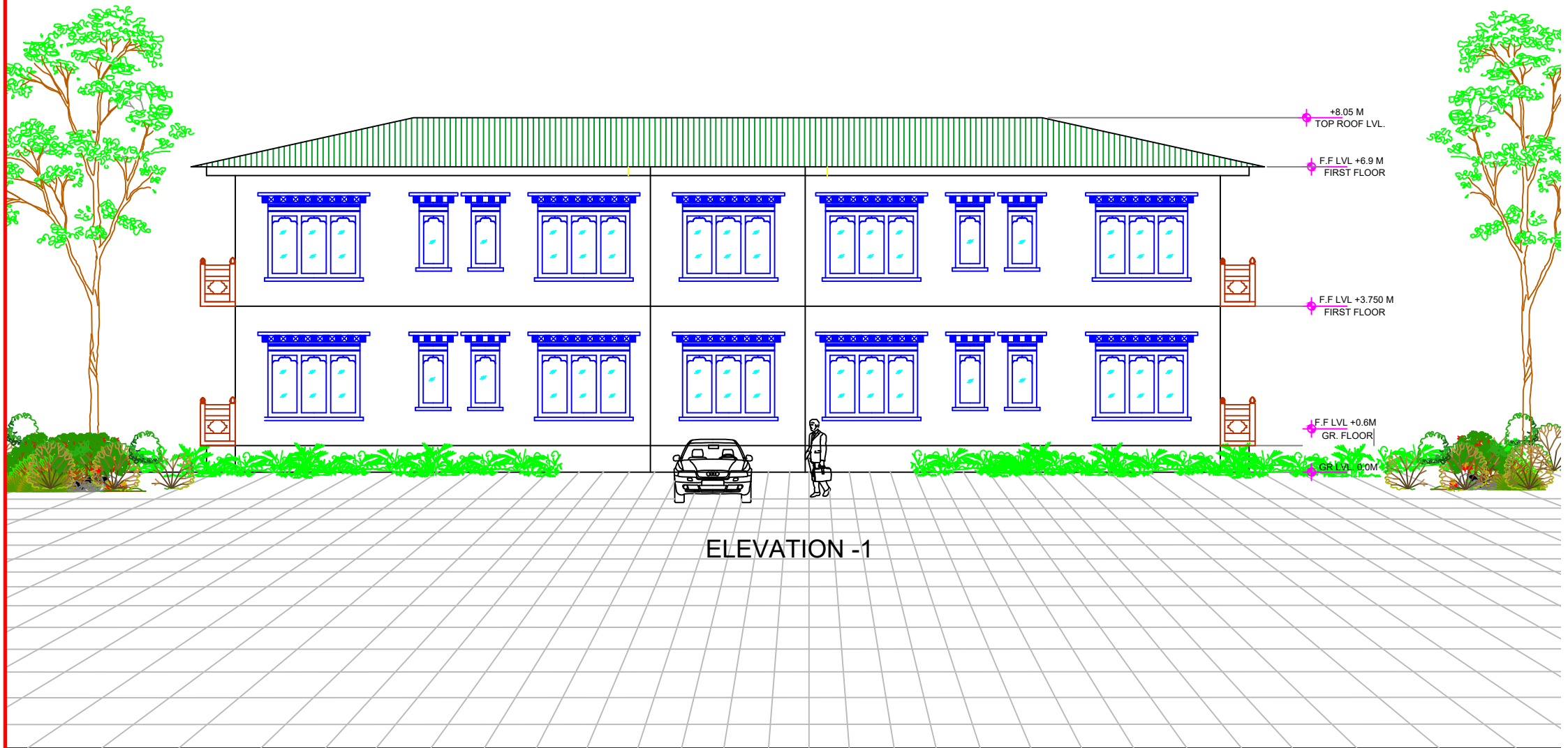
1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

SCHEDULE OF OPENINGS

Sl.No.	Opening Type	Length	Height
1	D1	1050	2100
2	D2	900	2100
3	D3	750	2100
4	V	760	1275
5	W1	2080	1560
6	W2	1420	1560

SHEET 2 OF 15

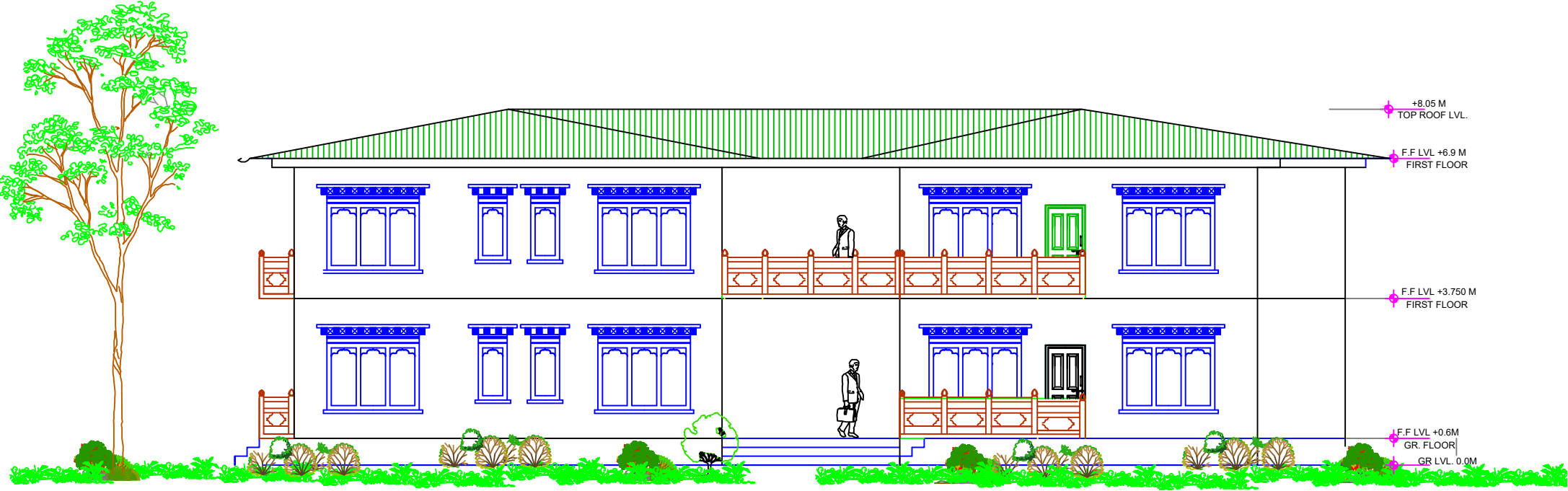
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - FIRST FLOOR PLAN	
M.M. VERMA TEAM LEADER ANURAG VARMA (ARCHITECT) ANIL KUMAR CIVIL ENGINEER DECEMBER, 2015	P.D. CHIBBER (ELECTRICAL ENGINEER) S.S. GOUDAS (SURVEY OFFICER) S.M. GOUDAS (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SQL/ARCH/34



ELEVATION -1

SHEET 3 OF 15

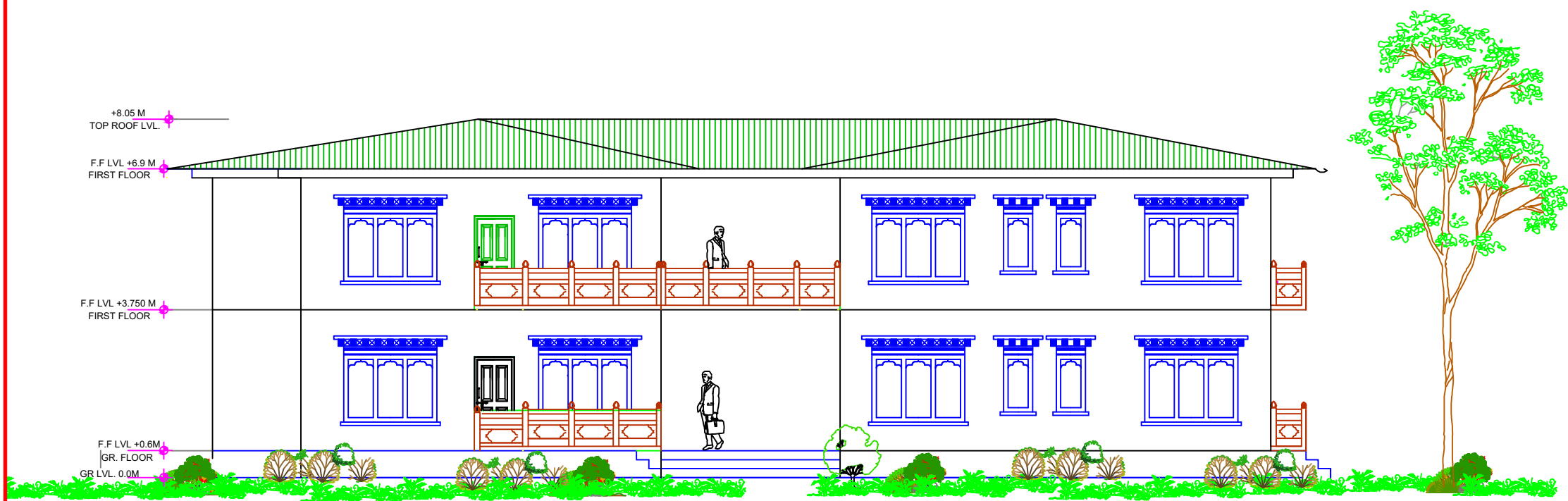
DETAILED PROJECT REPORT FOR			
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN			
CONSULTANTS:		WAPCOS LTD.	
 वापकोस WAPCOS LIMITED WAPCOS Engineering & Construction Rajiv Gandhi Education City Gurgaon, Haryana - 122002, India			
 HEMC		HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - ELEVATION - 1			
P.M. VERMA TEAM LEADER ANURAG VARMA (ARCHITECT) ANUPAM TRIPATHI (CIVIL ENGINEER) <i>P.M. Verma</i> <i>Anurag Varma</i> <i>Anupam Tripathi</i>		P.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GOUDRA (SURVEY OFFICER) K.A. CHAKRABORTY (ENVIRONMENT OFFICER) <i>P.P. Chibber</i> <i>S.S. Goudra</i> <i>K.A. Chakraborty</i>	
DECEMBER- 2015		DRG NO.: WAP/DIE/SGLQ/ARCH/34	



ELEVATION - 2

SHEET 4 OF 15

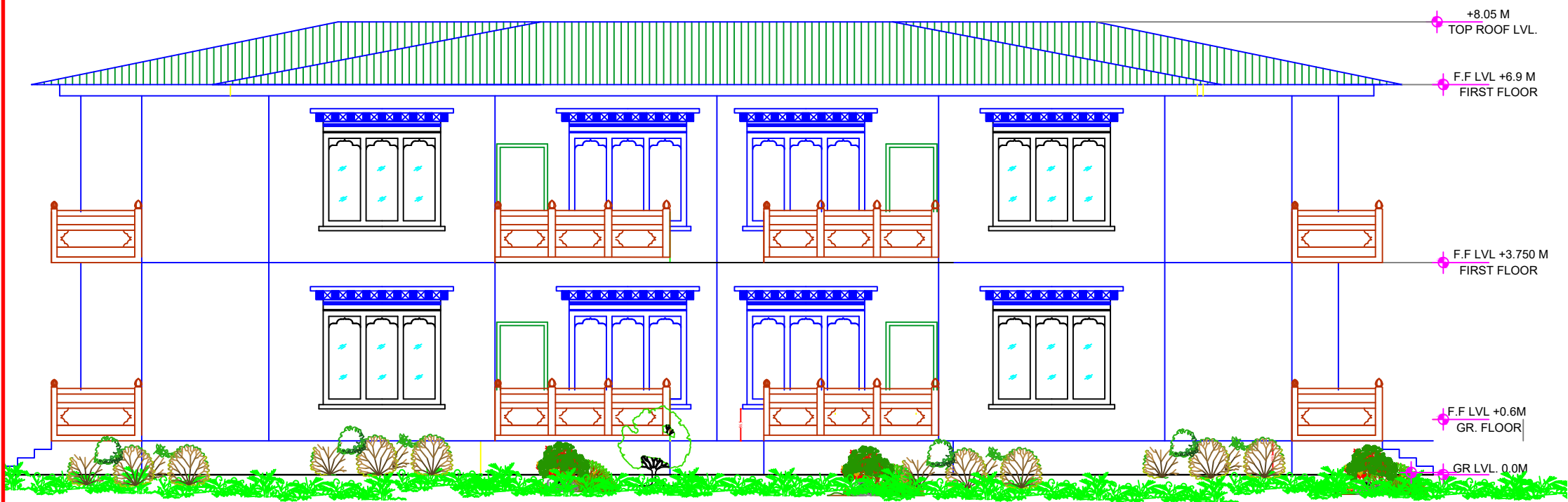
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMTSE, BHUTAN	
CONSULTANTS:	 WAPCOS LTD.
	HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - ELEVATION - 2	
P.M. VERMA TEAM LEADER	P.P. CHIBBER ELECTRICAL ENGINEER
ANURAG VARMA ARCHITECT	S.S. GOSWAMI SURVEY OFFICER
ANUPAM TRIPATHI CIVIL ENGINEER	K.P. CHAKRABORTY ENVIRONMENT OFFICER
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



ELEVATION - 3

SHEET 5 OF 15

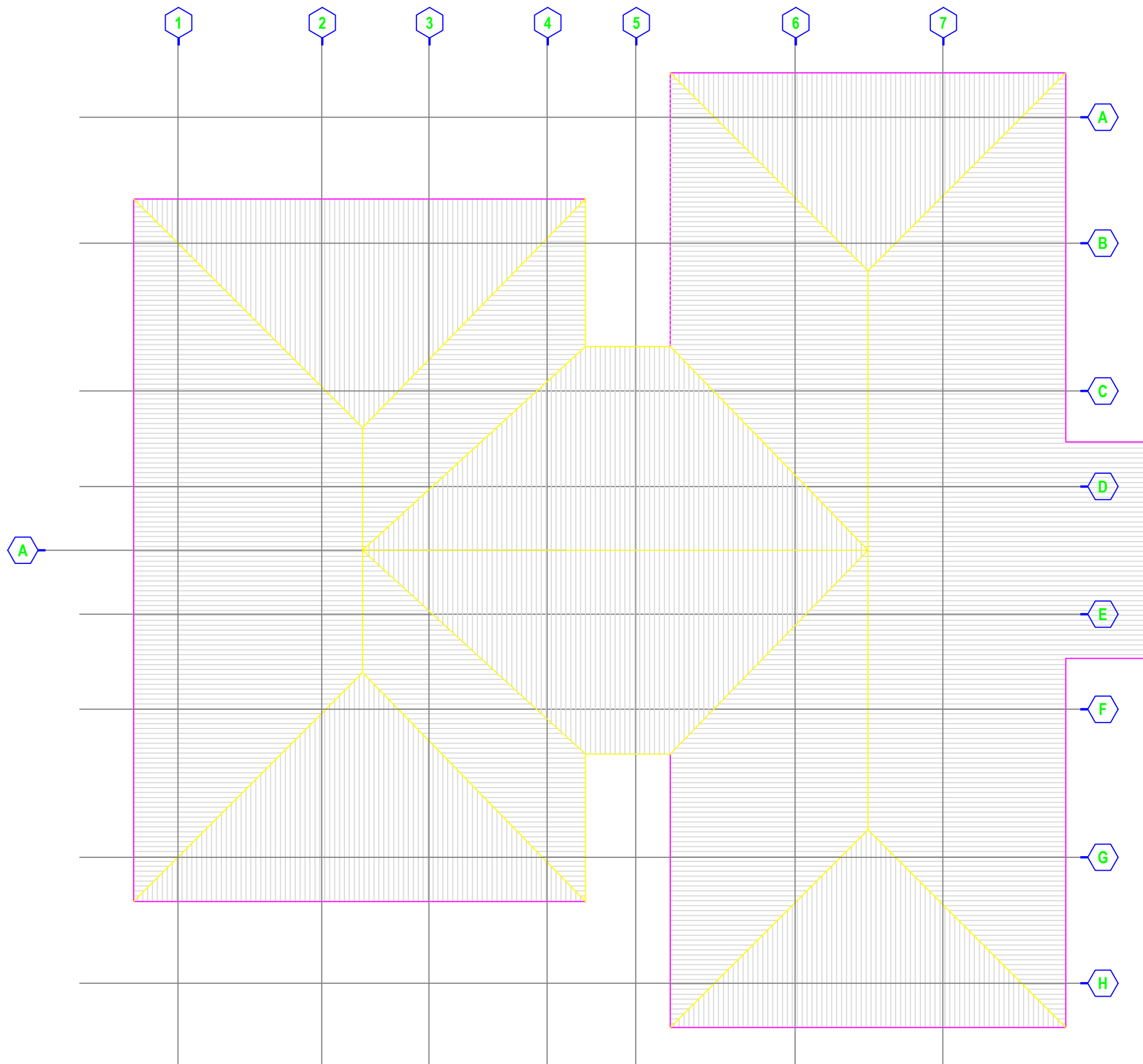
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	 WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - ELEVATION - 3	
T.M. VERMA TEAM LEADER	P.P. CHIBBER ELECTRICAL ENGINEER
ANURAG VARMA ARCHITECT	S.S. GOUDRA SURVEY OFFICER
ANUPAM TRIPATHI CIVIL ENGINEER	K.A. CHAKRABORTY ENVIRONMENT OFFICER
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



ELEVATION - 4

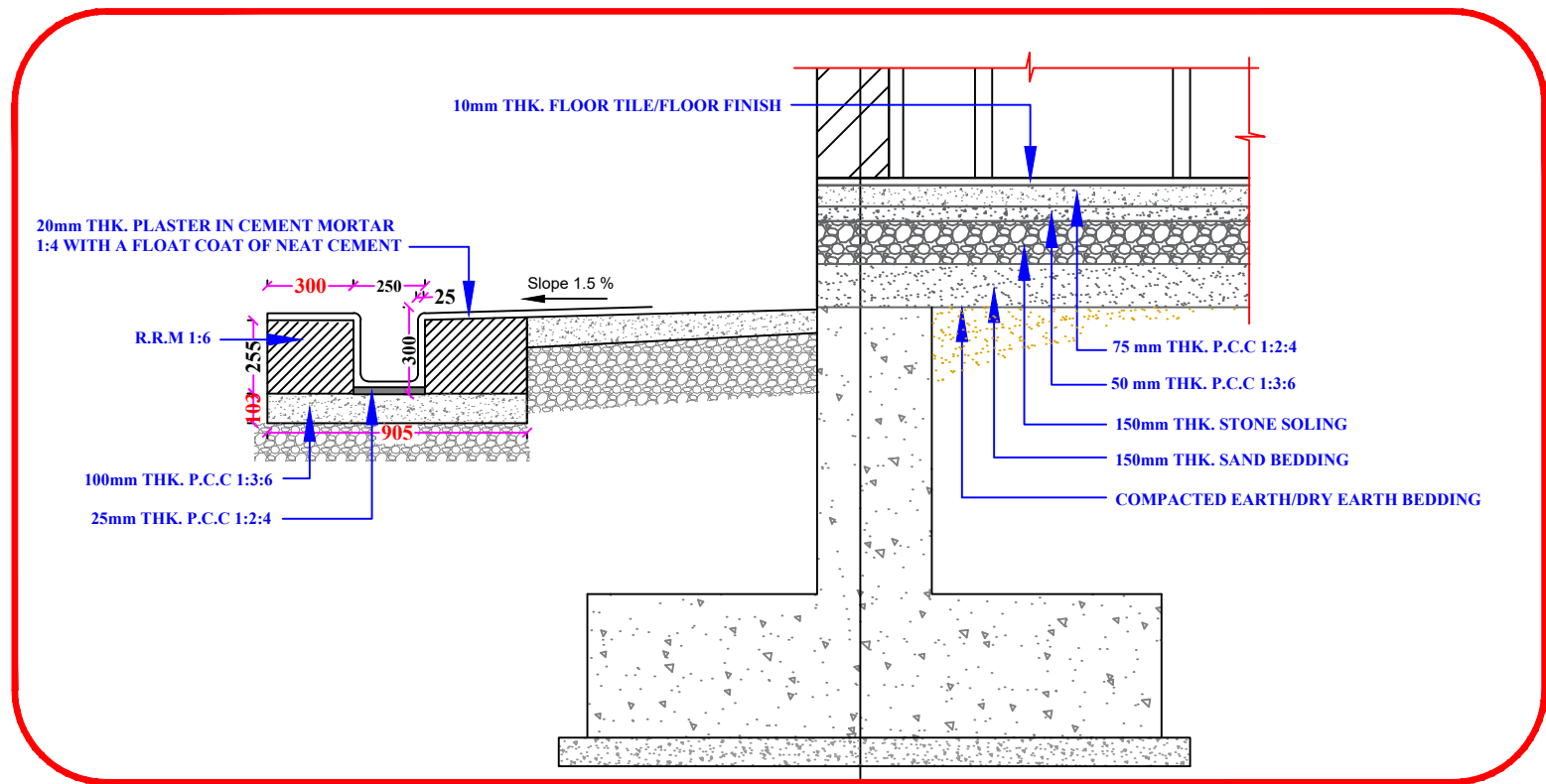
SHEET 6 OF 15

[SHEET NO. OF 15]			
DETAILED PROJECT REPORT FOR			
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN			
CONSULTANTS:		 वापकोस लिमिटेड WAPCOS LIMITED W-10, Plot No. 1, Sector-10 Gurgaon, Haryana-122001 INDIA	WAPCOS LTD.
		HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - ELEVATION - 4			
P.M. VERMA		P.P. CHIBBER	
TEAM LEADER		ELECTRICAL ENGINEER	
ANURAG VARMA		S.S. GOUDRA	
ARCHITECT		SURVEY OFFICER	
ANUPAM TRIPATHI		K.P. CHAKRABORTY	
CIVIL ENGINEER		ENVIRONMENT OFFICER	
DECEMBER- 2015		DRG NO.: WAP/DIE/SGLQ/ARCH/34	

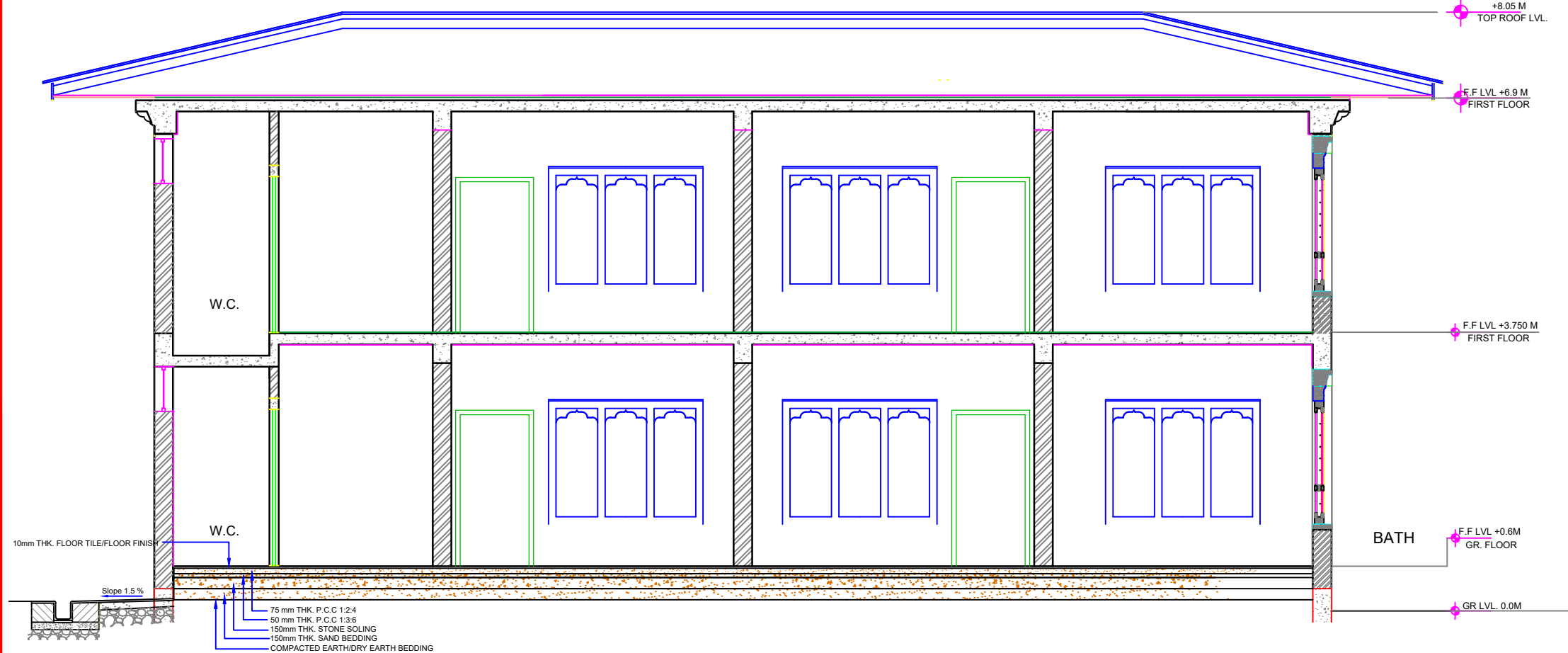


SHEET 7 OF 15

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LIMITED	WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY		
SECURITY GUARD LIVING QUARTER - ROOF PLAN		
P.M. VERMA TEAM LEADER	P.P. CHIBBER ELECTRICAL ENGINEER	G. K. SINGH ARCHITECT
ANURAG VARMA ARCHITECT	S. S. GOUDRA SURVEY OFFICER	R. K. CHAKRAVARTY ENVIRONMENT OFFICER
ANIL KISHOR TRIPATHI CIVIL ENGINEER		
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34	



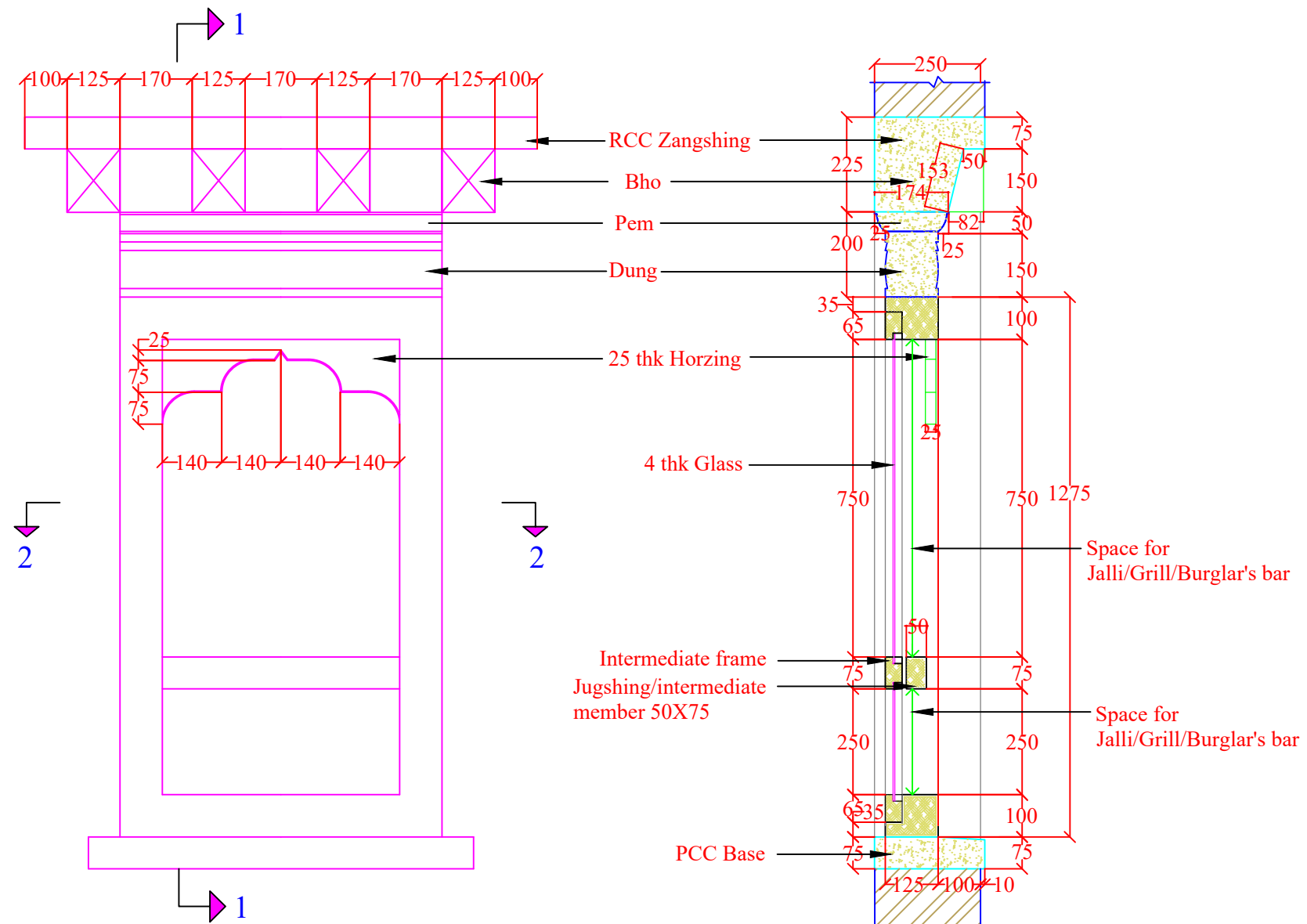
DETAIL X-X



SECTION AT AA

SHEET 8 OF 15

DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LTD.
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - SECTION A-A	
TEAM LEADER R.M. VERMA (ARCHITECT)	DESIGNER R.P. CHIBBER (ARCHITECT)
ARCHITECT ANURAG VARMA (ARCHITECT)	SURVEY OFFICER S.S. GOSWAMI (SURVEY OFFICER)
ENVIRONMENT OFFICER ANIL KISHOR TRIPATHI (ENVIRONMENT OFFICER)	ENVIRONMENT OFFICER R.K. CHAKRABORTY (ENVIRONMENT OFFICER)
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



