

ARCHITECTURAL & STRUCTURAL DRAWINGS OF
PROPOSED 03 STOREY BUILDING

South Regional

Customs Head Office,

Addu City, Maradhoo

For Customs Maldives

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B.3.2	Terrace Floor Slab Plan		<input type="checkbox"/>	<input checked="" type="checkbox"/>	
B.3.3	Roof Slab Plan		<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C.1.1	Structural Details 01		<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C.2.1	Details		<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C.2.2	Structural Notes		<input type="checkbox"/>	<input checked="" type="checkbox"/>	

PROPOSED 03 STOREY BUILDING AT

South Regional
Customs Head
Office, Addu
City, Maradhoo

Client:
Customs Maldives

Page Name:

Sheet Index

25/02/2025

Architect: Mohamed Hassan
Engineer: Ehsan Waleed
Drawn by: Aishath Shafiqul Azal

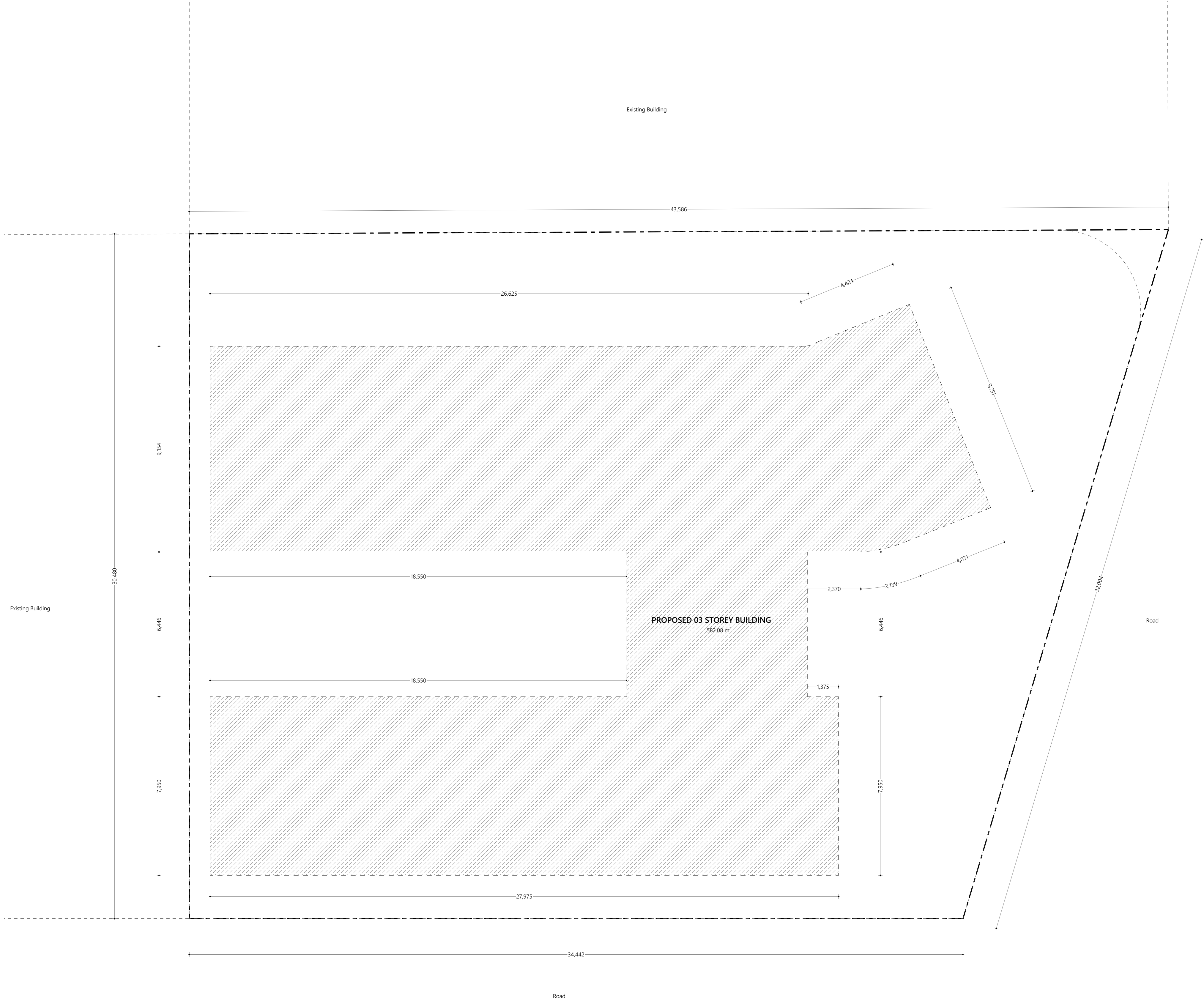


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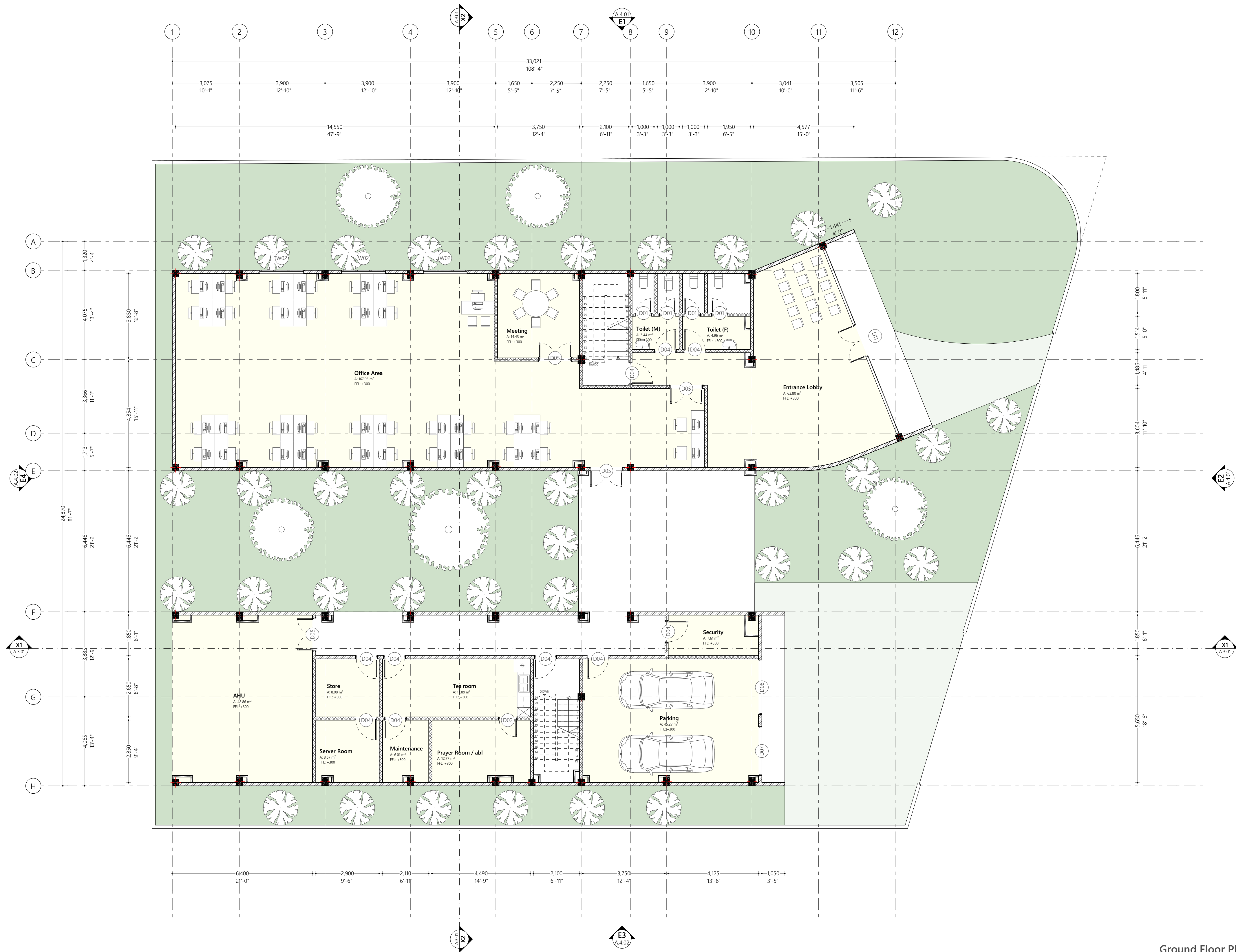
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Building Information List

Plot Area : 1192.43
Footprint Area : 582.08
Built-up Area : 1652
Longest Length : 38.7
Width Coefficient : 15.15
Open Areas : 608.7
Building Height : 8.3
Road Width : (width of road)



Site Plan
1:100



Ground Floor Plan
1:100

Wall Legend	
2D Plan View	Description
	1200mm high 100mm thick RC balcony wall as per balcony detail
	150mm thick exterior masonry wall with 25mm plaster on exterior and 16mm plaster on interior finished with ground smooth and washable paint of selected color
	150mm thick interior masonry wall with 16mm plaster on both sides finished with ground smooth and washable paint of selected color



PROPOSED 03 STOREY BUILDING AT


South Regional Customs Head Office, Addu City, Maradhoo

Client
Customs Maldives

Page Number
First Floor Plan

25/02/2020

Architect: Mohammed Hassan
Engineer: Ibrahim Waheed
Drawn by: Ashraf Shadhry Alsal

