

CLIENT:



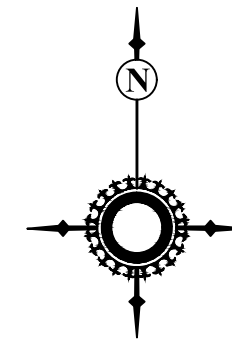
PROJECT NAME:

20 m³/Day FSTP at TUNDUMA, TANZANIA

LOCATION:

TUNDUMA, TANZANIA

VICINITY MAP:



Structural Drawings

GENERAL NOTES

A: CODES AND STANDARDS

AS REFERENCED IN THE STRUCTURAL DESIGN FOR BUILDINGS, THE FOLLOWING BRITISH STANDARDS SHALL GOVERN THE CONSTRUCTION, QUALITY CONTROL, AND SAFETY OF ALL STRUCTURAL WORK PERFORMED IN THIS PROJECT: -

- CP3: CHAPTER V: 1972 AND BS6399:2-1997 FOR DESIGN OF WIND LOADS IN BUILDINGS.
- BS8110:2-1997 CODE OF PRACTICE FOR STRUCTURAL USE OF REINFORCED CONCRETE IN BUILDINGS.
- BS5268:1-1985 CODE OF PRACTICE FOR STRUCTURAL USE OF TIMBER.
- BS8002:1-1994 CODE OF PRACTICE FOR EARTH RETAINING STRUCTURES.
- BS5950-1:2000 STRUCTURAL USE OF STEEL WORKS IN BUILDINGS.

B: DIMENSIONS

- UNLESS OTHERWISE STATED, ALL DIMENSIONS ON THE DRAWINGS ARE IN MILLIMETERS (mm)

C: FLOOR AND ROOF LOADS

PROVISION OF MINIMUM DESIGN LOADS EXPERIENCED IN STRUCTURE WILL BE AS PER THE FOLLOWING SPECIFICATIONS: -

- DEAD LOAD:
FIRST FLOOR SLABS
(A) SCREED 762244.. 1.20 KN/m²
(B) CEILING AND SERVICES 762244.. 0.50 KN/m²
(C) FLOOR PARTITION AT ANY POINT 762244.. 2.0 KN/m²
- IMPOSED LOAD:
IMPOSED LOAD ON THE FLOOR SLABS 762244.. 2.0 KN/m²

NOTE: -
GROUND FLOOR SLAB WILL BE THE SLAB ON GRADE WITH MINIMUM REINFORCEMENT FOR CRACK CONTROL

D: WIND LOADS

WIND LOADS HAVE BEEN DESIGNED AS PER THE CP3:CHAPTER V:1972 AND BS6399:2-1997:

- THE DESIGN BASIC WIND SPEED IS 35 m/s
- BUILDING IMPORTANCE AND TYPE FACTOR 1.0

E: GEOTECHNICAL CRITERIA

- FOUNDATION DESIGN WILL BASE ON THE RESULTS AND RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATION REPORT PREPARED.
- CURRENTLY FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 150 KN/m² AND AN AVERAGE SOIL STIFFNESS MODULUS (Es) OF 5.0 MN/m².

F: BACKFILL

- CONTRACTOR SHALL ANTICIPATE AND MAKE PROVISIONS FOR ADEQUATE DRAINAGE DURING AND AFTER BACKFILLING.
- BACKFILL MATERIAL PLACED AGAINST FOUNDATION WALLS SHALL BE FREE DRAINING MATERIAL WITH PARTICLE GRADING RANGING FROM 2.5mm TO 20mm FREE FROM DUST, OIL, PAINTS, MUD, ORGANIC WASTES, SALTS AND SHALL NOT INCLUDE SITE EXCAVATED SOIL MATERIALS.
- ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM LOOSE LIFTS OF 200 mm AND SHALL BE COMPACTED TO DRY DENSITIES OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.

G: CAST-IN-PLACE CONCRETE CONSTRUCTION

- DESIGN, CONSTRUCTION, AND QUALITY CONTROL OF ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH REFERENCED CODES AND STANDARDS.
- ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE FROM GRANITE AGGREGATE, FINE SAND AND POZOLANA CEMENT.
- CONCRETE CONSTRUCTION AND PROPERTIES SHALL CONFORM TO THE MINIMUM CRITERIA SPECIFIED IN TABLE 1 BELOW.

TABLE 1 - CONCRETE PROPERTIES			
STRUCTURAL ELEMENTS	MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS MPa	MAXIMUM WATER CEMENT RATIO	ENTRAINED AIR RANGE (%)
FOUNDATIONS	STRIP FOUNDATIONS: 20 PAD FOUNDATIONS: 25	0.55	2 - 4 %
WALLS & ELEVATED SLABS	25	0.55	4 - 6 %
COLUMNS AND BEAMS	25	0.55	4 - 6 %

- PRE-CONSTRUCTION QUALITY ASSURANCE SUBMITTALS SHALL BE IN ACCORDANCE WITH THE BRITISH STANDARDS
- FIELD QUALITY ASSURANCE REQUIREMENTS FOR CONCRETE CONSTRUCTION, INCLUDING CONCRETE TEST CYLINDERS, SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF BRITISH STANDARDS BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE

H: REINFORCEMENT

STEEL REINFORCEMENT FOR CONCRETE SHALL BE HIGH STRENGTH DEFORMED BARS CONFORMING TO BS4449, GRADE 460 AND THE ADDITIONAL REQUIREMENTS LISTED BELOW: -

- THE ACTUAL YIELD STRENGTH BASED ON MILD TESTS SHALL NOT EXCEED THE SPECIFIED YIELD STRENGTH BY MORE THAN 125 MPA.
- THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRENGTH TO THE ACTUAL TENSILE YIELD STRENGTH SHALL NOT BE LESS THAN 1.25.
- DETAILS OF STEEL REINFORCEMENT SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE BS866: 2000
- EXPOSURE CONCRETE PROTECTION FOR STEEL REINFORCEMENT OF CAST-IN-PLACE CONCRETE SHALL BE PROVIDED AS SPECIFIED IN TABLE 2 BELOW: -

TABLE 2 - CONCRETE PROTECTION				
STRUCTURAL ELEMENT	NOT EXPOSED TO EARTH OR WEATHER IN SERVICE (mm)	EXPOSED TO EARTH OR WEATHER IN SERVICE (mm)		EARTH FORMED
		Ø16mm OR SMALLER	Ø20mm OR LARGER	
SLABS	25	40	50	75
BEAMS	35	40	50	75
WALLS	40	40	50	75
FOOTINGS	50	75	75	75

- WHEN REINFORCING STEEL IS NOTED AS CONTINUOUS IN WALLS AND SLABS, STAGGERING SHOULD BE NECESSARY.
- REINFORCING BARS SHOULD CONFORM WITH THE FOLOWING LAP LENGTHS: -

TABLE 3: MINIMUM LAP LENGTHS		
MINIMUM LAP LENGTHS STAGGERED		MINIMUM LAP LENGTHS NOT STAGGERED
BAR DIA (mm)	LAP LENGTH (mm)	LAP LENGTH (mm)
10	400	500
12	500	600
16	650	800
20	800	1000
25	1000	1250
32	1300	1600

- LAP LENGTHS FOR UNEQUAL SIZE BARS SHALL BE BASED ON THE SMALLER BAR.

I: STRUCTURAL TIMBER

- STRUCTURAL TIMBER TO BE USED IN THE ROOF SHALL CONFORM TO BS5268: 1-1985.
- ALL STRUCTURAL TIMBER USED FOR THE ROOF SHOULD HAVE TENSILE STRENGTH PARALLEL TO GRAINS OF 4.50 N/mm²
- ALL STRUCTURAL TIMBER USED FOR THE ROOF SHOULD HAVE BENDING STRENGTH PARALLEL TO GRAINS OF 7.50 N/mm²
- ALL STRUCTURAL TIMBER USED FOR THE ROOF SHOULD HAVE COMPRESSION STRENGTH PARALLEL TO GRAINS OF 7.90 N/mm²
- ALL STRUCTURAL TIMBER TO BE USED IN THE ROOF SHOULD HAVE A LIMIT MOISTURE CONTENT OF 18%

J: ANCHORS AND DOWELS

- ALL ANCHOR BOLTS SHOULD HAVE A DIAMETER OF Ø16mm GRADE 8.8 PROVIDED WITH HOLDING DOWN PLATE OR WITH A MINIMUM RADIUS OF 82 mm FOR THE HOLDING OWN HOOK.
- ALL STEEL BASE PLATES SHOULD HAVE A THICKNESS OF NOT LESS THAN 10mm
- WHENEVER NECESSARY, CONCRETE ADHESIVE ANCHORS SHALL BE INSTALLED TO PROVIDE THE FOLLOWING MINIMUM ALLOWABLE CAPACITIES AND EMBEDMENT (WHEN TESTED IN NORMAL WEIGHT CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 25 N/mm²):

K: BLOCK WORK

- FOR GENERAL SETTING OUT OF BLOCKWORK AND BLOCKWORK EXPANSION JOINTS, REFER TO ARCHITECTS DRAWINGS
- ALL LOAD-BEARING BLOCK WALLS TO BE OF SOLID WITH A COMPRESSIVE STRENGTH OF NOT NOT LESS THAN 7MPa LAID ON IN CLASS II MORTAR WITH 28 DAYS COMPRESSIVE STRENGTH OF 7MPa
- BRICK FORCE BARS SHOULD BE PROVIDED WITH MINIMUM DIMENSION OF 2.8mm AND YIELD STRENGTH = 485MP AND LAP LENGTH OF 400mm MINIMUM
- BRICK FORCE BARS SHOULD BE PROVIDED IN EVERY COURSE IN THE FOUNDATION BLOCK WORK UP TO THE THE GROUND FLOOR BEAMS AND IN EVERY THIRD COURSE IN THE SUPERSTRUCTURE TIED UP INTO STRUCTURAL COLUMNS
- ALL BRICK FORCE BARS SHOULD BE GALVANISED WITH MINIMUM COATING OF 750g/m OF ZINC.