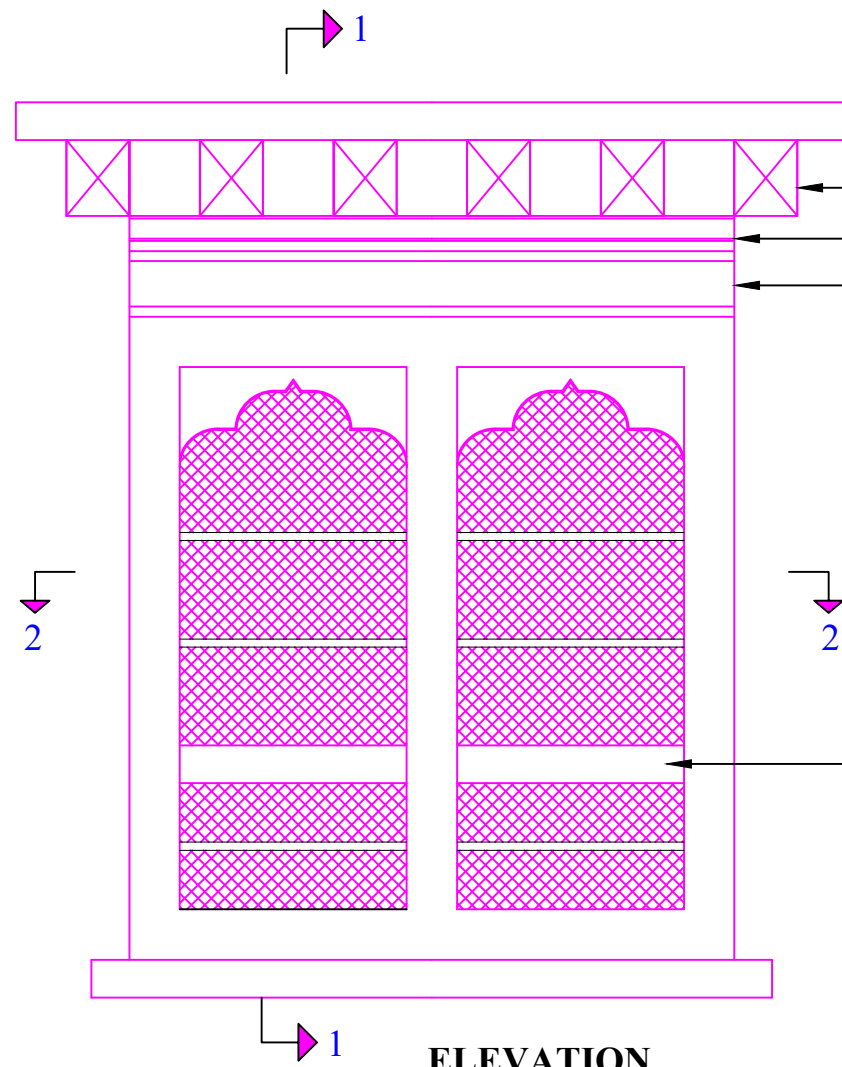
ELEVATION

SECTION 1-1

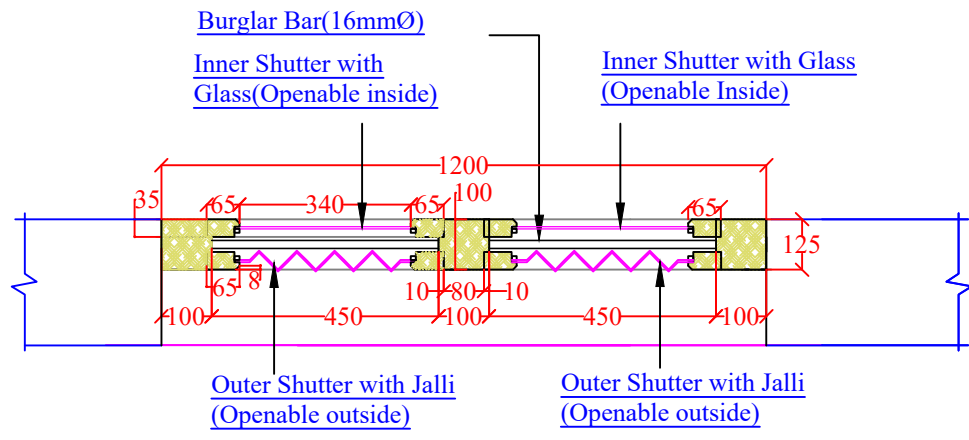
SECTION 2-2



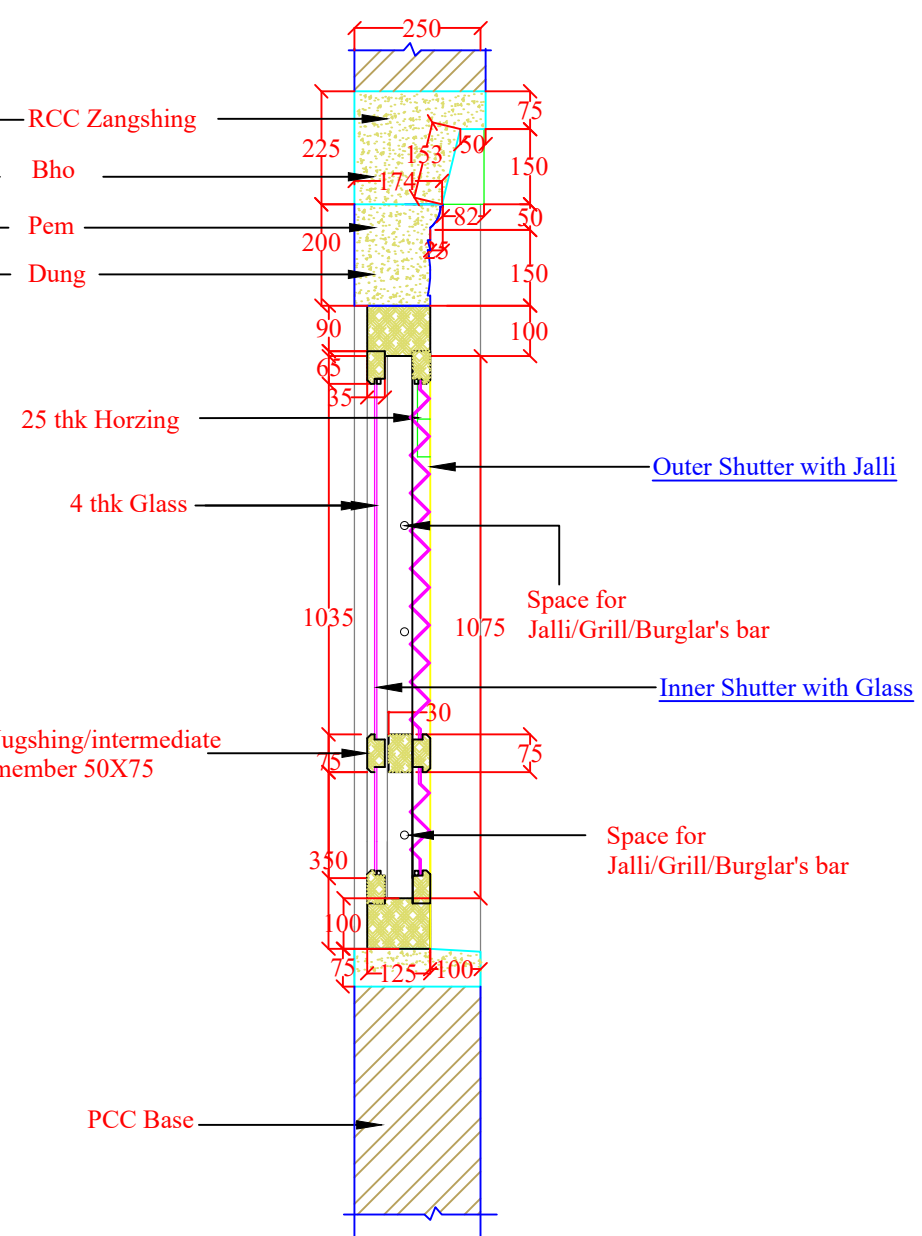
SHEET 9 OF 15	
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LIMITED HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - VENTILATION	
TEAM LEADER ARCHITECT CIVIL ENGINEER	DESIGNER SURVEY OFFICER ENVIRONMENT OFFICER
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



ELEVATION



SECTION 2-2

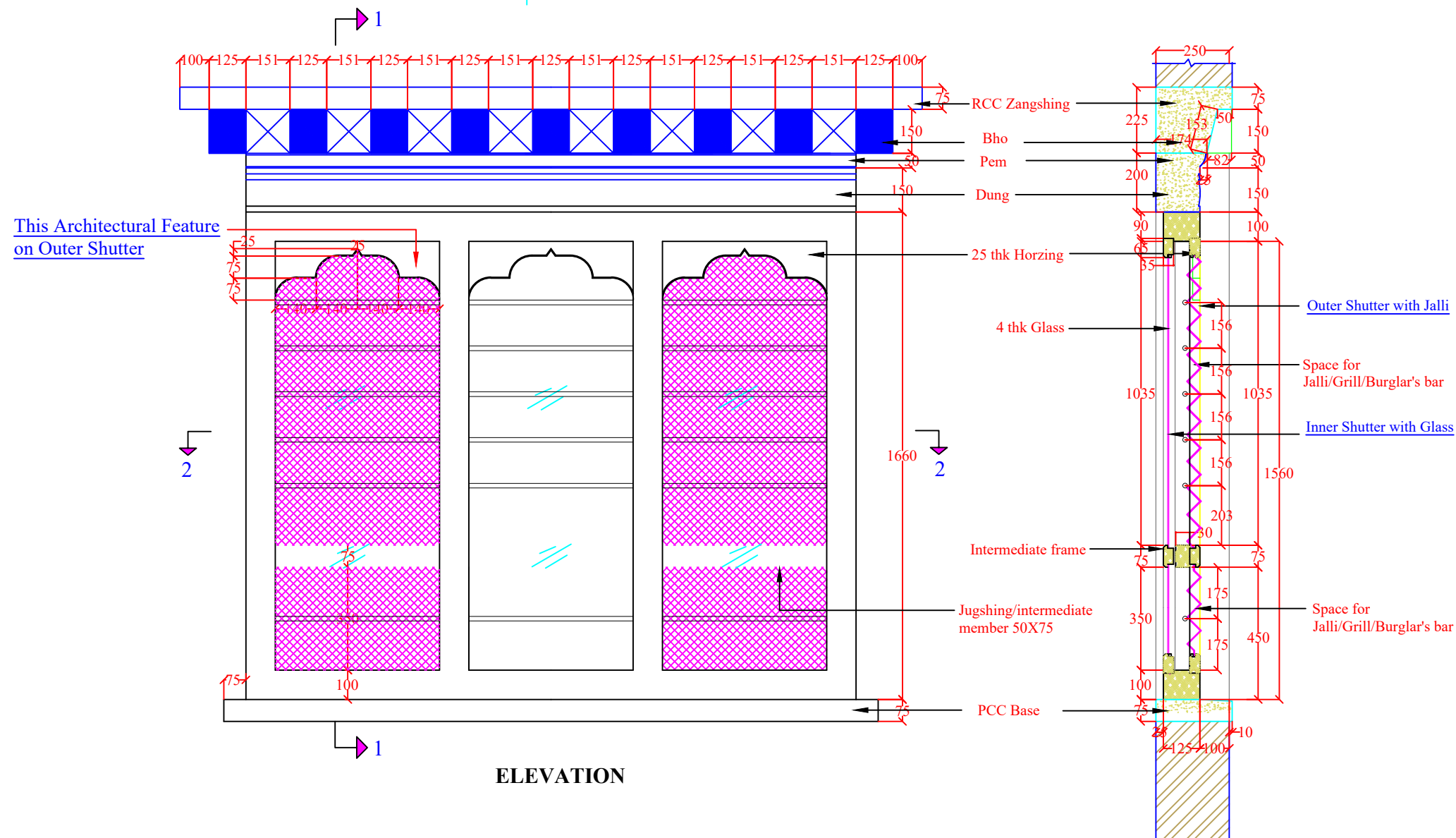


SECTION 1-1

W2a

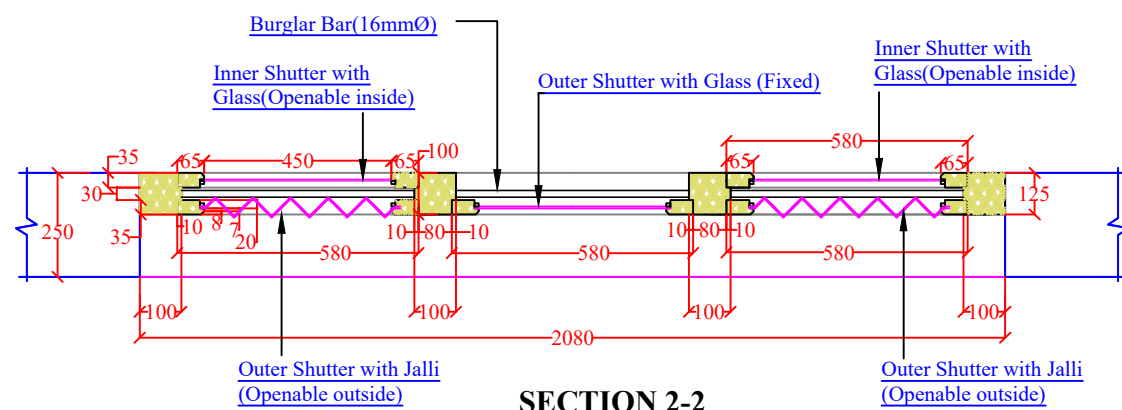
SHEET 10 OF 15

DETAILED PROJECT REPORT FOR			
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN			
CONSULTANTS:		WAPCOS LTD.	
 वायकोस (भारत) WAPCOS LIMITED 204, Park Road, New Delhi-110002 INDIA Website: www.wapcos.com Mobile: 011-26100000, 011-26100001		 WAPCOS LTD.	
 HEMC		HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER -WINDOW - 2A			
M.YALVERA (TEAM LEADER)  <u>ARCHITECT</u>  <u>ARCHITECT</u>  <u>ARCHITECT</u>  <u>ARCHITECT</u> 		P.P. CHIBBER (ELECTRICAL ENGINEER)  <u>ARCHITECT</u>  <u>ARCHITECT</u>  <u>ARCHITECT</u>  <u>ARCHITECT</u> 	
DECEMBER-2015		DRG NO. : WAP/DIE/SGLQ/ARCH/34	



ELEVATION

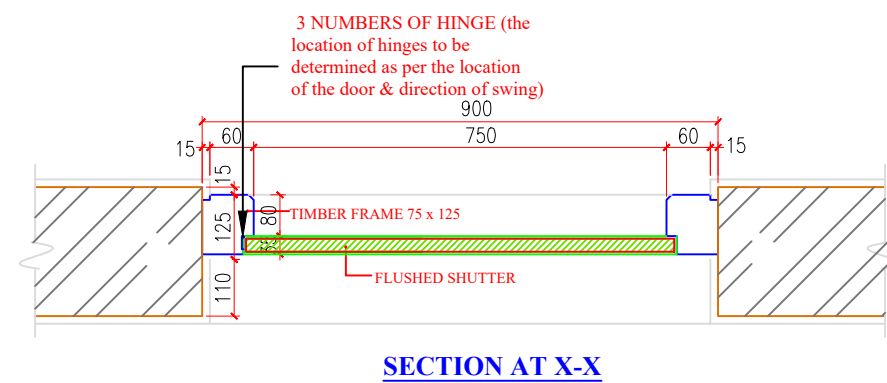
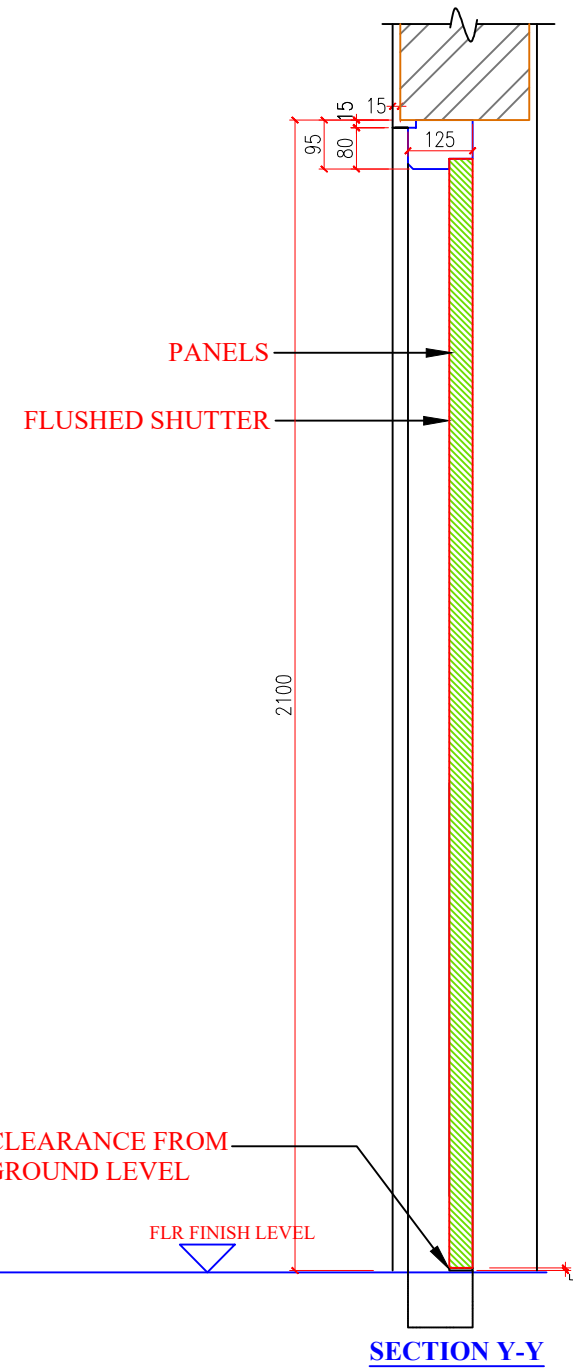
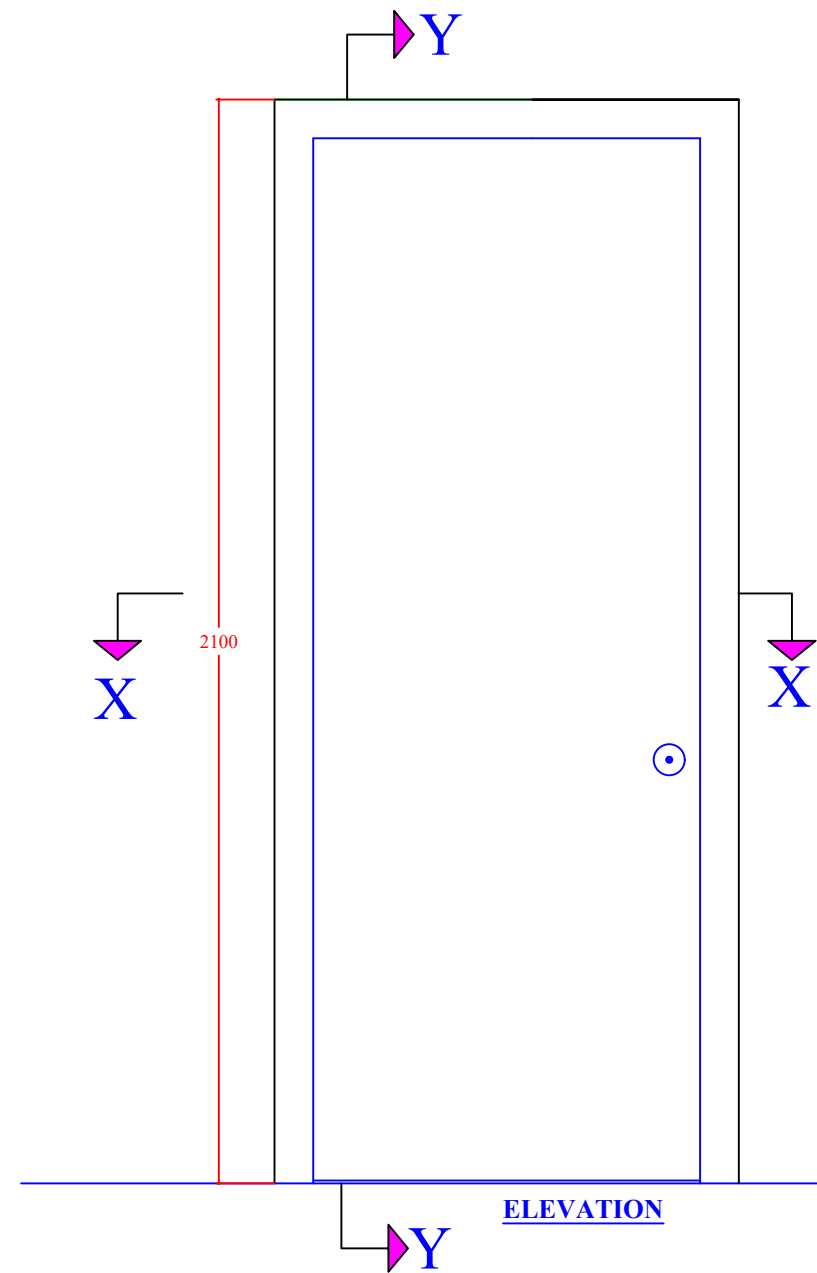
SECTION 1-1



SECTION 2-2



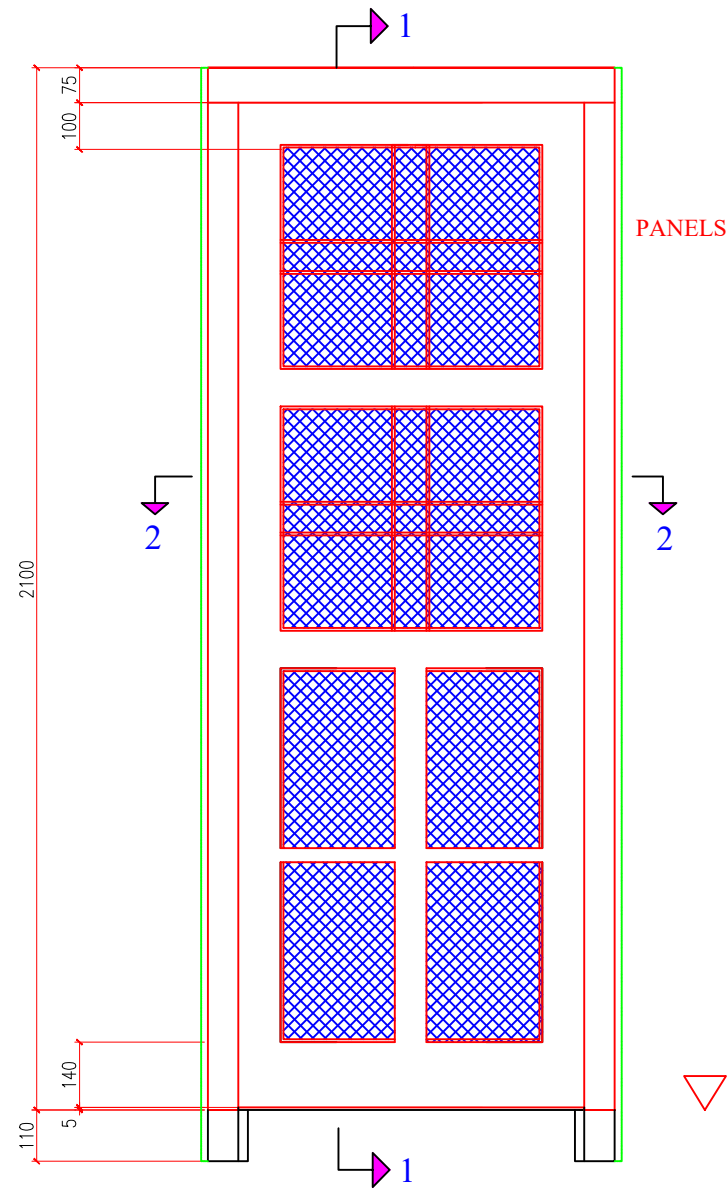
SHEET 11 OF 15	
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LTD.
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - WINDOW - 1	
TEAM LEADER	R.P. CHIBBER
ARCHITECT	S.S. GOSWAMI
CIVIL ENGINEER	R.P. CHIBBER
DECEMBER - 2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



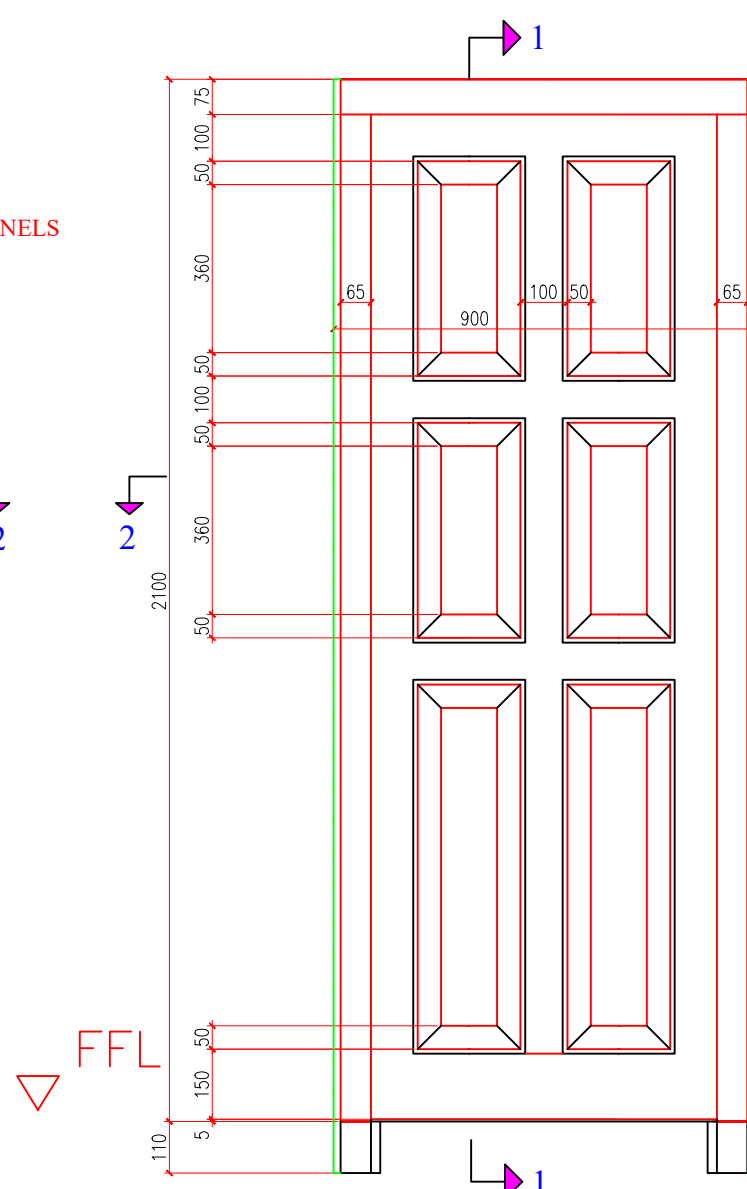
D2

SHEET 12 OF 15

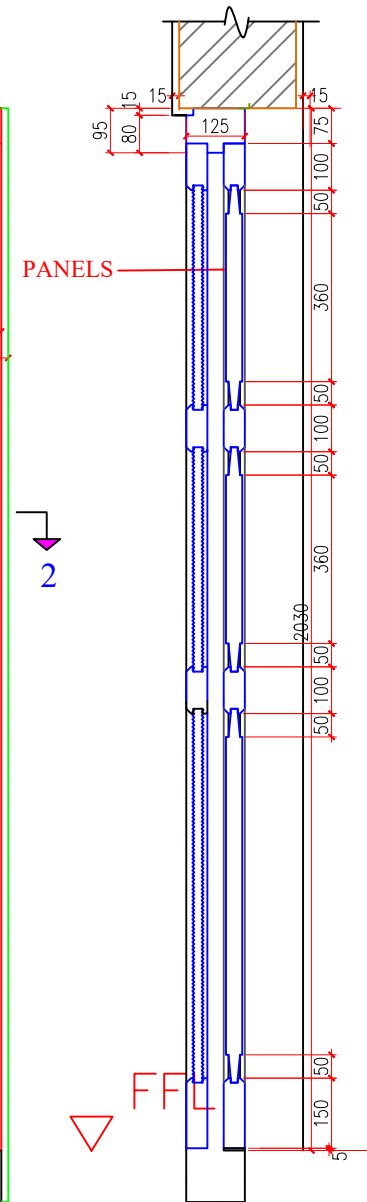
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LTD.
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - DOOR - 2A	
P.M. VERMA (TEAM LEADER)	P.P. CHIBBER (ELECTRICAL ENGINEER)
ANURAG VARMA (ARCHITECT)	S.S. GOUDRA (SURVEY OFFICER)
ANUPAM TRIPATHI (CIVIL ENGINEER)	P.P. CHIBBER (ENVIRONMENT OFFICER)
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34