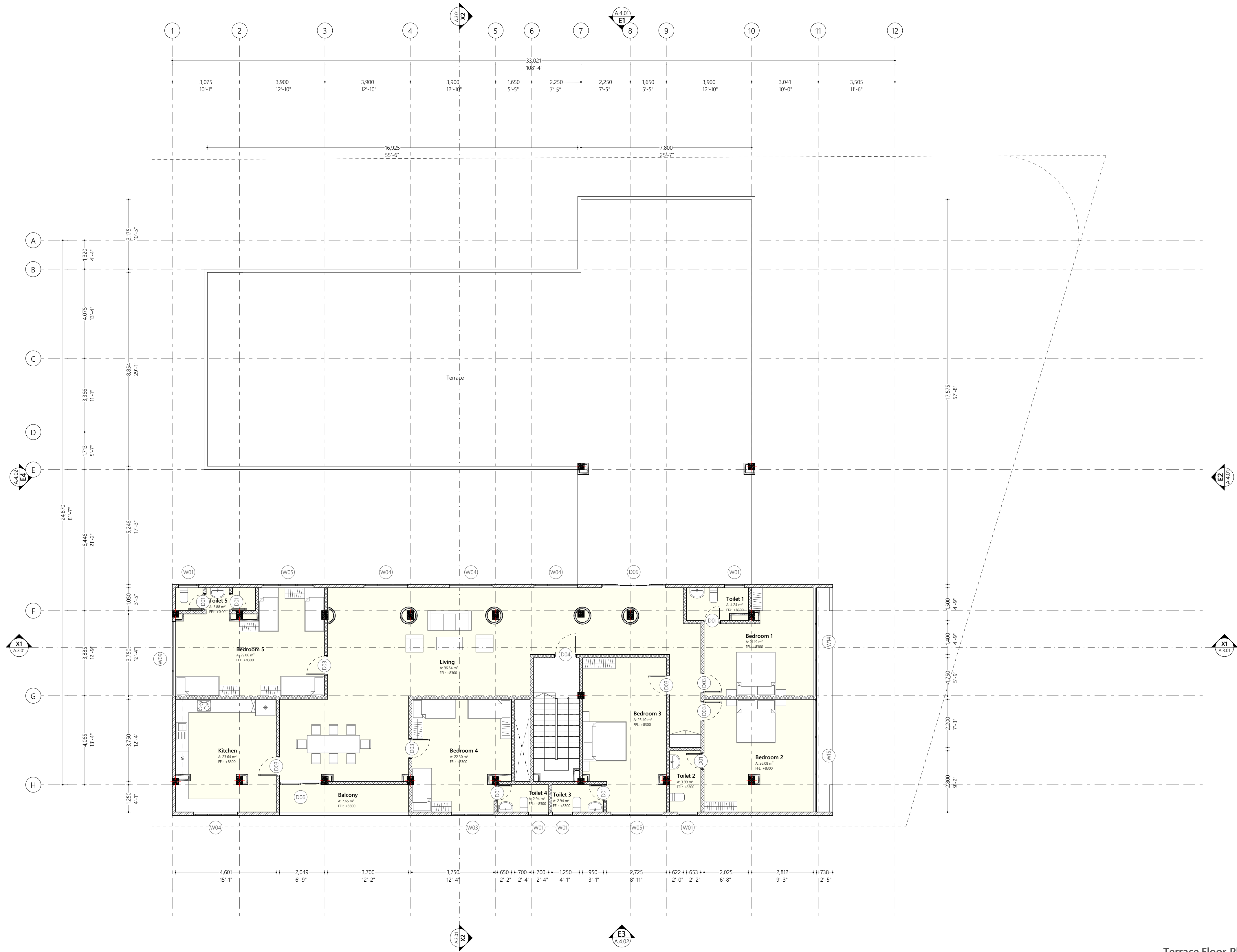


EPOCH

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

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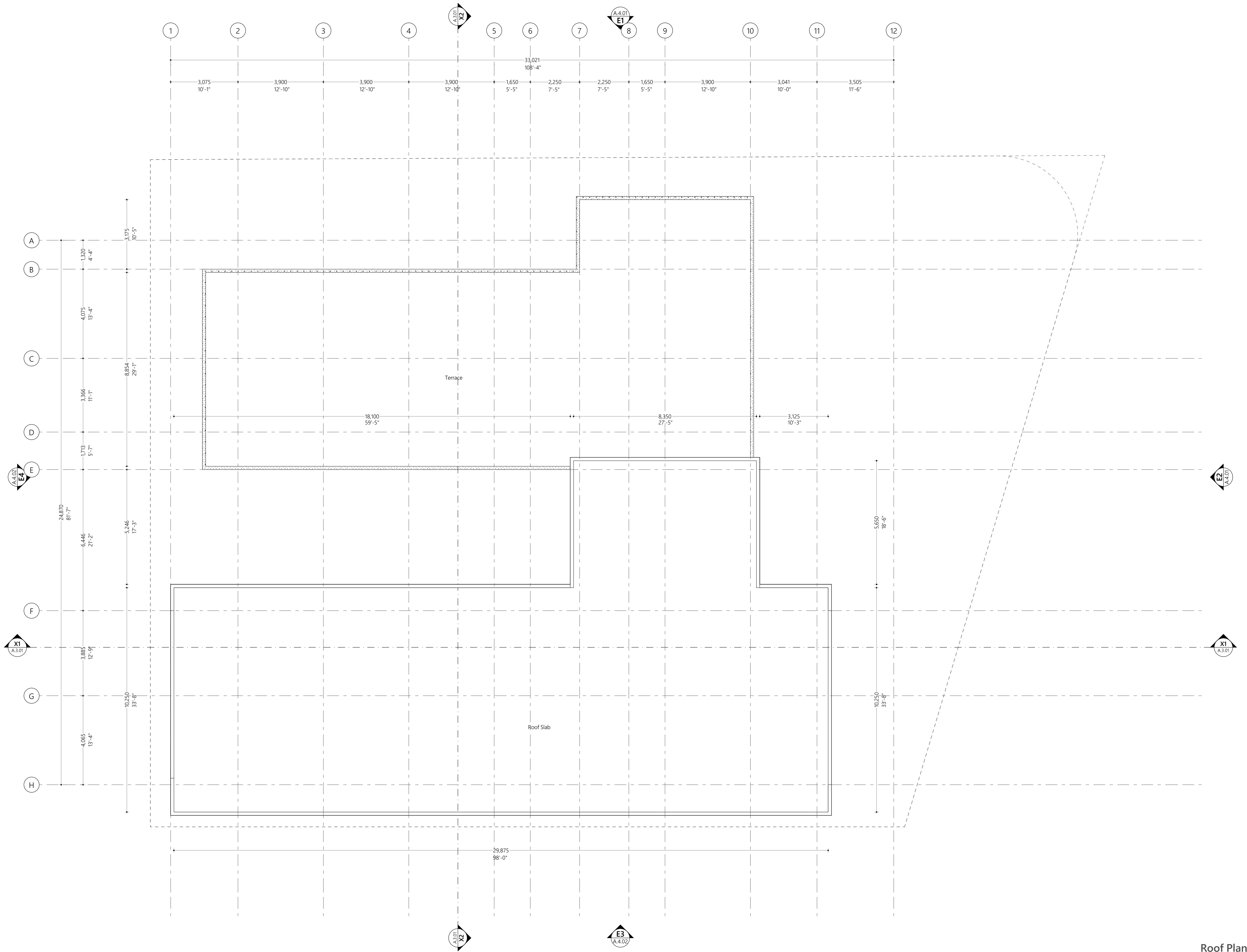
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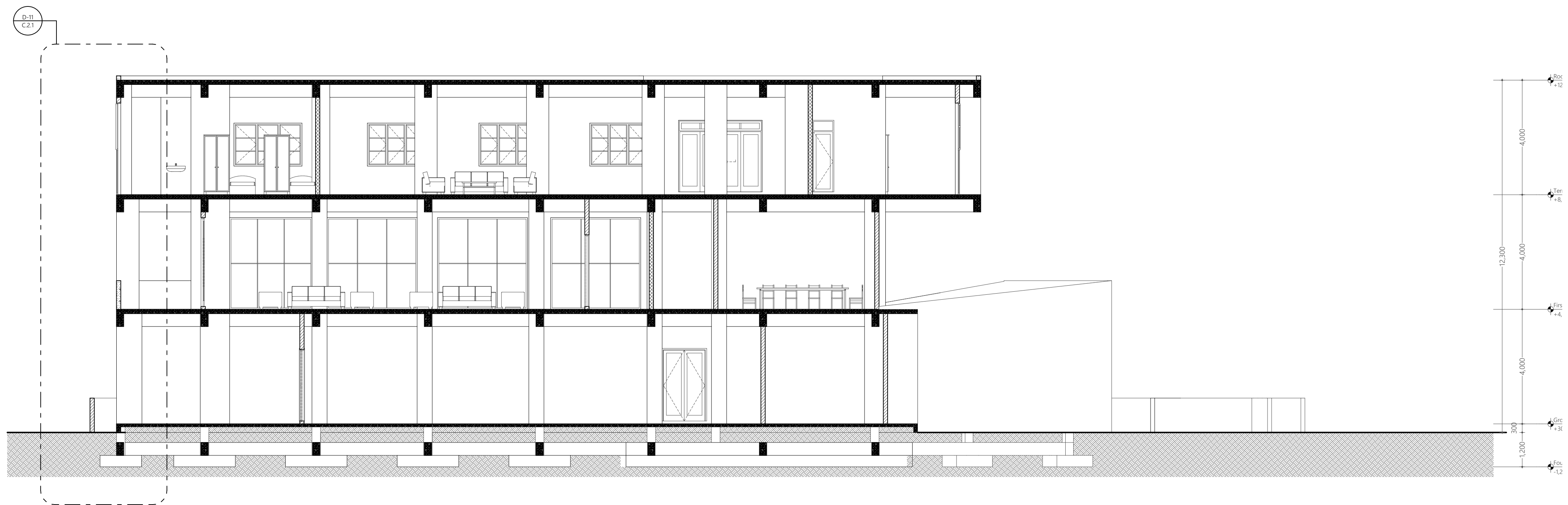
Terrace Floor Plan
1:100

Wall Legend	
2D Plan View	Description
	1200mm high 100mm thick RC balcony wall as per balcony detail
	150mm thick exterior masonry wall with 25mm plaster on exterior and 16mm plaster on interior finished with ground smooth and washable paint of selected color
	150mm thick interior masonry wall with 16mm plaster on both sides finished with ground smooth and washable paint of selected color

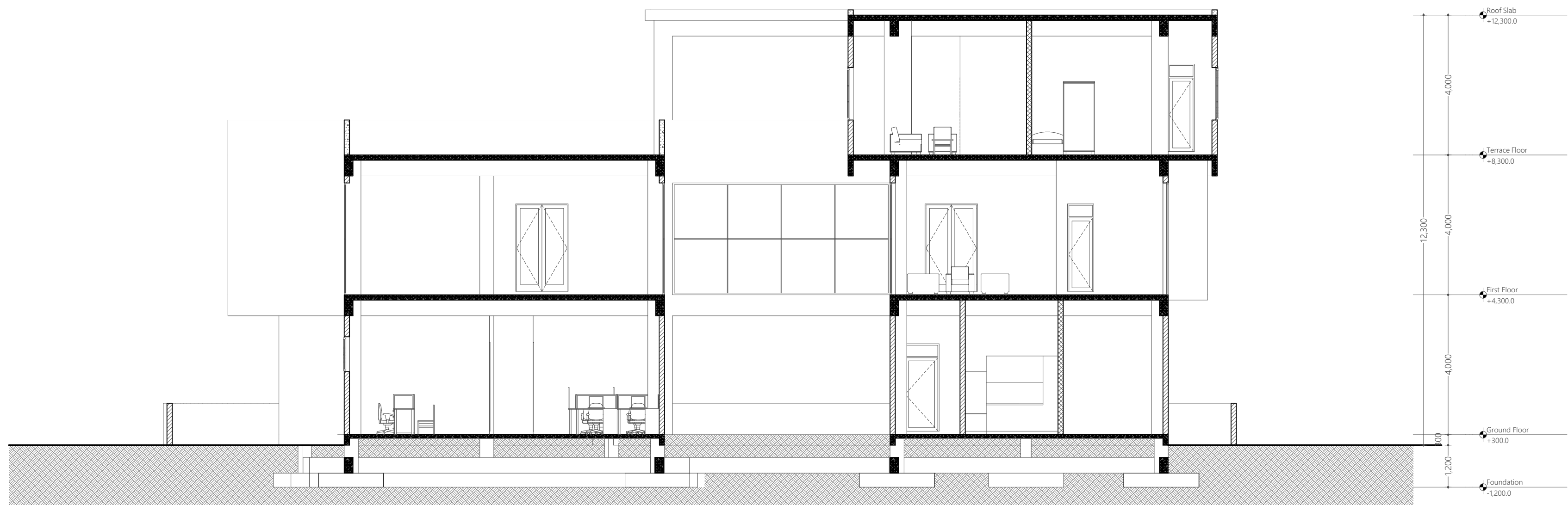
Wall Legend	
2D Plan View	Description
	1200mm high 100mm thick RC balcony wall as per balcony detail
	150mm thick exterior masonry wall with 25mm plaster on exterior and 16mm plaster on interior finished with ground smooth and washable paint of selected color
	150mm thick interior masonry wall with 16mm plaster on both sides finished with ground smooth and washable paint of selected color