L: LIST OF ABBREVIATIONS

ABR - ALTERNATE BARS REVERSED

ABS - ALTERNATE BARS STEGGERED

CJ - CONSTRUCTION JOINTS

CL - CENTRE LINE

B - BOTTOM REINFORCING BARS

T - TOP REINFORCING BARS

N - NEAR FACE REINFORCING BARS

F - FAR FACE REINFORCING BARS

S - SIDE REINFORCING BARS

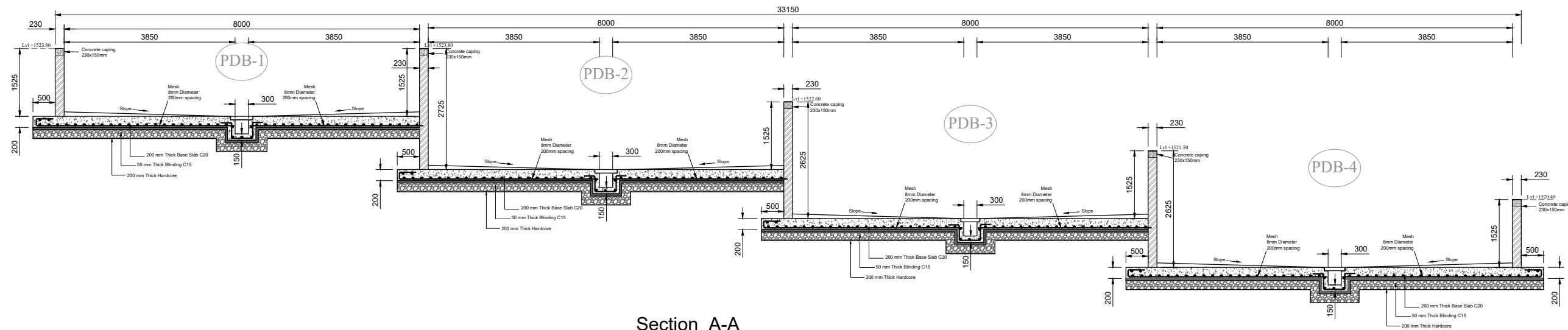
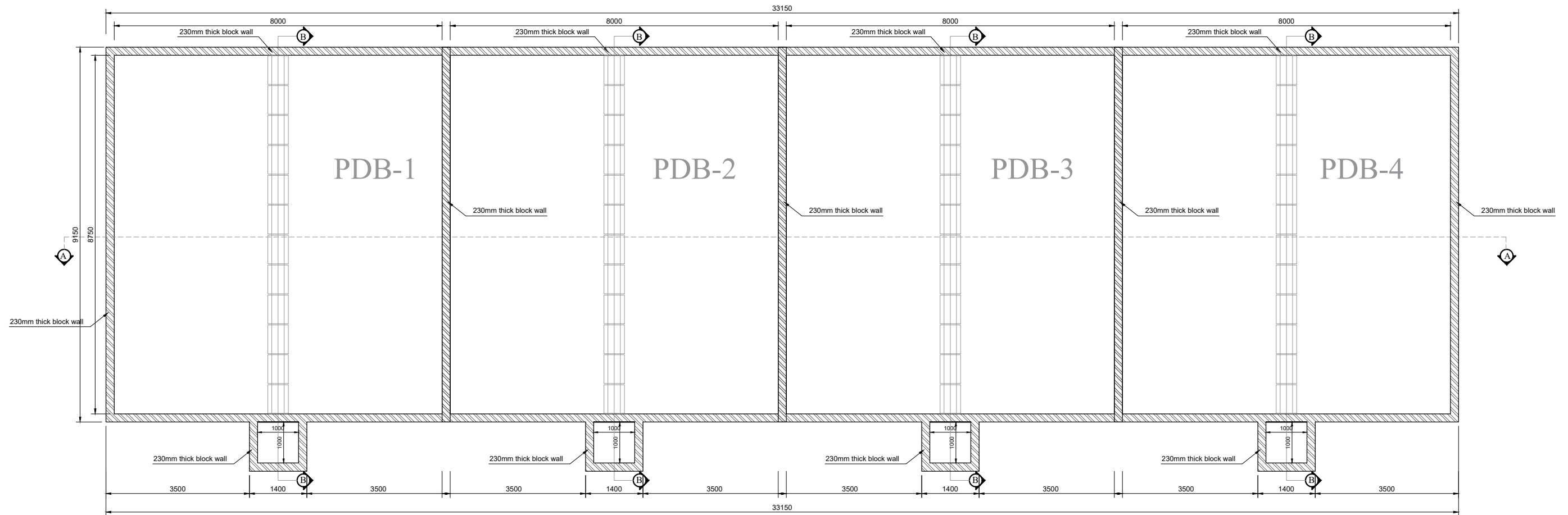
Ø - BOLT DIAMETER

t_c - THICKNESS OF CONNECTED PART/ BASE PLATE

P_y - DESIGN STRENGTH OF STEEL

PLANTED DRYING BEDS (PDB)

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						SCALE (AT A3): 1:8	DATE: 24/03/2022	

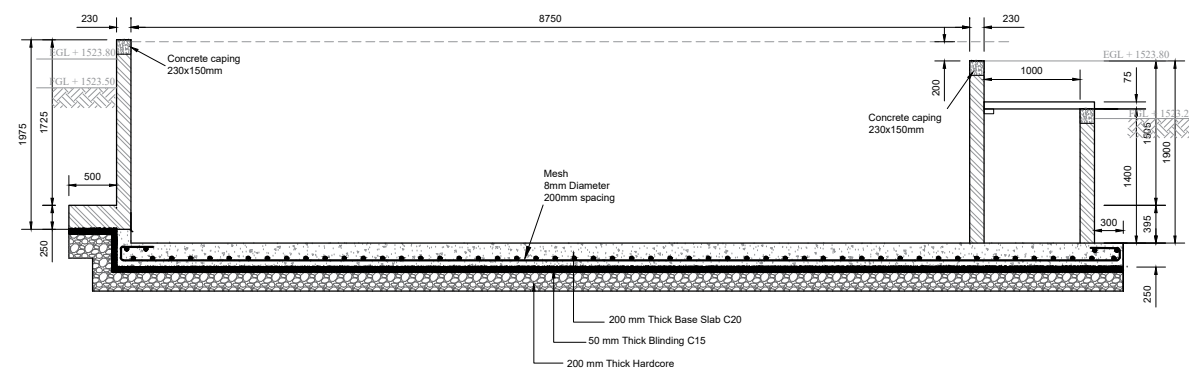
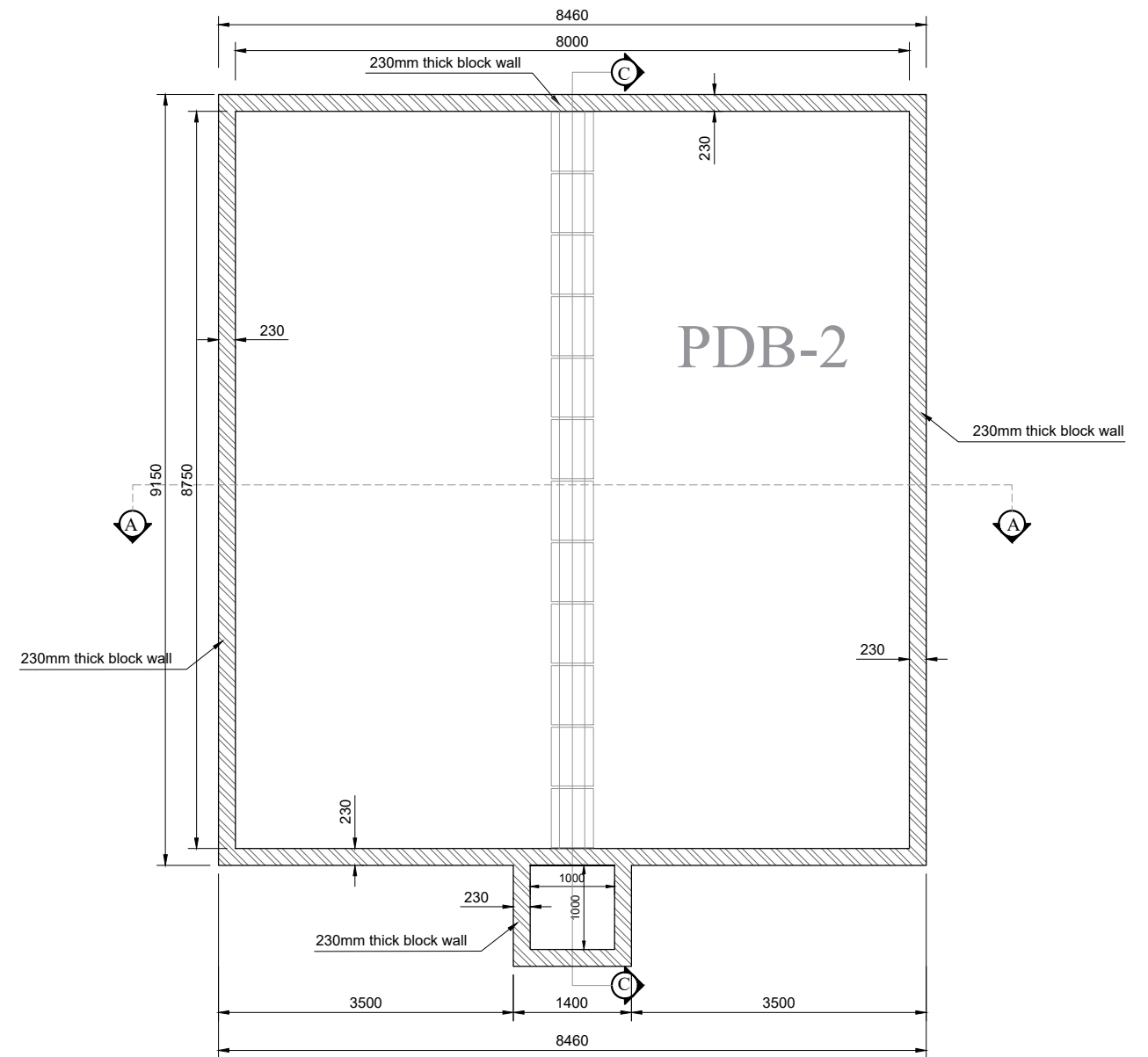
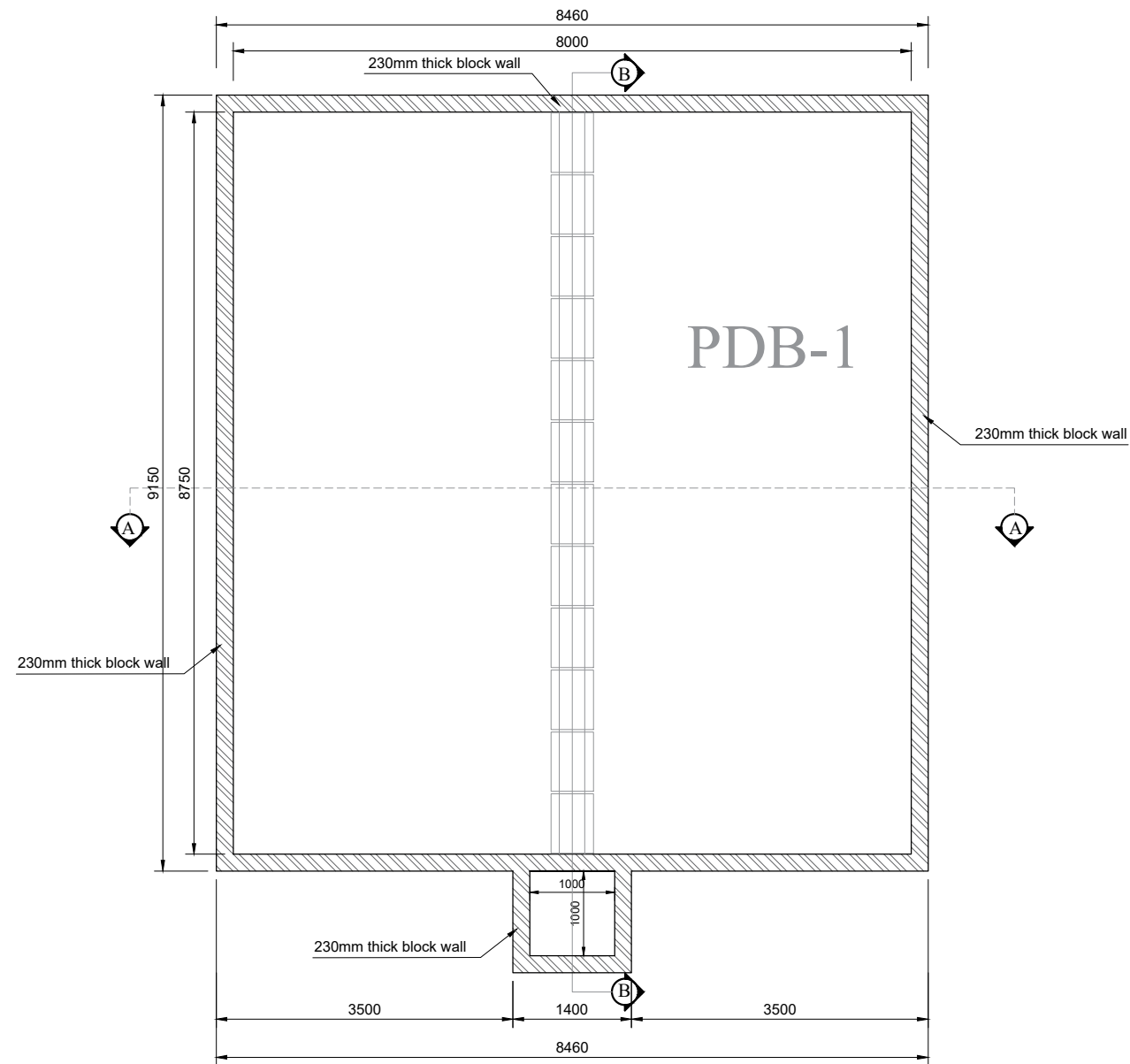