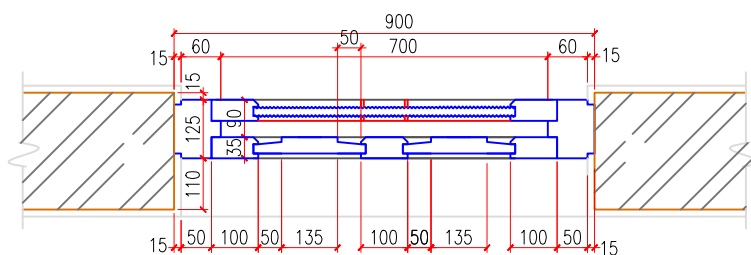
ELEVATION



ELEVATION



SECTION AT 1-1

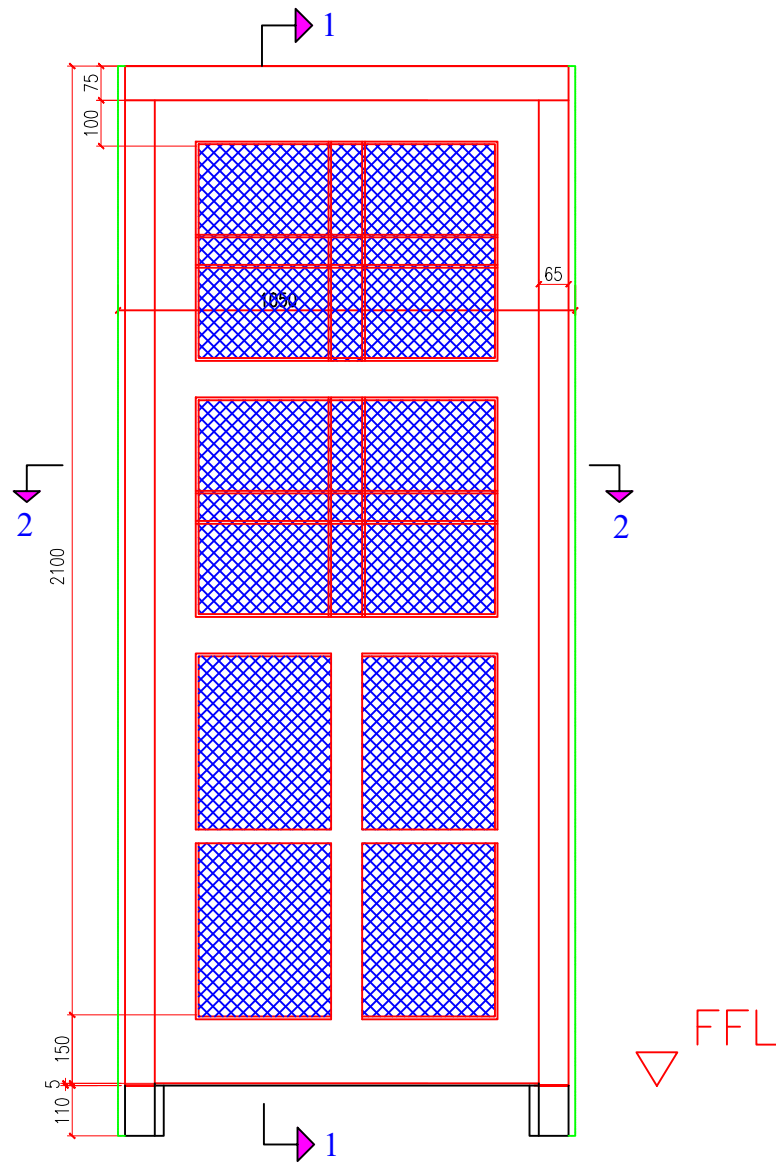


SECTION AT 2-2

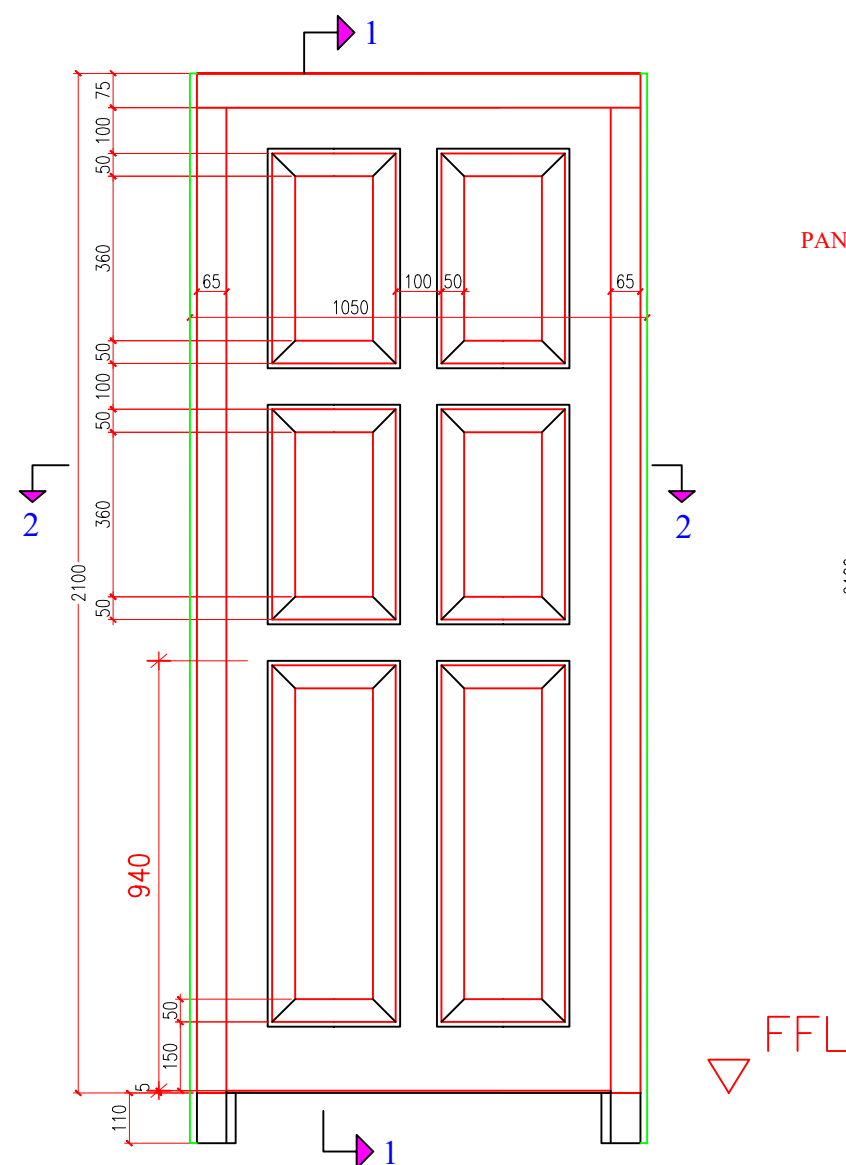
D2

SHEET 13 OF 15

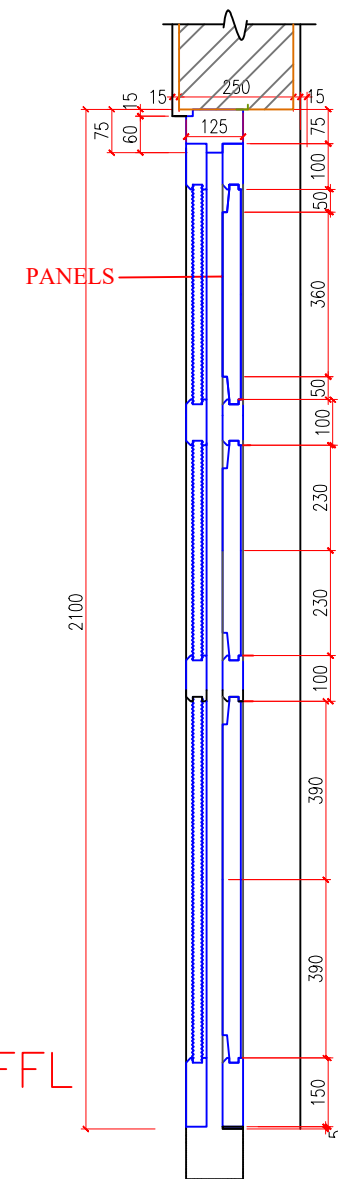
DETAILED PROJECT REPORT FOR			
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN			
CONSULTANTS:		WAPCOS LTD.	
 वाय्कोस लिमिटेड WAPCOS LIMITED H-10, Phase I, Sector 3, Gurgaon Haryana-122001, India www.wapcos.com		HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
			
SECURITY GUARD LIVING QUARTER - DOOR - 2			
TEAM LEADER <u>ABHIRAM YADAV</u> (ARCHITECT) <u>ABHIRAM YADAV</u> ARCHITECT	 <u>R.P. CHIBBER</u> (ELECTRICAL ENGINEER)	 <u>S.S. GOUDRA</u> (SURVEY OFFICER)	
 ARCHITECT DECEMBER-2015	 <u>R.P. CHIBBER</u> (ENVIRONMENT OFFICER)	 <u>R.P. CHIBBER</u> (ENVIRONMENT OFFICER)	
DRG NO.: WAP/DIE/SGLQ/ARCH/34			



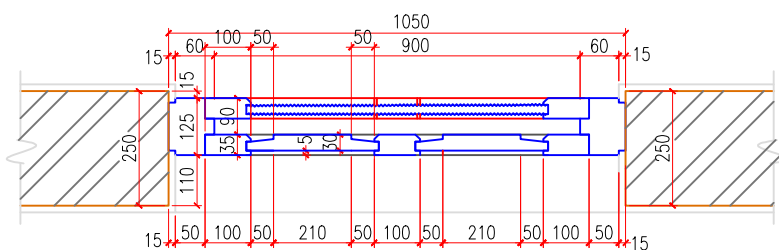
ELEVATION



ELEVATION



SECTION AT 1-1

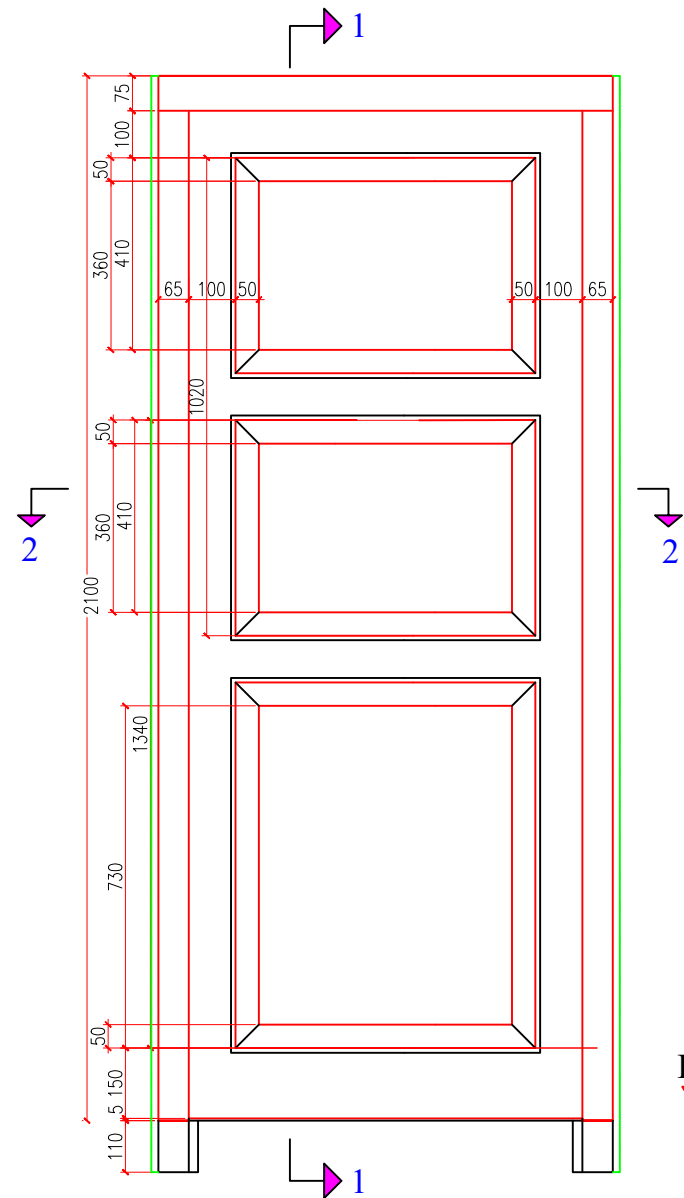


SECTION AT 2-2

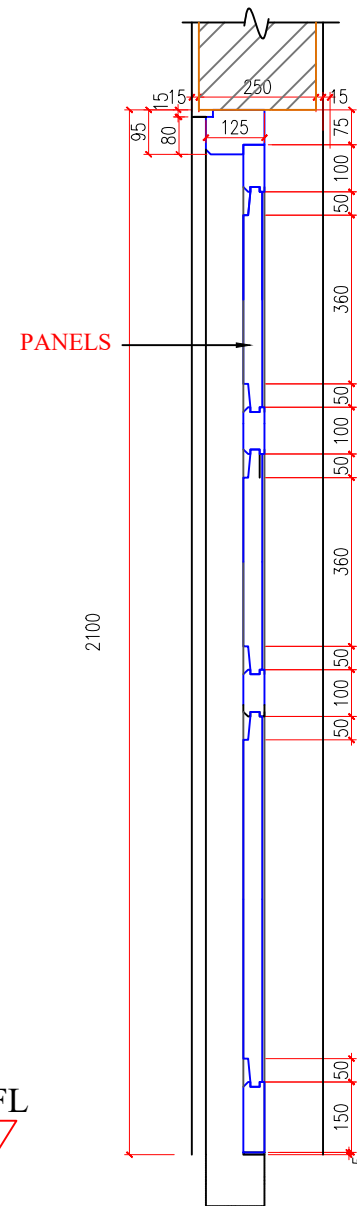
D1

SHEET 14 OF 15

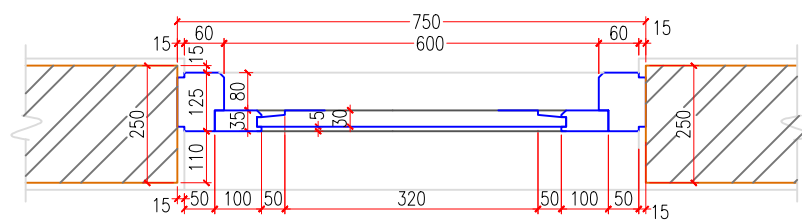
DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LIMITED	WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY		
SECURITY GUARD LIVING QUARTER - DOOR - 1		
T.M. VERMA TEAM LEADER	P.P. CHIBBER ELECTRICAL ENGINEER	G. K. SINGH ARCHITECT
ANURAG VARMA ARCHITECT	S. S. GOSWAMI SURVEY OFFICER	K. P. CHAKRABARTY ENVIRONMENT OFFICER
ANIL KISHOR TRIPATHI CIVIL ENGINEER		
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34	



ELEVATION



SECTION AT 1-1



SECTION AT 2-2

D

SHEET 15 OF 15	
DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	WAPCOS LIMITED HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - DOOR	
TEAM LEADER ARCHITECT CIVIL ENGINEER	DESIGNER SURVEY OFFICER ENVIRONMENT OFFICER
DATE: 2015	DRG NO.: WAP/DIE/SGLQ/ARCH/34

Sheet No.	TITLE
01	General Notes
02	GA & R/F Details of Foundation & Column
03	GA & R/F Details of Foundation & Column
04	GA & R/F Details of Plinth Beam
05	GA & R/F Details of Plinth Beam
06	GA & R/F Details of First Floor Beam
07	GA & R/F Details of First Floor Beam
08	GA & R/F Details of Roof Beam
09	GA & R/F Details of Roof Beam
10	GA & R/F Details of Slab
11	GA & R/F Details of Staircase
12	General Reinforcement Detailing

BASIC DESIGN DATA FOR THE STRUCTURE

ATTRIBUTE	ELEMENT	DATA
Material Constants	CONCRETE	M25 (CONCRETE STRENGTH OF 25MPA) MAXIMUM AGREGATE SIZE: 20MM POISON'S RATIO: 0.17 Ec = 5000 √Fck MPA ≈ 25000MPa ≈25kN/mm ² UNIT WEIGHT OF RCC: 25kN/m ³ UNIT WEIGHT OF PCC: 24kN/m ³ UNIT WEIGHT OF CEMENT MORTAR & CEMENT PLASTER: 20.4kN/m ³
	STEEL	FE 500 TMT BARS (ULTIMATE YIELD STRENGTH OF 415MPa) AS IS:1786 UNIT WEIGHT: 78.5kN/m ³ Es: 200kN/mm ²
	BRICK WALL	UNIT WEIGHT: 18kN/m ³ (IS:875); UNIT COMPRESSIVE STRENGTH: 10MPa
	WATER	UNIT WEIGHT: 10kN/m ³
	SATURATED SOIL	UNIT WEIGHT: 22kN/m ³
	CGI SHEET	UNIT WEIGHT: 0.056kN/m ²
Support	BASE OF COLUMNS	FIXED
Loads	LIVE LOAD	FOR RESIDENTIAL BUILDING (IS:875) 2kN/m² ON ROOFS; 3kN/m² FOR STAIRCASE OR BALCONY
	FLOOR FINISH	1 kN/m ²
	ROOF	0.75 kN/m ² (IS:875) (IN ACCESSIBLE ROOF)
	EARTHQUAKE LOAD	AS PER IS:1893 (PART I) - 2002, ZONE V, IMPORTANCE FACTOR =I, RESPONSE REDUCTION FACTOR, R=5
Soil	ALLOWABLE BEARING PRESSURE	200kN/m ² (VERIFY PRIOR TO CONSTRUCTION AT SITE)
Codes/Standards	IS:456-2000	CODE OF PRACTICE OF PLAIN AND REINFORCED CONCRETE.
	IS:13920-1993 (REAFFIRMED 2003)	DUCTILE DETAILING OF REINFORCED CONCRETE STRUCTURES SUBJECTED TO SEISMIC FORCES
	IS:875-1987	CODE OF PRACTICE FOR DESIGN LOADS (OTHER THAN EARTHQUAKE) FOR BUILDINGS AND STRUCTURE
	IS:1893-2002	CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES.

SHEET 1 OF 12

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

CONSULTANTS:



वापकोस (भारत)
WAPCOS LIMITED

WAPCOS LTD.



HEMC

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER
GENERAL NOTES

M.M.VERMA
(TEAM LEADER)

ANURAG VARMA
(ARCHITECT)

AMITASH TRIPATHI
(CIVIL ENGINEER)

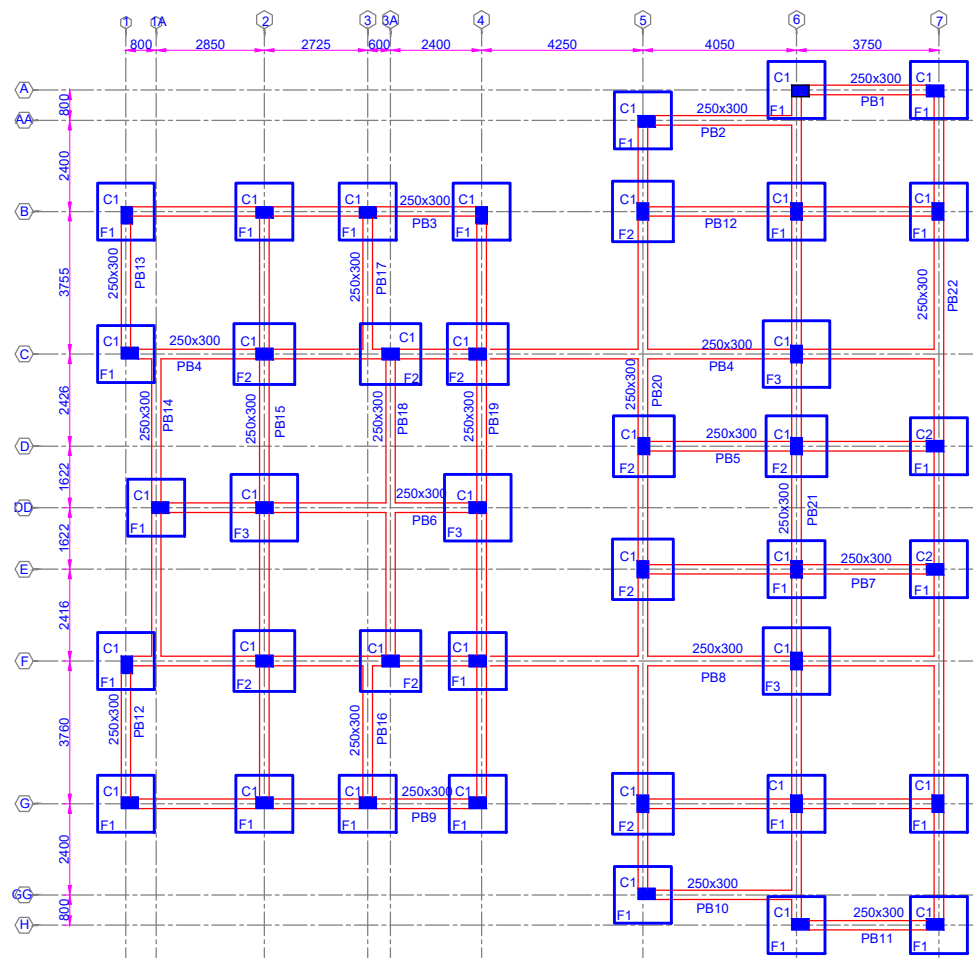
O.P.CHIBBER
(ELECTRICAL ENGINEER)

S.S.GODARA
(SURVEY OFFICER)

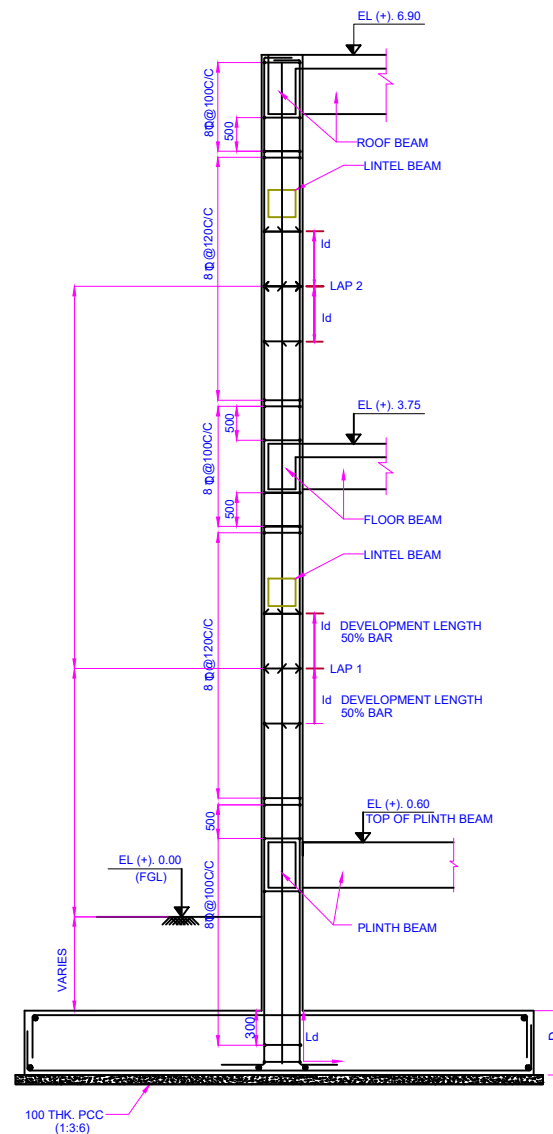
K.D.CHAMLING
(ENVIRONMENT OFFICER)

DECEMBER- 2015

DRG NO.: WAP/DIE/SGLQ/STR/35



FOUNDATION LAYOUT EL.(+) 0.60M



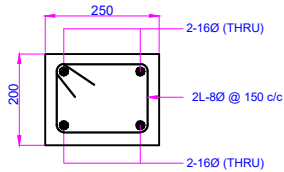
TYP.COLUMN ELEVATION

NOTES

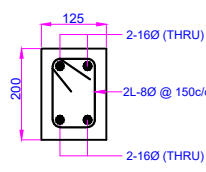
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
2. ALL R.C.C. WORK SHALL BE IN M25 GRADE.
3. ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786)
4. CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
a) FOUNDATION -----BOT. 50mm TOP & SIDES 50mm
b) COLUMN-----40mm
5. LAP LENGTH SHALL BE 50xDIA. OF BAR.

COLUMN SCHEDULE

COLUMN MKD.	COLUMN SIZE AND REINF. ARRANGEMENT	BAR MKD.	FOOTING TO LAP 1	LAP 1 TO LAP 2 OR FOOTING TO LAP 2	LAP 2 TO LAP 3 OR UPTO MUMTY	TIES
C1		A	10-16Ø	10-16Ø	10-16Ø	8Ø
C2		A	12-20Ø	10-20Ø	10-20Ø	8Ø



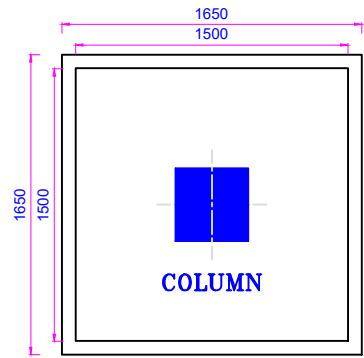
LINTEL BEAM DETAILS (TYP-1)
LINTEL BEAM ON 250MM THICK BRICK WALL



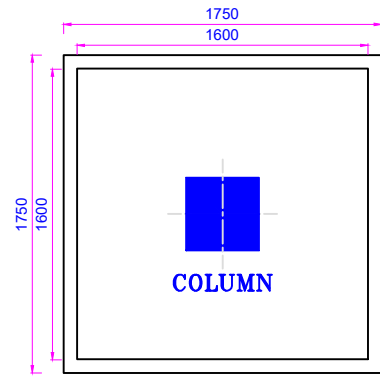
LINTEL BEAM DETAILS (TYP-2)
LINTEL BEAM ON 125MM THICK BRICK WALL

SHEET 2 OF 12

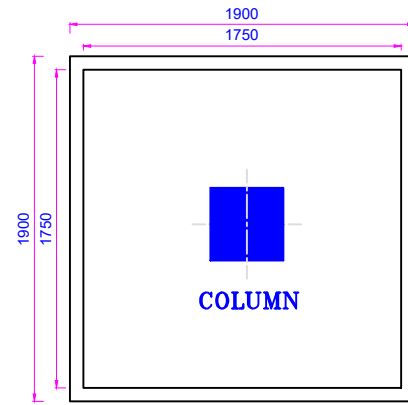
DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER GA & R/F DETAILS OF FOUNDATION & COLUMN		
M.M.VERMA (TEAM LEADER)	O.P.CHIBBER (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S.GODARA (SURVEY OFFICER)	
AMITASH TRIPATHI (CIVIL ENGINEER)	K.D.CHAMLING (ENVIRONMENT OFFICER)	
DECEMBER- 2015	DRG NO.: WAP/DIE/SG/LQ/STR/35	



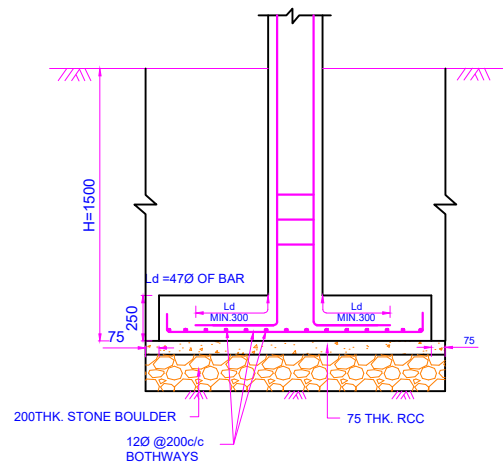
PLAN F1



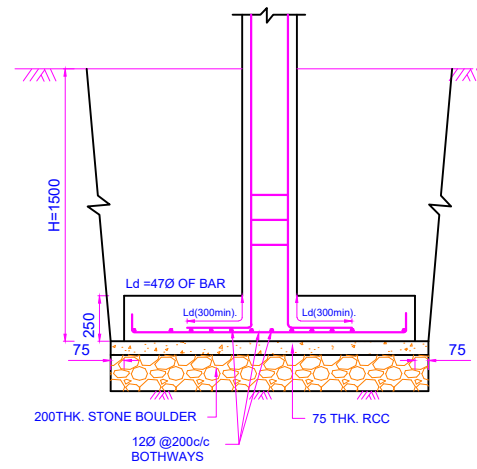
PLAN F2



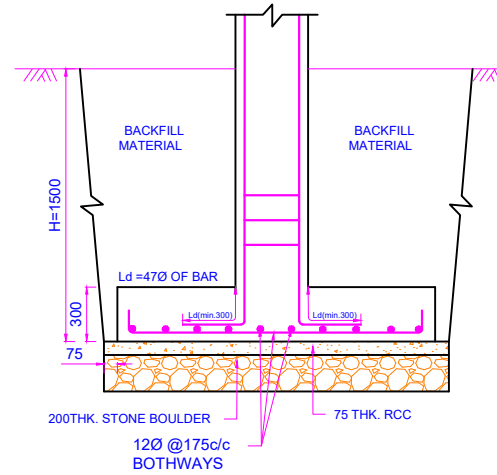
PLAN F3



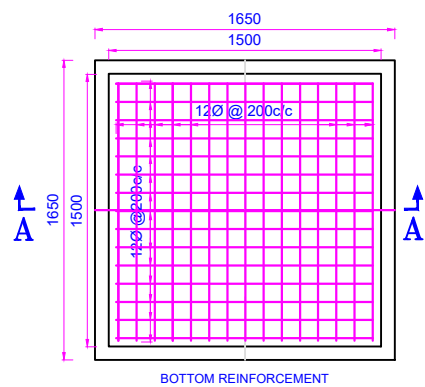
SECTION A-A



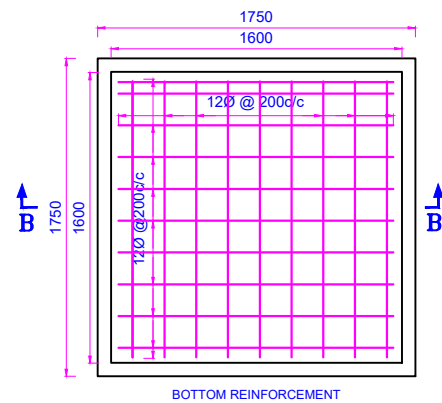
SECTION B-B



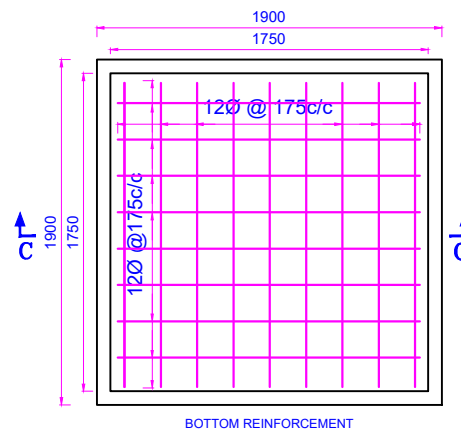
SECTION C-C



F1
1500X1500



F2
1600X1600



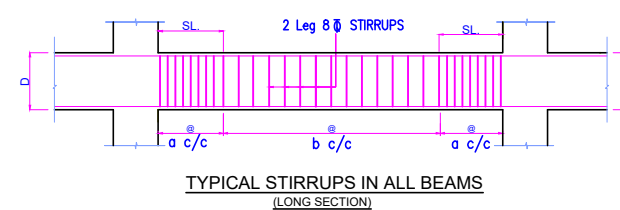
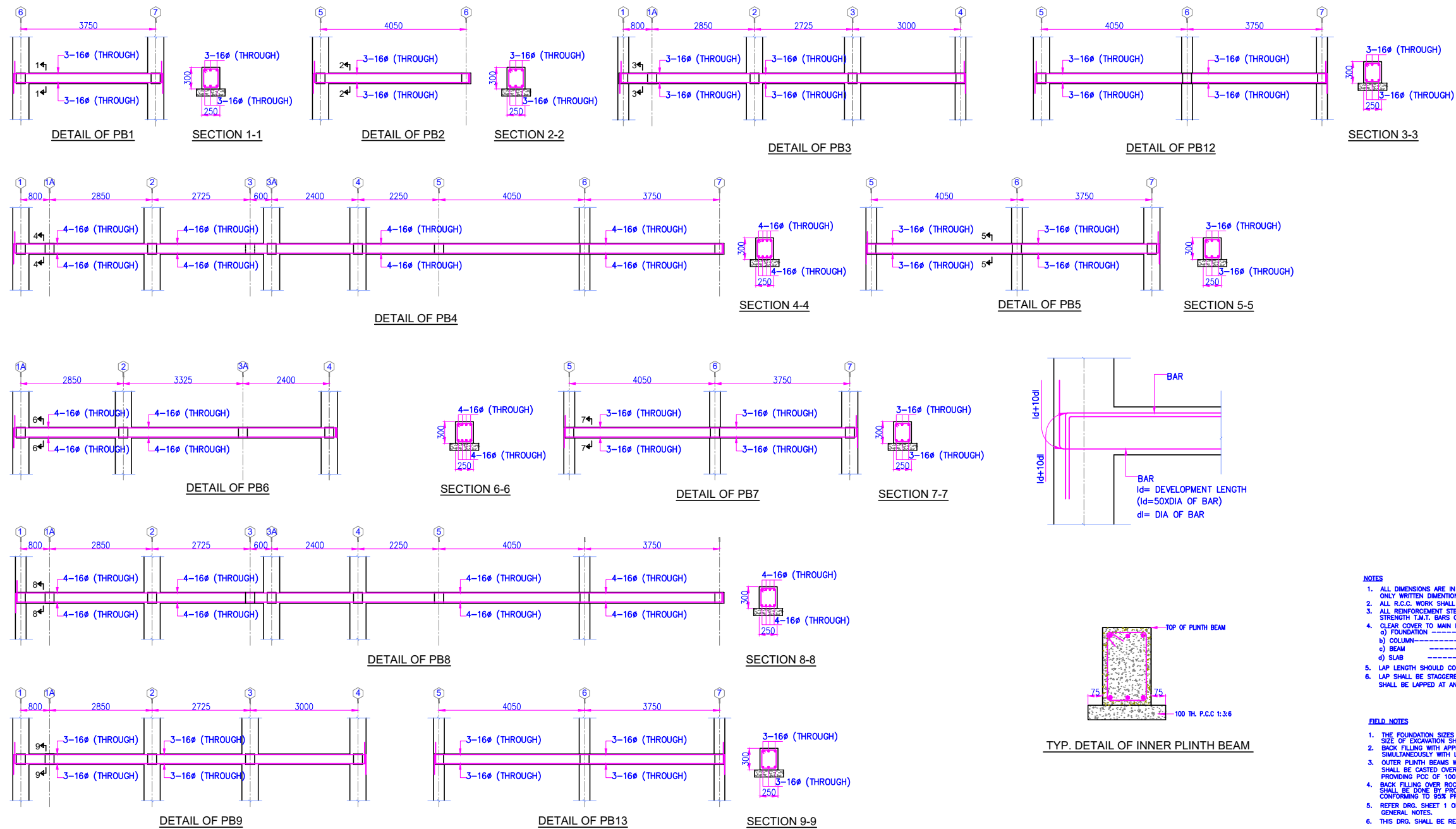
F3
(1750X1750)

NOTES

1. ALL DIMENSIONS ARE IN mm. ONLY WRITTEN DIMENTION ARE TO BE FOLLOWED.
2. ALL R.C.C. WORK SHALL BE IN M-25 GRADE.
3. ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786)
4. CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
a) FOUNDATION ----- BOTTOM. 50mm TOP & SIDES 50mm
b) COLUMN-----40mm
5. LAP LENGTH SHALL BE 50xØ. OF BAR.
6. LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION
7. FOR COLUMN DETAILS REFER RELEVANT DRAWINGS.