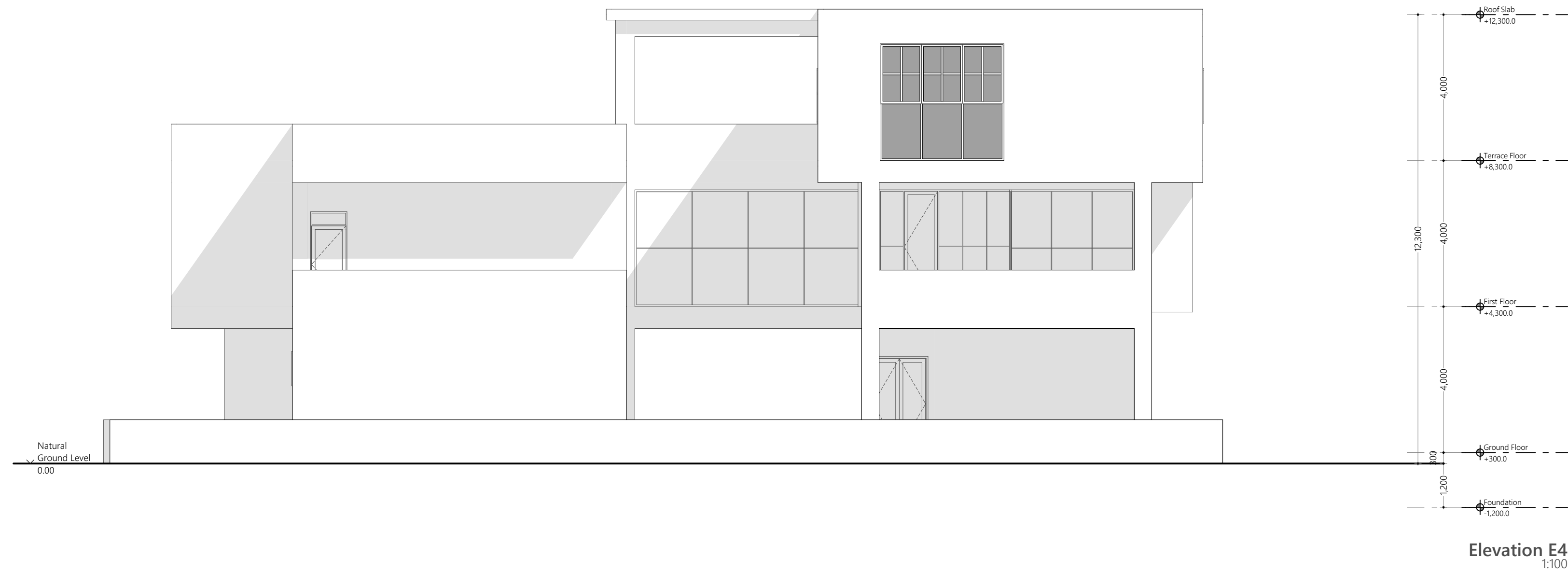
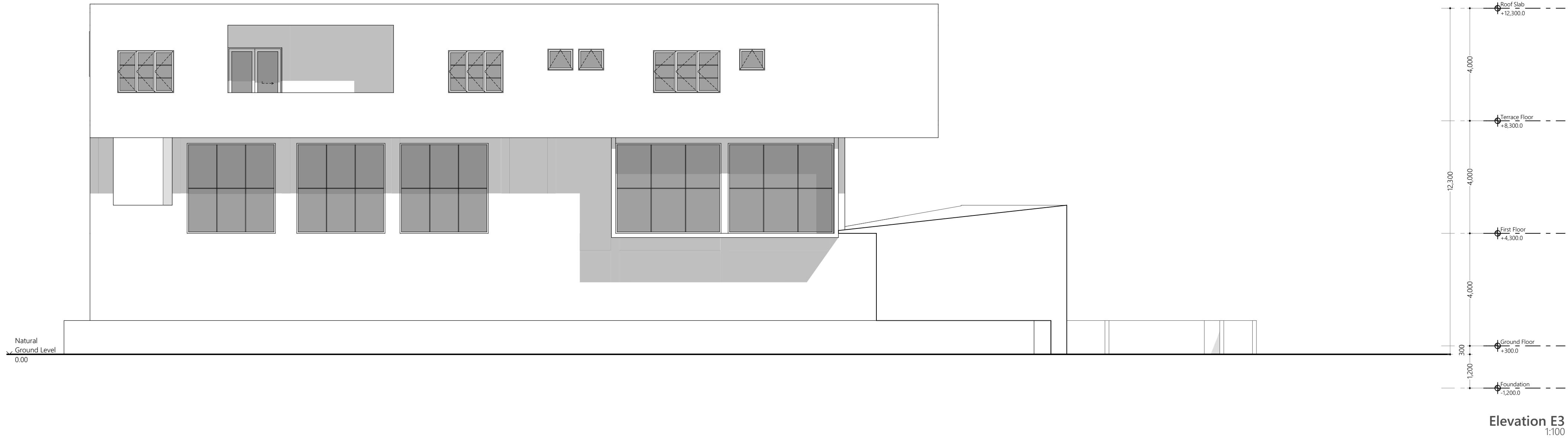
Roof Plan
1:100



X1 Building Section
1:100



X2 Building Section
1:100



All Openings Schedule										
Element ID	D01	D02	D02	D03	D04	D05	D06	D07	D08	D09
Quantity	12	1	1	6	19	8	1	1	1	1
W x H Size	750x2,500	750x2,500	850x2,500	900x2,500	1,000x2,500	1,500x2,500	1,924x2,500	2,225x2,500	2,500x2,500	2,920x2,500
Sill height	100	100	100	100	100	100	100	100	100	100
Head height	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
2D Symbol										
View from Side Opposite to Opening Side										
Frame	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	Solid Timber Frame	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum
Door Leaf	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	Solid Core Timber Panel	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum
Window Sash	---	---	---	---	---	---	---	---	---	---
Glazing					01 Reflective Glass	01 Reflective Glass	01 Reflective Glass			01 Reflective Glass

All Openings Schedule										
Element ID	D11			W01	W02	W03	W04	W05	W06	W07
Quantity	1			5	3	1	4	2	1	8
W x H Size	9,134×3,400			900×750	2,000×1,000	1,950×1,500	2,000×1,500	2,378×1,500	2,880×3,200	3,144×3,200
Sill height	100			1,800	1,800	1,000	1,000	1,000	0	0
Head height	3,500			2,550	2,800	2,500	2,500	2,500	3,200	3,200
2D Symbol										
View from Side Opposite to Opening Side										
Frame	03 Powder Coated Aluminum			03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum
Door Leaf	03 Powder Coated Aluminum			---	---	---	---	---	---	---
Window Sash	---			03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum	03 Powder Coated Aluminum
Glazing	01 Reflective Glass			01 Reflective Glass	01 Reflective Glass	01 Reflective Glass	01 Reflective Glass	01 Reflective Glass	01 Clear Glass	01 Clear Glass

Door and Window Notes

Dimensions shown on DWG indicate effective openings of frame

Sealant shall be provided at all joints while fabrication

All frame depths are 100mm
All door leaf thicknesses are 35mm
All window sash thickness are 25mm
All frame edges shall be trimmed 3mm
All wooden components should be wood stained finish
All aluminum components to be powder coated (min. 60 microns)

All aluminum panels should be of 6mm thick unless specified
All glazing should be of 6mm unless specified

External units must comply the following weather conditions:
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant and the wedges trimmed with 12X12mm hardwood beading fixed to frames by brass nails

All hardware should be provided for the performance of al functions of the units
Hinges shall confirm to

1) Door size more than 700X1900mm
WD: 125mm X2 sets
SD: 150mm X3 sets

2) Door size less than 700X1900mm
WD: 100mm X2 sets
SD: 125mm X2 sets

Locks shall be cylindrical with master key sets
Door knobs shall be 1000mm above FFL

PROPOSED 03 STOREY BUILDING AT

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Customs Maldives

Page Name:
All Opening Schedule

25/02/2025

Architect: Mohamed Hassan
Engineer: Ehsan Waleed
Drawn by: Aishath Shafiqul Azal

EPOCH
ESTD 2013

100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 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Element ID	W08		W09		W10		All Openings Schedule		W12		W13		W14	
Quantity	6		1		1		W11		2		1		1	
W x H Size	3,372×3,200		3,395×3,200		3,422×3,200		3,525×3,200		3,750×3,200		4,100×3,200		4,949×3,200	
Sill height	0		0		0		0		0		0		0	
Head height	3,200		3,200		3,200		3,200		3,200		3,200		3,200	
2D Symbol														
	3,372		3,395		3,422		3,525		3,750		4,100		4,949	
View from Side Opposite to Opening Side														
	3,200		3,200		3,200		3,200		3,200		3,200		3,200	
Frame	03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum	
Door Leaf	---		---		---		---		---		---		---	
Window Sash	03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum	
Glazing	01 Clear Glass		01 Reflective Glass		01 Clear Glass		01 Clear Glass		01 Clear Glass		01 Clear Glass		01 Reflective Glass	

Element ID	W08		W09		W10		All Openings Schedule		W11	
Quantity	6		1		1		W10		1	
W x H Size	3,372×3,200		3,395×3,200		3,422×3,200		3,525×3,200		3,525×3,200	
Sill height	0		0		0		0		0	
Head height	3,200		3,200		3,200		3,200		3,200	
2D Symbol										
	3,372		3,395		3,422		3,525		3,525	
View from Side Opposite to Opening Side										
	3,200		3,200		3,200		3,200		3,200	
Frame	03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum	
Door Leaf	---		---		---		---		---	
Window Sash	03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum		03 Powder Coated Aluminum	
Glazing	01 Clear Glass		01 Reflective Glass		01 Clear Glass		01 Clear Glass		01 Clear Glass	

CUSTOMS, VENTILATION SCHEDULE					
Room Name	Room Area	Opening	Required Opening	Designed Opening	Opening %
Ground Floor					
Tea Room	17.89		MECHANICAL VENTILATION		
Prayer Room	12.77		MECHANICAL VENTILATION		
Maintenance	6.01		MECHANICAL VENTILATION		
Server Room	8.67		MECHANICAL VENTILATION		
Store	8.08		MECHANICAL VENTILATION		
AHU	47.74		MECHANICAL VENTILATION		
Security	6.93		MECHANICAL VENTILATION		
Toilet (F)	4.96		MECHANICAL VENTILATION		
Toilet (M)	3.44		MECHANICAL VENTILATION		
Meeting Room	14.43		MECHANICAL VENTILATION		
Office Area	167.95		MECHANICAL VENTILATION		
First Floor					
Office	8.64		MECHANICAL VENTILATION		
Executive Office	10.11		MECHANICAL VENTILATION		
Toilet (F)	2.61		MECHANICAL VENTILATION		
Toilet (M)	2.63		MECHANICAL VENTILATION		
Pantry	6.56		MECHANICAL VENTILATION		
Seminar Room	52.95		MECHANICAL VENTILATION		
Meeting Room	19.66		MECHANICAL VENTILATION		
Training Room	40.34		MECHANICAL VENTILATION		
Toilet 1	2.89		MECHANICAL VENTILATION		
Recreation Hall	96.01		MECHANICAL VENTILATION		
Seminar Room 2	139		MECHANICAL VENTILATION		
Terrace Floor					
Living Room	97.94	D4,D9,W4	9.794	12.77	13.04
Bedroom 1	19.66	W14	1.966	4.68	23.80
Toilet 1	4.27	W1	0.427	0.53	12.41
Bedroom 2	26.08	W15	2.608	7.08	27.15
Toilet 2	3.99	W1	0.399	0.53	13.28
Bedroom 3	25.4	W5	2.54	3.06	12.05
Toilet 3	2.94	W1	0.294	0.53	18.03
Bedroom 4	22.3	W3	2.23	2.46	11.03
Toilet 4	2.94	W1	0.294	0.53	18.03
Bedroom 5	29.06	W5,W14	2.906	7.74	26.63
Toilet 5	3.88	W1	0.388	0.53	13.66
Kitchen	23.64	W4	2.364	2.52	10.66

Ventilation Schedule
1:100

Door and Window Notes

Dimensions shown on DWG indicate effective openings of frame

All frame depths are 100mm
All door leaf thicknesses are 35mm
All window sash thickness are 25mm
All frame edges shal be trimmed 3mm
All wooden components should be wood stained finish
All aluminum components to be powder coated (min. 60 microns)
SD: 150mm X3 sets

All aluminum panels should be of 6mm thick unless specified
All glazing should be of 6mm unless specified

External units must comply the following weather conditions:
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant
and the wedges trimmed with 12X12mm hardwood beading fixed to
frames by brass nails

Sealant shall be provided at all joints while fabrication

All hardware should be provided for the performance of al functions
of the units
Hinges shall confirm to

1) Door size more than 700X1900mm
WD: 125mm X2 sets
SD: 150mm X3 sets

2) Door size less than 700X1900mm
WD: 100mm X2 sets
SD: 125mm X2 sets

Locks shall be cylindrical with master key sets
Door knobs shall be1000mm above FFL