Section A-A

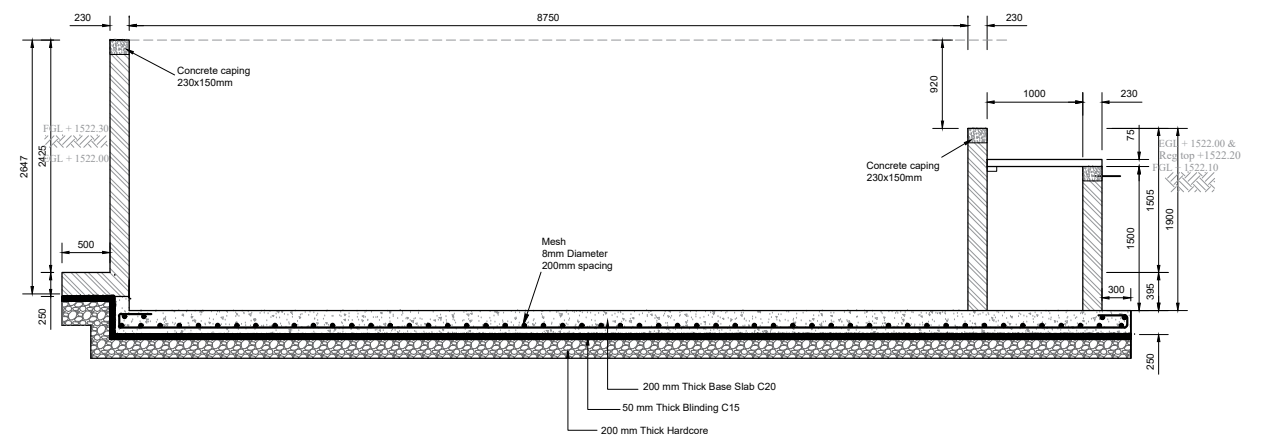
PDB Bar Bending schedule

member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
BRC mesh A252 Base slab	01	Y08	354 sqm		3.95	1399	

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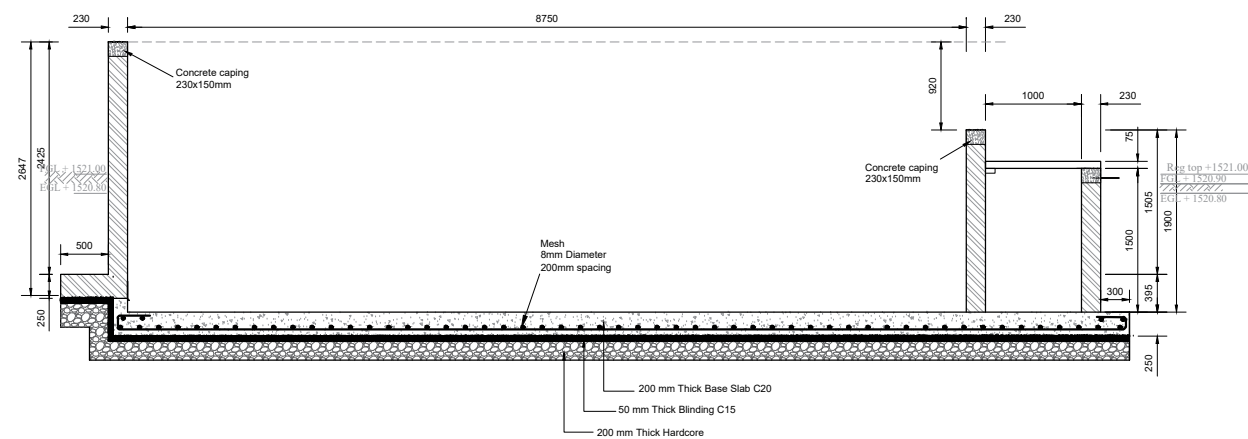
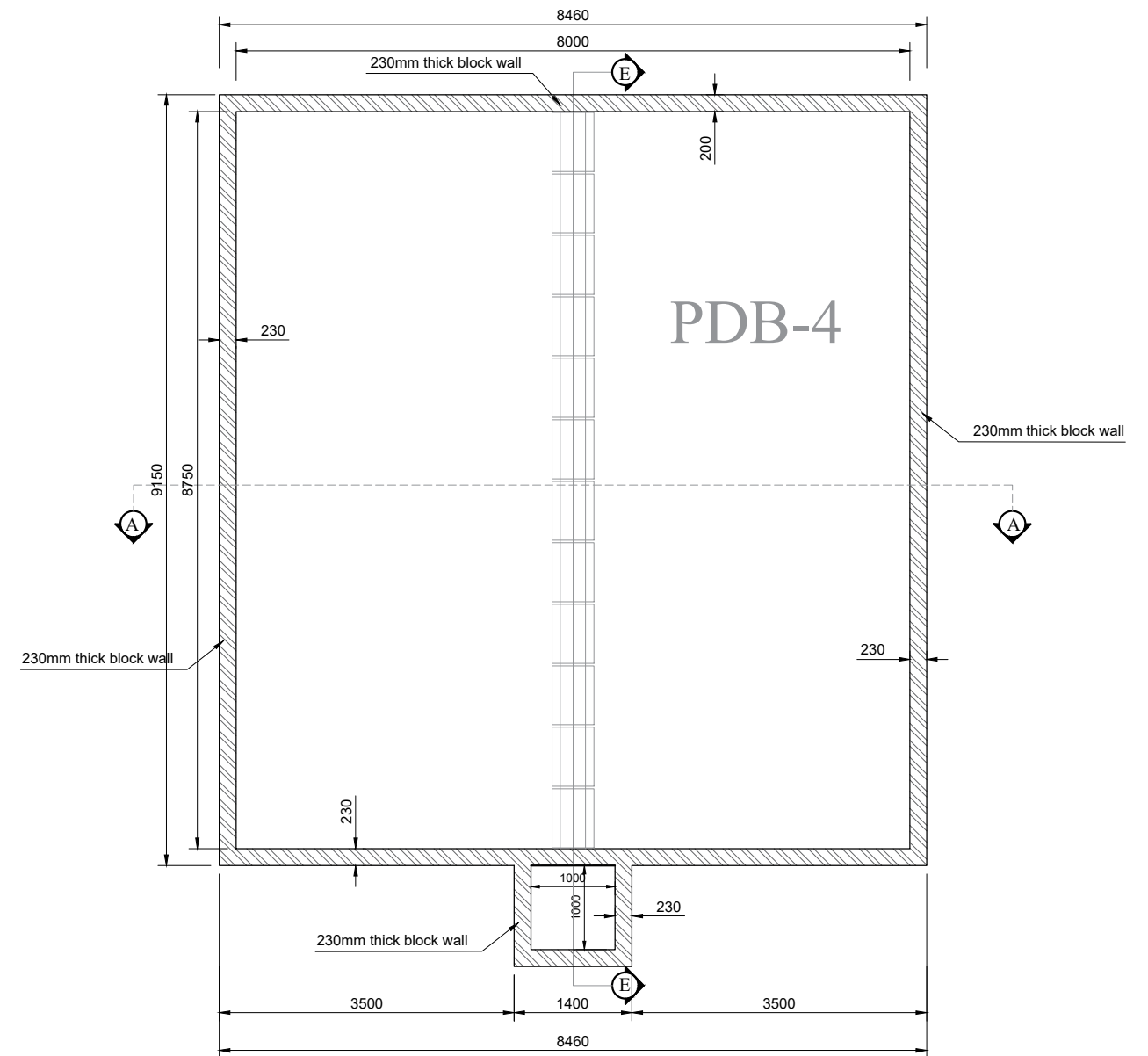
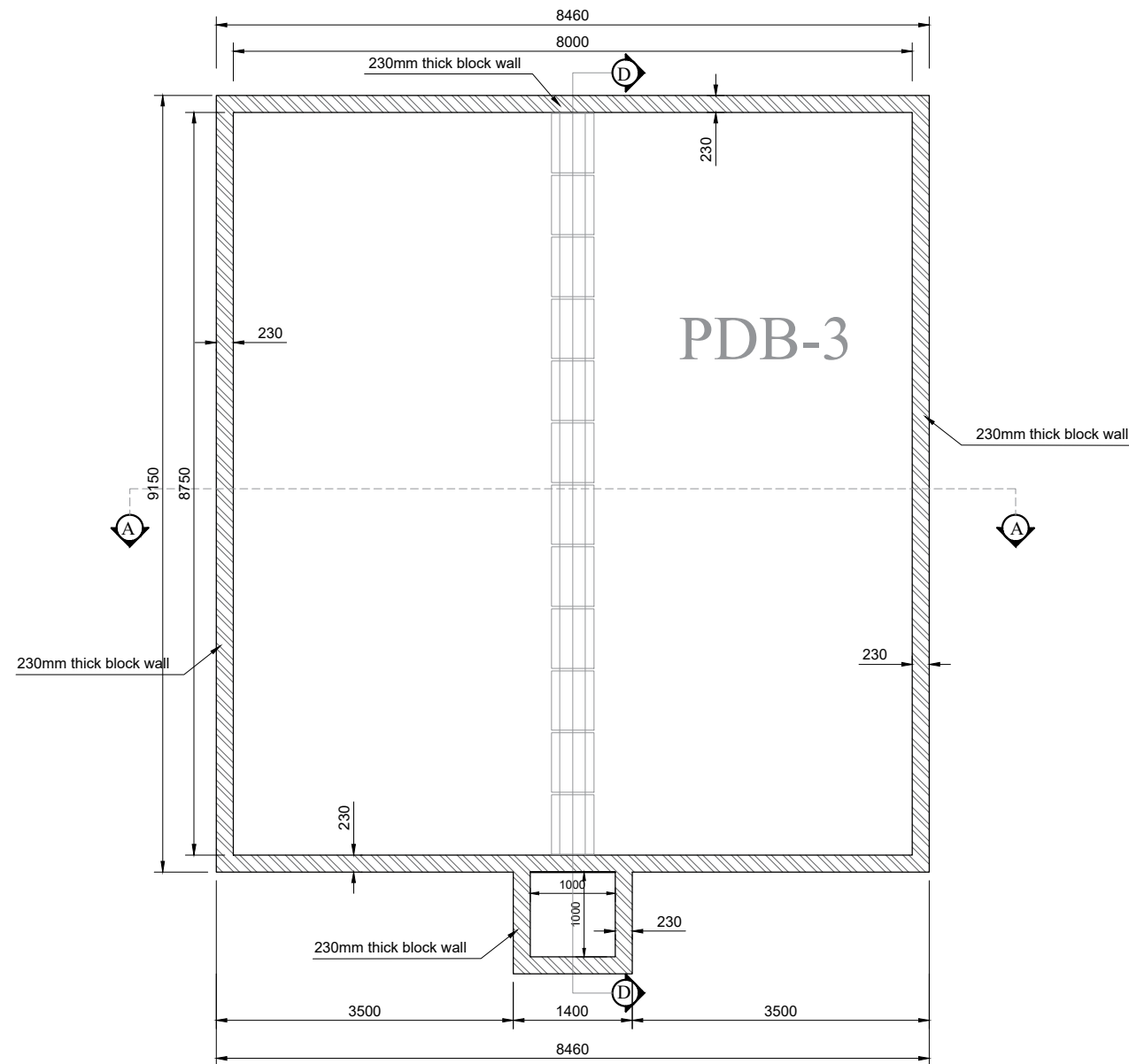