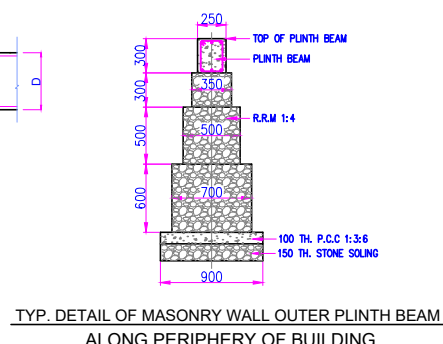
SHEET 3 OF 12

DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	 WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER GA & R/F DETAILS OF FOUNDATION & COLUMN	
M.M.VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITASH TRIPATHI (CIVIL ENGINEER)	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D.CHAMLING (ENVIRONMENT OFFICER)
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/STR/35



TYPICAL STIRRUPS IN ALL BEAMS

D	SL	a	b
300	600	100	150
400	800	100	200



SHEET 4 OF 12

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

CONSULTANTS: **WAPCOS LTD.**

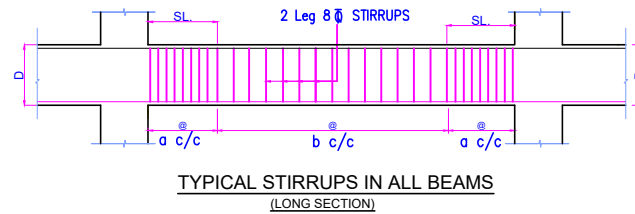
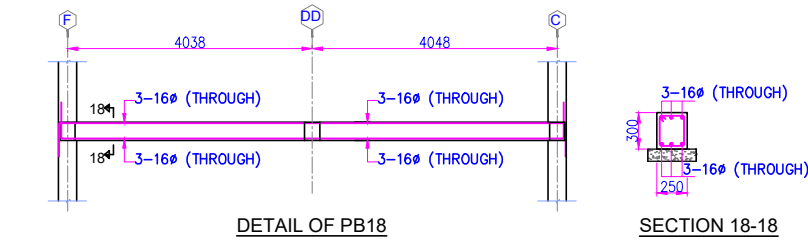
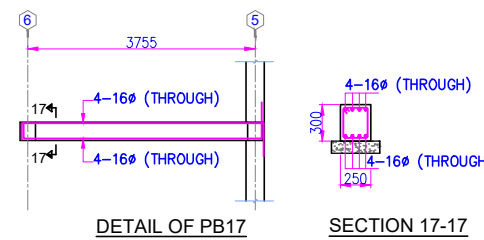
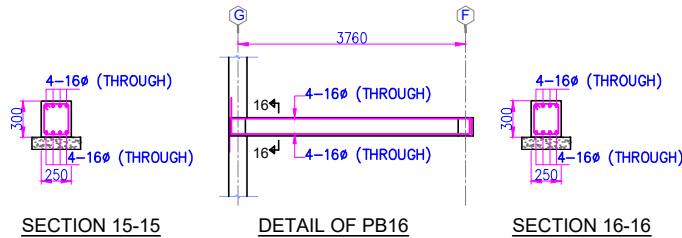
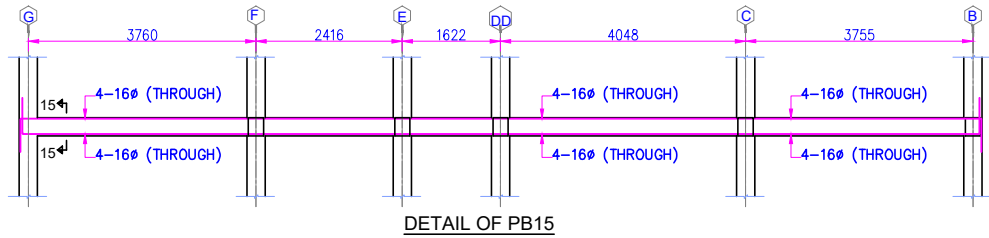
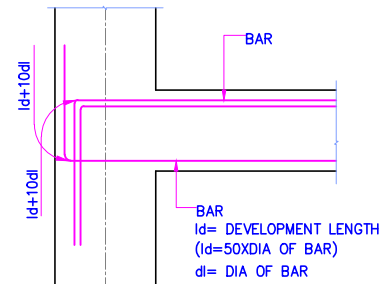
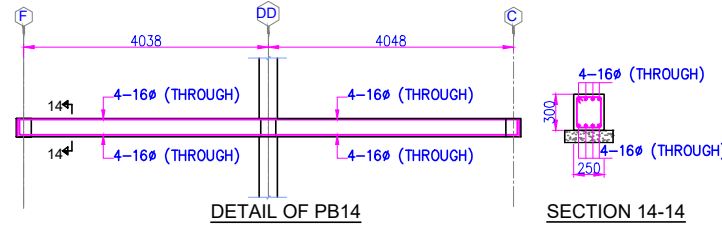
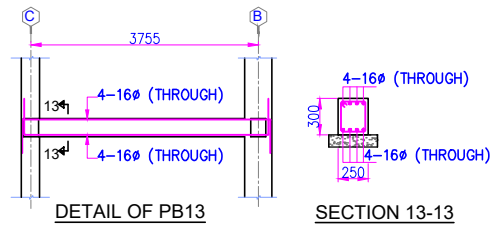
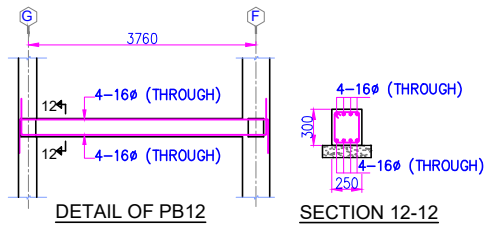
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER
GA & RF DETAILS OF PLINTH BEAM

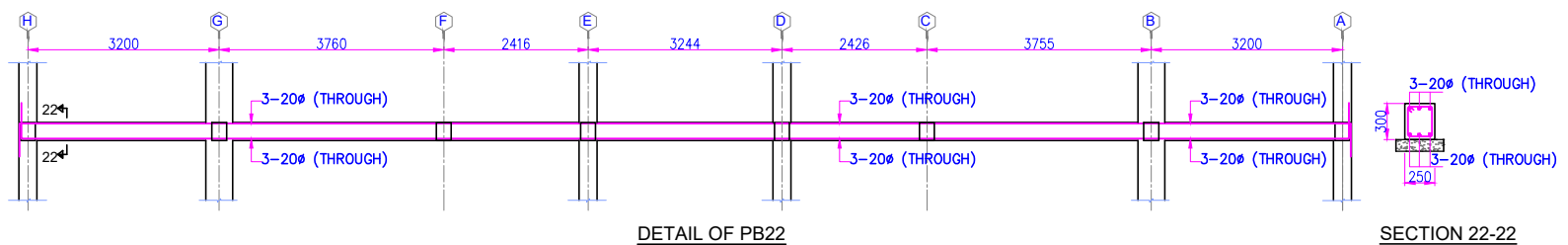
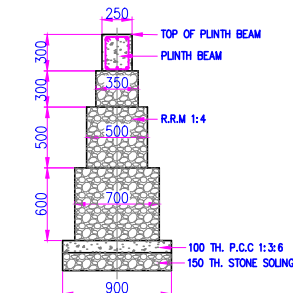
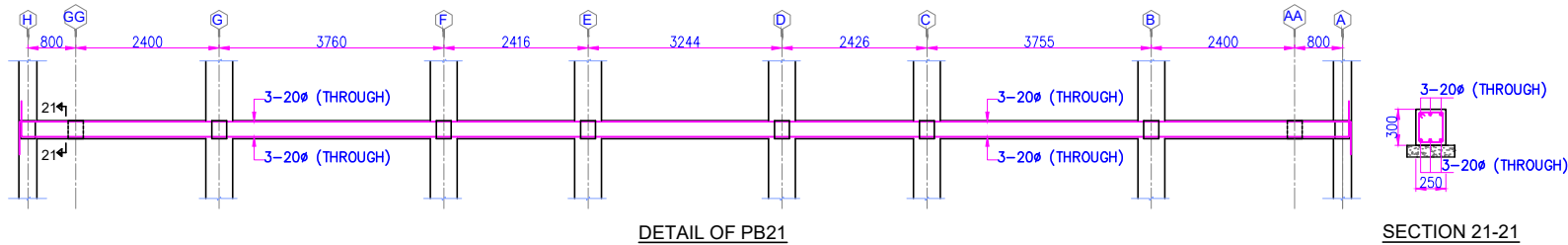
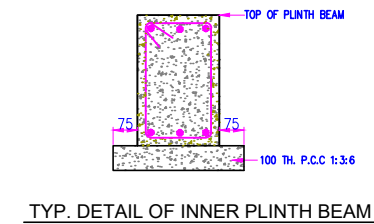
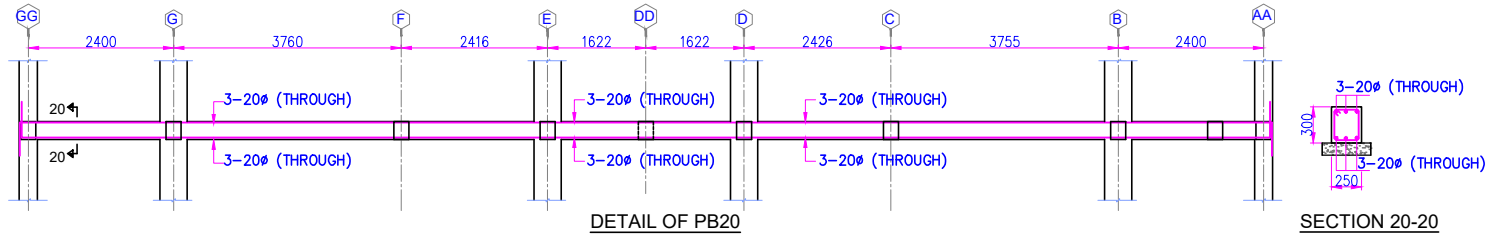
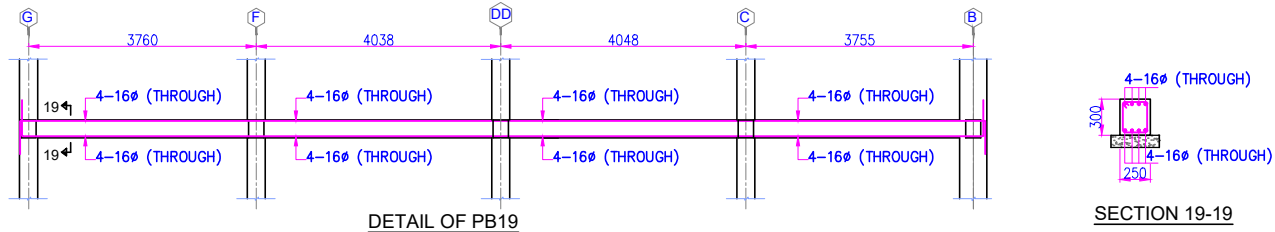
M.M. VERMA (TEAM LEADER)	D.P. CHIBBER (ELECTRICAL ENGINEER)
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)

DECEMBER- 2015

DRG NO.: WAP/DIE/SGLQ/STR/35



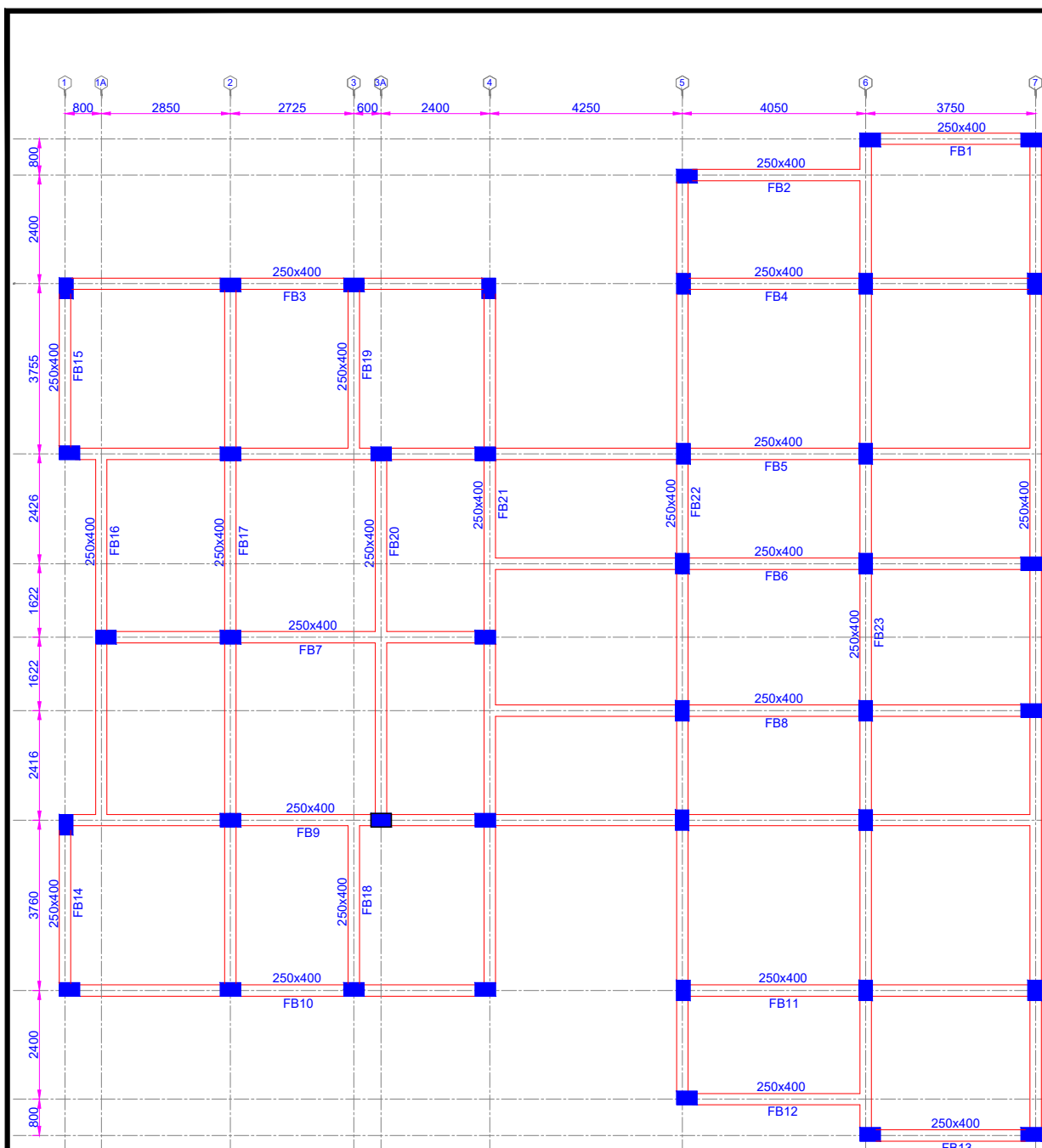
D	SL	a	b
300	600	100	150
400	800	100	200



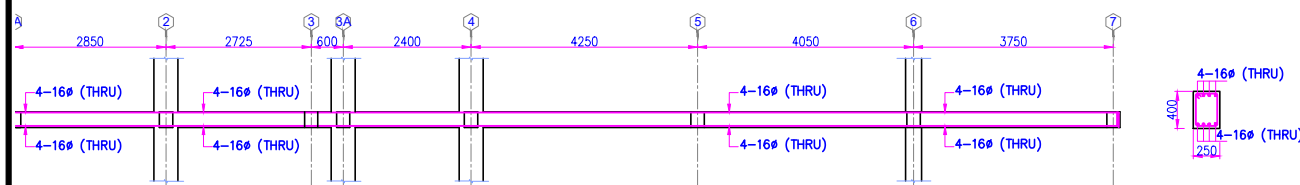
- NOTES**
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M.
 2. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
 3. ALL R.C.C. WORK SHALL BE IN M25 GRADE.
 4. ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786 SIMULTANEOUSLY WITH LAYER OF COLUMN.
 5. CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - a) FOUNDATION -----BOT. 50mm TOP & SIDES 50mm
 - b) COLUMN -----40mm
 - c) BEAM -----25mm
 - d) SLAB -----20mm
 6. LAP LENGTH SHOULD CONSIDER AS 50xDIA. OF BAR.
 7. LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION
- FIELD NOTES**
1. THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS
 2. BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
 3. OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
 4. BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO 95% PROCTOR DRY DENSITY UPTO FGL.
 5. REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
 6. THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRG.

SHEET 5 OF 12

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	WAPCOS LTD.	WAPCOS LTD.
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY		
SECURITY GUARD LIVING QUARTER GA & RF DETAILS OF PLINTH BEAM		
M.M. VERMA (TEAM LEADER)	O.P. CHIBRA (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)	
ANIL K. TRIPATHI (CIVIL ENGINEER)	K.D. CHAKRABORTY (ENVIRONMENT OFFICER)	
DECEMBER-2015	DRG NO.: WAP/DIE/SGLO/STR/35	

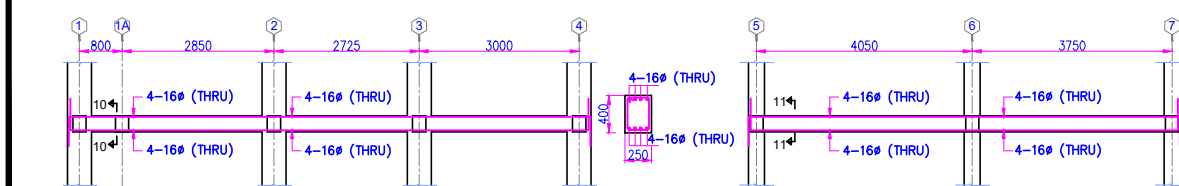


FIRST FLOOR PLAN AT EL. (+) 3.75M



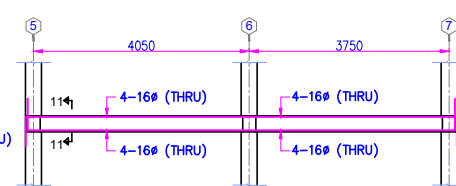
DETAIL OF FB9

SECTION 9-9



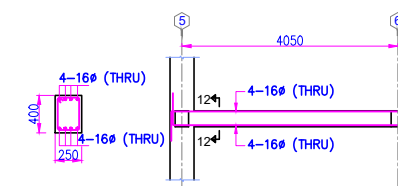
DETAIL OF FB10

SECTION 10-10



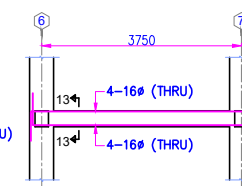
DETAIL OF FB11

SECTION 11-11



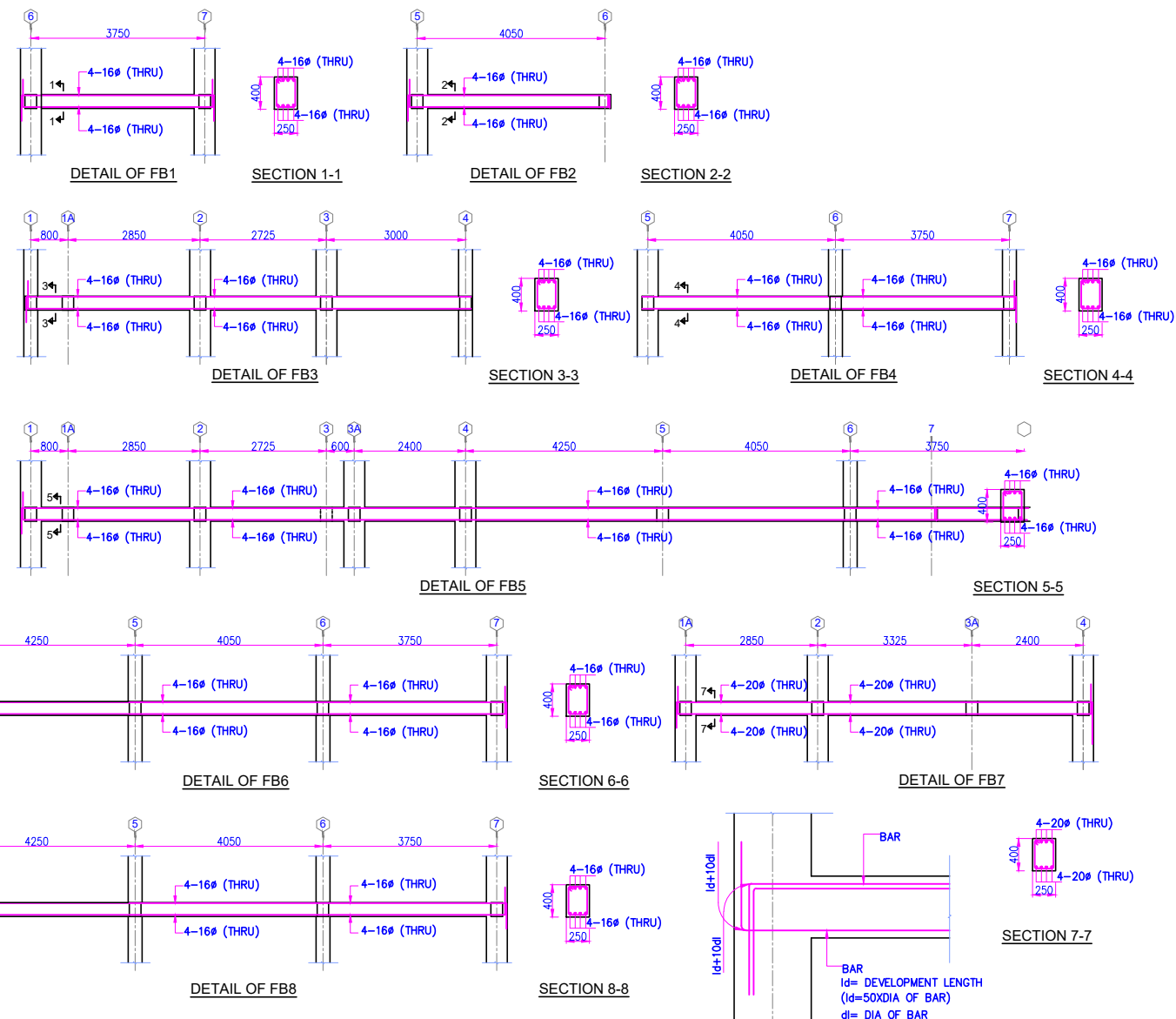
DETAIL OF FB12

SECTION 12-12



DETAIL OF FB13

SECTION 13-13



TYPICAL STIRRUPS IN ALL BEAMS
(LONG SECTION)

TYPICAL STIRRUPS IN ALL BEAMS

D	SL	a	b
300	600	100	150
400	800	100	200

- NOTES**
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
 - ALL R.C.C. WORK SHALL BE IN M25 GRADE.
 - ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786)
 - CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - FOUNDATION - BOT. 50mm TOP & SIDES 50mm
 - COLUMN - 40mm
 - BEAM - 25mm
 - SLAB - 20mm
 - LAP LENGTH SHOULD CONSIDER AS 50X DIA. OF BAR.
 - LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION

- FIELD NOTES**
- THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS.
 - BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
 - OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
 - BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO 95% PROCTOR DRY DENSITY UPTO FGL.
 - REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
 - THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

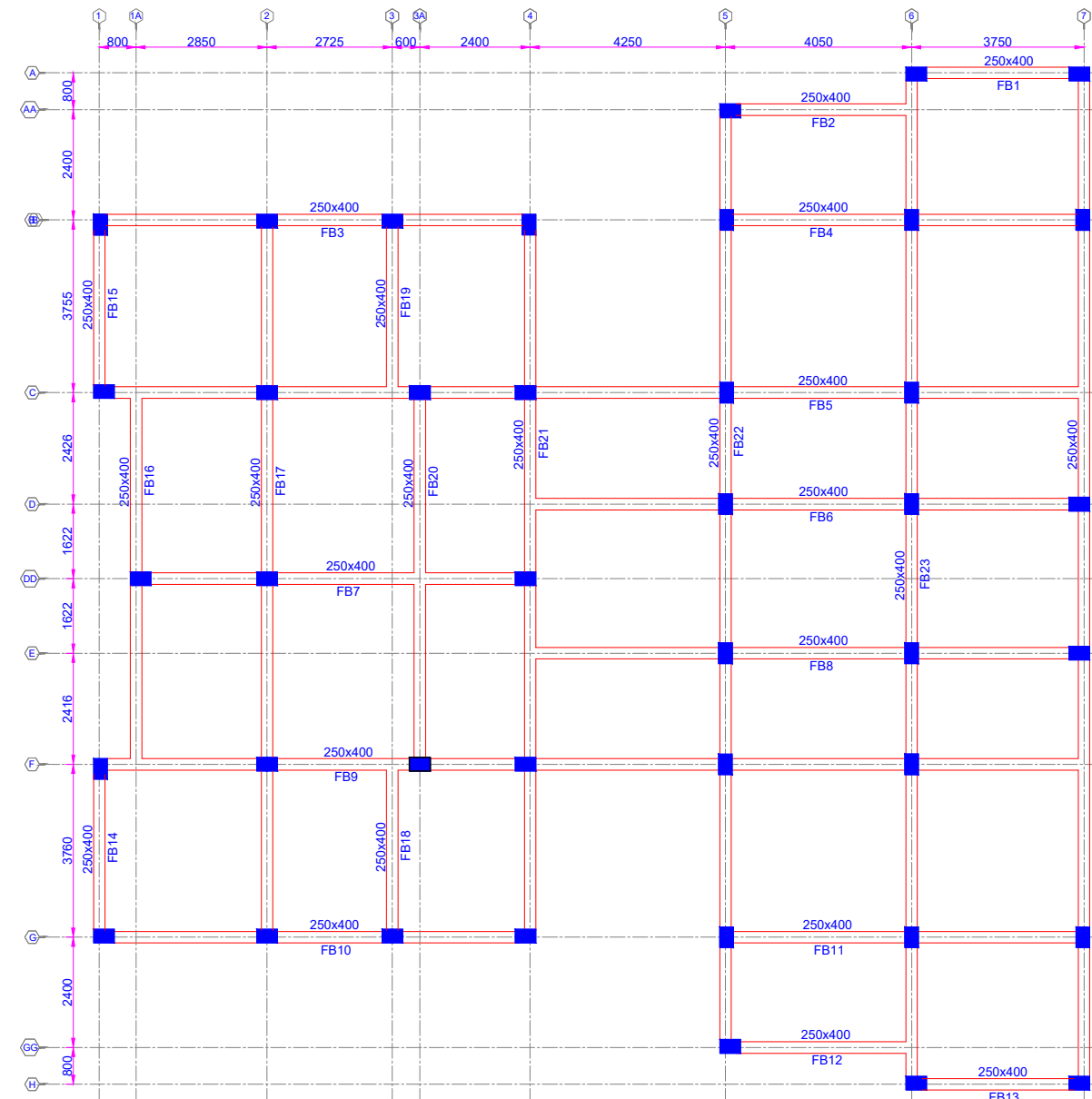
CONSULTANTS: **WAPCOS LTD.**

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

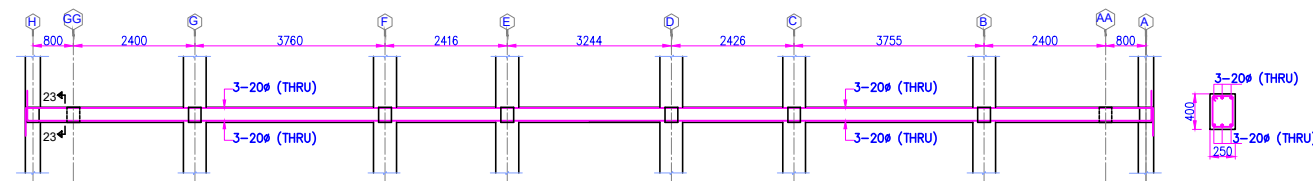
SECURITY GUARD LIVING QUARTER
GA & RF DETAILS OF FIRST FLOOR BEAM

DECEMBER-2015

DRG NO.: WAP/DIE/SGLQ/STR/35

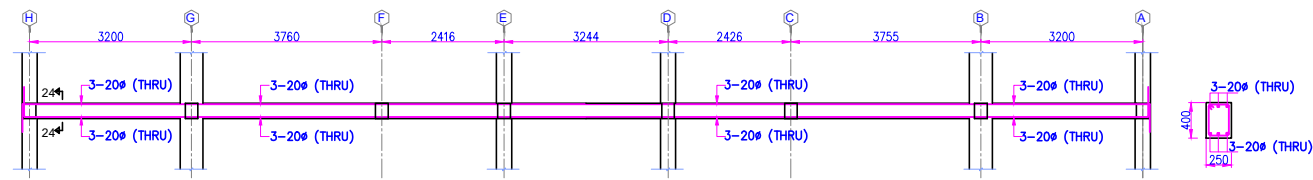


FIRST FLOOR PLAN AT EL. (+) 3.75M



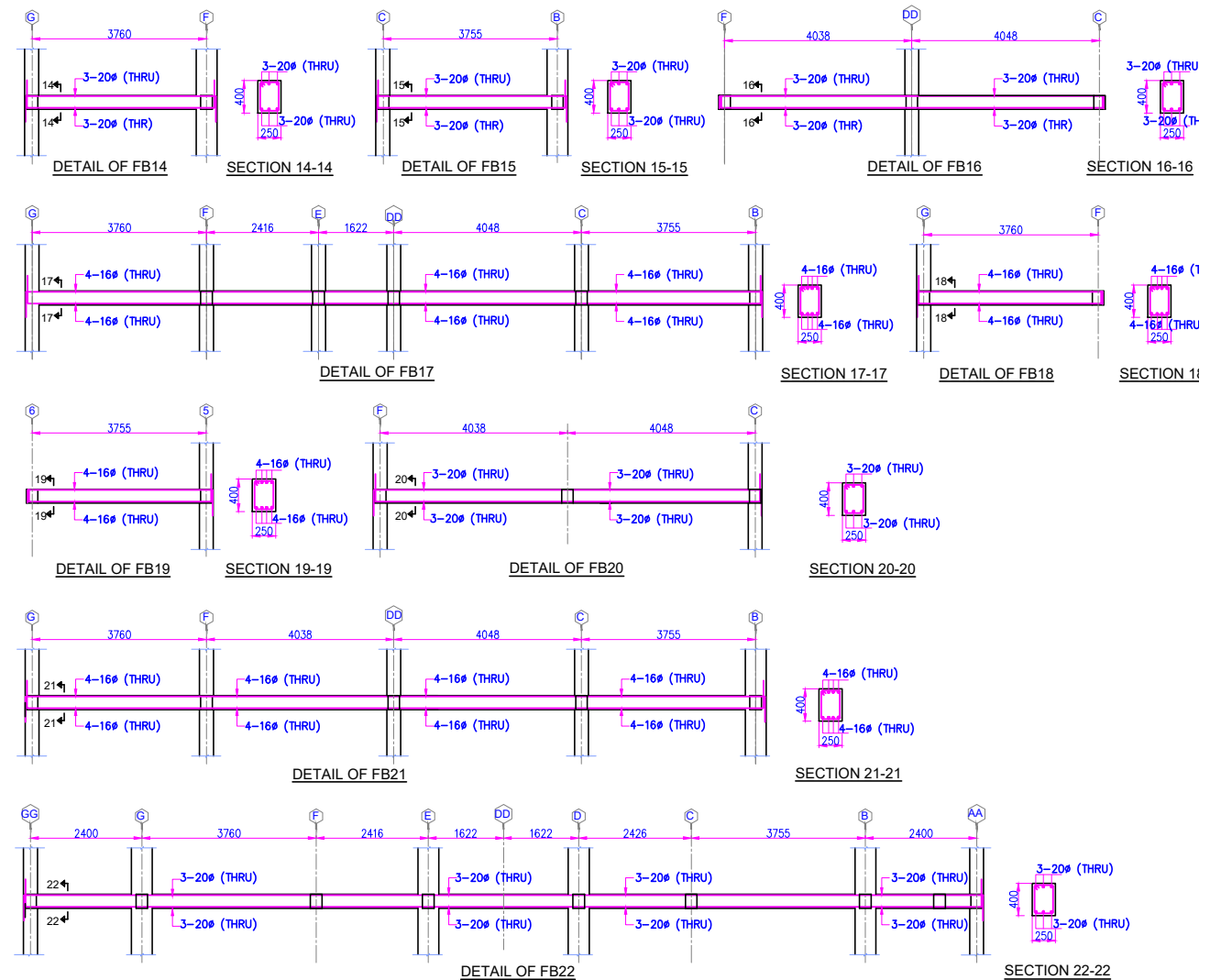
DETAIL OF FB23

SECTION 23-23



DETAIL OF FB24

SECTION 24-24



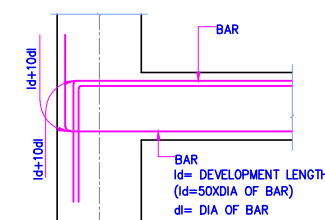
TYPICAL STIRRUPS IN ALL BEAMS
(LONG SECTION)