PROPOSED 03 STOREY BUILDING AT

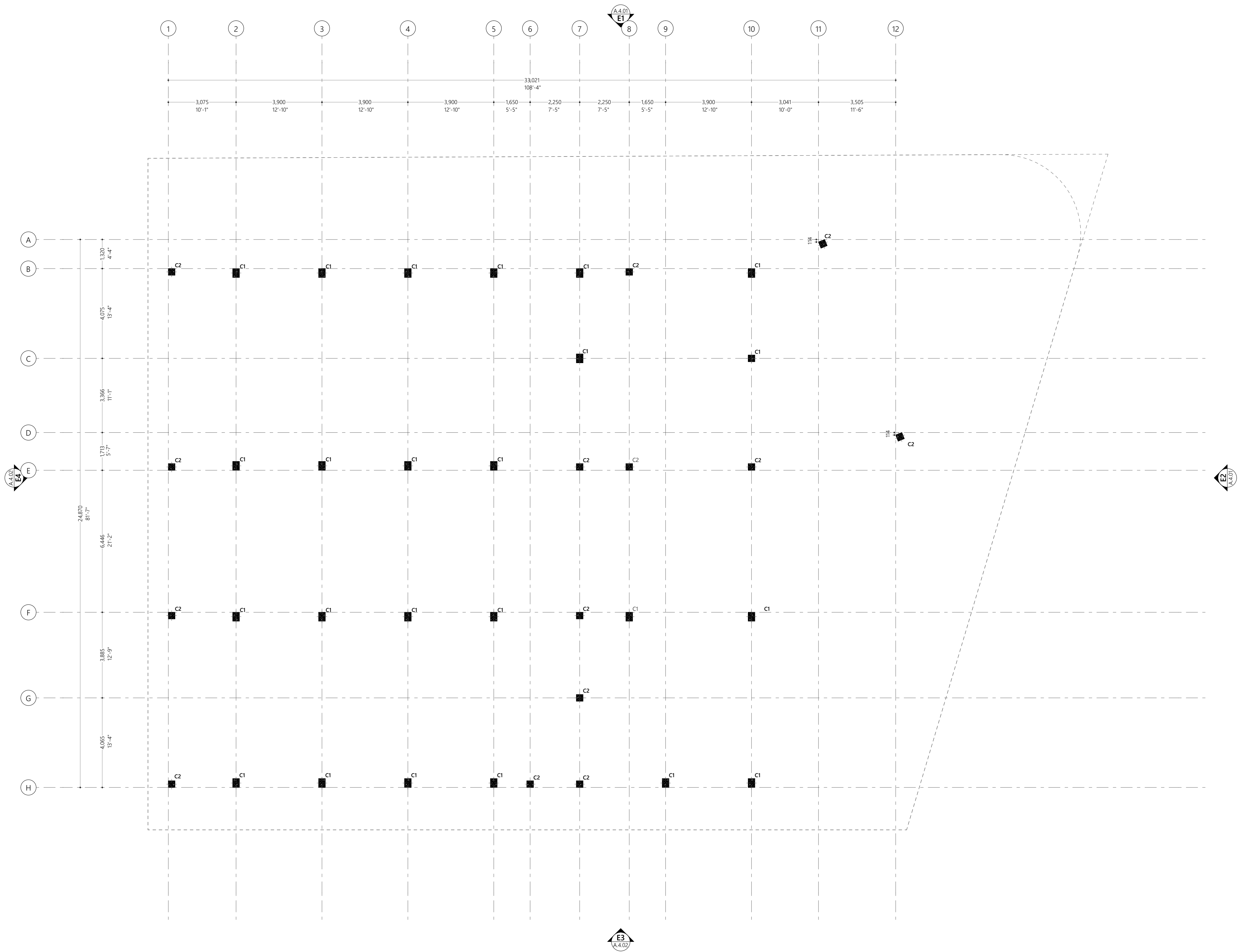
South Regional
Customs Head
Office, Addu
City, Maradhoo

Client:
Customs Maldives

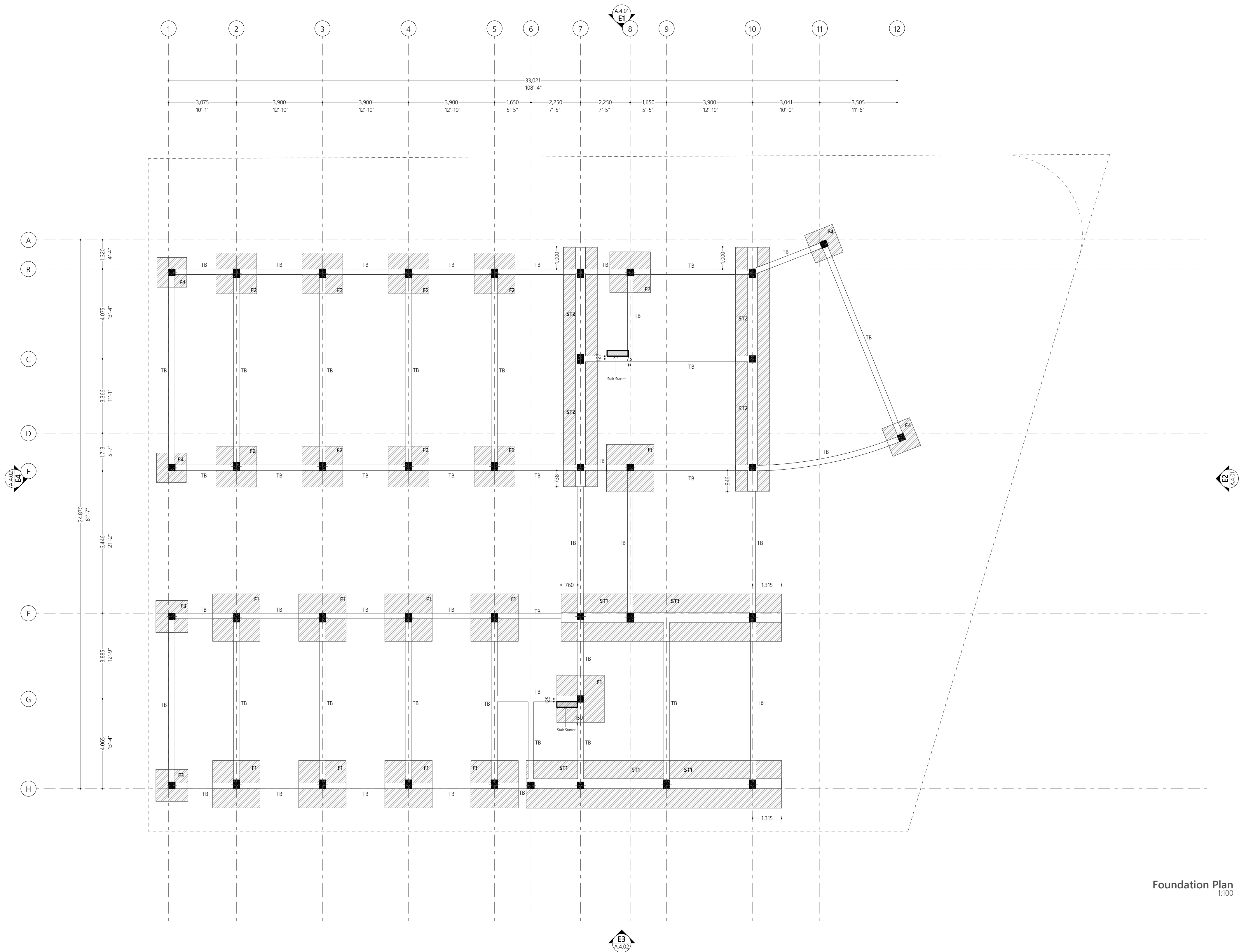
Page Name:
All Opening Schedule/
Ventilation Schedule

29/12/2025
Architect: Mohamed Hassan
Engineer: Ehsan Waleed
Drawn by: Aashif Shafiqul Azam

EPOCH
ESTD 2013
1001 101 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200 9210 9220 9230 9240 9



Column Layout
1:100



Foundation Details:

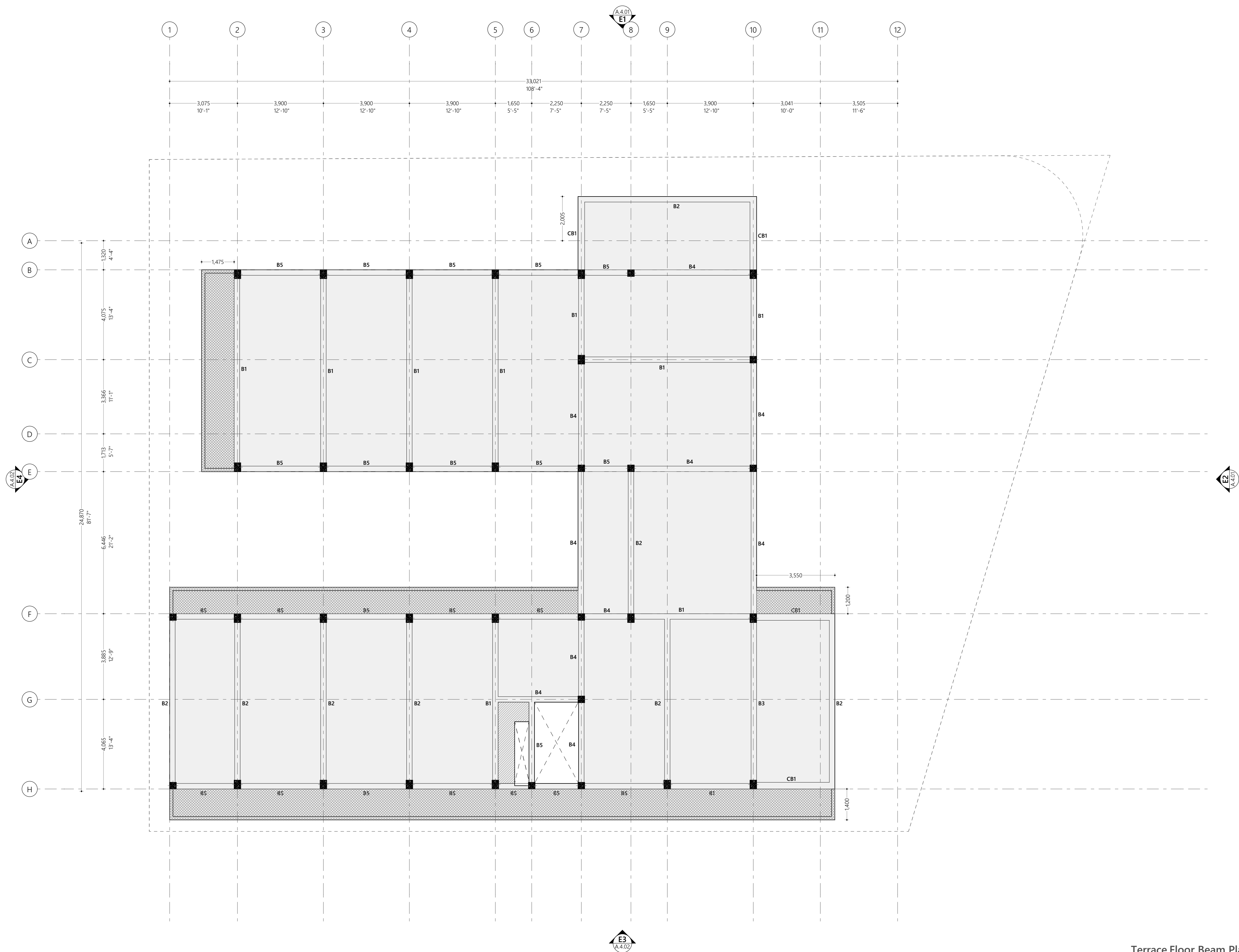
	Dimensions	Reinforcement
F1	2150x2150x400	T12@125C/C B/W (B)
F2	1850x1850x400	T12@150C/C B/W (B)
F3	1450x1450x400	T12@150C/C B/W (B)
F4	1350x1350x400	T12@150C/C B/W (B)

Foundation Depth = 1200mm
Ground Slab = 100mm thick RC slab on fill reinforced with T10@200C/C (B/W)

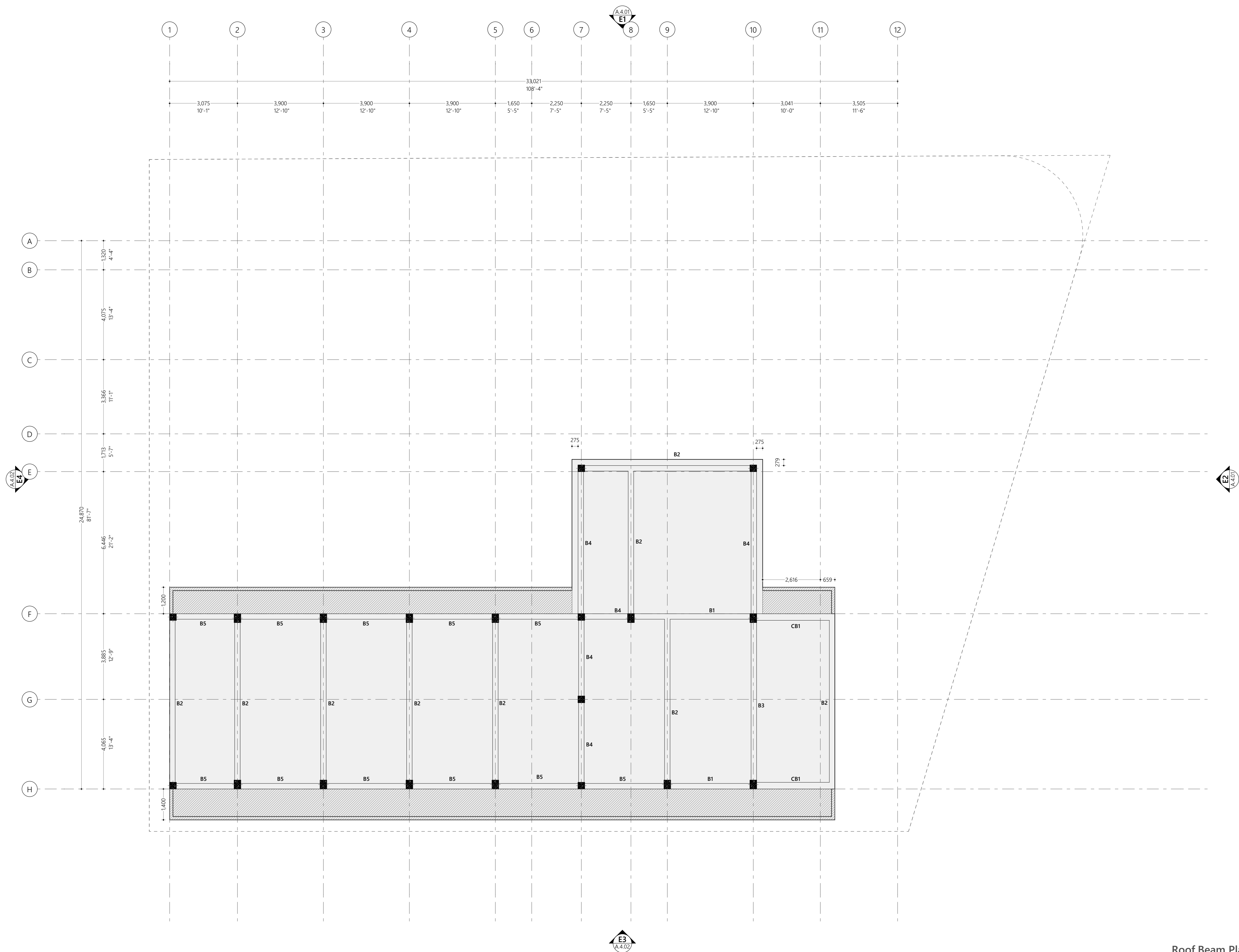
All Footings are to be laid on top of 50mm thick lean concrete
Apply waterproofing to all substructure (below ground elements)
All below ground & terrace concrete works shall be done using waterproofing admixtures