Section B-B

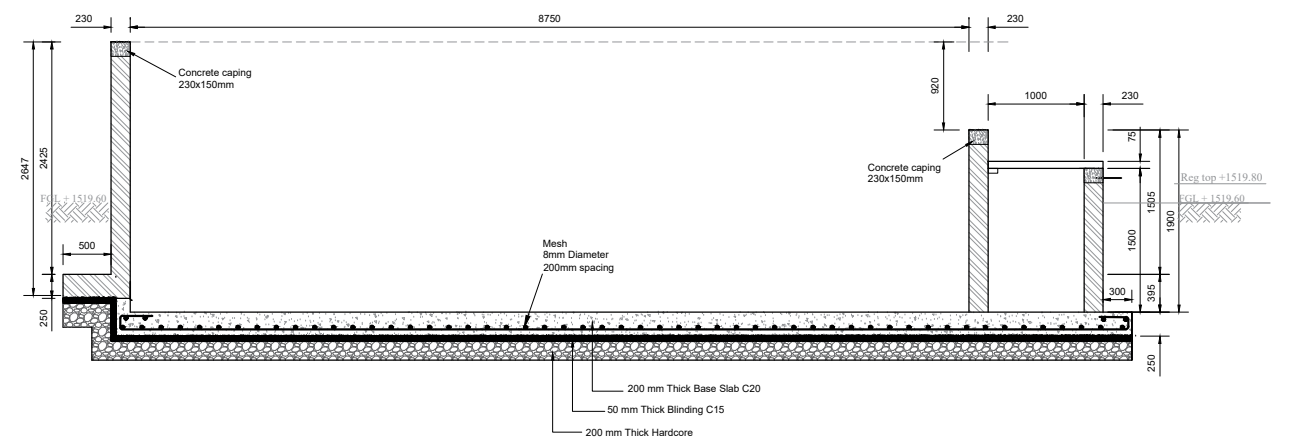


Section C-C

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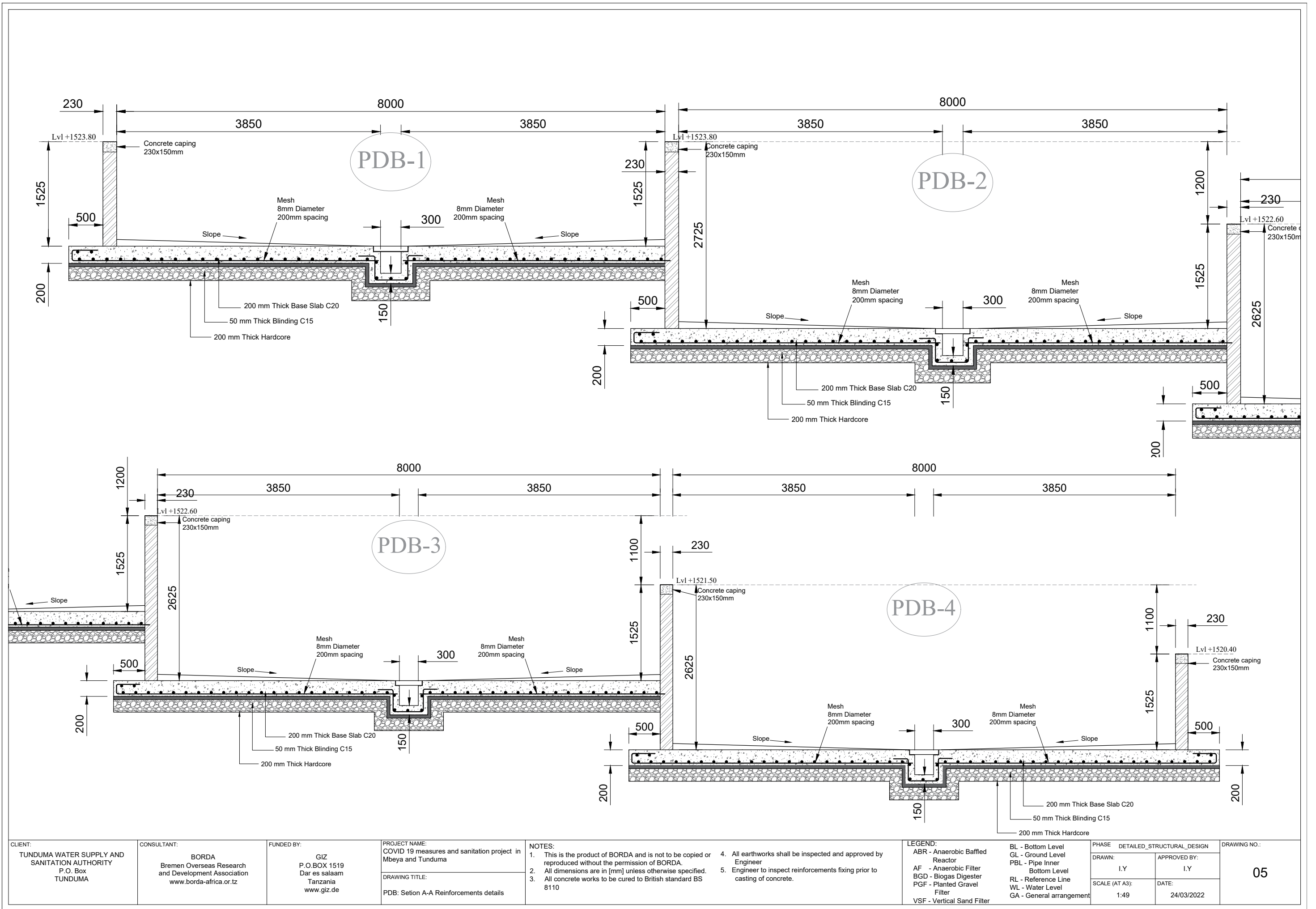