- NOTES**
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
 - ALL R.C.C. WORK SHALL BE IN M25 GRADE.
 - ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786)
 - CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - FOUNDATION --- BOT: 50mm TOP & SIDES 50mm
 - COLUMN --- --- 40mm
 - BEAM --- --- 25mm
 - SLAB --- --- 20mm
 - LAP LENGTH SHOULD CONSIDER AS 50xDIA. OF BAR.
 - LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION

- FIELD NOTES**
- THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS
 - BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
 - OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
 - BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO 95% PROCTOR DRY DENSITY UPTO FGL.
 - REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND

TYPICAL STIRRUPS IN ALL BEAMS

D	SL	a	b
300	600	100	150
400	800	100	200



DETAILED PROJECT REPORT FOR

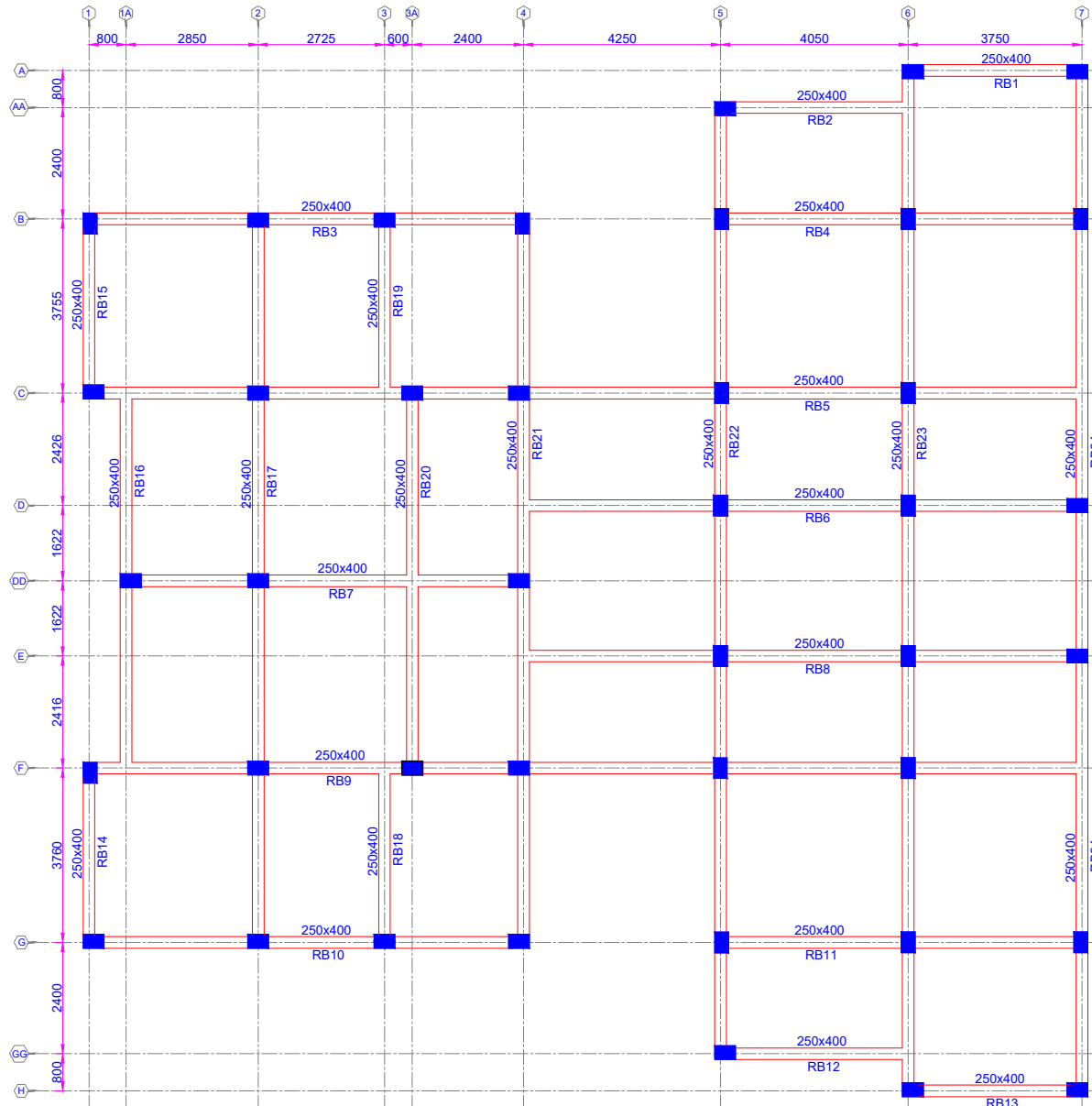
**DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN**

CONSULTANTS: **WAPCOS LTD.**

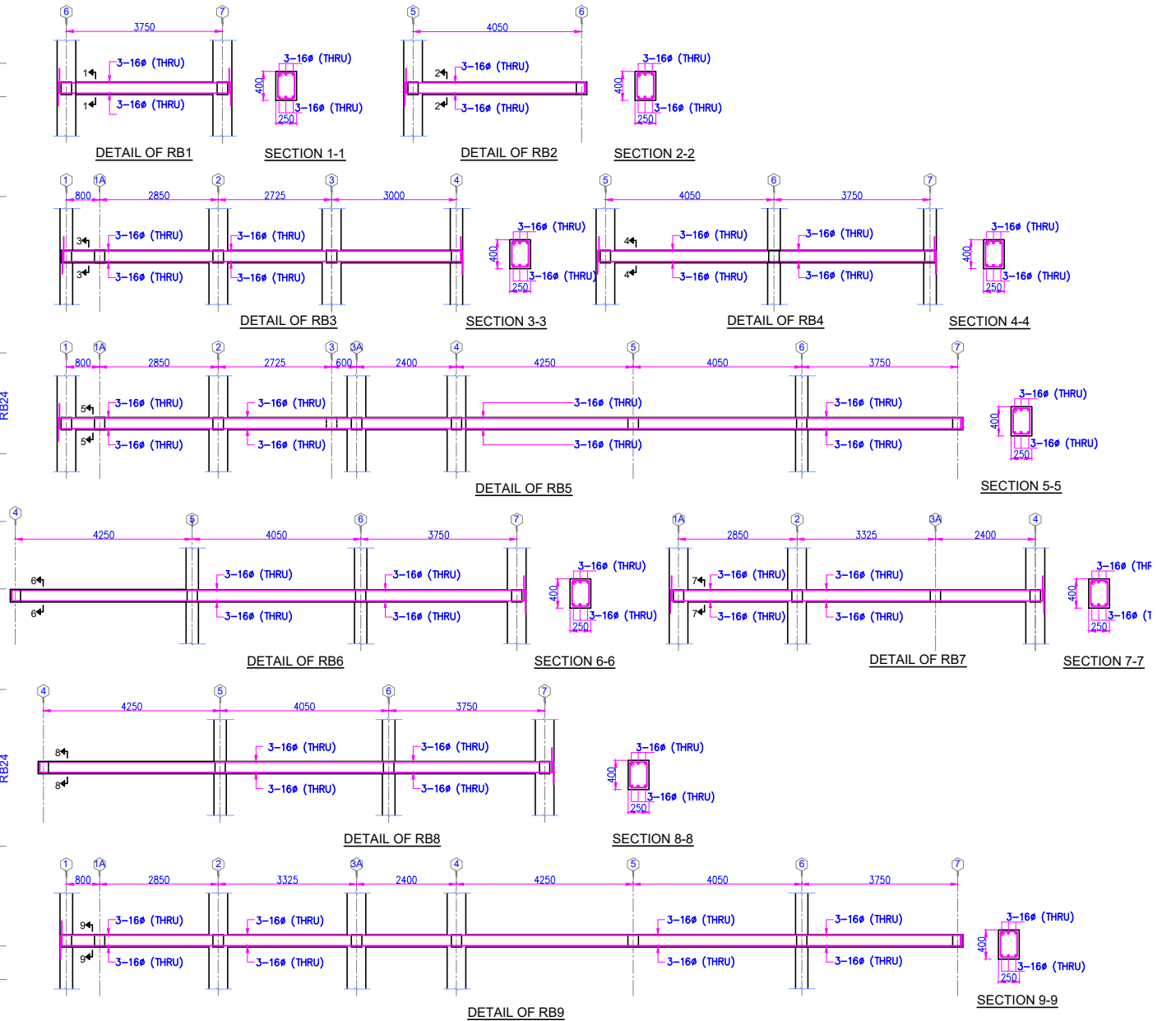
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

**SECURITY GUARD LIVING QUARTER
GA & RF DETAILS OF FIRST FLOOR BEAM**

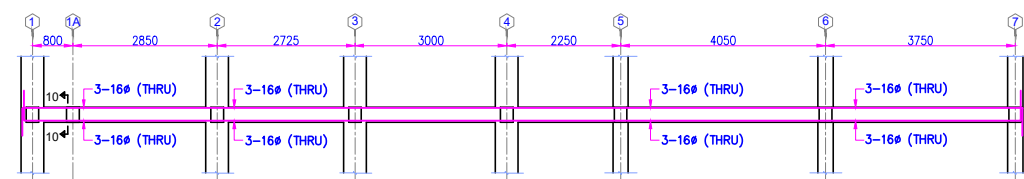
M.M. VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)
DECEMBER-2015	DRG NO.: WAP/DIE/SGLQ/STR/35



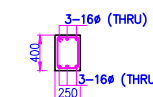
ROOF PLAN AT EL. (+) 6.90M



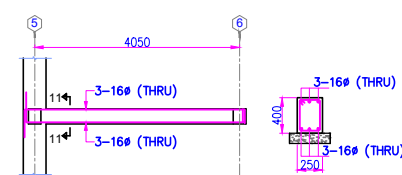
- NOTES**
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
 - ALL R.C.C. WORK SHALL BE IN M25 GRADE.
 - ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786)
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d) SLAB -----20mm
 - LAP LENGTH SHOULD CONSIDER AS 50DIA. OF BAR.
 - LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION



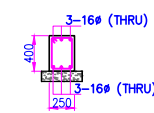
DETAIL OF RB10



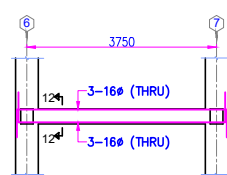
SECTION 10-10



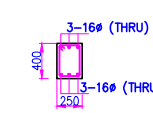
DETAIL OF RB11



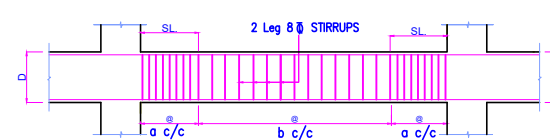
SECTION 11-11



DETAIL OF RB12



SECTION 12-12



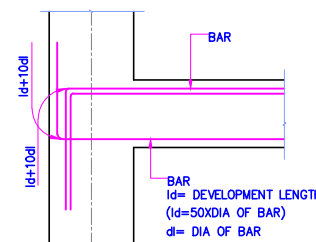
TYPICAL STIRRUPS IN ALL BEAMS (LONG SECTION)

D	SL	a	b
300	600	100	150
400	800	100	200

TYPICAL STIRRUPS IN ALL BEAMS

FIELD NOTES

- THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS.
- BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
- OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
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- REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
- THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.



SHEET 8 OF 12

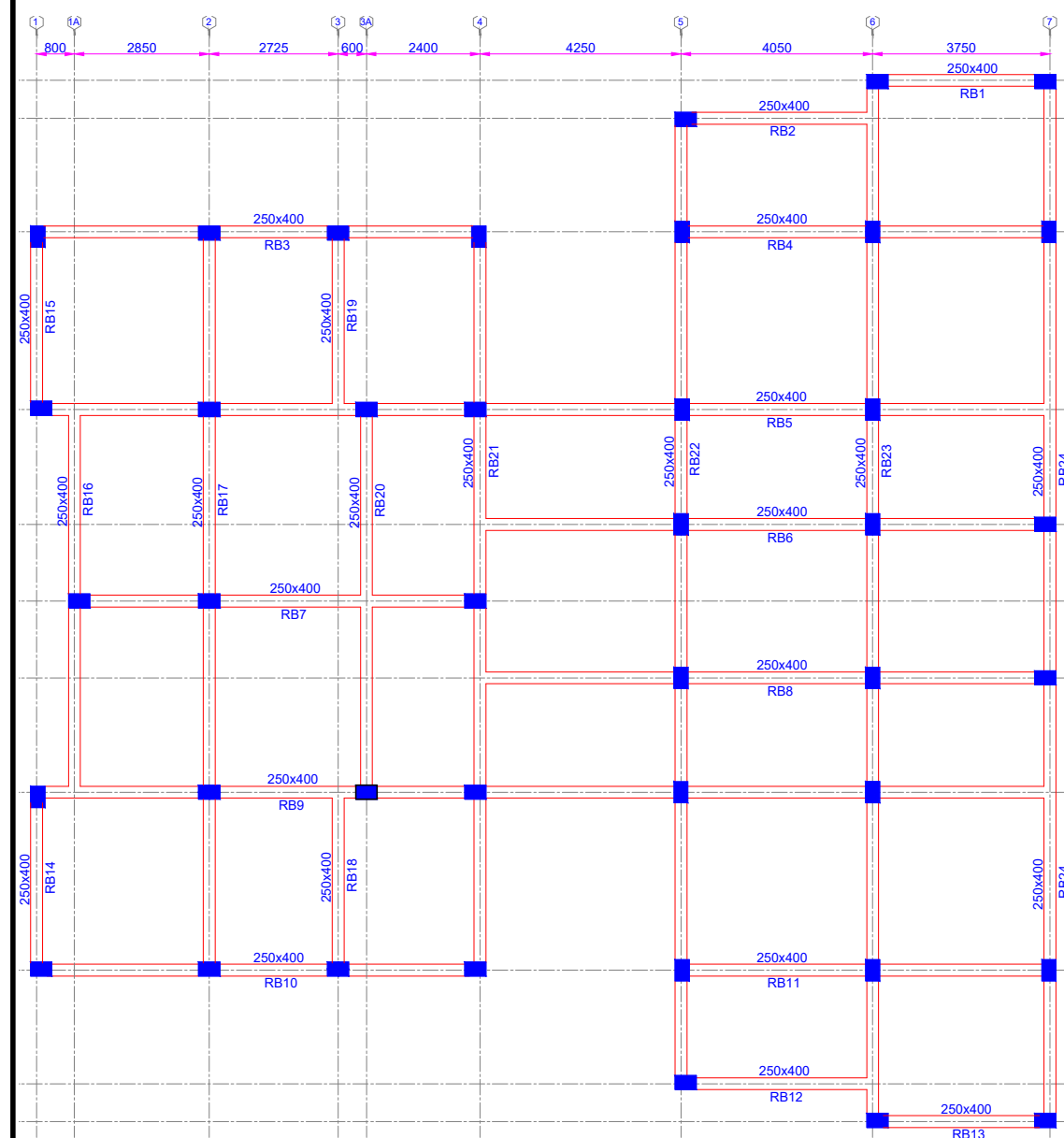
DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

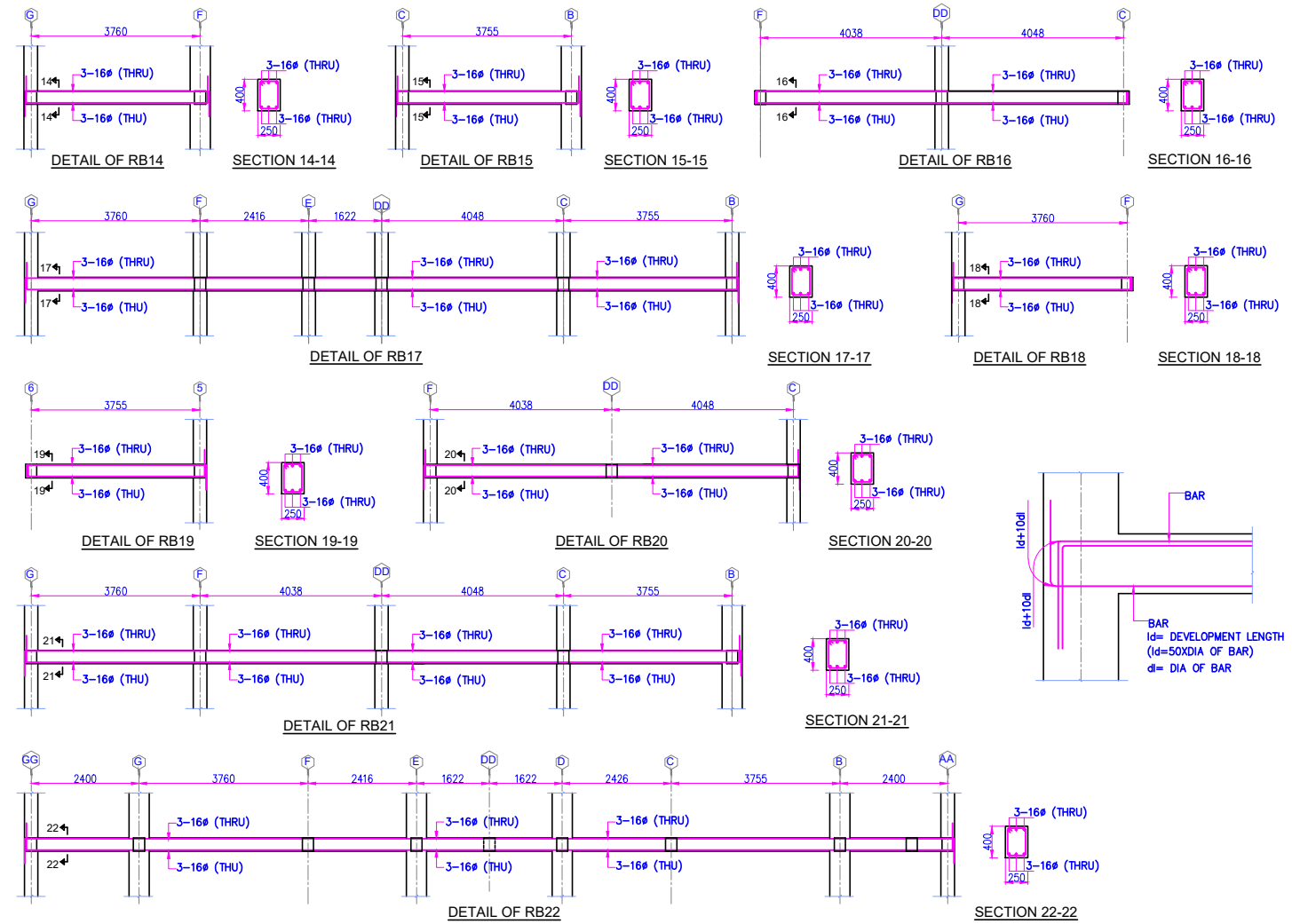
CONSULTANTS: **WAPCOS LTD.**

SECURITY GUARD LIVING QUARTER
GA & RF DETAILS OF ROOF BEAM

DECEMBER-2015

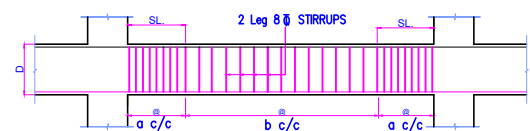


ROOF PLAN AT EL. (+) 6.90M



- NOTES**
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
 - ALL R.C.C. WORK SHALL BE IN M25 GRADE.
 - ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF $\phi \geq 500$ GRADE CONFORMING TO IS:1786).
 - CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - FOUNDATION -----80T, 50mm TOP & SIDES 50mm
 - COLUMN -----40mm
 - BEAM -----25mm
 - SLAB -----20mm
 - LAP LENGTH SHOULD CONSIDER AS 50X DIA. OF BAR.
 - LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION.

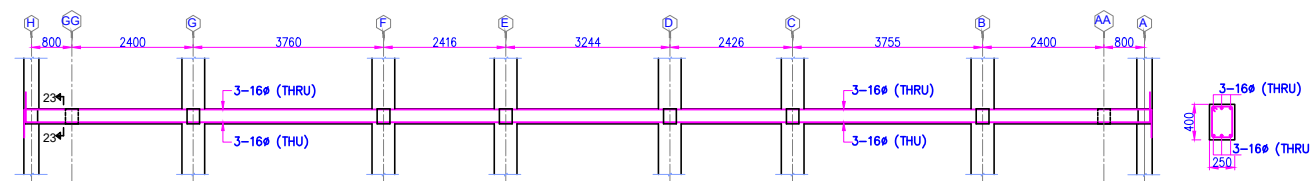
- FIELD NOTES**
- THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS.
 - BACK FILLING WITH APPROVED MEDIUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
 - OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
 - BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO ISX PROCTOR DRY DENSITY UPTO FGL.
 - REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
 - THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.



TYPICAL STIRRUPS IN ALL BEAMS (LONG SECTION)

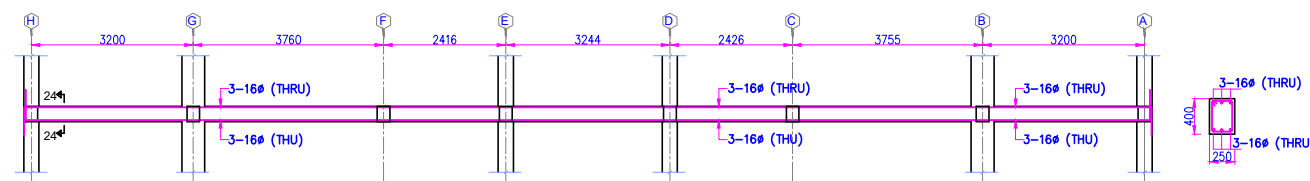
TYPICAL STIRRUPS IN ALL BEAMS

D	SL	a	b
300	600	100	150
400	800	100	200



DETAIL OF RB23

SECTION 23-23



DETAIL OF RB24

SECTION 24-24

SHEET 9 OF 12

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

CONSULTANTS: **WAPCOS LTD.**

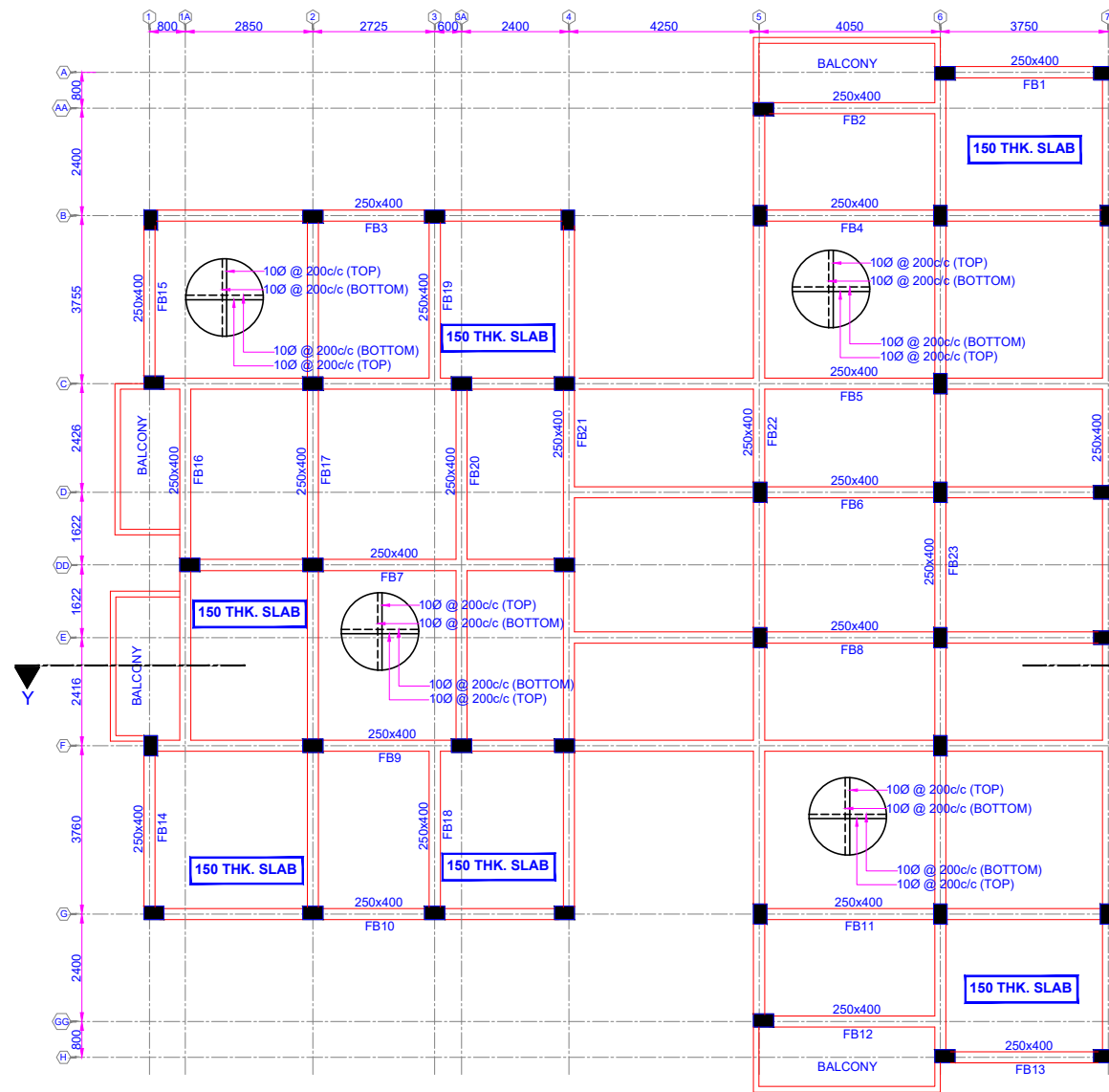
HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER
GA & RF DETAILS OF ROOF BEAM

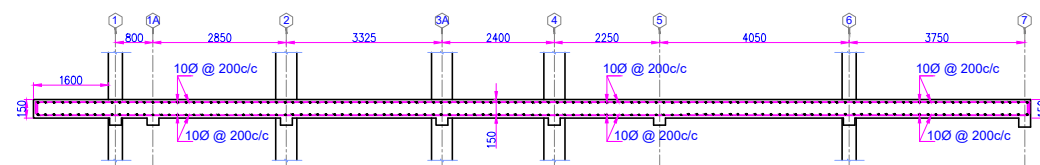
M.M. VERMA (TEAM LEADER)	S.P. CHIBRA (ELECTRICAL ENGINEER)
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)
ANIL K. TRIPATHI (CIVIL ENGINEER)	K.D. CHAKRABORTY (ENVIRONMENT OFFICER)

DECEMBER-2015

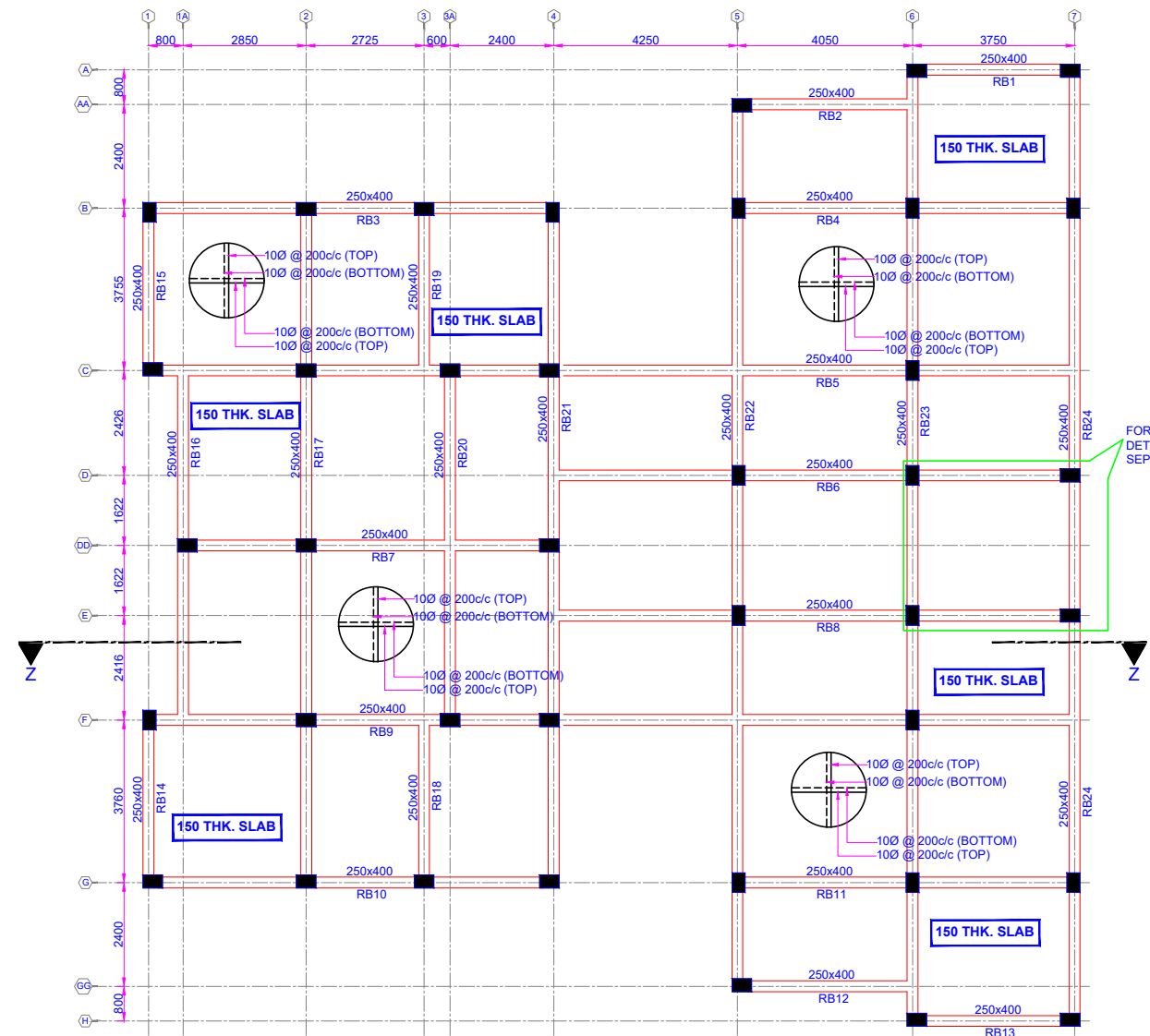
DRG NO.: WAP/DIE/SGLO/STR/35



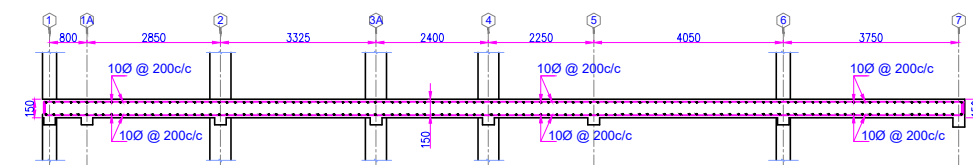
FIRST FLOOR PLAN AT EL. (+) 3.50M



SECTION Y-Y



ROOF PLAN AT EL. (+) 9.0M



SECTION Z-Z

SHEET 10 OF 12

NOTES

1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
2. ALL R.C.C. WORK SHALL BE IN M25 GRADE.
3. ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 550 GRADE CONFORMING TO IS:1786).
4. CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - a) FOUNDATION -----40mm
 - b) COLUMN-----40mm
 - c) BEAM -----25mm
 - d) SLAB -----20mm
5. LAP LENGTH SHOULD CONSIDER AS 50xØ. OF BAR.
6. LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION.