Foundation Plan
1:100

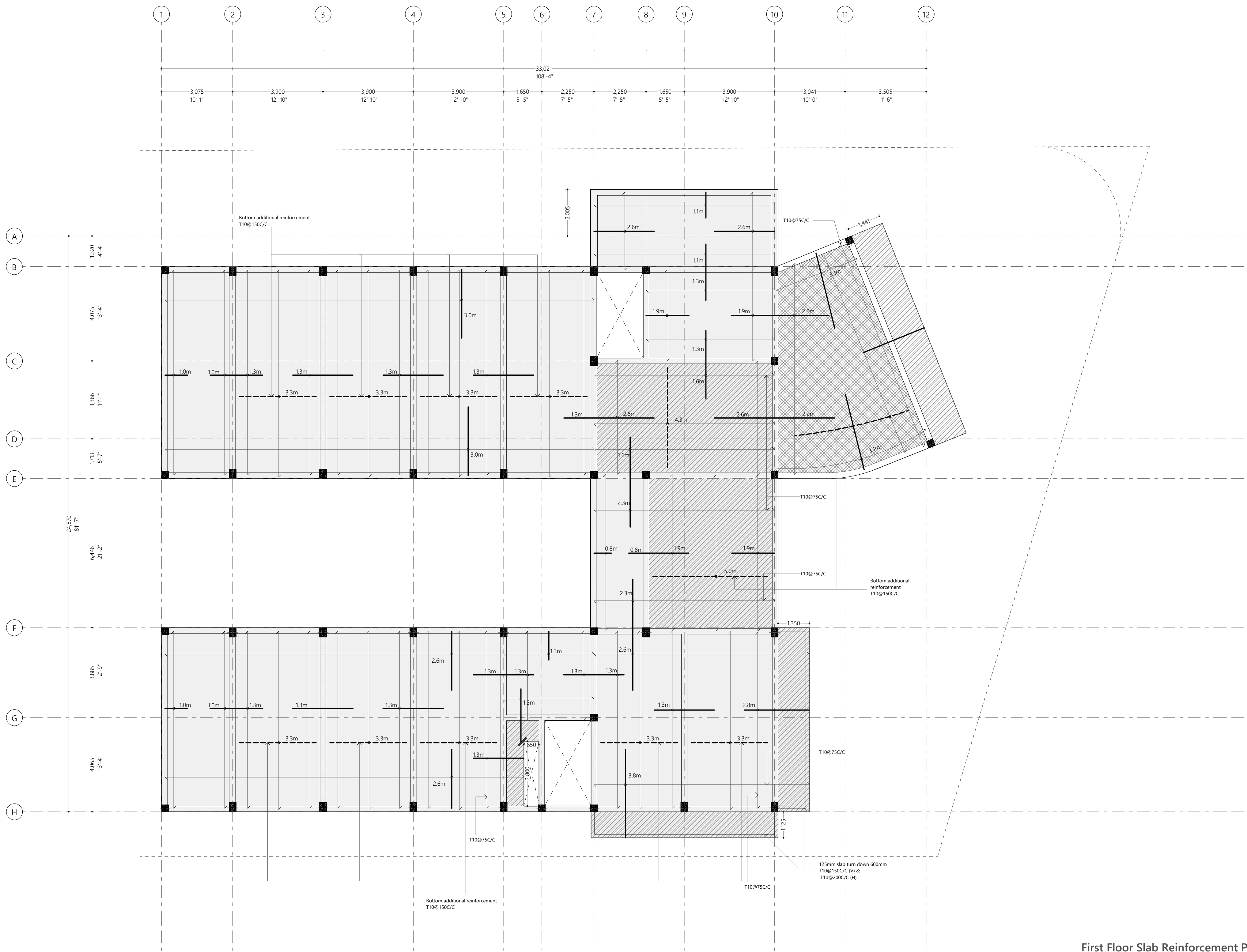




Terrace Floor Beam Plan
1:100

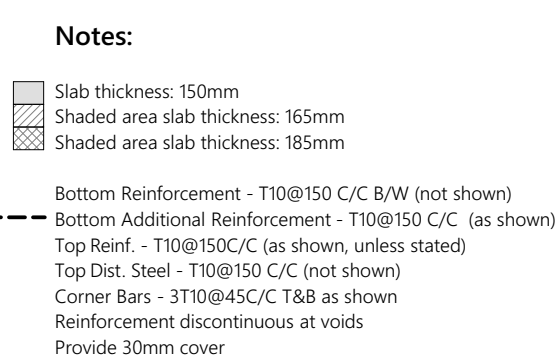


Roof Beam Plan
1:100

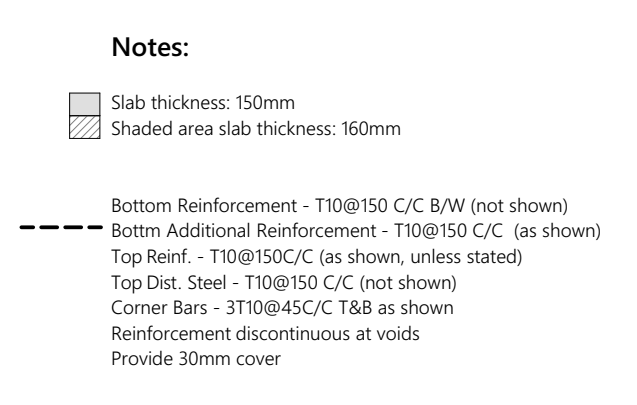


First Floor Slab Reinforcement Plan
1:100

- Notes:**
- Slab thickness: 150mm
 - Shaded area slab thickness: 165mm
 - Shaded area slab thickness: 175mm
 - Bottom Reinforcement - T10@150 C/C B/W (not shown)
 - Bottom Additional Reinforcement - T10@150 C/C (as shown)
 - Top Reinf. - T10@150C/C (as shown, unless stated)
 - Top Dist. Steel - T10@150 C/C (not shown)
 - Corner Bars - 3T10@45C/C T&B as shown
 - Reinforcement discontinuous at voids
 - Provide 30mm cover



PROPOSED 03 STOREY BUILDING AT
**South Regional
Customs Head
Office, Addu
City, Maradhoo**
Client:
Customs Maldives




PROPOSED 6TH STOREY BUILDING AT
**South Regional Customs Head Office,
Addu City, Maldives**

Client
Customs Maldives

Page Name:
Roof Slab Plan

25/12/2025

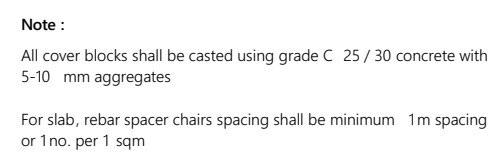
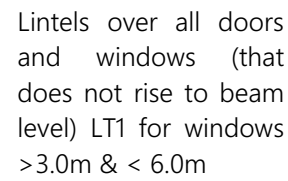
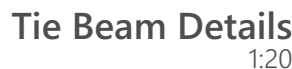
Architect: Mohamed Hassan
Engineer: Brian Walford
Drawing by: Aishah Shadyah Abul



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CONSULTANTS

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W www.acpch.com.mv A M, 001604501496
Kandoombe Vagaa, Addu City, Republic of Maldives

No.	Date
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---	B.3.3



All Footings are to be laid on top of 50mm thick lean concrete
Apply waterproofing to all substructure (below ground elements)
All below ground & terrace concrete works shall be done using waterproofing admixtures

Cover to foundations = 50mm
Cover to floor slabs = 30mm
Cover to floor beams = 35mm
Cover to columns = 40mm
Laps = 45Dia (Dia=Bar Diameter)
Mid bars = $0.85 \times \text{Span}$
Sup bars = $1/3 \times \text{Span}$
Concrete mix = 1:2:3 (C:S:A)
Lean concrete mix = 1:2:5

Foundation Depth = 1200mm
Ground Slab = 100mm thick RC slab on fill reinforced with T10@200C/C (B/W)

All Footings are to be laid on top of 50mm thick lean concrete
Apply waterproofing to all substructure (below ground elements)
All below ground & terrace concrete works shall be done using waterproofing admixtures

PROPOSED 03 STOREY BUILDING A

South Regional
Customs Head
Office, Addu
City, Maradhoo

Client:
Customs Maldives

Page Name:

Structural Details 01

Architect: Mohamed Hassan

Engineer: Issam Waseed
 Design by: Aishah Shadmy Afz

 ASMA

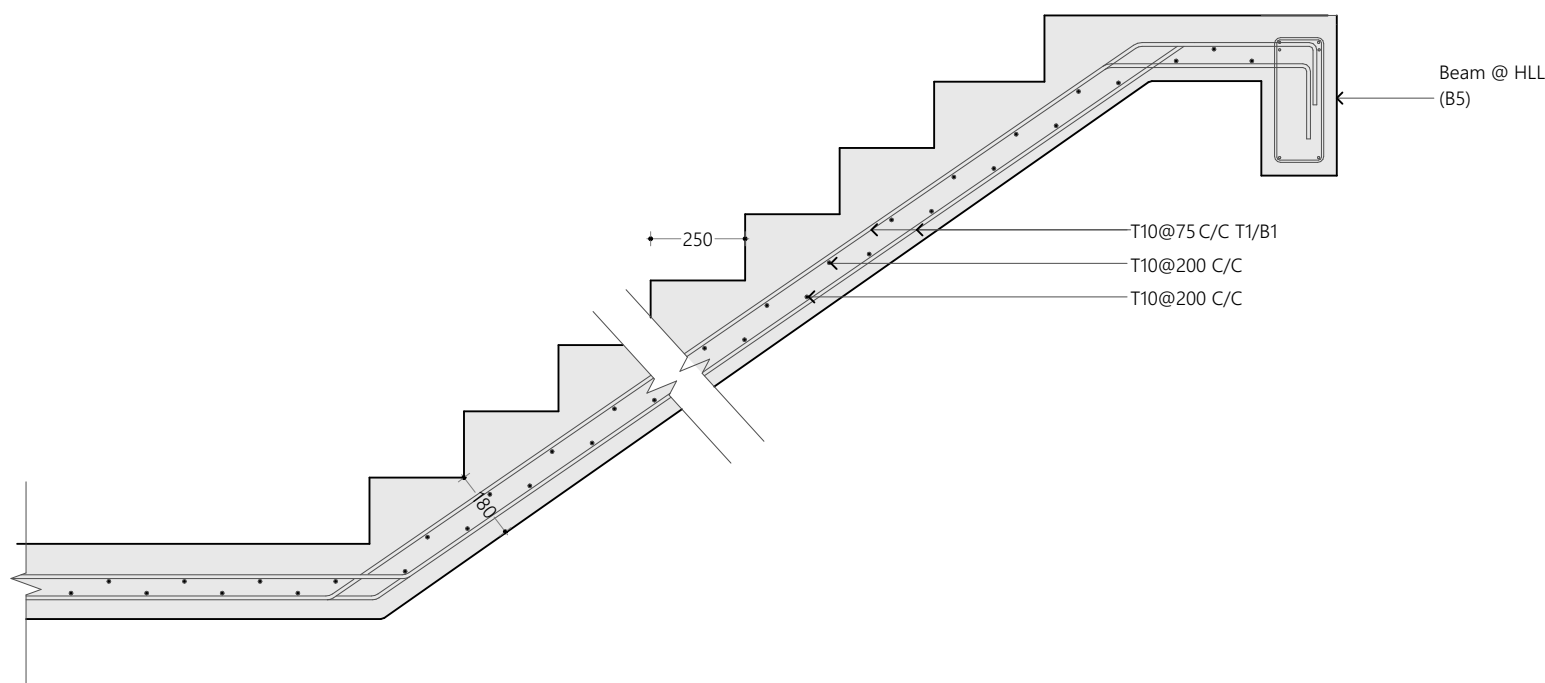
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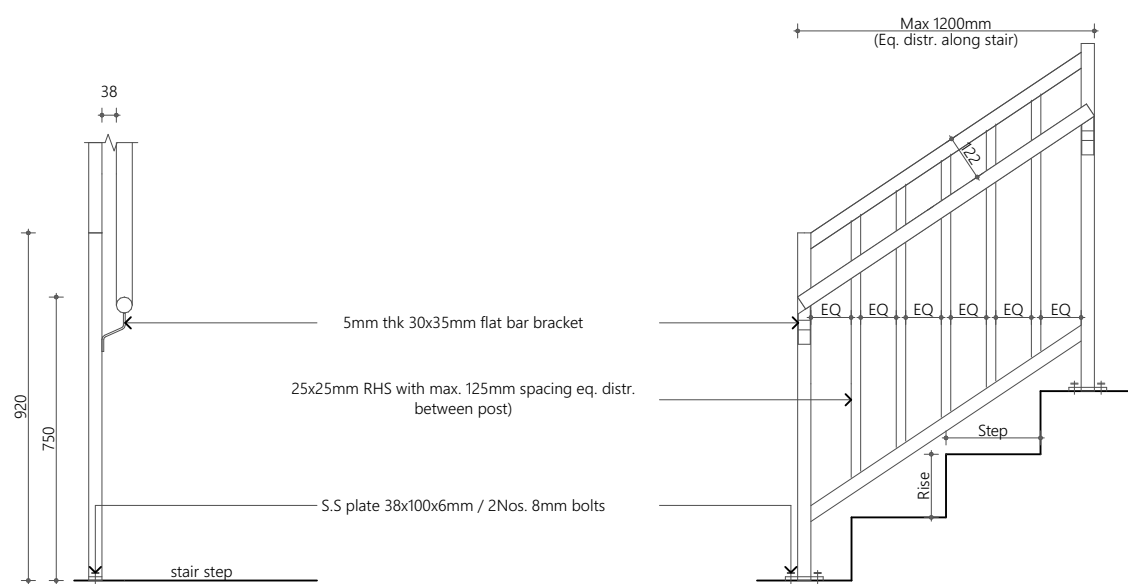
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1000 C. Li

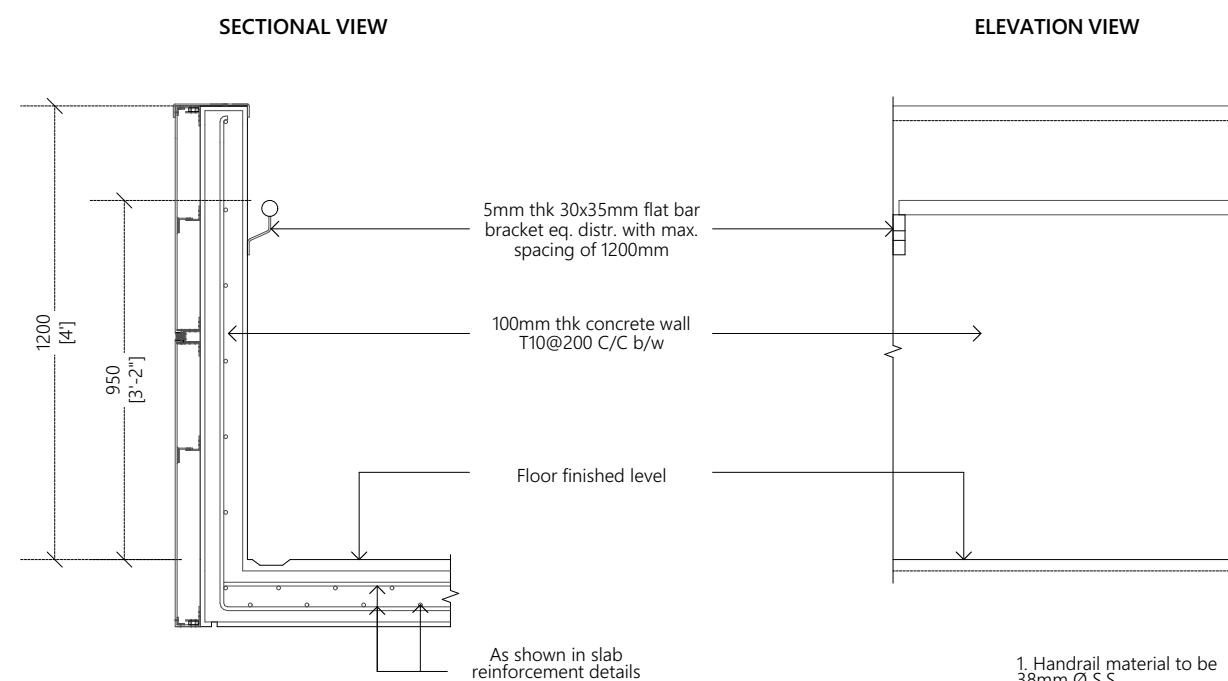


Staircase Reinforcement Detail
1:20

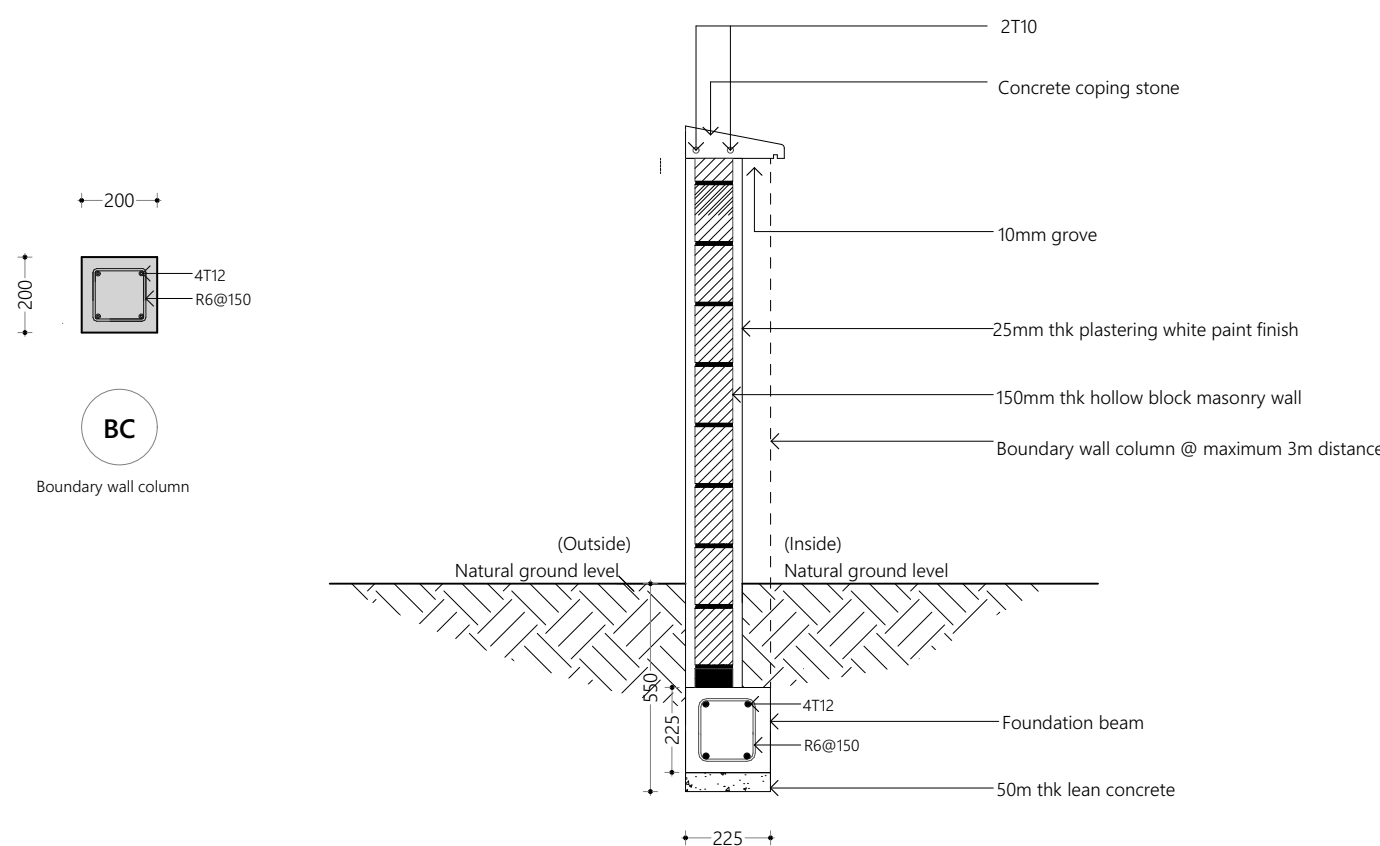


1. Post, top line and bottom line material to be 38x38mm RHS
2. Handrail material to be 38mm Ø 5.5 or varnished timber
3. Step: 250mm
4. Rise: 167mm