Section D-D



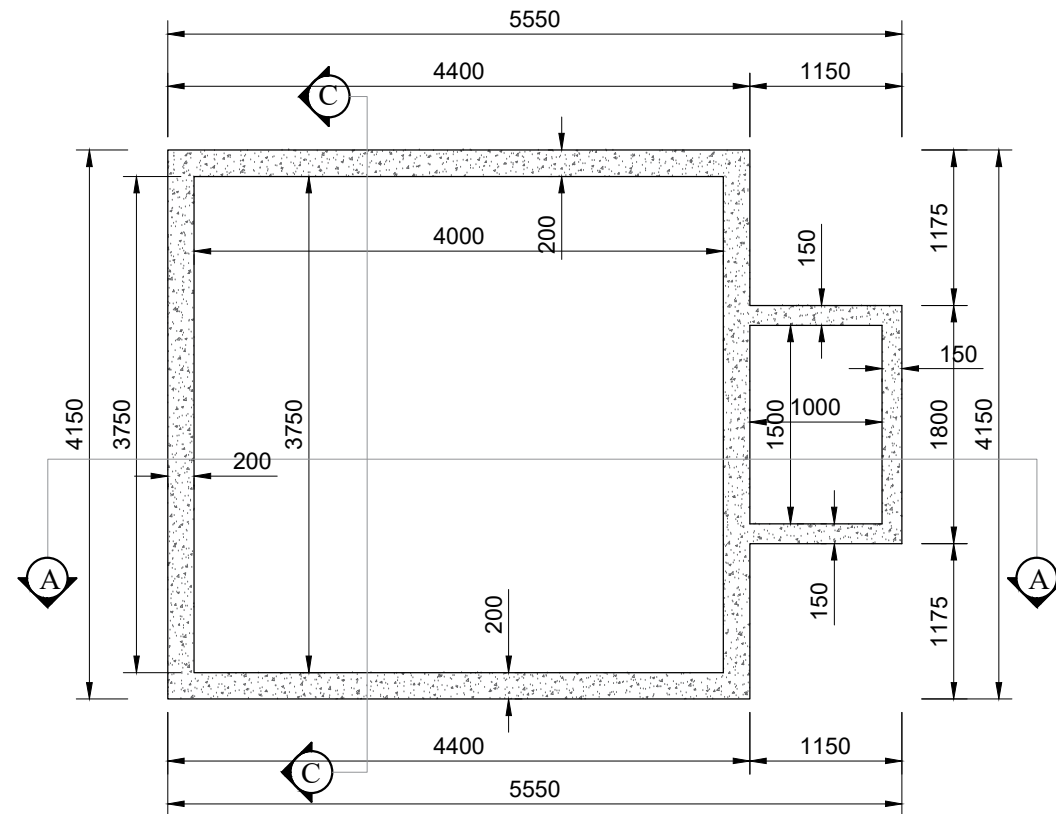
Section E-E

<p>CLIENT:</p> <p>TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY</p> <p>P.O. Box TUNDUMA</p>	<p>CONSULTANT:</p> <p>BORDA</p> <p>Bremen Overseas Research and Development Association</p> <p>www.borda-africa.or.tz</p>	<p>FUNDED BY:</p> <p>GIZ</p> <p>P.O.BOX 1519 Dar es salaam Tanzania</p> <p>www.giz.de</p>	<p>PROJECT NAME:</p> <p>COVID 19 measures and sanitation project in Mbeya and Tunduma</p> <p>DRAWING TITLE:</p> <p>PDB: GA Plans and Sections 3/3</p>	<p>NOTES:</p> <ol style="list-style-type: none"> This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. All dimensions are in [mm] unless otherwise specified. All concrete works to be cured to British standard BS 8110 All earthworks shall be inspected and approved by Engineer Engineer to inspect reinforcements fixing prior to casting of concrete. 	<p>LEGEND:</p> <p>ABR - Anaerobic Baffled Reactor</p> <p>AF - Anaerobic Filter</p> <p>BGD - Biogas Digester</p> <p>PGF - Planted Gravel Filter</p> <p>VSF - Vertical Sand Filter</p> <p>BL - Bottom Level</p> <p>GL - Ground Level</p> <p>PBL - Pipe Inner Bottom Level</p> <p>RL - Reference Line</p> <p>WL - Water Level</p> <p>GA - General arrangement</p>	<p>PHASE</p> <p>DETAILED_STRUCTURAL_DESIGN</p> <p>DRAWN: I.Y</p> <p>APPROVED BY: I.Y</p> <p>SCALE (AT A3): 1:76</p> <p>DATE: 24/03/2022</p>	<p>DRAWING NO.:</p> <p>04</p>
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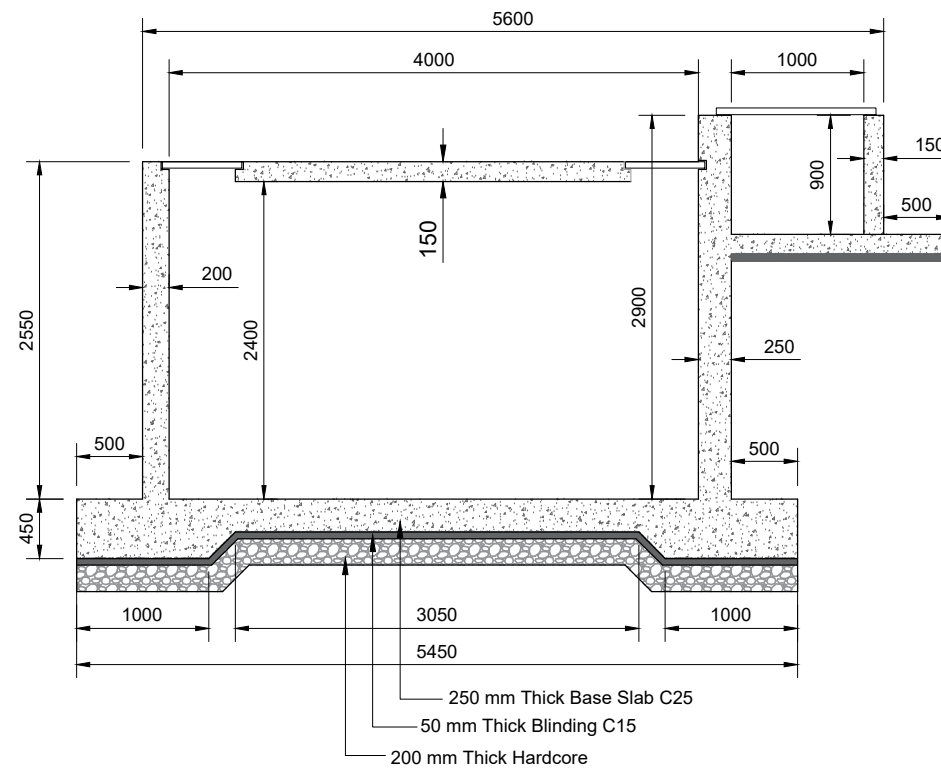


SC AND ASR

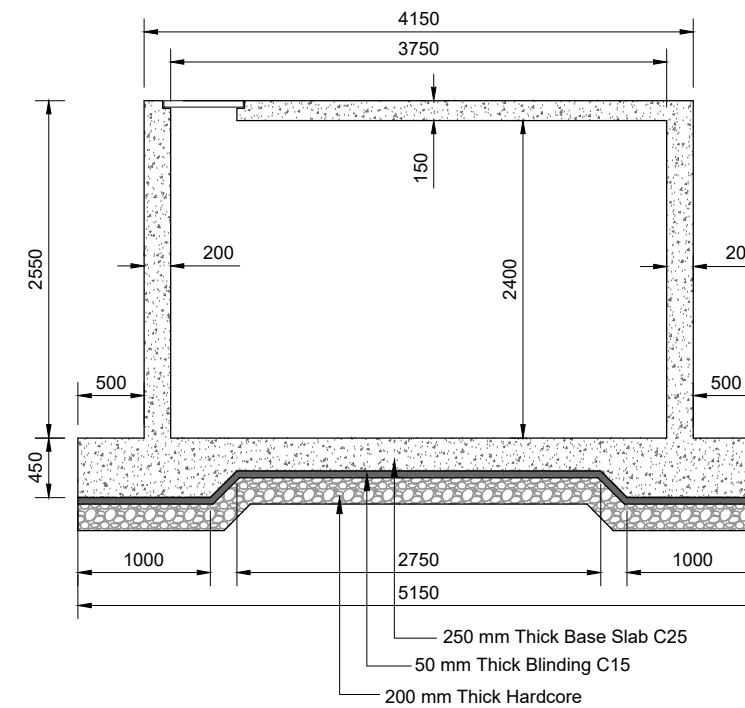
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			DRAWING TITLE: SC & ASR SEPARATOR			DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:8	DATE: 24/03/2022	