FIELD NOTES

1. THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS.
2. BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
3. OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
4. BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO 95% PROCTOR DRY DENSITY UPTO FGL.
5. REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
6. THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN

CONSULTANTS:



WAPCOS LTD.



HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER GA & RF DETAILS OF SLAB

M.M. VERMA

(TEAM LEADER)

ANURAG VARMA

(ARCHITECT)

AMITABH TRIPATHI

(CIVIL ENGINEER)

DECEMBER- 2015

O.P. CHIBBER

(ELECTRICAL ENGINEER)

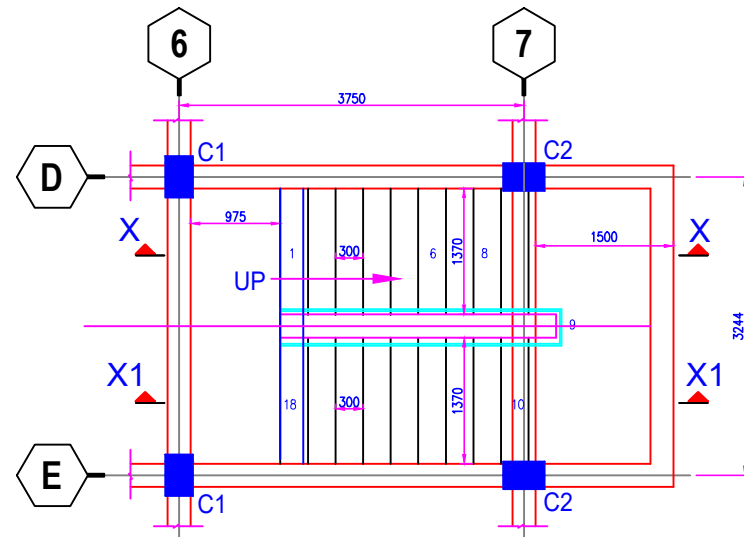
S.S. GODARA

(SURVEY OFFICER)

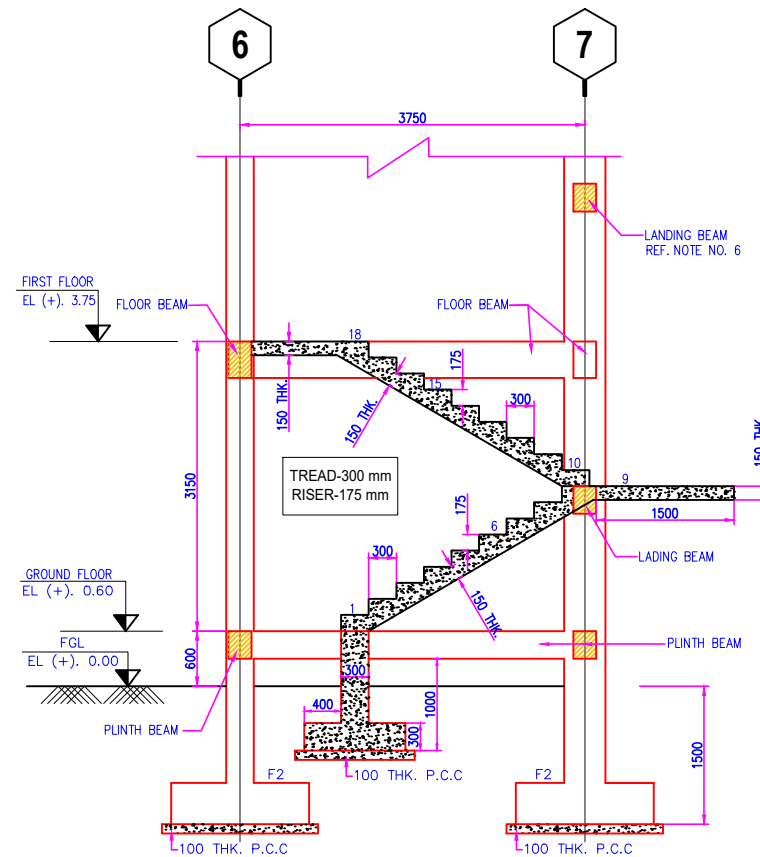
K.D. CHAMLING

(ENVIRONMENT OFFICER)

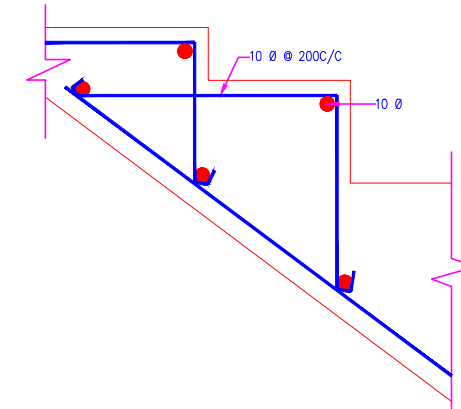
DRG NO.: WAP/DIE/SG/LQ/STR/35



PLAN SHOWING THE LAYOUT OF STAIRCASE
FROM GROUND FLOOR TO FIRST FLOOR



TYPICAL SECTION X-X THROUGH STAIRCASE



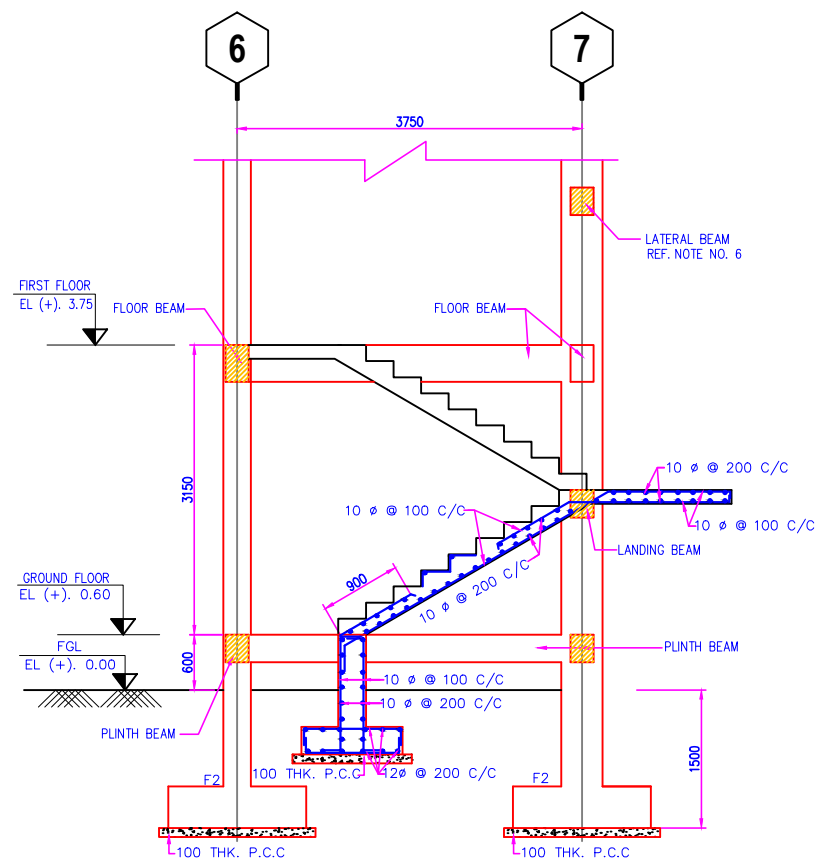
DETAIL OF NOSING REINFORCEMENT

NOTES

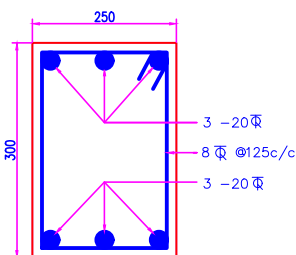
- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
- ALL R.C.C. WORK SHALL BE IN M25 GRADE.
- ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY (HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786
- CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - FOUNDATION -----BOT. 50mm TOP & SIDES 50mm
 - COLUMN-----40mm
 - BEAM -----25mm
 - SLAB -----20mm
 - STAIRCASE SLAB-----20mm
- LAP LENGTH SHOULD CONSIDER AS 50xDIA. OF BAR.
- LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION

FIELD NOTES

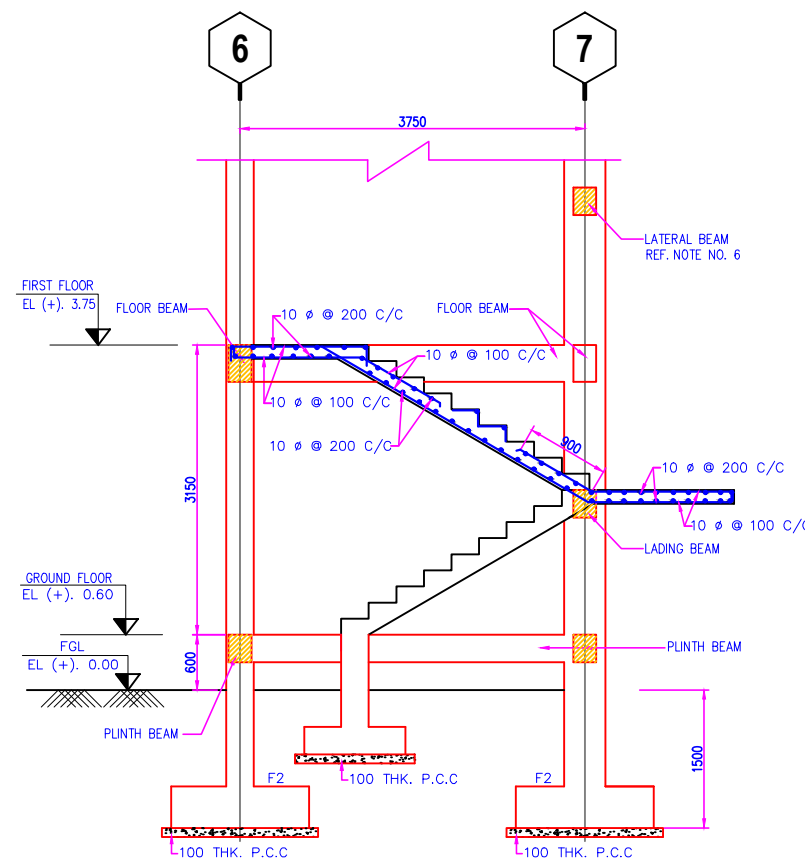
- THE FOUNDATION SIZES ARE BASED ON THE DESIGN. THE SIZE OF EXCAVATION SHOULD BE AS PER SITE REQUIREMENTS
- BACK FILLING WITH APPROVED MOORUM/SAND SHALL BE FILLED UP SIMULTANEOUSLY WITH LAYER OF COLUMN.
- OUTER PLINTH BEAMS WHICH ARE ALONG THE PERIPHERY OF BUILDING SHALL BE CASTED OVER WELL COMPACTED SUB-BASE BY PROVIDING PCC OF 100MM.
- BACK FILLING OVER ROCK & GRADING OF AREA AROUND THE BUILDING SHALL BE DONE BY PROVIDING STRUCTURALLY COMPACTED FILLING CONFORMING TO 95% PROCTOR DRY DENSITY UPTO FGL.
- REFER DRG. SHEET 1 OF 12 FOR BASIC DESIGN DETAILS AND GENERAL NOTES.
- TO AVOID SLENDER COLUMN A LATERAL BEAM OF SIZE 250x300 IS PROPOSED AT EL. (+) 5.475M
- THIS DRG. SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL DRG.



REINFORCEMENT DETAIL THROUGH SECTION X-X



TYPICAL SECTION OF
LANDING & LATERAL BEAM



REINFORCEMENT DETAIL THROUGH SECTION X1-X1

SHEET 11 OF 12

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN

CONSULTANTS:

WAPCOS LIMITED

WAPCOS LTD.

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER R/F DETAILS OF STAIRCASE

M.M. VERMA

(TEAM LEADER)

ANURAG VARMA

(ARCHITECT)

AMITABH TRIPATHI

(CIVIL ENGINEER)

DECEMBER-2015

O.P. CHIBBER

(ELECTRICAL ENGINEER)

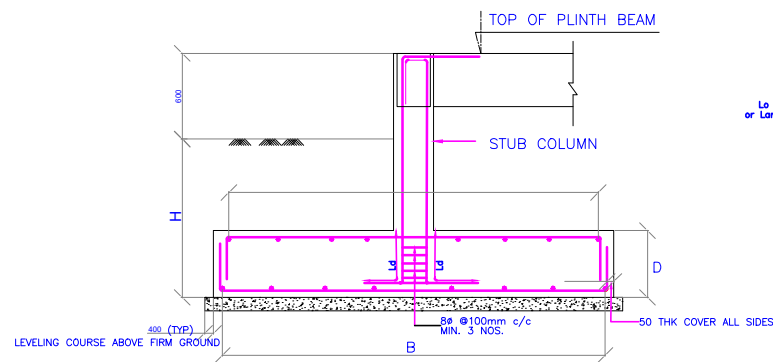
S.S. GODARA

(SURVEY OFFICER)

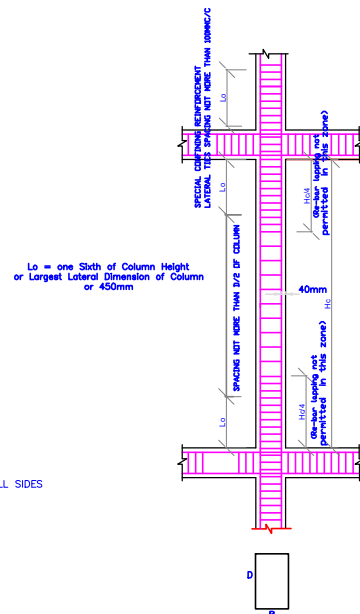
K.D. CHAMLING

(ENVIRONMENT OFFICER)

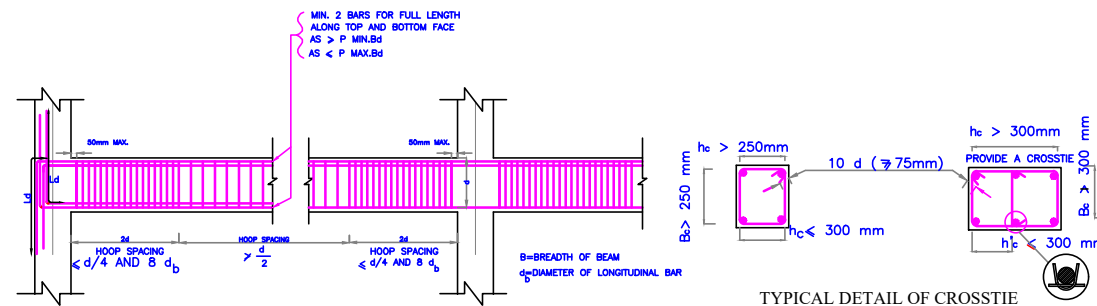
DRG NO.: WAP/DIE/SGLQ/STR/35



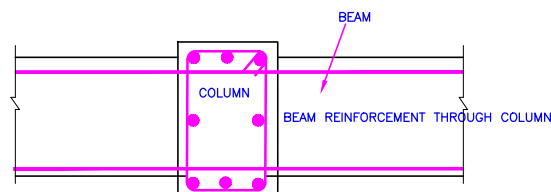
TYP.REINF.DETAIL OF ISOLATED FOOTING & STUB COLUMN



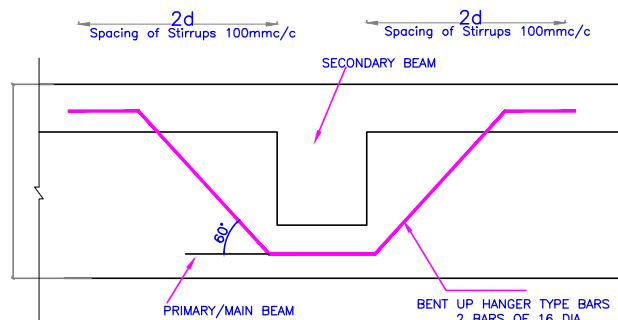
TYPICAL COLUMN SECTION
(SHOWING TYPICAL ARRANGEMENT OF REBAR AND TIES IN COLUMN)



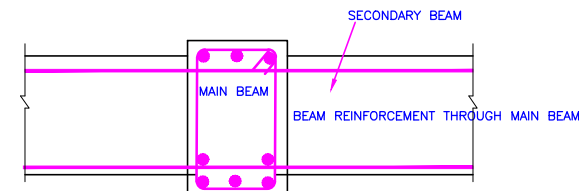
TYPICAL BEAM STIRRUPS ARRANGEMENT DETAILS



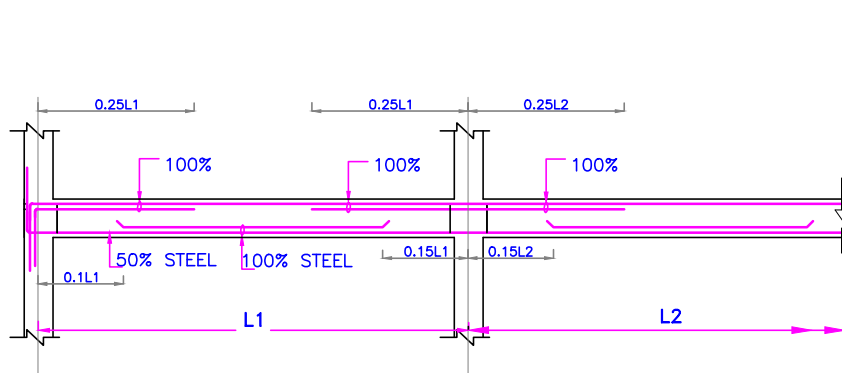
TYPICAL SECTION
(SHOWING TYPICAL ARRANGEMENT OF REBAR OF BEAM THROUGH COLUMN)



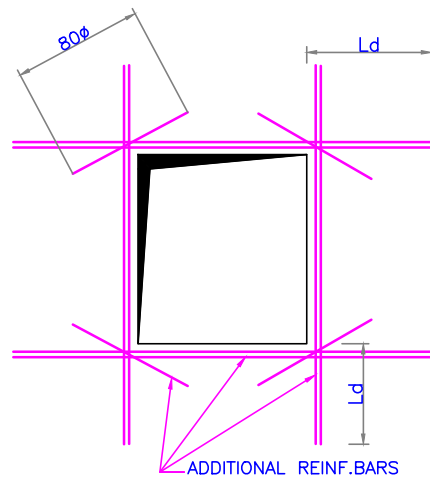
TYPICAL SECTION
(REINFORCEMENT DETAILS OF SECONDARY BEAM CONNECTING TO PRIMARY BEAM)



TYPICAL SECTION
(SHOWING TYPICAL ARRANGEMENT OF REBAR OF SEC. BEAM THROUGH MAIN BEAM)



TYPICAL CURTAILMENT DETAILS OF CONTINUOUS BEAM



TYPICAL REINFORCEMENT DETAILS AROUND SLAB OPENING

SL.NO.	DIAMETER (mm)	Ld (mm)
1.	12	710
2.	16	940
3.	20	1175
4.	25	1500

NOTES

- ALL DIMENSIONS ARE IN MM & LEVELS ARE IN M. ONLY WRITTEN DIMENSION ARE TO BE FOLLOWED.
- ALL R.C.C. WORK SHALL BE IN M25 GRADE.
- ALL REINFORCEMENT STEEL SHALL BE TESTED QUALITY HIGH YIELD STRENGTH T.M.T. BARS OF Fe 500 GRADE CONFORMING TO IS:1786
- CLEAR COVER TO MAIN REINF. SHALL BE AS FOLLOWS:
 - FOUNDATION -----BOT. 50mm TOP & SIDES 50mm
 - COLUMN -----40mm
 - BEAM-----25mm
 - SLAB-----20mm
 - RETAINING WALL -----50mm
- LAP SHALL BE STAGGERED AND NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT ANY GIVEN SECTION
- LAP LENGTH SHALL BE 50 x φ OF BAR.
- REFER IS: 13920 -1993 (REAFFIRMED 2003) AND SP 34-1987 FOR GENERAL REINF. DETAILING PROVISIONS.

SHEET 12 OF 12

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN

CONSULTANTS:



WAPCOS LTD.



HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER

STRUCTURAL DETAILS
GENERAL REINFORCEMENT DETAILING

M.M. VERMA
(TEAM LEADER)

ANURAG VARMA
(ARCHITECT)

AMITABH TRIPATHI
(CIVIL ENGINEER)

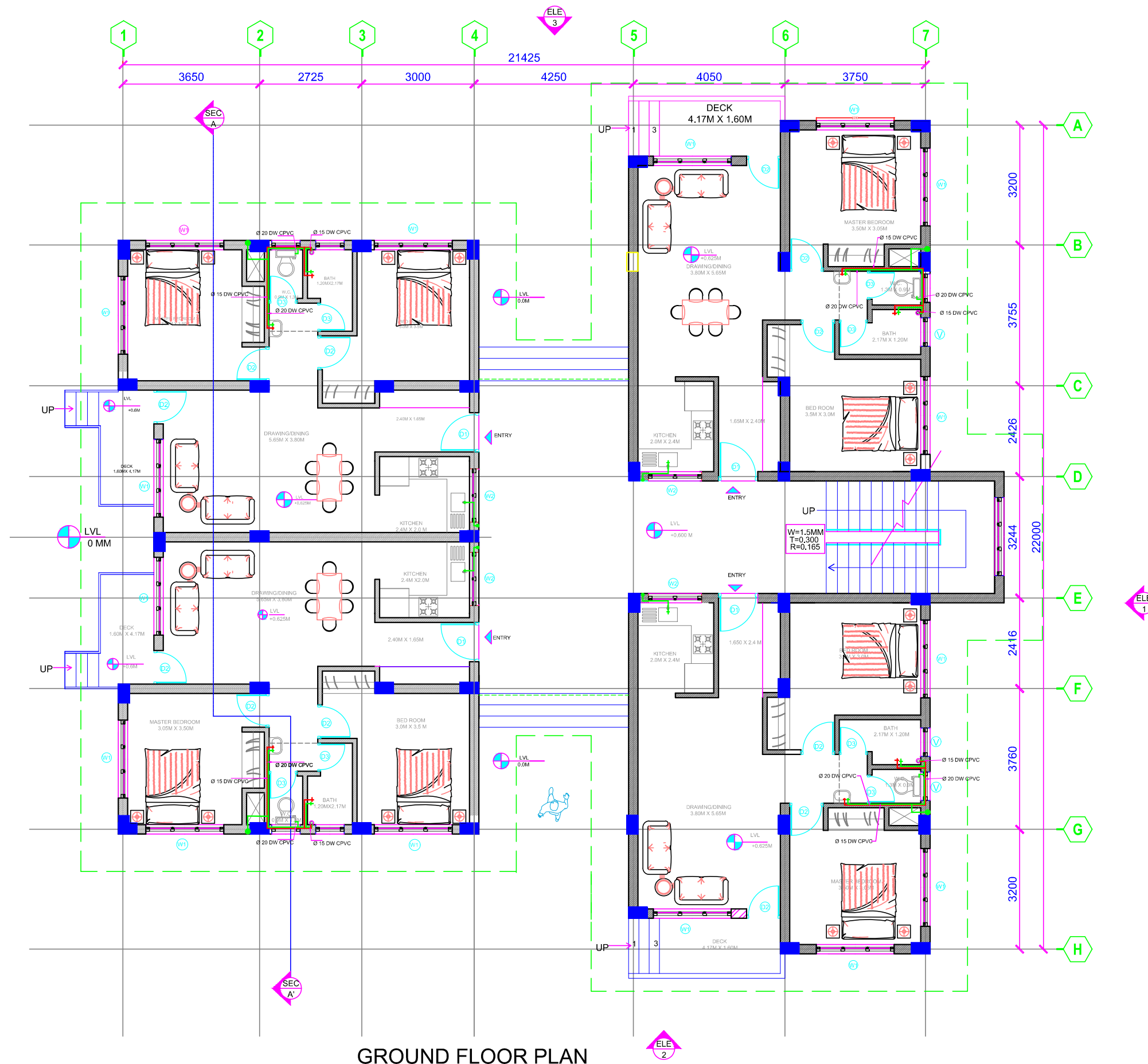
DECEMBER- 2015

D.P. CHIBBER
(ELECTRICAL ENGINEER)

S.S. GODARA
(SURVEY OFFICER)

K.D. CHAMLING
(ENVIRONMENT OFFICER)

DRG NO.: WAP/DIE/SGLO/STR/35



NOTE:

1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

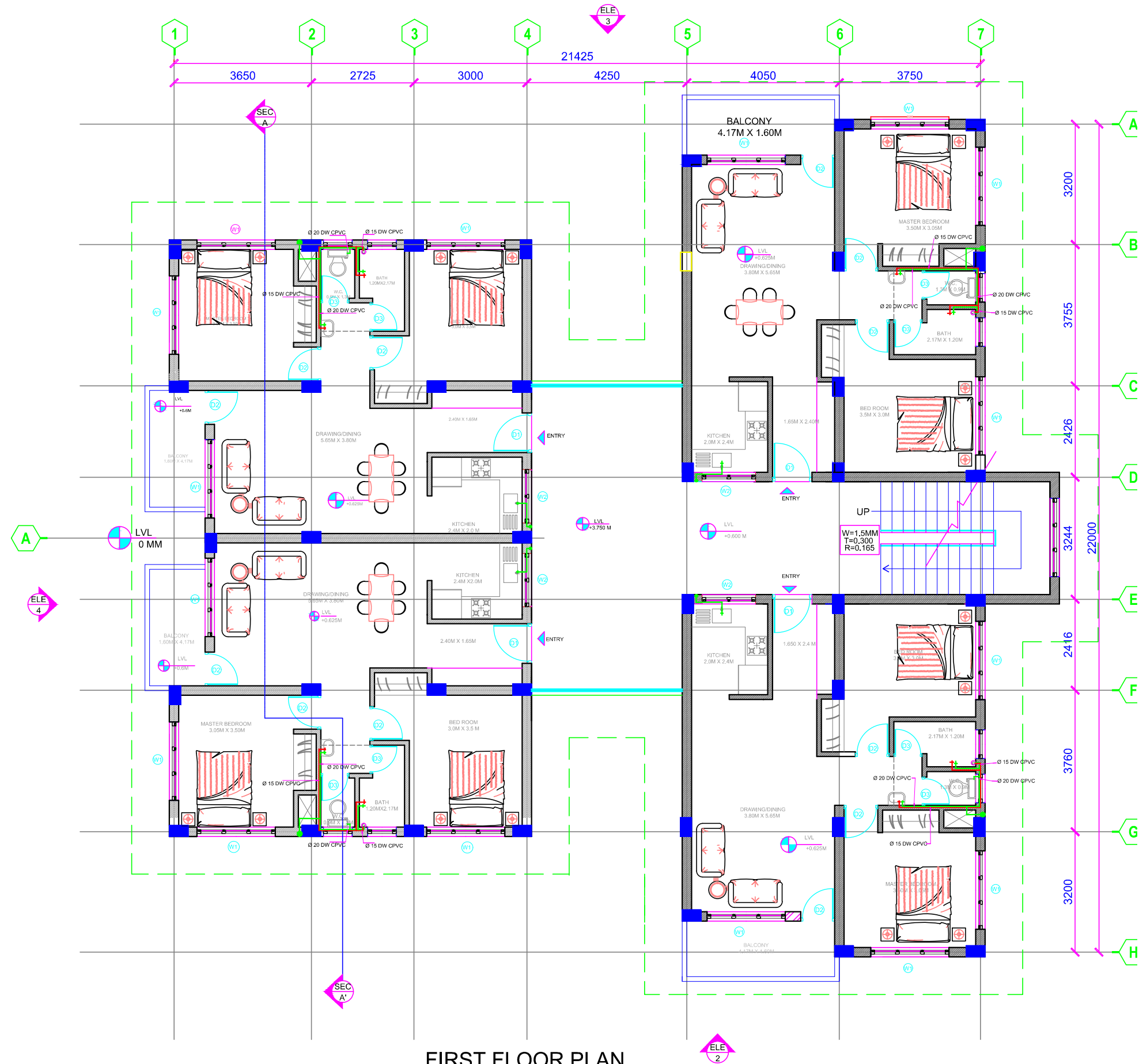
LEGEND:-

- COLD WATER PIPE (Green line)
- HOT WATER PIPE (Red line)
- GEYSER (Circle with 'G')

GROUND FLOOR PLAN

SHEET 1 OF 4

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	
	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - GROUND FLOOR PLAN PLUMBING DETAILS		
M.M.VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)	
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)	
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/PLUMB./37	



FIRST FLOOR PLAN

- NOTE:**
1. DRAWINGS ARE NOT TO BE SCALED.
 2. ALL DIMENSIONS ARE IN MILLIMETERS.
 3. ALL LEVELS ARE IN METERS.