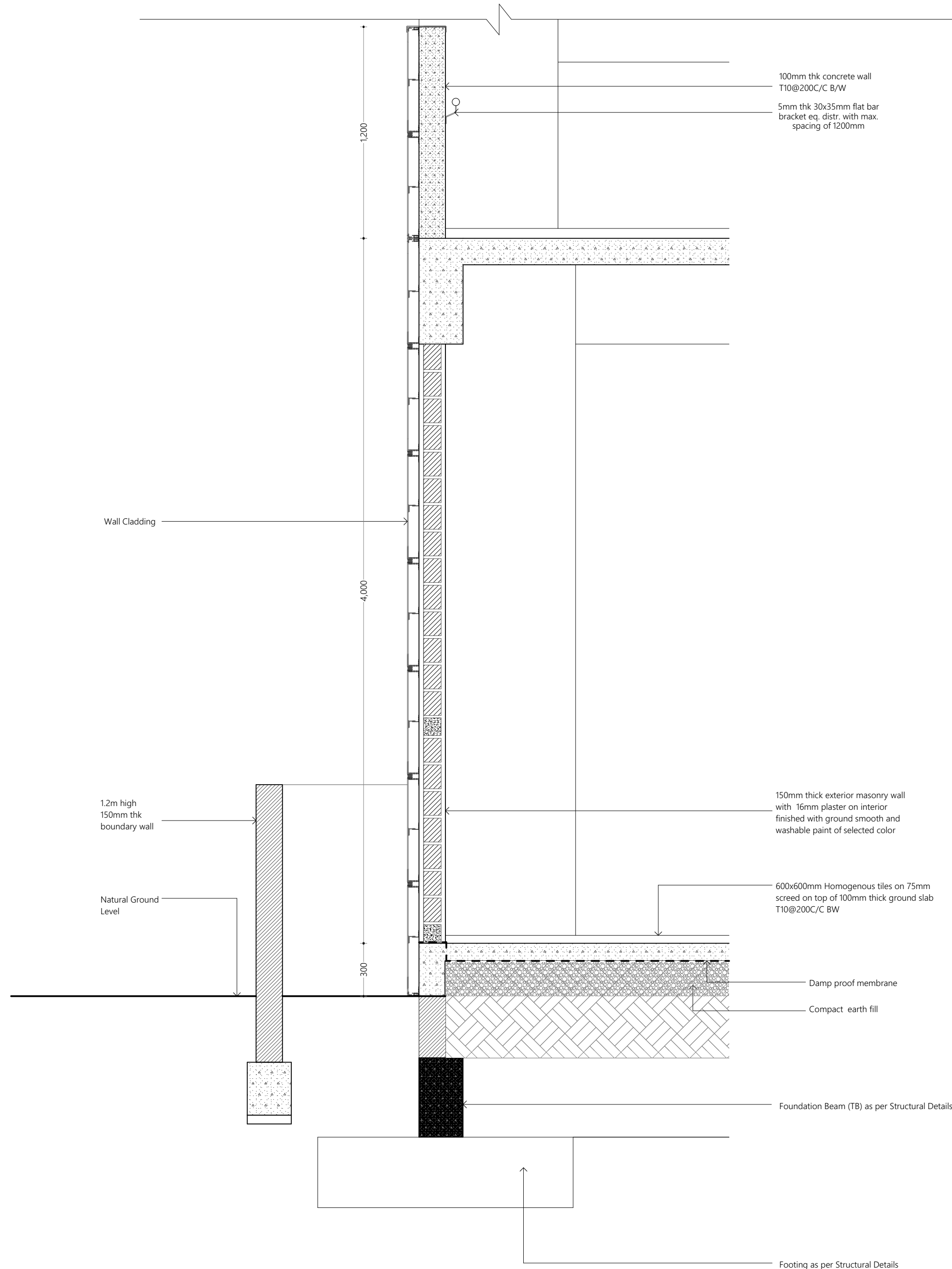
Staircase Railing Detail
1:20



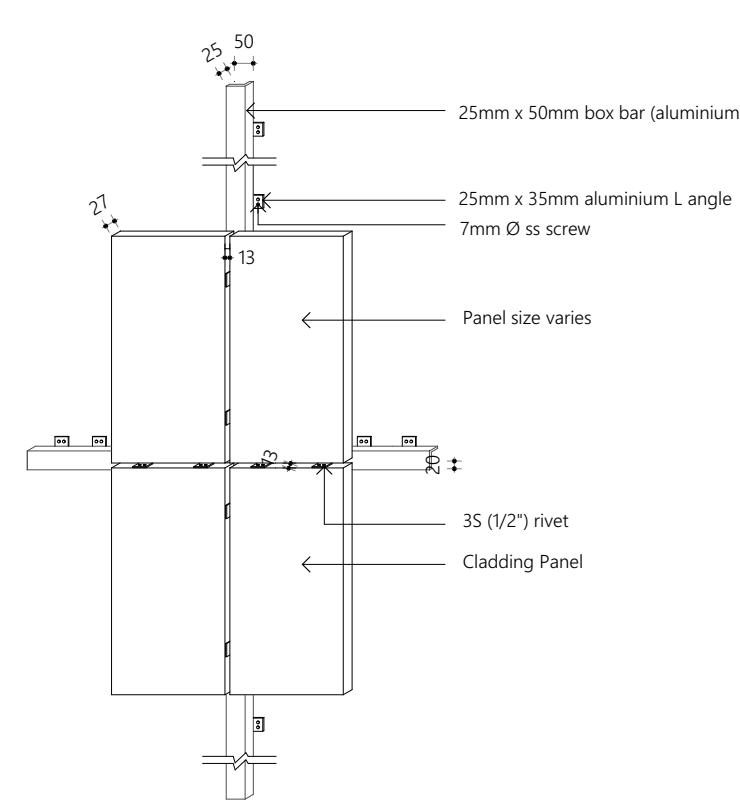
1.2m High RC Wall Detail
1:20



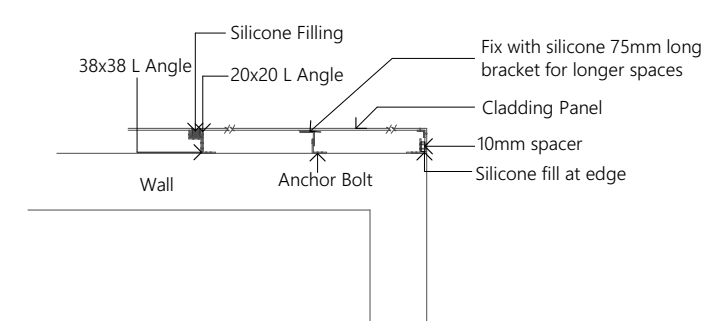
Boundary Wall Detail
1:20



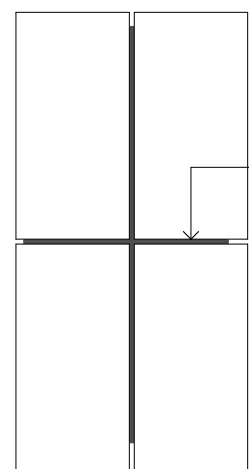
Detail
1:20



WALL CLADDING FIXING DETAIL



TYPICAL SECTION (including wall edge)



Cladding Detail
1:20

1. General notes

1.1. Do not scale the drawings. All dimensions shall be read from the drawing or computed. Elevations are in millimeters, distances and reinforcement bar sizes are in millimeters.

1.2. In the interpretation of these drawings, indicated dimensions shall govern and distances or sizes shall not be scaled for construction purposes.

1.3. The contractor shall coordinate with the ar, se, ee and other utility and equipment plans for the exact size, number and locations of all sleeves or openings through floor slabs, beams and walls. Any discrepancies or conflict in the setting out lines, levels, details, locations, sizes, reinforcement etc. Of the structural member shall be brought to the attention of the engineer prior to commencement of work.

1.4. All reinforced concrete work shall be done in accordance with the british structural code bs8110 or ec-en2 building code.

1.5. All structural steel work shall be done in accordance with the british structural code bs5950 parts 1to 9 and ec-en3 in so far as they do not conflict with the local building code requirements.

1.6. All slabs, beams and other structural elements which are not indicated, detailed, designated or inadvertently omitted but are necessary to be coordinated with architectural and other allied engineering plans as well as to complete the structural works in accordance with the intent of the plans and specifications shall be brought up during pre-bids/meetings/negotiations. It is understood that the contractor has provided and included all these items in his bid.

1.7. The contractor shall produce shop drawings and schedules as required for completion of the works and record drawings of the as-built and builder works for the consultant's approval.

1.8. Contractor shall do full coordination between structural, architectural and mep drawings in wet areas to allow for drainage pipes.

1.9. All discrepancies shall be brought to the attention of the consultant engineer proceeding with the work on site.

1.10. All materials to be used in conjunctions shall comply with the requirements of the specified codes, standards and ordinance of relevant building authorities unless noted otherwise in the project specification and/or drawings.

1.11. All dimensions and levels shown on the drawings shall be verified by the contractor. Any discrepancies shall be brought to consultant's attention prior to construction.

1.12. The contractor shall ensure that during construction, no part of the structure is overstressed by excessive construction loads until their completion. Temporary bracing and propping to be provided were required.

1.13. Once the excavation is done to a specified depth, the bearing capacity of the soil shall be confirmed by relevant test, if the value is less than the design bearing capacity the engineer is to be informed immediately.

1.14. The contractor shall submit a method statement for all elements of work and shall not proceed until consultant's written approval is given. The method statement shall provide the contractor's preferable options where such options are available.

1.15. The contractor shall comply with all requirements of the local regulations and requirements of all concerned authorities.

1.16. Quality of concrete finish for all non-plastered columns and beams is to be in accordance with - fair faced concrete as reflected on the architectural drawings and specifications.

1.17. Any structural requirements specified by relevant authorities, which are not covered in notes and specifications are assumed to be duly considered by the contractor.

1.18. All typical details and notes shown on drawings shall apply unless noted otherwise. Typical detail may not necessary be indicated on the plans but shall still apply as shown or described in the details where particular details are noted on the drawings the specified details shall be used.

1.19. The design life of the structure of this project shall maintain a minimum of 50 years life period. The primary structural components are to be designed and detailed to satisfy this requirement. Concrete mix supplier shall submit a life cycle analysis which reflect a 50 years design life without maintenance, inspection and repair requirement during this period.

2. Concrete

2.1. All concrete works shall conform to the bs8110 or ec-en, a grade of c25/30 indicates that concrete shall have a fcu compressive strength of 30n/mm2 established from test cubes at 28 days equivalent to a compressive strength of 25n/mm2 established from cylinder tests at 28 days.

concrete mix design shall comply with bs8500-1:2006 as follows:

Mix Number	1	2	3	4
Grade	C30/37	C25/30	C25/30	C16/30
Min cement content (kg/m³)	380	340	340	300
Cement Type	SRC	OPC	OPC	SRC
Max free W/C ratio	0.4	0.45	0.45	0.55
Slump	75 ± 25	75 ± 25	75 ± 25	100 ± 25
Aggregate	20	20	20	20

mix 1 - used in reinforced concrete works for structures at sea/exposed to sea, water retaining structures and tank structures.

mix 2 - used in reinforced concrete works for ground level and below (sub-structure) or any reinforced concrete works in contact with soil or water.

mix 3 - used in reinforced concrete works above ground fir lv (superstructure) for horizontal members (beams/slabs) and vertical members (columns/walls).

mix 4 - used for plain concrete blinding and mass fill.

2.2. Contractor shall implement a trial mix in accordance with the project specifications & authority requirements. Trial mix results shall be submitted for engineer's review & approval prior to commencing concreting.

2.3. Contractor shall submit the details of additives, plasticizers, micro silica, curing compounds, waterproofing agents, etc. Application should follow strictly the manufacturer recommendation. It is contractors responsibility to ensure that all constituents of concrete are compatible to each other.

2.4. Maximum percentage (by weight) of salt contents permissible in aggregates used for concrete, hollow blocks & hournli blocks, etc. shall be as follows:

- a) acid soluble chlorides in aggregate - (fine 0.03%, coarse 0.02%)
- b) acid soluble sulphate in aggregate - (fine 0.3%, coarse 0.2%)

2.5. Concrete shall be cured by an approved means in accordance with the specifications.

2.6. Aggregates shall be from approved source and in accordance with the specifications.

2.7. Openings, sleeves:

- a) no holes, sleeves or penetrations be placed vertically or horizontally through beams unless approved by the engineer.
- b) no holes to be made in slabs unless approved by the engineer.

2.8. Construction joints:

- a) the contractor shall submit to the engineer for approval a plan marked up showing the location of all construction joints
- b) horizontal construction joints shall not be made in beams, unless approved by the consultant or engineers.
- c) vertical construction joints may be located at midspan of slabs or beams after reviewed and approved by the engineers.
- d) contractor shall submit shear friction and the additional required reinforcement calculation of construction joint

at any location) for engineers review and approval.

3. Reinforcement

3.1. The reinforcement used in the reinforced concrete shall be round, deformed type 2 bars marked as (t) to indicate high yield strength of 460n/mm2 to bs4449 or type 500b to ec-en. The carbon equivalent of rebars should not exceed 0.51 for grade 460.

3.2. Reinforcement details shown are indicative. The contractor shall prepare detailed shop drawings & full bar schedules in accordance with the design drawings and shall be cut and bent in accordance with bs 8666 and aci 315-09 for the engineer's approval at least four weeks prior to commencement of reinforced concrete work and after coordinating with all concerned parties.

3.3. Lap lengths and anchorage lengths of reinforcement shall be as per bs 8110 and ec-en. Additional lapping if required to be provided with engineer's approval. The minimum lap length of reinforcement shall be the maximum of (45 bar dia in general and 50 dia for tension) or the values of the table a.

Table a : schedule of lap splices

Bar dia	lap splices length (mm)
10	500
12	600
16	800
20	1000
25	1250

3.4. Spacer bars in beams shall be a minimum 125 or the size of bar if greater at 1000mm c/c; chairs in slabs shall be a minimum 120@1000mm c/c, and minimum ties in walls shall be @@1000mm c/c.

3.5. Clear cover to reinforcement including links, stirrups, and ties shall be as follows:

- A) structure in contact with ground
 - Footings = 75mm
 - Wall and column = 50mm
 - Ground beam = 50mm
 - Slab at ground level = 50mm

- B) super structure
 - Columns = 40mm
 - Beams = 35mm
 - Slabs = 30mm
 - Walls = 40mmAll concrete elements in contact with water/splash zone = 50mm

3.6. Reinforcement bars to be cut, bent or adjusted to clear all openings and interfering structures to suit at site to the approval of the consultant or engineer.

3.7. For holes in slabs up to 300x300 sq, reinforcement is to be cut and replacement bars fixed adjacent to the hole extending 50x bar diameter beyond the hole.

4. Fire resistance

4.1. All structural concrete members between units on boundaries are designed to maintain fire resistance of 2 hours.

5. Cracking

5.1. The cracking of the structural concrete in general is restricted to 0.30mm.

6. Earthwork & foundations

6.1. Foundation detail design is based on the assumed safe allowable bearing capacity has been taken as 150kpa. The actual requirement for the foundation design is to be verified based on final geotechnical report for the project.

6.2. Excavations for foundations down to formation level shall be carried out by mechanical means, except for the last 100mm of excavation which is to be carried out by manual methods and recommended by geotechnical consultant.

6.3. The formation level of foundation is to be inspected and approved by the geotechnical engineer before commencement of the work.