Sectional Plan Of
ASR+SC

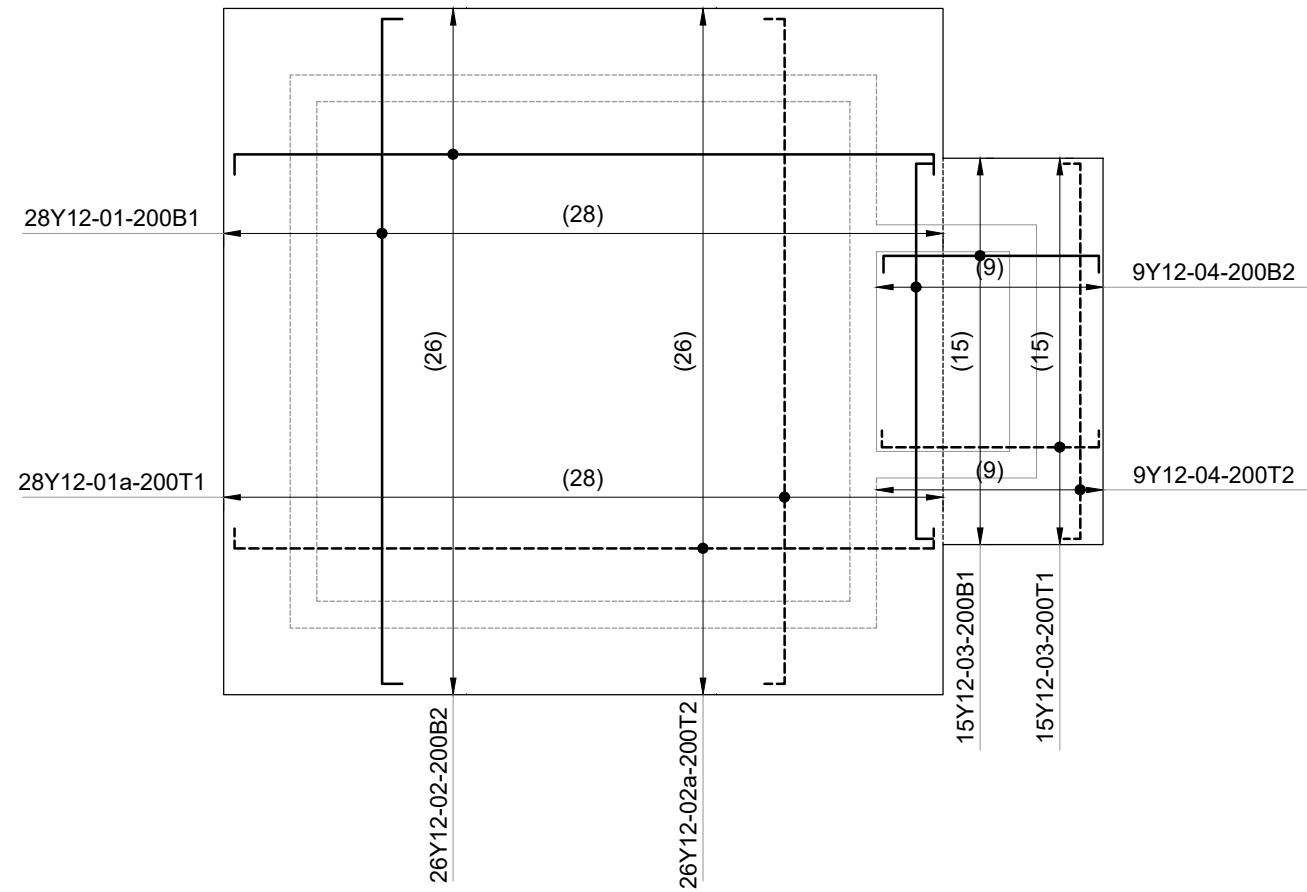


Section A-A

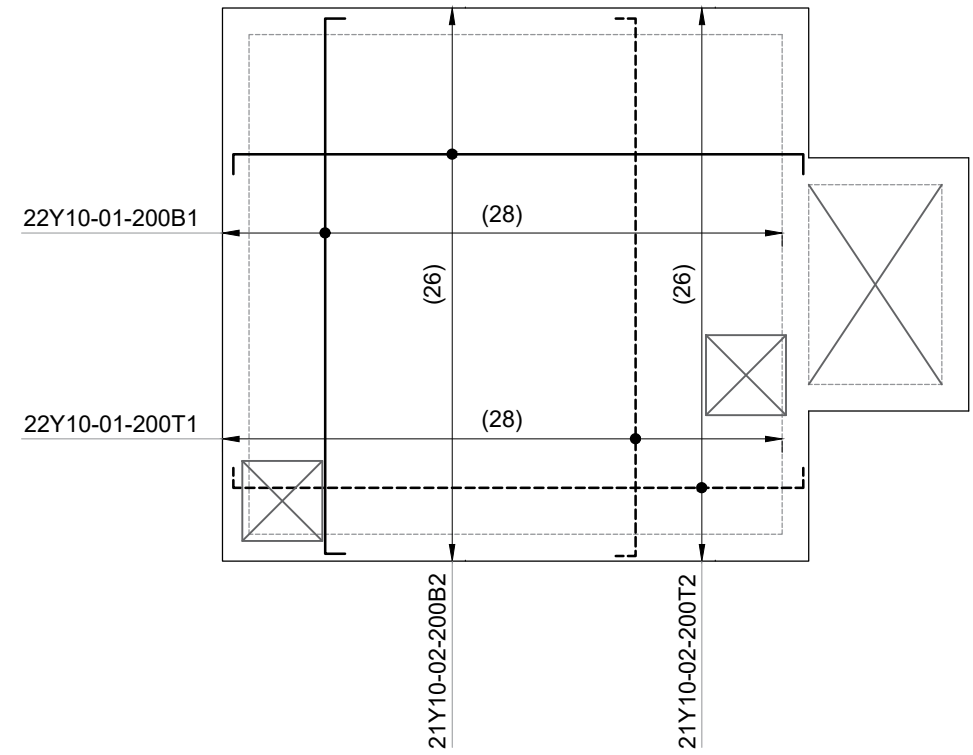


Section C-C

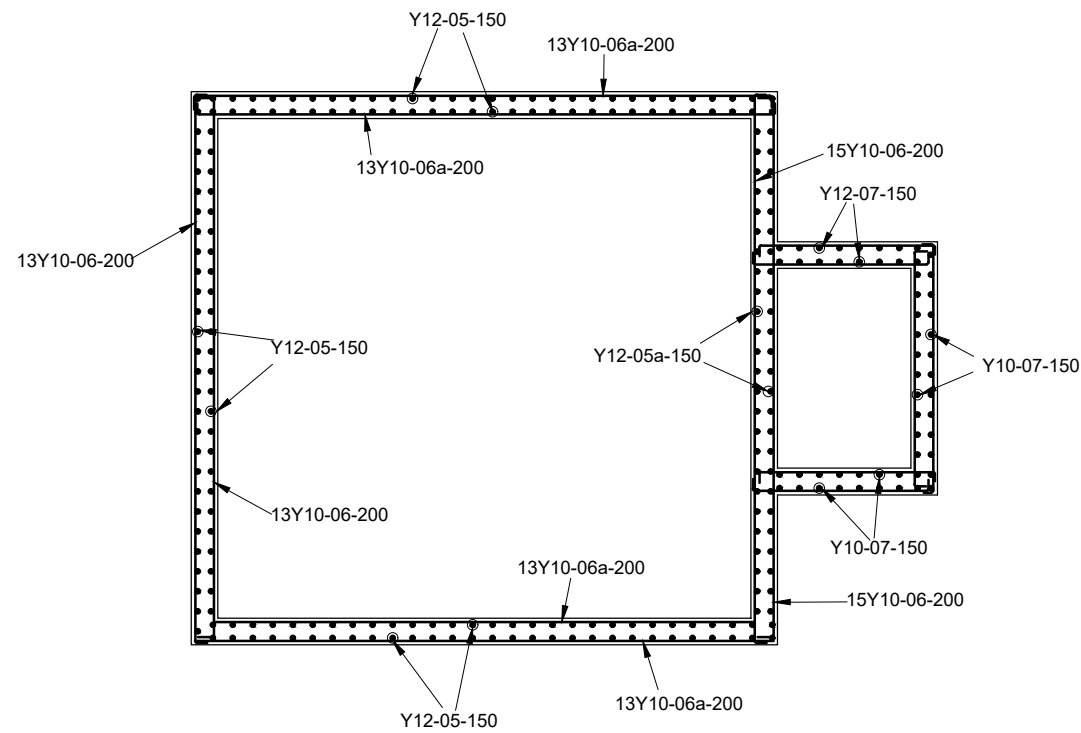
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						SCALE (AT A3): 1:57	DATE: 24/03/2022	



Base reinforcements details

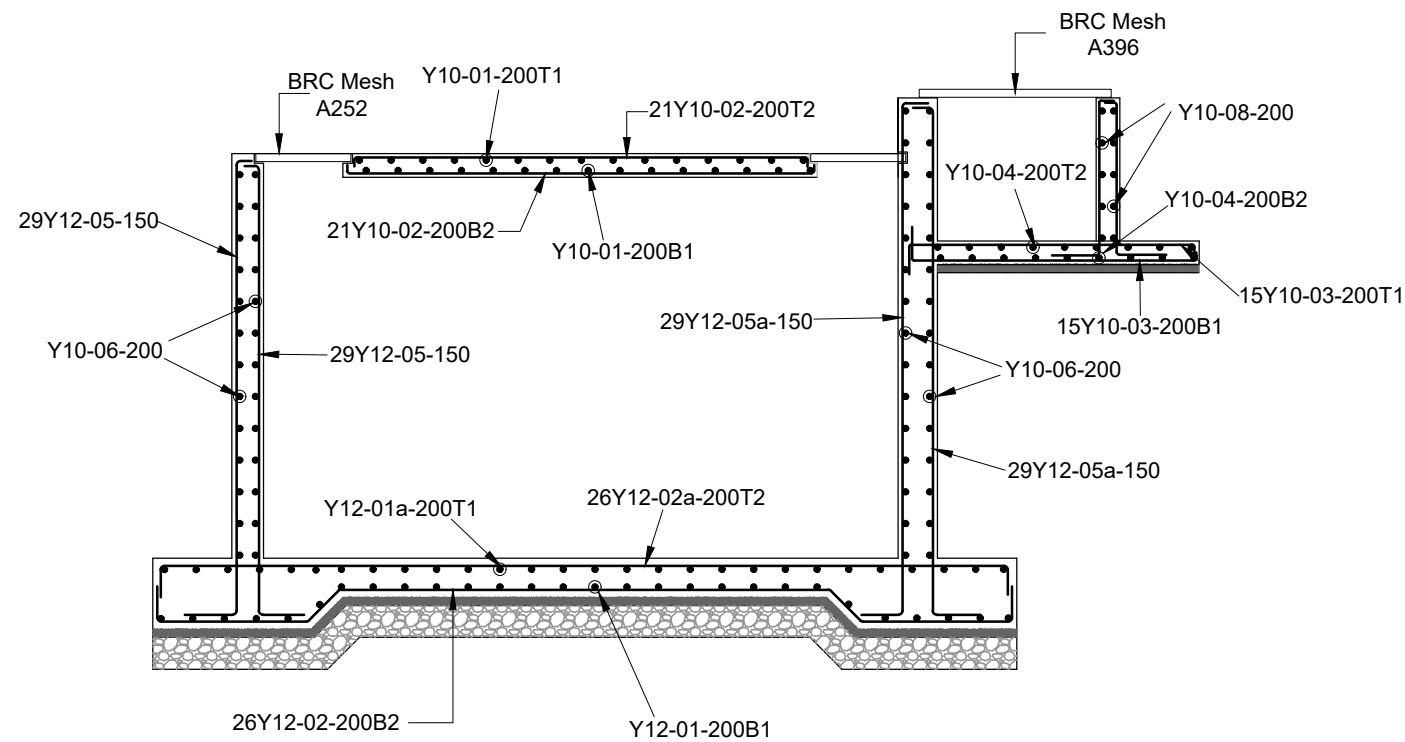


Top Slab reinforcements details

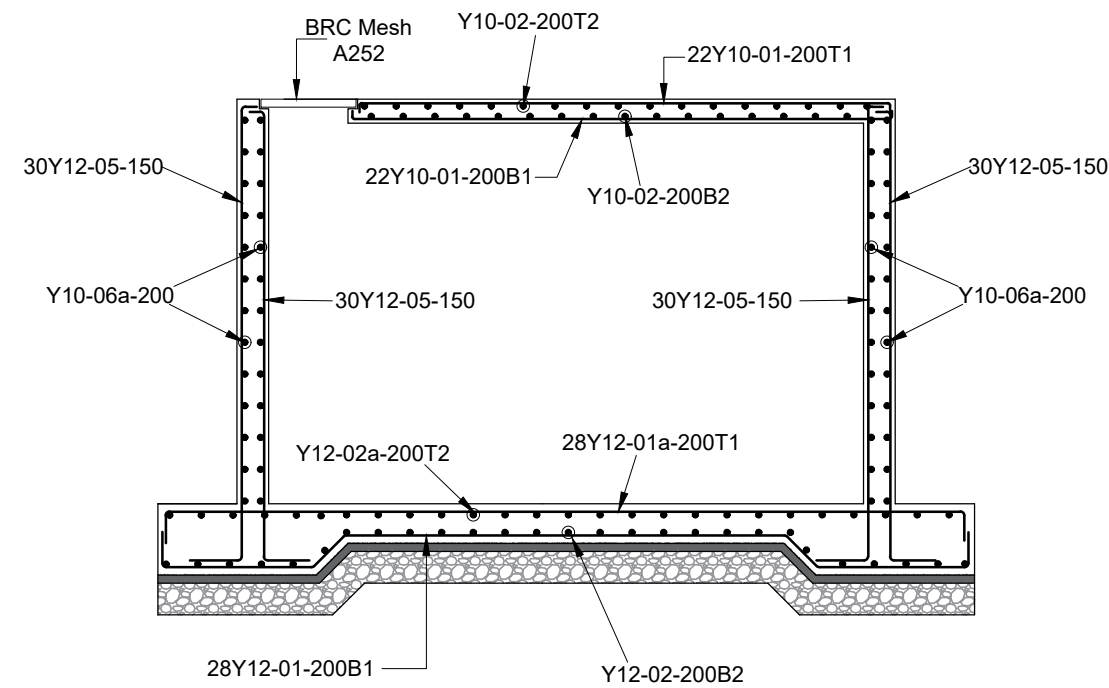


Walls: Plan reinforcements details

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							I.Y	I.Y	
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Section A-A reinforcements details