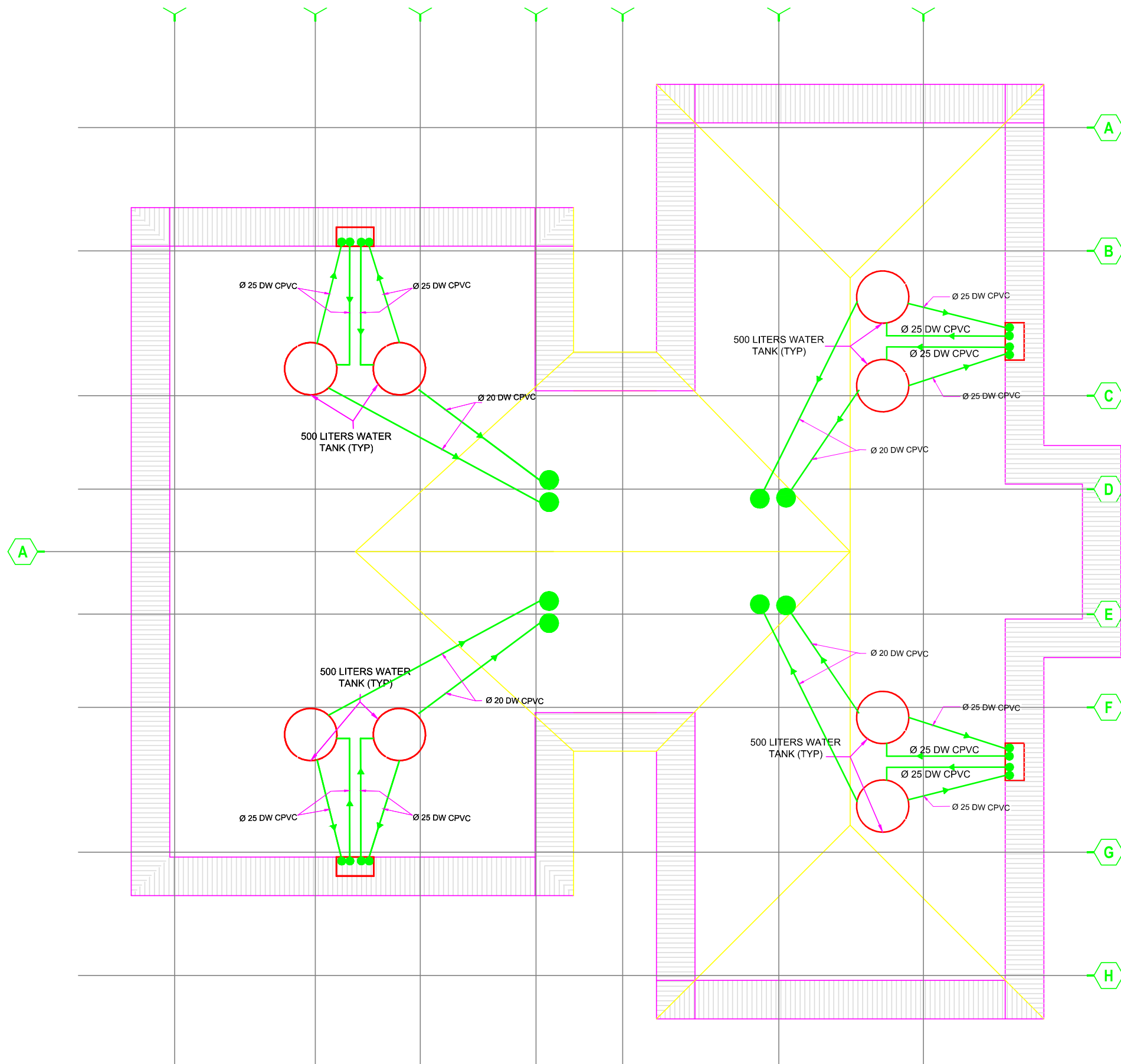
LEGEND:-

COLD WATER PIPE —

HOT WATER PIPE —

GEYSER G

SHEET 2 OF 4		
DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	
	WAPCOS LTD. is a Public Limited Company incorporated in India under the Companies Act, 1956. It is a member of the Indian Engineering & Management Consultancy Association (IEMCA) and the Indian Institute of Engineers (IIE).	
	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - FIRST FLOOR PLAN PLUMBING DETAILS		
M.M.VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)	
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)	
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/PLUMB./37	

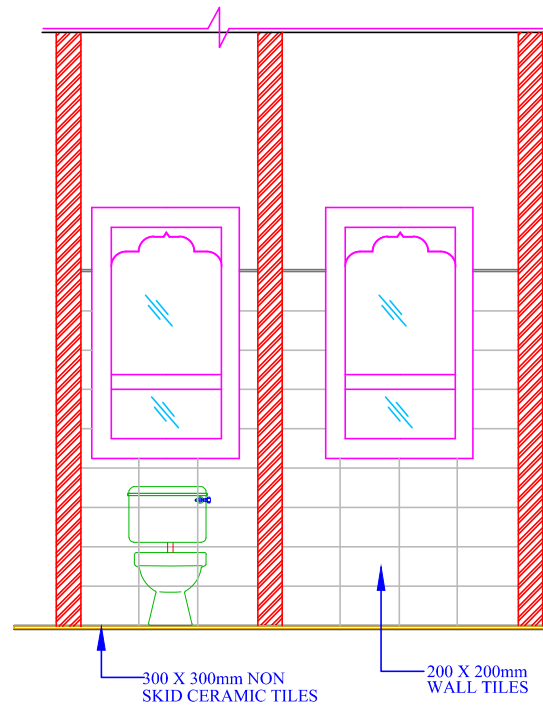


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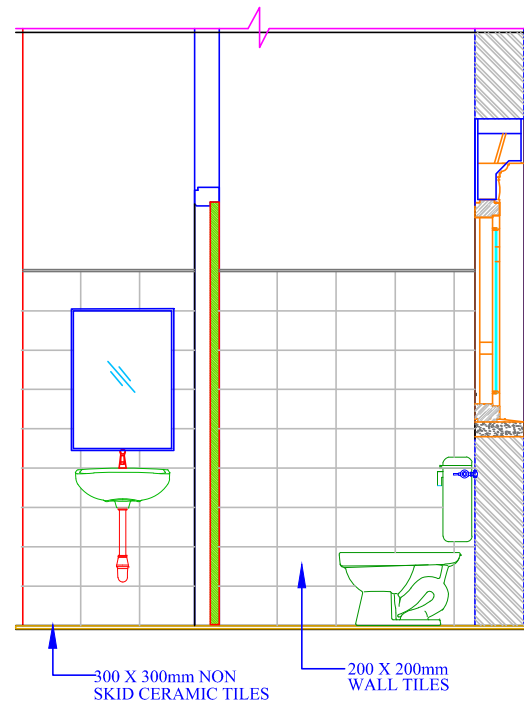
1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

SHEET 3 OF 4

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - ROOF PLAN PLUMBING DETAILS		
M.M. VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (CIVIL ENGINEER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D. CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SGLQ/PLUMB./37	



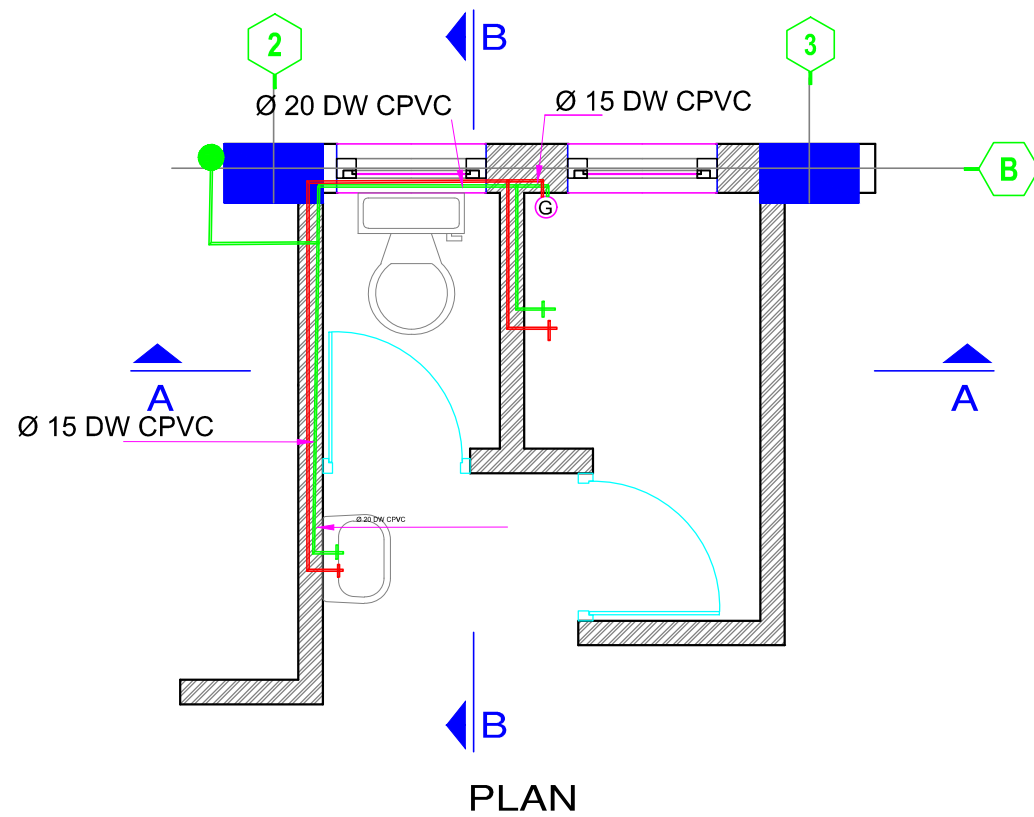
SECTION A-A



SECTION B-B

NOTE:

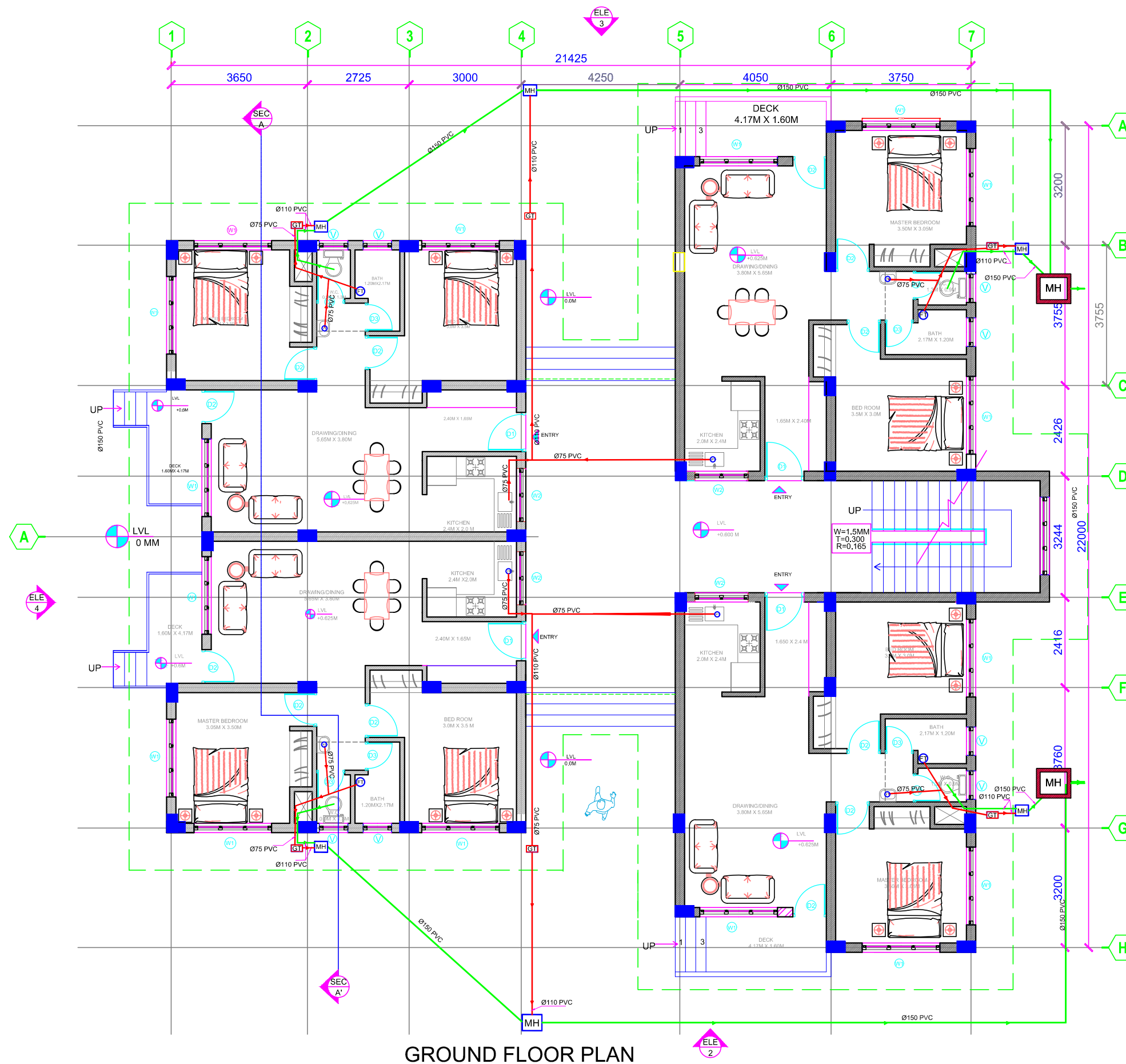
1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.



PLAN

SHEET 4 OF 4

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - TOILET DETAILS PLUMBING DETAILS		
M.M. VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (CIVIL ENGINEER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D. CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SGLQ/PLUMB./37	



NOTE:

1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

LEGEND:-

- SEWER PIPE —
- SANITARY PIPE —
- FLOOR TRAP (FT)
- URINAL TRAP (UT)

SHEET 1 OF 8

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER - GROUND FLOOR PLAN SANITARY SEWER DETAILS		
M.M. VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (CIVIL ENGINEER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D. CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SGLQ/SANIT./38	   

NOTE:

1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

LEGEND:-

- SEWER PIPE —
- SANITARY PIPE —
- FLOOR TRAP (FT)
- URINAL TRAP (UT)

SHEET 2 OF 8

DETAILED PROJECT REPORT FOR

**DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN**

CONSULTANTS:



WAPCOS LTD.



HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

**SECURITY GUARD LIVING QUARTER - FIRST FLOOR PLAN
SANITARY SEWER DETAILS**

M.M. VERMA
(TEAM LEADER)

ANURAG VARMA
(ARCHITECT)

AMITABH TRIPATHI
(CIVIL ENGINEER)

DECEMBER - 2015

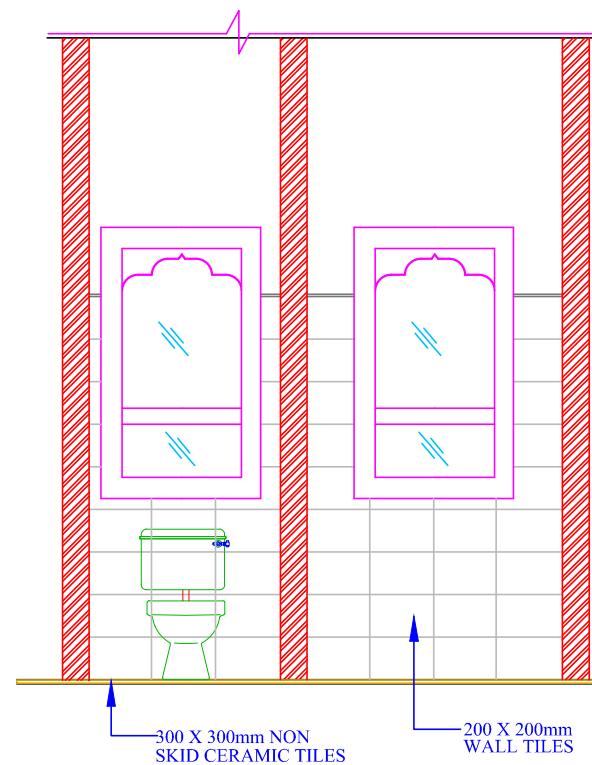
O.P. CHIBBER
(ELECTRICAL ENGINEER)

S.S. GODARA
(SURVEY OFFICER)

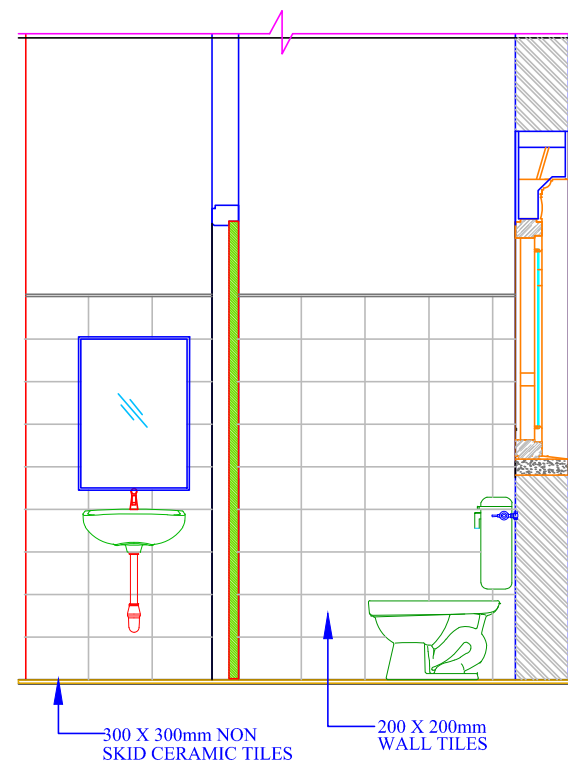
K.D. CHAMLING
(ENVIRONMENT OFFICER)

DRG NO.: WAP/DIE/SGLQ/SANIT./38

FIRST FLOOR PLAN



SECTION A-A



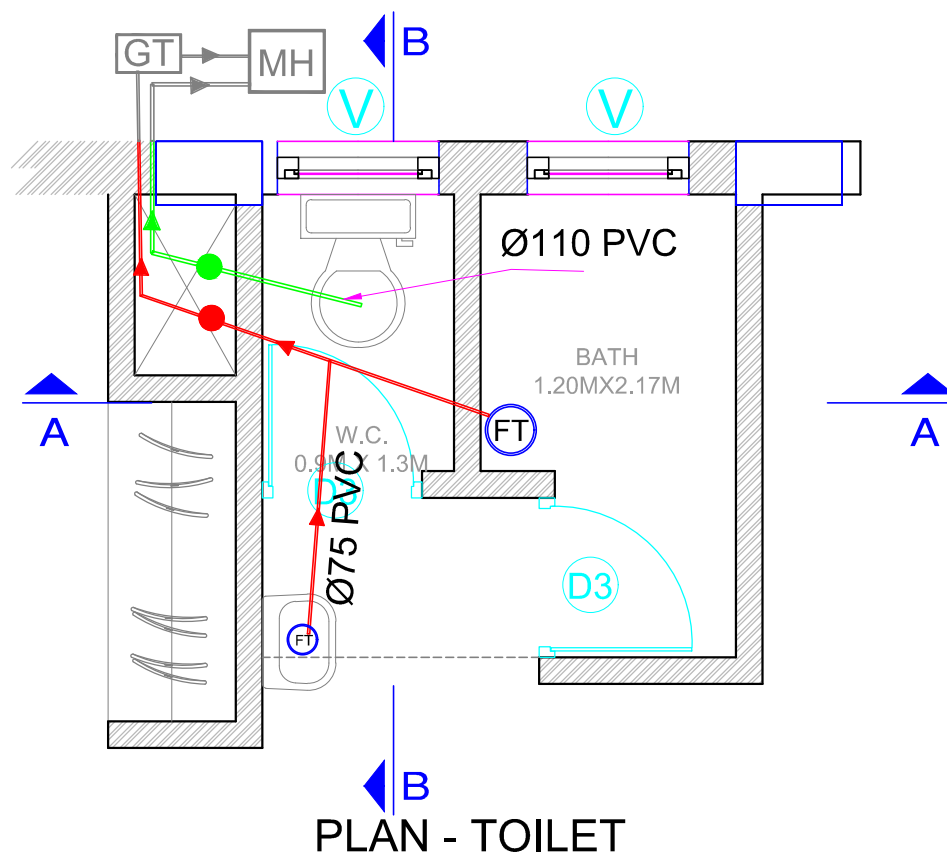
SECTION B-B

NOTE:

1. DRAWINGS ARE NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.

LEGEND:-

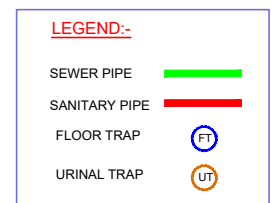
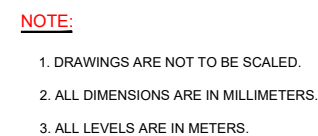
- SEWER PIPE
- SANITARY PIPE
- FLOOR TRAP
- URINAL TRAP

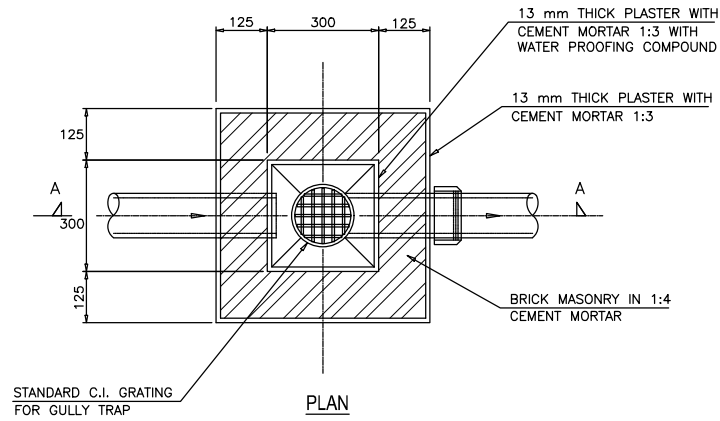


PLAN - TOILET

SHEET 3 OF 8

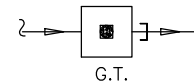
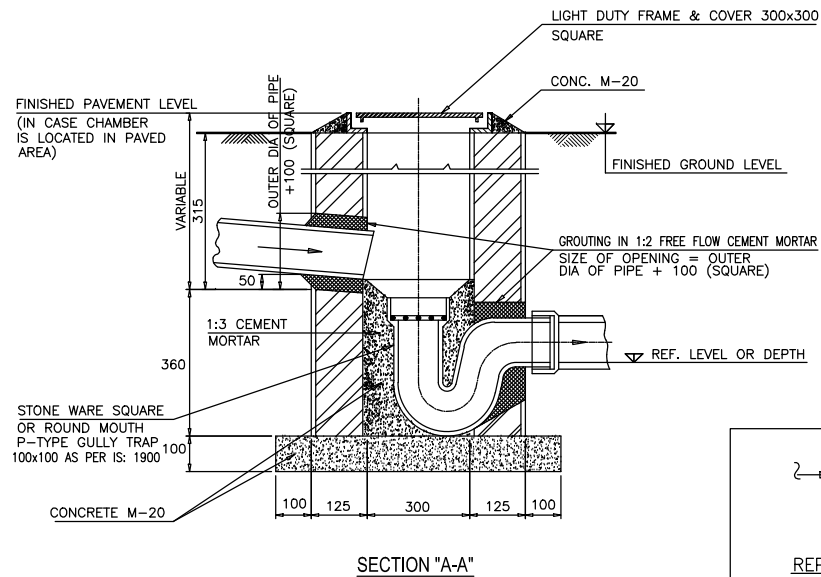
DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY		
SECURITY GUARD LIVING QUARTER - TOILET DETAILS SANITARY SEWER DETAILS		
M.M.VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)	
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)	
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/SANIT./38	





NOTE:

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2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL LEVELS ARE IN METERS.



REPRESENTATION ON DRG.

SHEET 5 OF 8

DETAILED PROJECT REPORT FOR

**DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN**

CONSULTANTS:



WAPCOS LTD.



HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

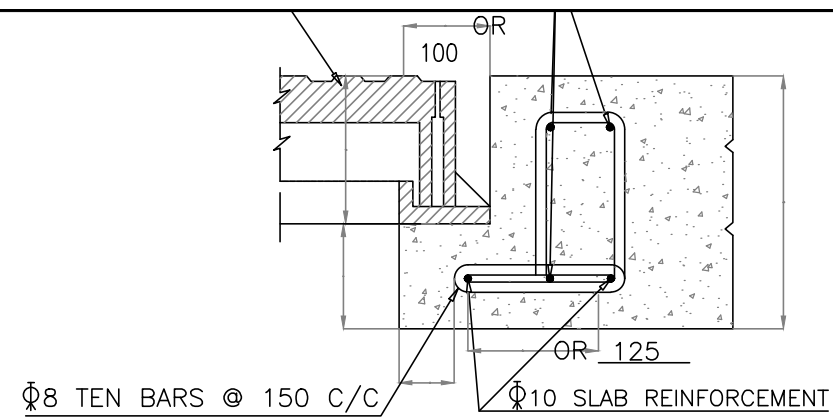
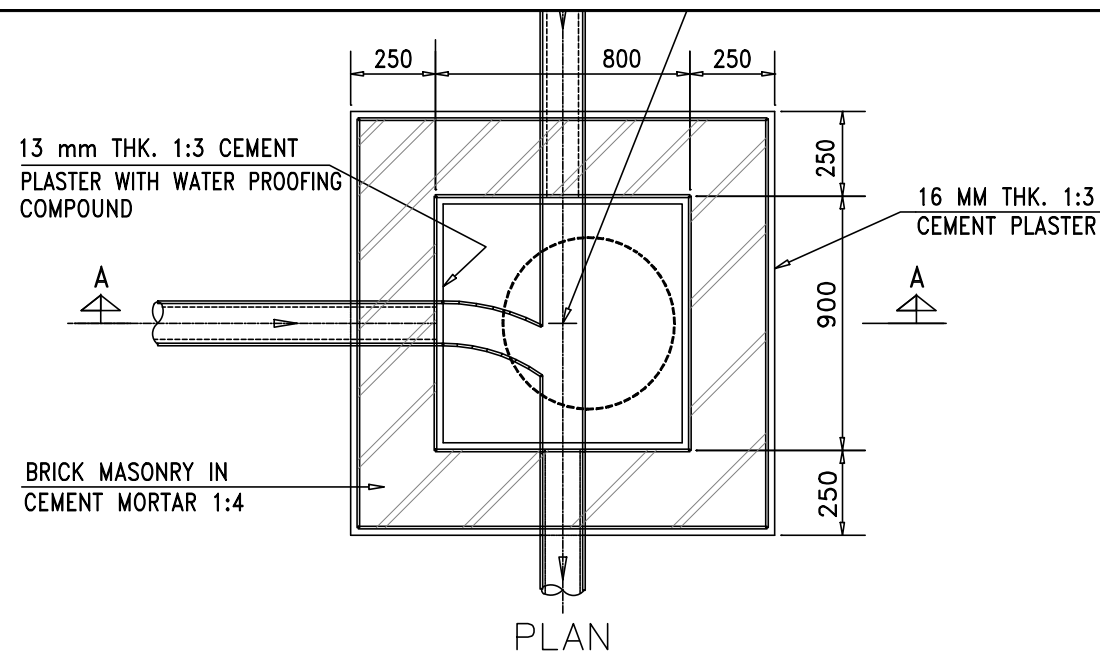
**SECURITY GUARD LIVING QUARTER
OUTLINE DETAILS OF GULLY TRAP**

M.M. VERMA
(TEAM LEADER)
ANUPAM VARMA
(ARCHITECT)
AMYASH TRIPATHI
(CIVIL ENGINEER)