6.4. Engineering fill (unless specified otherwise as a higher quality material) shall be selected well graded granular material approved by the engineer with a minimum soaked cbr of 15% compacted not exceeding 250mm in layers to 95% maximum dry density as per geotechnical investigation report recommendations in accordance with the specification. However, a minimum cover of 250mm back fill material shall be provided at the top of foundations below the blinding to cast against.

6.5. Efficient site drainage during and after construction of the project should be provided by the contractor.

6.6. Site inspection by a qualified engineer should be carried out after completion of the excavation works and after preparation of the proposed foundation level to ensure that the contact surface is free from any loose/soft layer and properly prepared for the foundation.

7. Concrete workmanship

7.1. All concrete without plaster shall be fair finish unless noted otherwise.

7.2. All concrete surface to have plaster are to be hacked to have an adequate surface key.

7.3. All concrete is to be cured by an approved method-water pounding or curing compound.

7.4. All types of construction joints in concrete shall be at a specified locations and approved by the engineers.

7.5. All substructure concrete works shall be protected with water proofing as per standard details & specifications.

7.6. All concrete shall be compacted using a mechanical vibration process.

7.7. 25x25mm chamfers to external corners and edges shall be provided in accordance with specifications and directed by the engineer.

8. Structural steel

8.1. All structural steel works shall be in accordance with bs 5950 parts 1 to 9 or ec-en3.

8.2. Maximum dimension of holes shall be in accordance with bs 5950 : part 1 : 2000 table 35, unless indicated otherwise.

8.3. The contractor shall provide whatever temporary ties or bracing necessary for a safe and proper erection of the steel structures.

8.4. Welding shall comply with bs en 1011-1 : 2009, bs en 1011-2 : 2001 and bs bs en 1011-8 : 2004.

8.5. Contractor shall do a detailed design for aluminum shades and to submit full design calculations and detailed shop drawings for all steel sections and connections to the engineer for approval prior to commencement of fabrication.

8.6. All rolled products and plates shall conform to bs en 10025-2. Cold form welded structural hollow sections shall conform to bs en 10219-1. Hot finish hollow sections shall conform to bs 10219-1 unless noted otherwise on drawings.

8.7. All connections shall be made with minimum 2nos. Galvanized grade 8.8 to bs 3692 with a minimum diameter of 20mm and minimum yield strength of 627mpa and minimum ultimate strength of 785mpa and electrodes to bsd 639, unless noted otherwise.

- 8.8. Unless noted otherwise on the drawings, all connections shall be in accordance with the following minimum requirements:
 - A) all welds shall be at least 6mm continuous fillet welds all around.
 - B) all structural bolted connections should be galvanized minimum 85 micron and with a minimum of 2 bolts per connection. Purlin bolts shall be in accordance with the suppliers recommendations.
 - C) all gusset plates shall be at least 4mm thick.
 - D) all cap plates shall be at least 4mm thick.
 - E) all base plates shall be at least 4mm thick.

8.9. As minimum all structural steel members shall be shot blasted to sa 2.5, galvanized, primed & painted as below unless noted otherwise:

- A) hot galvanization (dft 200micron)
- B) primer coat to contain 2 coats of zinc rich epoxy primer (dft 275)
- C) top coat to contain 2 coats of polyurethane enamel paint (dft 325)

8.10. All structural steel work shall be corrosion protected in accordance with the structural specifications.

- 8.11. All steel should conform to the following:
 - A) shs, rhs and chs sections bsen 10210 s275 fy=275mpa
 - B) all angles and channels ubsen 10025 s275 fy=275mpa

8.12. All steel columns to be central on grids or equally spaced between grids unless noted otherwise.

8.13. All steel beams to be central on grids or equally spaced between grids unless noted otherwise.

8.14. All steel dimensions are to center line of section unless noted otherwise.

8.15. All bracing is to be set out on the centroids of bracing members and on the center line of beams and columns unless noted otherwise.

8.16. Where bracing is shown offset from center of members the contractor shall design and provide all necessary stiffeners.

8.17. Contractor to provide all leader railing as required to support free edges not trimmed with cold formed or mild steel work to be provided in accordance with architect's drawings.

8.18. Location of any connections, splices not shown in the drawings shall be submitted with design for engineers approval. All splices shall be made unless shown in the drawings and as approved by the engineers.

8.19. Contractor shall do a full coordination between architecture and structural drawings for the steel support for shade elements, locations and sizing connections with structural concrete elements and sections. Care shall be taken to prevent dissimilar metal corrosion.

9. Masonry blocks

9.1. Design and construction of all blocks shall comply with bs 5628 : parts 1,2 & 3 : 1992 or en-ec6. The contractor shall submit a construction method statement prior to commencing the works.

9.2. Wall ties in accordance with bs 1248 - cp 121 part 1,73.

9.3. All block wall joints to manufacturers specifications.

9.4. All block work walls are to be considered as non-load bearing partitions unless noted otherwise in drawings.

9.5. Block walls shall be reinforced horizontally and vertically as per manufacturers requirements.

9.6. Masonry wall mechanical properties

- young's modulus = 3.5e+006 kn/m2
- poisson's ratio = 0.25
- density = 20kn/m3
- min.compressive strength= 3.5 mpa

10. Design & loading

10.1.Consultant design

design and construction of reinforced concrete structural members, shall be in accordance with bs8110 & ec-en2 and the structural steel members to bs 5950 & ec-en3.

10.2.Contractor design

the contractor is responsible for the design of all temporary works. (shoring for excavation, signage... Etc) and the following items of permanent secondary works. (subjected to engineers review and approval)

- a) precast concrete elements
- b) architectural facade and support steelwork
- c) non load bearing feature columns
- d) all secondary steel works
- e) structural steelwork connections
- f) structural support for mep services
- g) shade structures
- h) balustrade and crash barrier
- i) structural glass
- j) interior signage

the design of the primary structure is considering the interfaces with these structures) loading reactions, opening ,etc.) And were detailed to accommodate these elements into the design.

the contractor shall submit a full detail design for the wall and boundary wall foundation, also the contractor to do

full coordination between the structural foundation for villas (including the water tanks, and the boundary wall for clashes, the contractor shall produce shop drawings for the boundary walls for engineer's approval.

10.3. Loading

- a) superimposed (dead loads & live loads) as per bs 6399 or en-ec1.
- b) self-weight & densities as per bs 648 or en-ec1.
- c) wind loads as per bs 6399 or en-ec1 (mean wind speed = 25m/s).

11. Timber

11.1. All timbers shall be in accordance with bs 5268 or ec-en5

11.2. All timber members sizes are indicative. Contractor shall coordinate with supplier and submit detail designs for all prefab timber structure for approval.

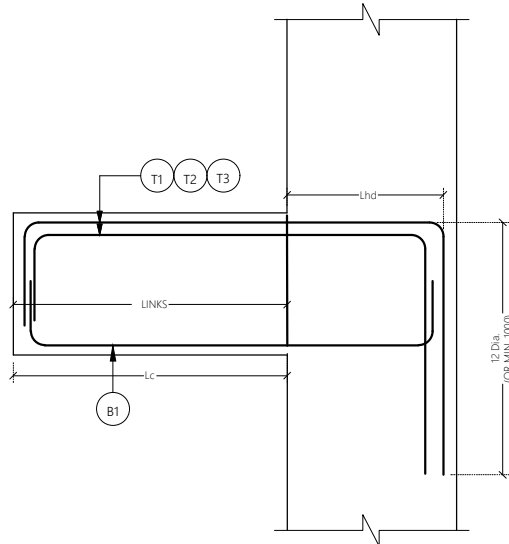
Notes:

1. First stirrups location shall be s/2 from the face of the column/ support.
2. Place one b bar in each bottom corner and one t bar in each top corner of the stirrup cage
3. Condition shown is at columns. Where beams and girder intersect, use typical interior girder section.
4. All bottom bars and top bars shall be placed in one layer unless two layers are noted in the beam schedule. Where to layers are noted provide 25 mm clear between layers. If two layers are noted place bar b1 above bar b and bar t above tt.
5. Length of exterior top bars are given only when straight bar occurs otherwise hooked bars are required.
6. Where a member is supported by a column, but has another member running perpendicular to it at the same column, the first stirrup spacing shall start from the face of the column and not from the face of the transverse beam.
7. Top & bottom reinforcement lapping of both main rebars can be ignored if the main rebars at left and right side of lapping location are identical.
8. For 'column width less or equal 2m l'="column width'/2. For 'column width' greater than 2m, l'="1m

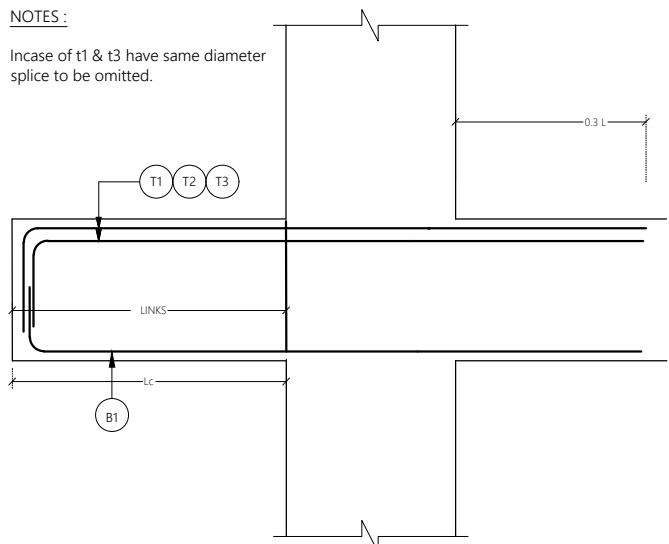
Supplementary abbreviations:

- B1 - continuous bottom bars
- B2 - additional bottom bars
- CE - cantilevered end
- D - depth of member, mm
- EE - each end
- EF - each face
- FL - full length
- EW - each way
- H - ac) standard hook
- ITB - interior top bar
- LE - left end
- LG - length
- P - paired stirrups
- RE - right end
- REM - remainder
- S - side bars
- T1 - top bars at internal supports
- T2 - top bars at mid-span
- T3 - top bars at end support
- W - width of member, mm

TYPICAL CANTELEVER BEAM FROM COLUMN



TYPICAL CANTELEVER BEAM CONTINUOUS

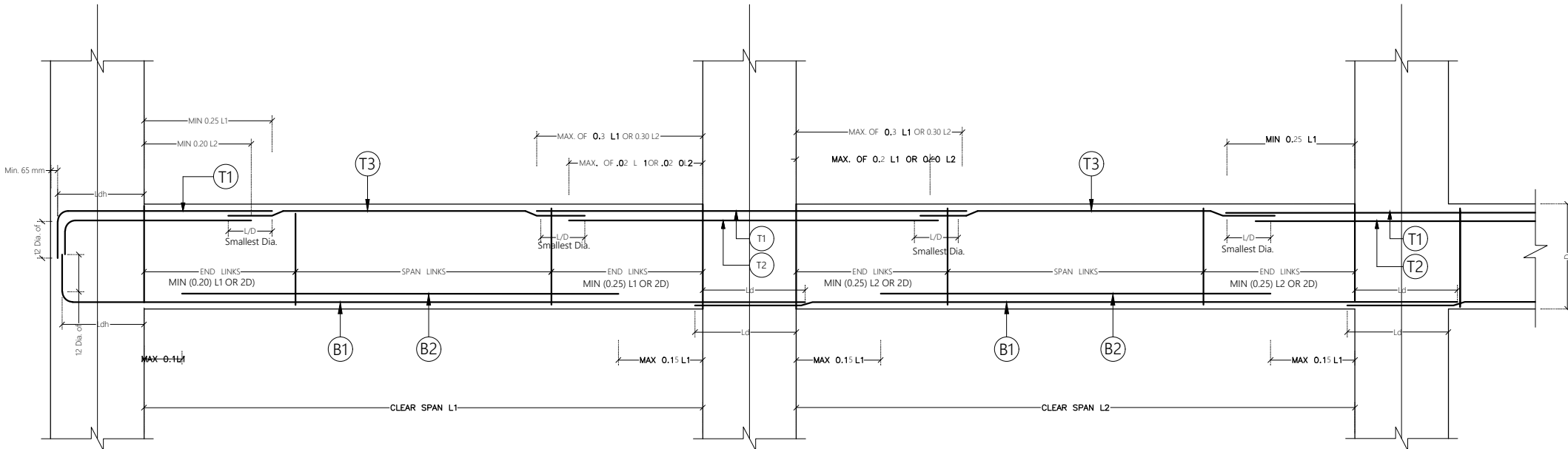


NOTES:

1. In case of T1 & T3 have same diameter splice to be omitted.

Structural Notes
1:100

CONTINUOUS BEAM DETAILS



NTS

Structural Notes
1:100