Section C-C reinforcements details

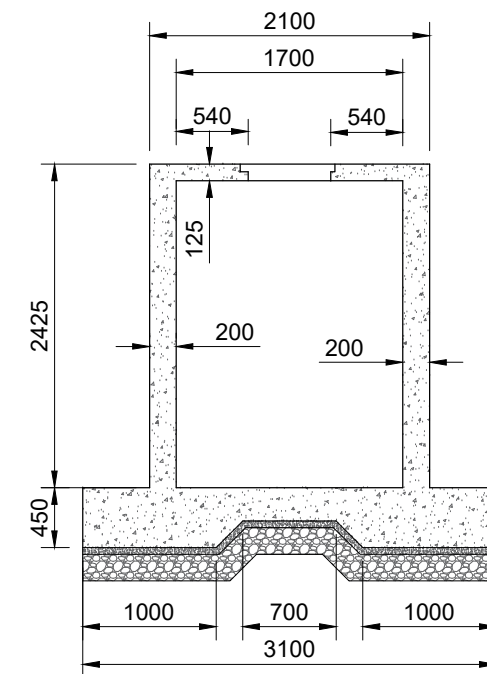
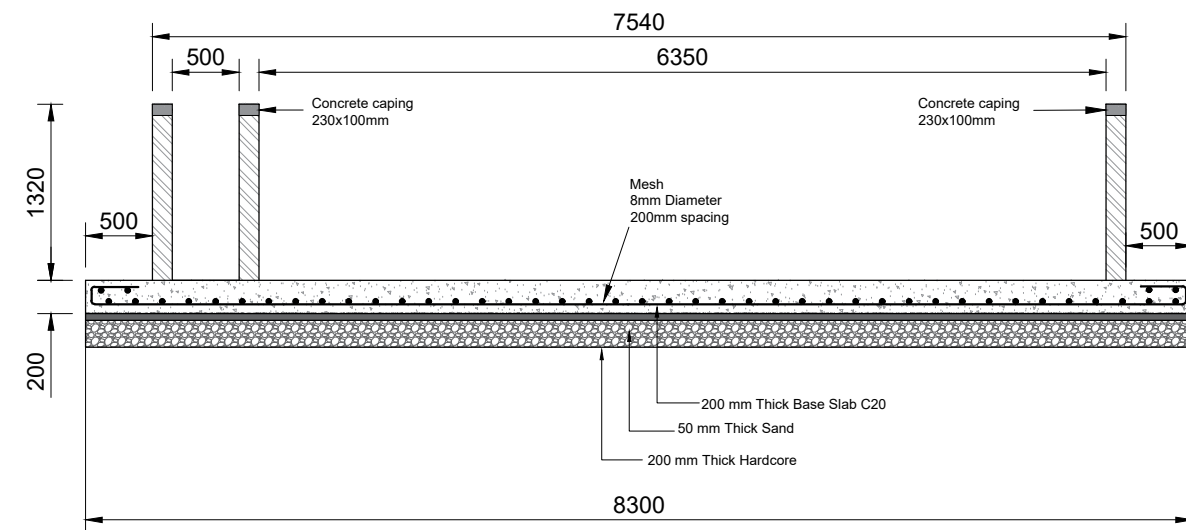
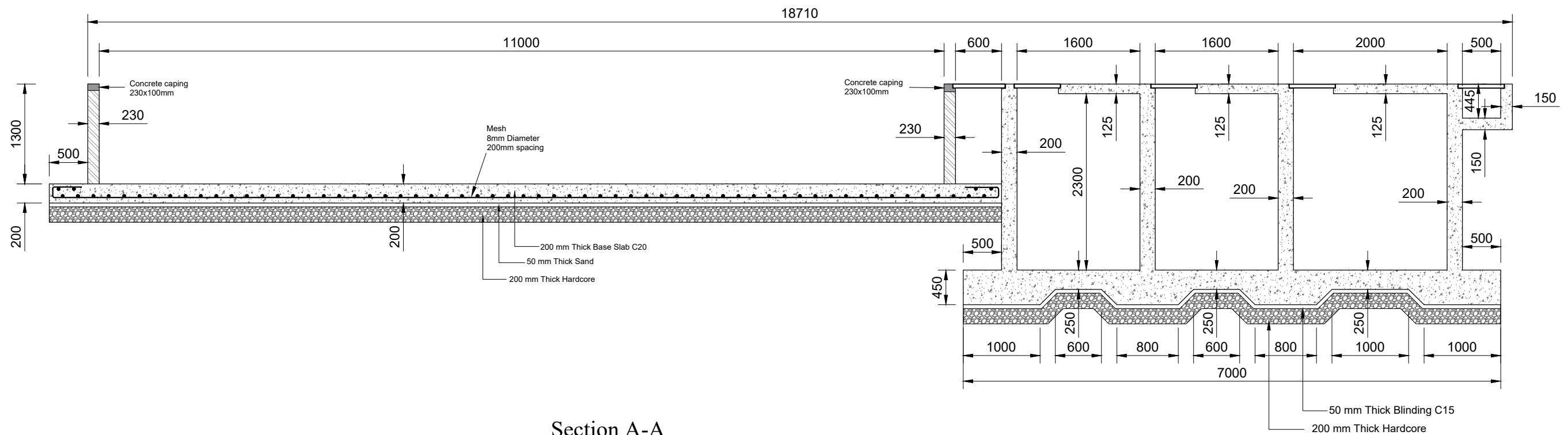
SC + ASR Bar Bending schedule

member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Base	01	Y12	28	5650	0.888	141	
	01a	Y12	28	5400	0.888	135	
	02	Y12	26	6000	0.888	139	
	02a	Y12	26	5700	0.888	132	
	03	Y10	30	2000	0.616	37	
	04	Y10	18	3050	0.616	34	
Walls	05	Y12	210	3250	0.888	606	
	05a	Y12	26	3600	0.888	84	
	06	Y10	56	4270	0.616	148	
	06a	Y10	52	4500	0.616	144	
	07	Y10	52	1300	0.616	42	
	08	Y10	30	1300	0.616	24	
Top slab	01	Y10	44	4300	0.616	117	
	02	Y10	42	4550	0.616	118	
	Total					1,901	

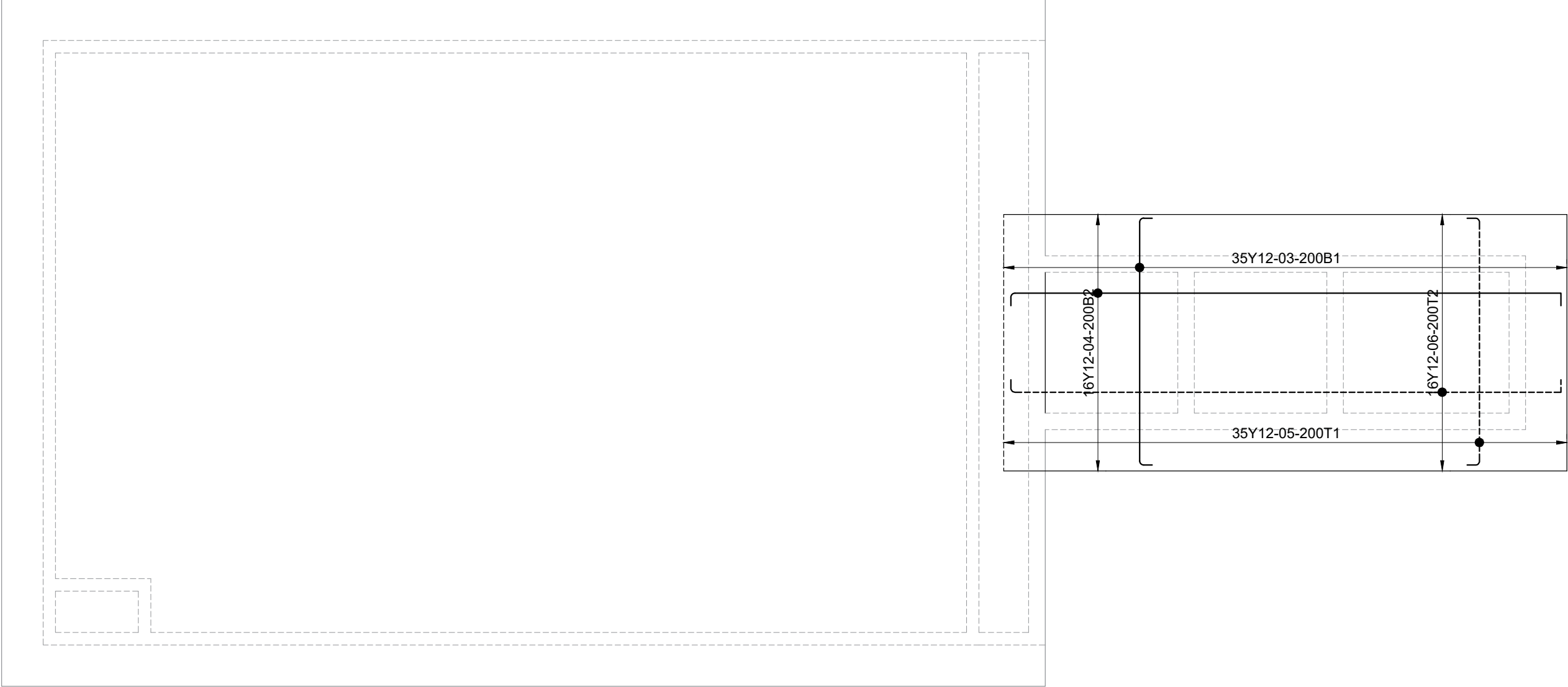
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						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:45	DATE: 24/03/2022	

ISAF+PGF

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 10
			DRAWING TITLE: ISAF& PGF SEPARATOR			DRAWN: I.Y	APPROVED BY: I.Y	
			SCALE (AT A3): 1:8			DATE: 24/03/2022		

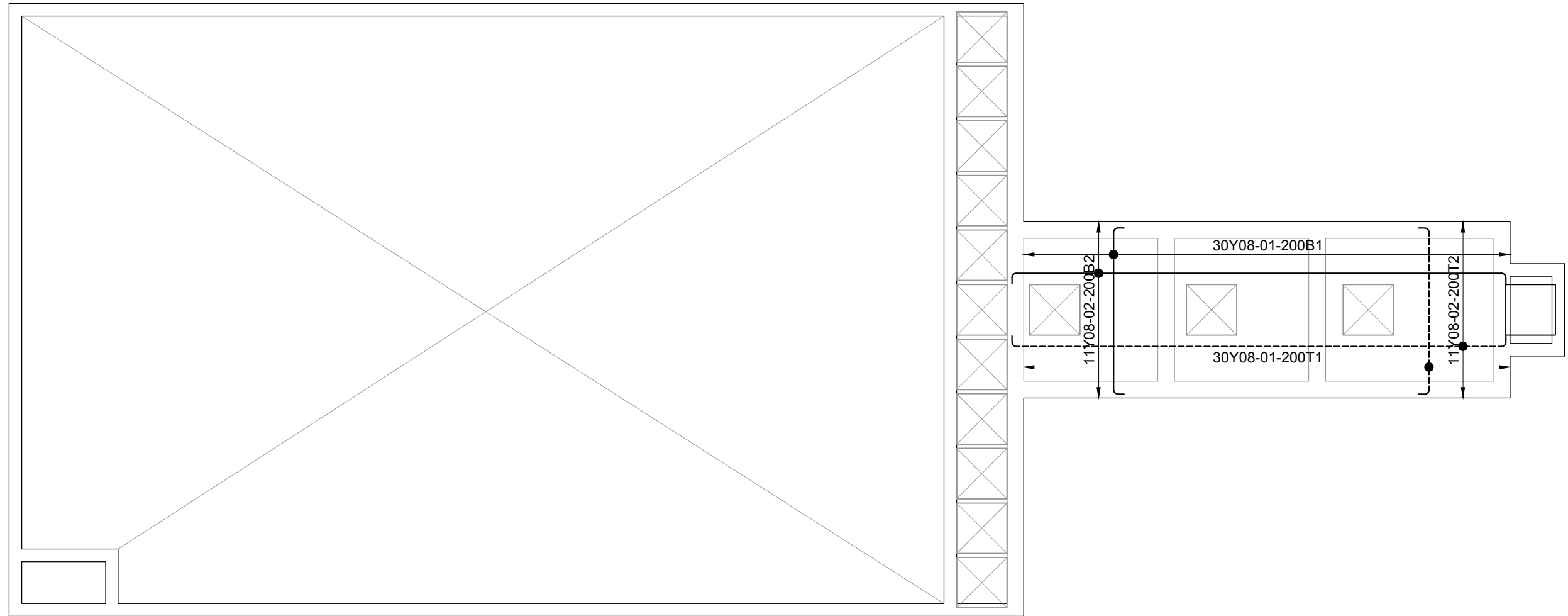


CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: ISAF & PGF: GA Sections	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): 1:54 DATE: 24/03/2022	DRAWING NO.: 12
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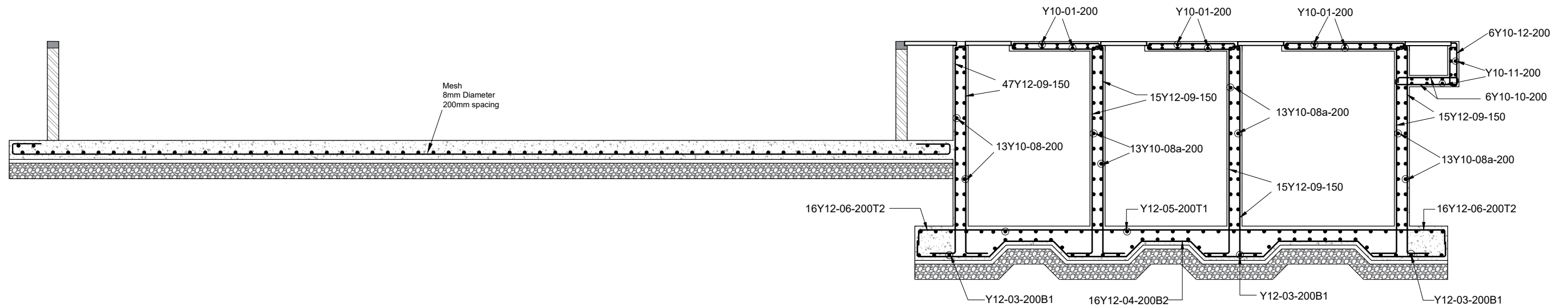
Base ISAF+PGF