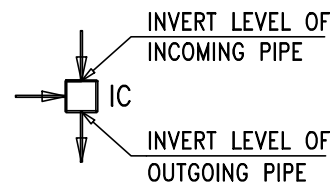
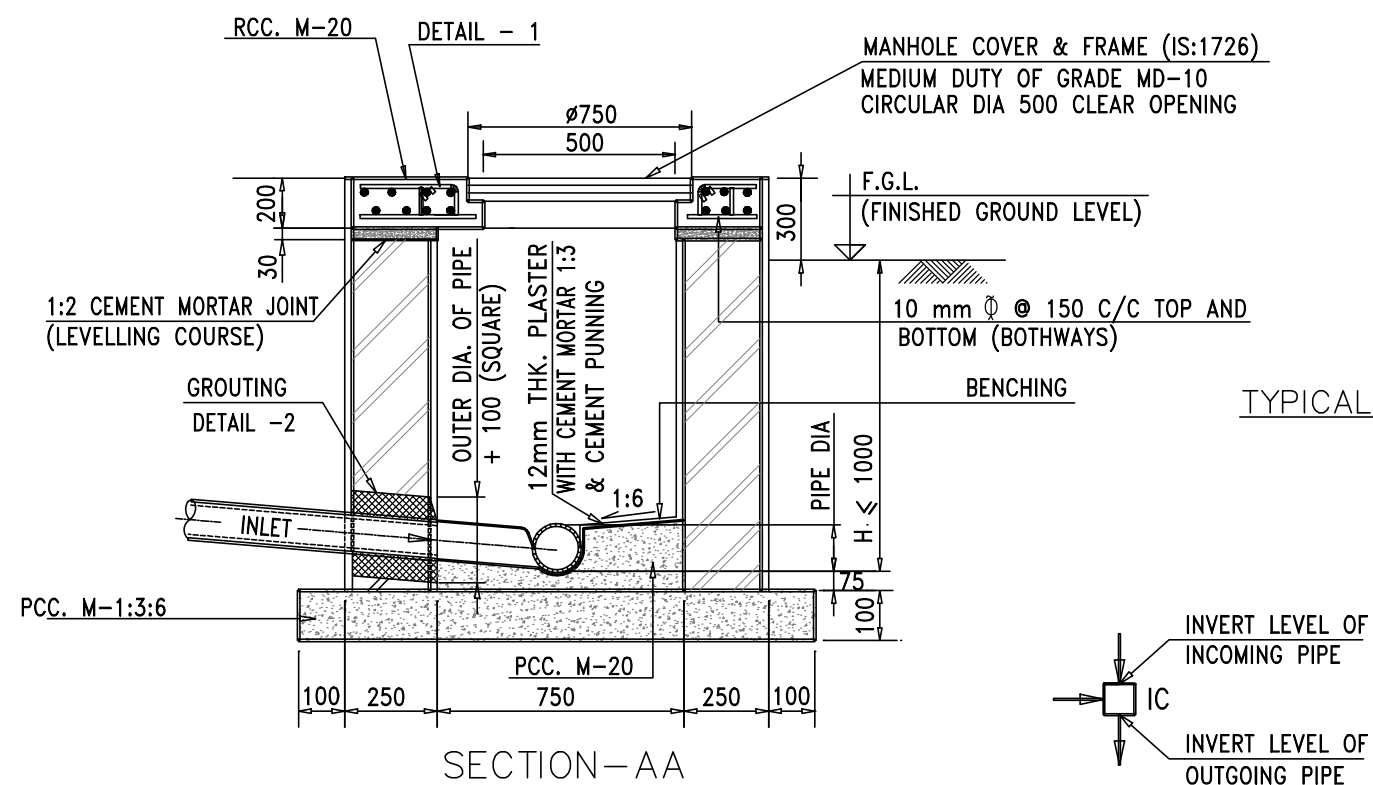
O.P. CHIBBER
(ELECTRICAL ENGINEER)
S.S. GOHATA
(SURVEY OFFICER)
K.D. CHAMLING
(ENVIRONMENT OFFICER)

DECEMBER-2015

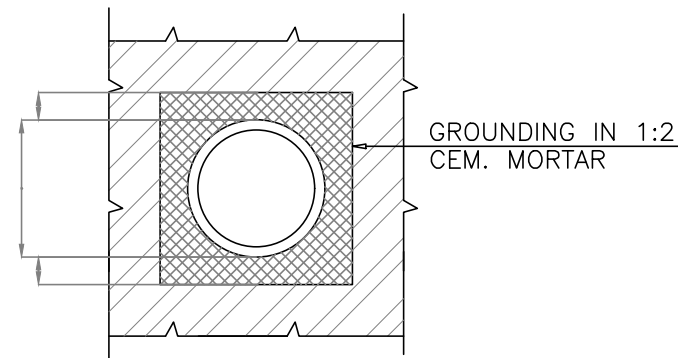
DRG NO.: WAP/DIE/SGLO/SANIT/38



FIXING C.I. COVER
DETAIL-1



REPRESENTATION
ON DRAWING



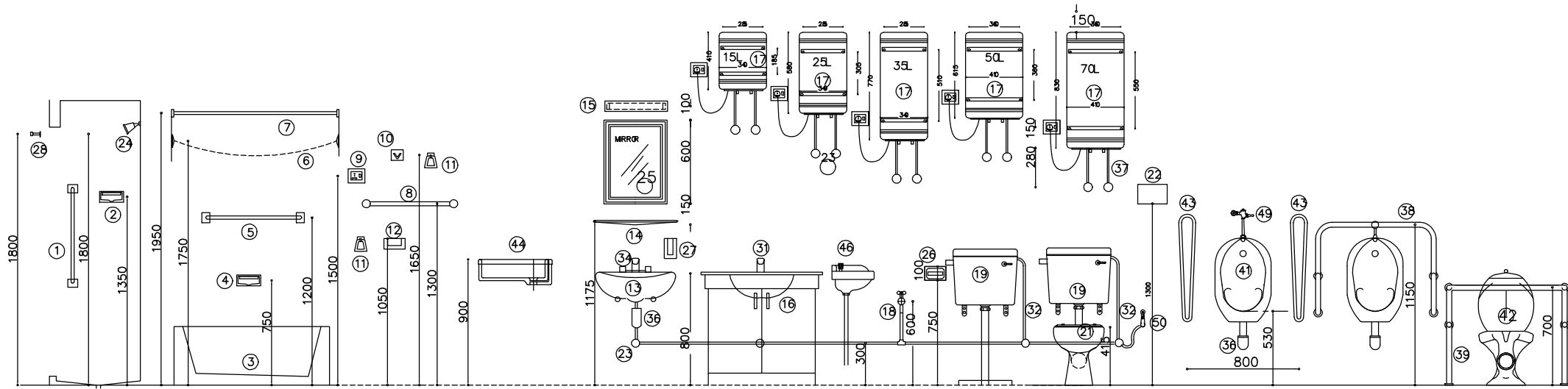
FOR MASONRY WALL
TYPICAL GROUTING DETAIL FOR PIPE IN WALL
DETAIL-2

NOTES:-

1. ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE.
2. ALL REINFORCEMENT SHALL BE OF Fe500 TMT GRADE CONFORMING TO IS: 1786.
3. BAR BENDING SHALL CONFORM TO IS: 2502.
4. TOP SLAB SHALL BE CAST-IN-SITU AND REINFORCEMENT ON WALL SIDE OF INSPECTION CHAMBER OPENING SHALL BE ADJUSTED AT SITE.
5. THE BRICKS SHALL CONFORM TO IS: 1077.
6. EXACT THICKNESS OF BRICK MASONRY WALL SHALL BE AS PER LOCALLY AVAILABLE BRICKS (HERE WALL THICKNESS HAS BEEN GIVEN AS PER BRICK SIZE OF 250 X 125 X 75).

SHEET 6 OF 8

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD. WAPCOS LTD. is a Public Limited Company registered in India under the Companies Act, 1956. It is a member of the Indian Institute of Engineers (IIE) and the Institution of Engineers (I.E.) India.	 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER OUTLINE DETAILS OF INSPECTION CHAMBER		
M.M. VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (CIVIL ENGINEER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D. CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SGLQ/SANIT./38	   



REMARKS
THE LOCATION OF FITTINGS
ARE SHOWN IN PLAN.

- | | | | | |
|---------------------|-----------------|------------------------------|--|--------------------------------------|
| 1 VERTICAL GRAB BAR | 11 TOWEL RING | 21 WATER CLOSET | 31 BASIN MIXTURE SINGLE HOLE LONG NOSE | 41 URINAL |
| 2 SOAP & GRAB BAR | 12 SOAP DISH | 22 ELECTRIC HAND DRYER | 32 CISTERN CONNECTION PIPE | 42 WATER CLOSET SUITE |
| 3 RECESSED TUB | 13 WASH BASIN | 23 STOP COCK | 33 ELBOW OPERATION STAN COCK | 43 URINAL DEVIDER |
| 4 SOAP & GRAB BAR | 14 GLASS SHELF | 24 SHOWER HEAD | 34 BASIN MIXTURE THREE HOLES | 44 LABO SINK |
| 5 TOWEL HANGER | 15 MIRROR LIGHT | 25 MIRROR | 35 STAND COCK | 45 KITCHEN MIXTURE |
| 6 CLOTHES LINE | 16 WASH BASIN | 26 PAPER HOLDER | 36 BOTTLE TRAP | 46 CORNER SINK |
| 7 CURTAIN RAIL | 17 WATER HEATER | 27 LIQUID SOAP DISPENSER | 37 FLEXIBLE HOLE STAINLESS | 47 BATH/ SHOWER MIXTURE SINGLE LEVER |
| 8 TOWEL HANGER | 18 BIB COCK | 28 DOOR BUMPER | 38 URINAL HANDRAIL | 48 BASIN MIXTURE SINGLE LEVER |
| 9 POWER POINT | 19 CISTAERN | 29 STAINLESS DRAIN | 39 WATER CLOSET HANDRAIL | 49 URINAL FLUSH VALVE |
| 10 ROBE HOOK | 20 TOILET PAN | 30 STAINLESS DRAIN WITH HOLE | 40 DRAIN COVER | 50 HEALTH FAUCET |

DETAILED PROJECT REPORT FOR

DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN

CONSULTANTS:

**WAPCOS** Private Limited

WAPCOS LTD.

**HEMC**

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

SECURITY GUARD LIVING QUARTER
TOILET FIXTURE HEIGHT

M.M.VERMA
(TEAM LEADER)

ANURAG VARMA
(ARCHITECT)

AMITABH TRIPATHI
(CIVIL ENGINEER)

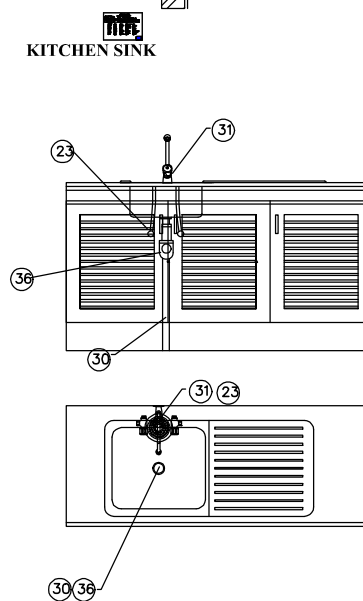
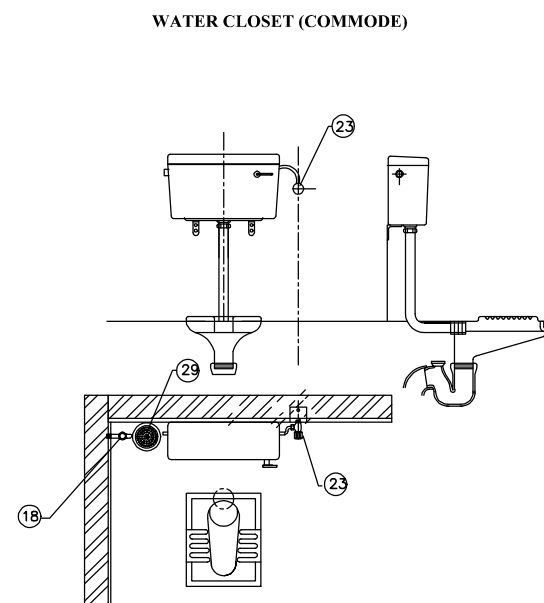
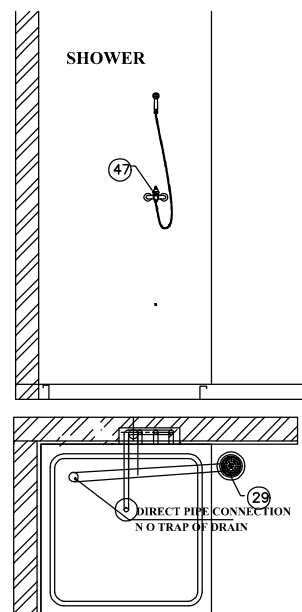
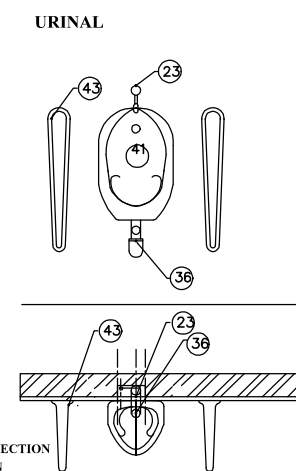
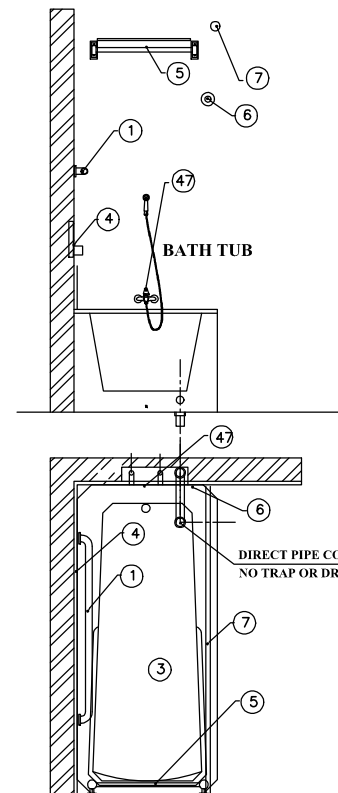
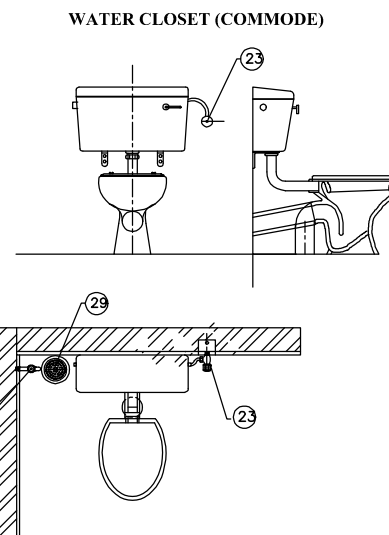
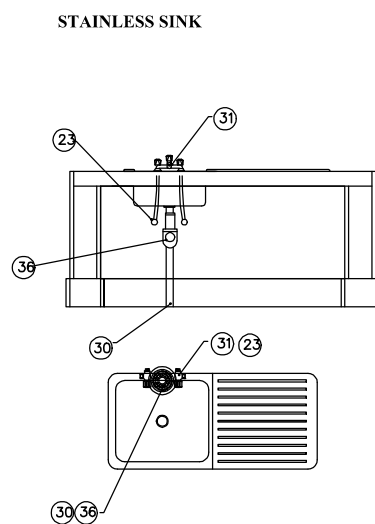
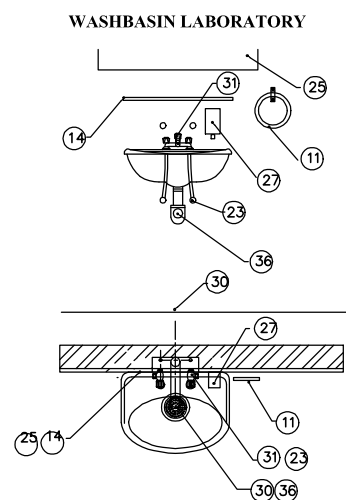
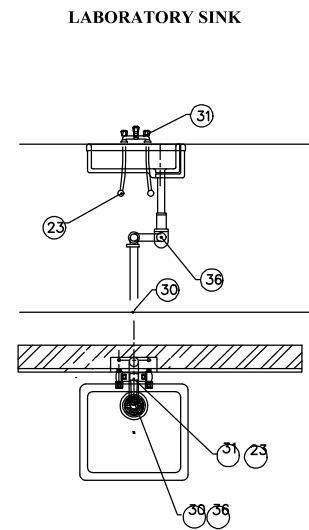
O.P. CHIBBER
(ELECTRICAL ENGINEER)

S.S. GODARA
(SURVEY OFFICER)

K.D. CHAMLING
(ENVIRONMENT OFFICER)

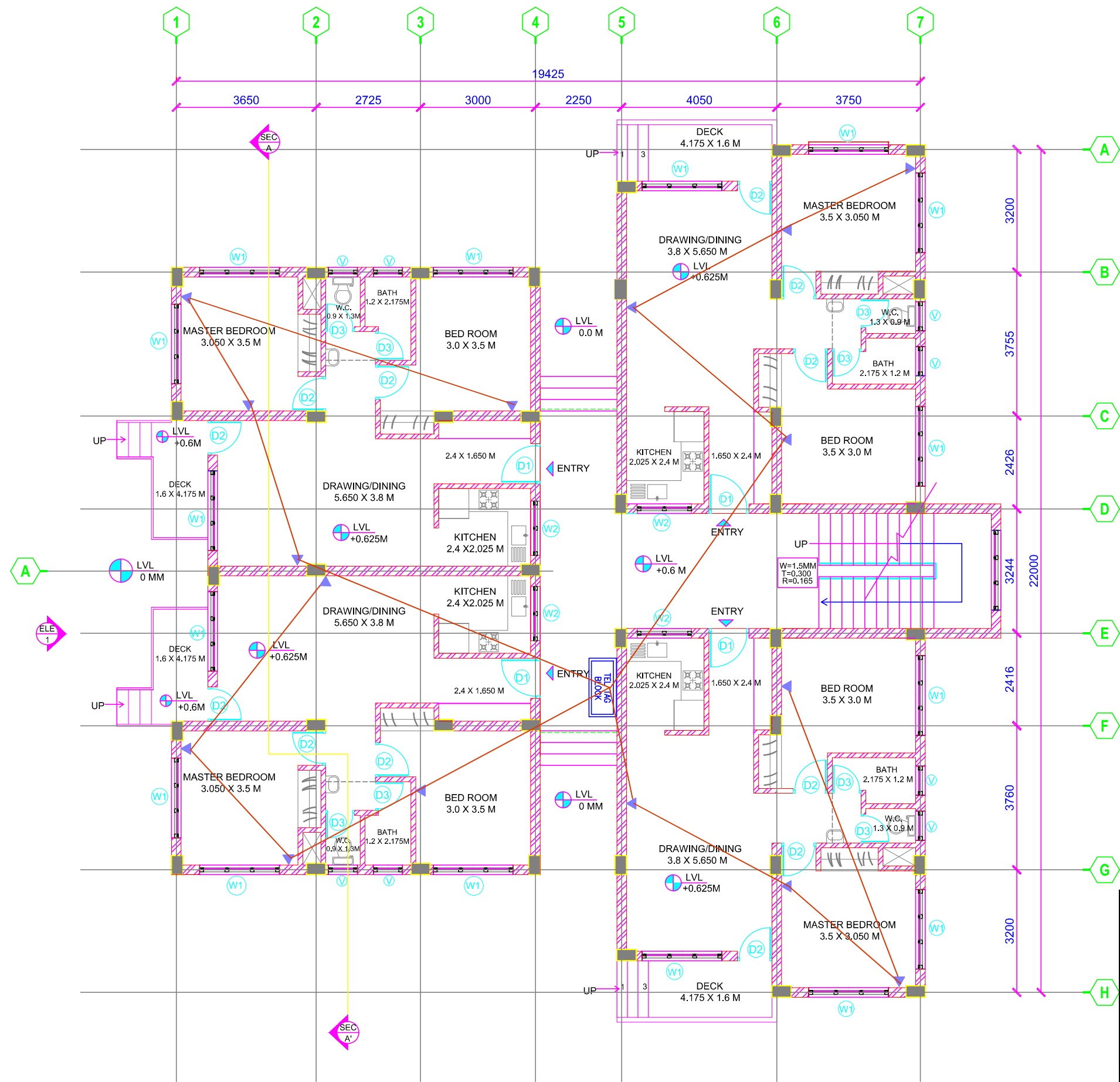
DECEMBER- 2015

DRG NO.: WAP/DIE/SGLQ/SANIT./38



SHEET 8 OF 8

DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	 WAPCOS LTD.
	HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY
SECURITY GUARD LIVING QUARTER STANDARD FIXTURE	
M.M.VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (CIVIL ENGINEER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S.GODARA (SURVEY OFFICER) K.D.CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SQLQ/SANIT./38

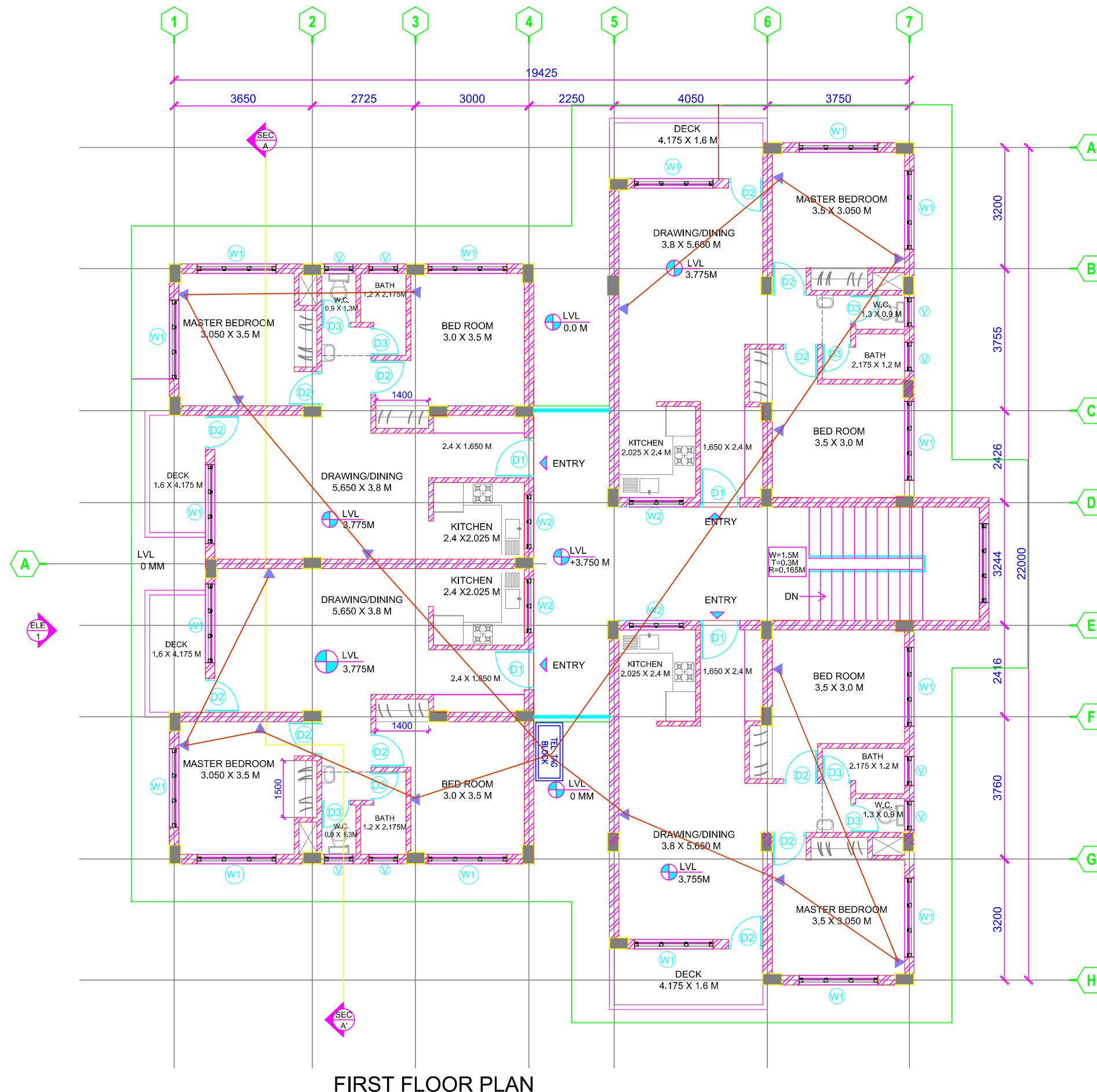


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 3. ALL LEVELS ARE IN METERS.

GROUND FLOOR PLAN

SHEET 1 OF 2

DETAILED PROJECT REPORT FOR	
DHAMDUM INDUSTRIAL PARK SAMSTE, BHUTAN	
CONSULTANTS:	 WAPCOS LTD. WAPCOS LIMITED 101 Street, 1st Floor, 1st Floor, 1st Floor, 1st Floor Bhutan, India. Phone: +91 11 2610 1111 Email: wpcos@wpcos.com
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY	
SECURITY GUARD LIVING QUARTER - GROUND FLOOR PLAN LAN DETAILS	
M.M. VERMA (TEAM LEADER) ANURAG VARMA (ARCHITECT) AMITABH TRIPATHI (ENVIRONMENT OFFICER) DECEMBER- 2015	O.P. CHIBBER (ELECTRICAL ENGINEER) S.S. GODARA (SURVEY OFFICER) K.D. CHAMLING (ENVIRONMENT OFFICER) DRG NO.: WAP/DIE/SGLQ/LAN/39



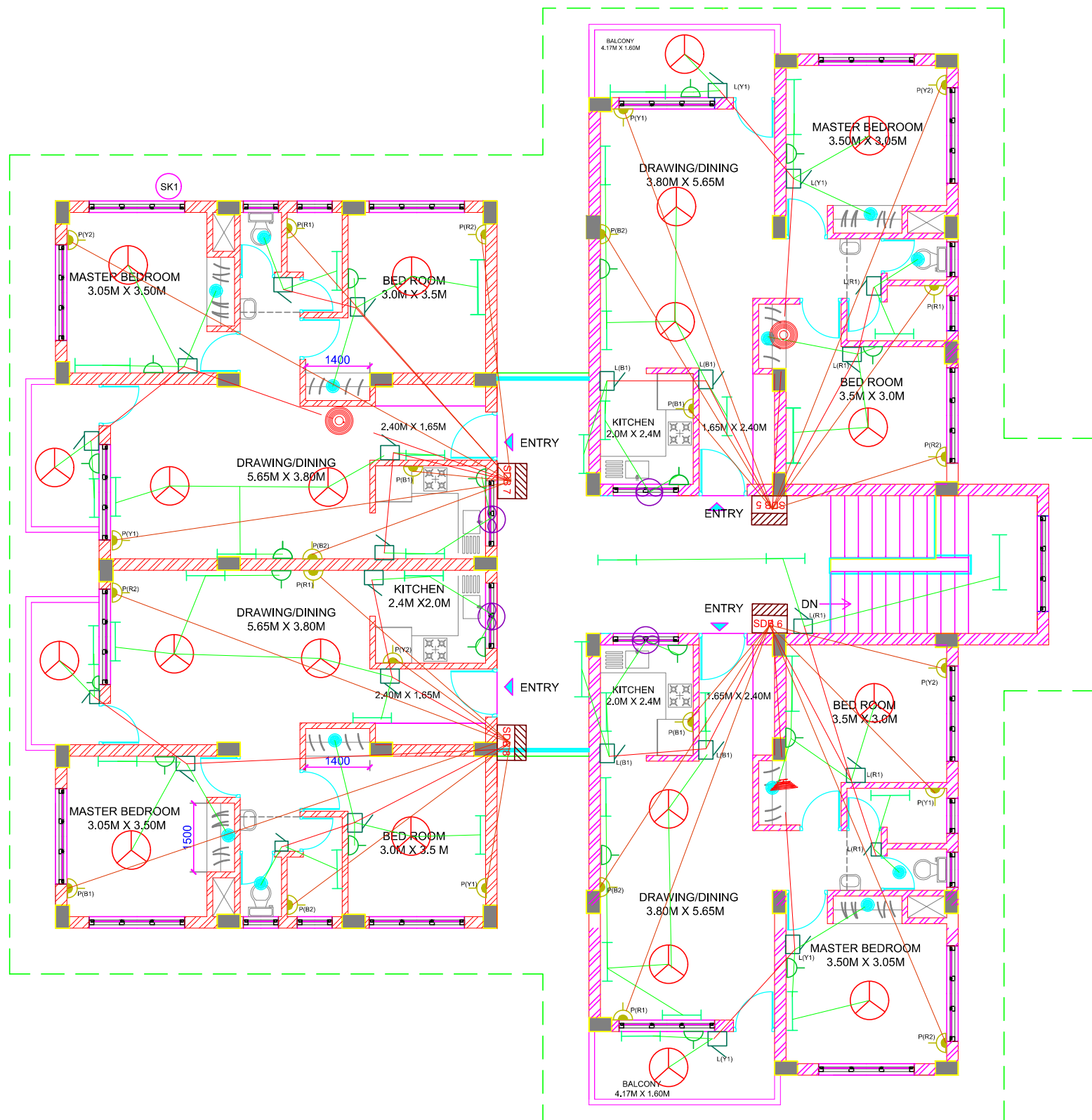
FIRST FLOOR PLAN

NOTE:

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3. ALL LEVELS ARE IN METERS.

SHEET 2 OF 2

DETAILED PROJECT REPORT FOR		
DHAMDUM INDUSTRIAL ESTATE SAMSTE, BHUTAN		
CONSULTANTS:	 WAPCOS LTD.	WAPCOS LTD.
 HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY		
SECURITY GUARD LIVING QUARTER - FIRST FLOOR PLAN LAN DETAILS		
M.M. VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)	
ANURAG VARMA (ARCHITECT)	S.S. GODARA (SURVEY OFFICER)	
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D. CHAMLING (ENVIRONMENT OFFICER)	
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/LAN/39	



FIRST FLOOR PLAN

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LEGEND

Lighting Luminaries	
	Decorative indoor ceiling fitting 2x20 W
	Outdoor fitting, 1x100 W
	2x40 W
	Indoor ceiling fitting, 1x60 W
	Decorative indoor ceiling fitting, 1x40 W
	Ceiling Fan Point (80W), 1200 mm
	Exhaust Fan Point, (80 W)

HDPE CONDUIT	
	20MM HDPE CONDUIT FOR 1.5SQ MM PVC INSULATED CU CONDUCTOR
	20MM HDPE CONDUIT FOR 2.5SQ MM PVC INSULATED CU CONDUCTOR
	25MM HDPE CONDUIT
	32MM HDPE CONDUIT

Outlet (Power / Other) & Switch	
	Switch Board
	5/6 PIN 16A 2000W Switch Socket Combined Modular Type with Switch
	5 Pin 6A 100W Switch Socket Combined modular type with Switch
	TELEPHONE SOCKET OUTLET
	3/6 Pin 25A 3000W Switch Socket Combined modular type with Switch

DISTRIBUTION BOARD	
	TEL TAG BLOCK
	Sub Distribution Board.
	Main Distribution Board.
	Switch Board.

SHEET 2 OF 3

DETAILED PROJECT REPORT FOR

**DHAMDUM INDUSTRIAL PARK
SAMSTE, BHUTAN**

CONSULTANTS: **WAPCOS LTD.**

HIMALAYAN ENGINEERING & MANAGEMENT CONSULTANCY

**SECURITY GUARD LIVING QUARTER - FIRST FLOOR PLAN
ELECTRICAL DETAILS**

M.M.VERMA (TEAM LEADER)	O.P. CHIBBER (ELECTRICAL ENGINEER)
ANURAG VARMA (ARCHITECT)	S.S.GODARA (SURVEY OFFICER)
AMITABH TRIPATHI (CIVIL ENGINEER)	K.D.CHAMLING (ENVIRONMENT OFFICER)
DECEMBER- 2015	DRG NO.: WAP/DIE/SGLQ/ELECT./40