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			DRAWING TITLE: ISAF & PGF: Base Reinforcements details			DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:54	DATE: 24/03/2022	

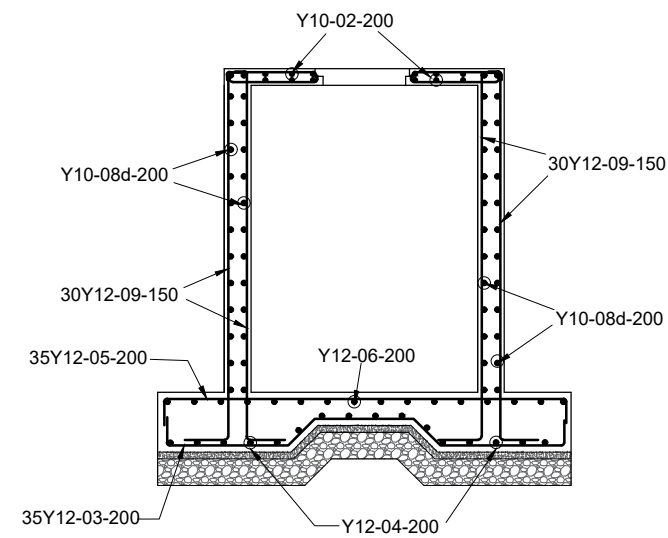


Top Slab ISAF+PGF

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						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:54	DATE: 24/03/2022	



Section A-A



Section C-C

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: ISAF & PGF: GA Sections	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): 1:54 DATE: 24/03/2022	DRAWING NO.: 15
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ISAF + PGF Bar Bending schedule

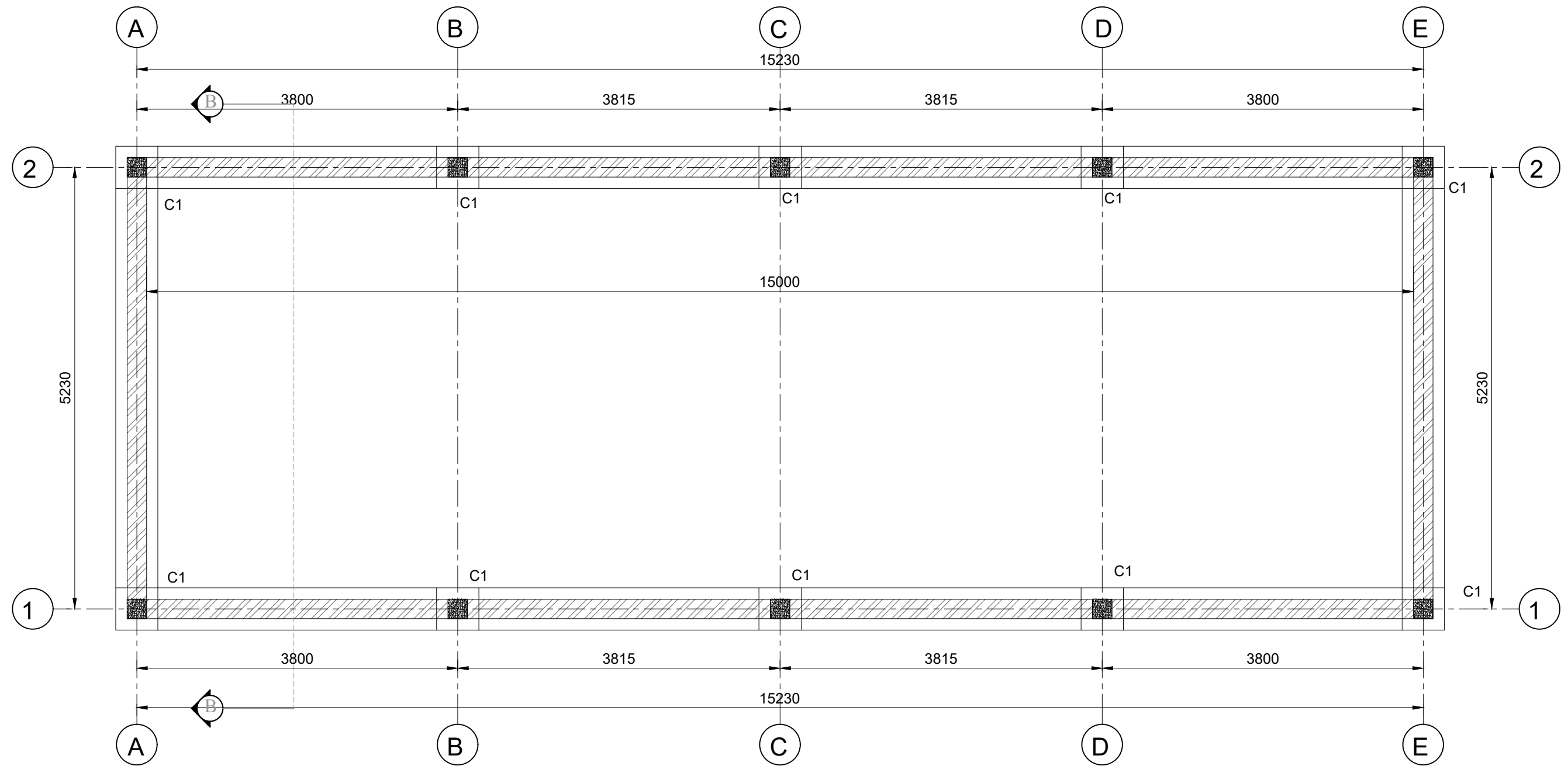
member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Base	03	Y12	35	3550	0.888	111	
	04	Y12	16	7800	0.888	111	
	05	Y12	35	3350	0.888	105	
	06	Y12	16	7250	0.888	103	
Walls	08	Y10	26	7500	0.616	120	
	08a	Y10	78	2185	0.616	152	
	08b	Y12	56	6150	0.888	306	
	08c	Y12	42	1500	0.888	56	
	08d	Y10	52	6100	0.616	196	
	09	Y12	304	3150	0.888	851	
Top slab	01	Y08	60	2185	0.324	43	
	02	Y08	22	6100	0.324	44	
	Total					2,198	

ISAF + PGF BRC mesh

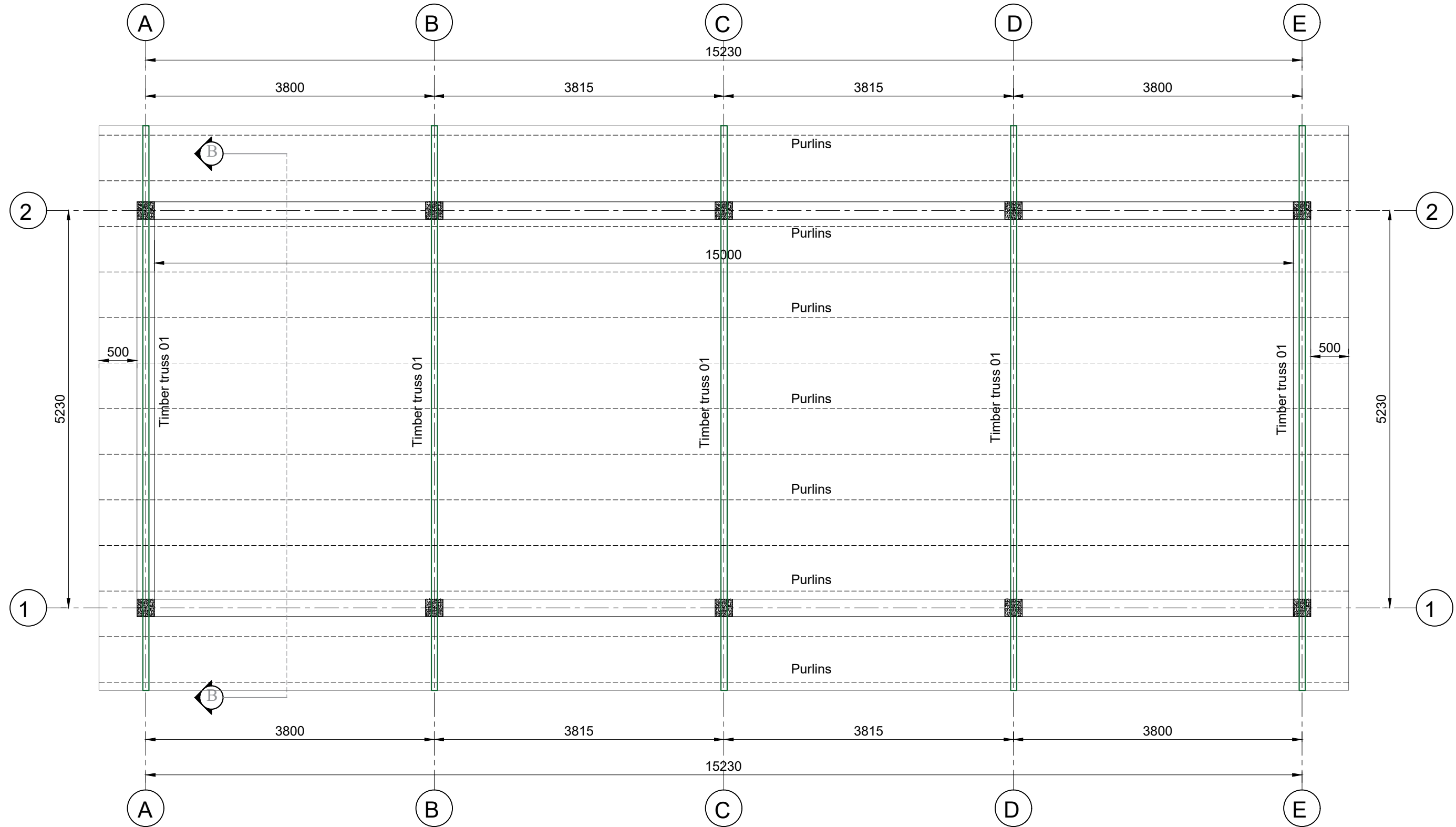
member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
BRC mesh A252 Base slab	01	Y08	92 sqm		3.95	363	

SDY

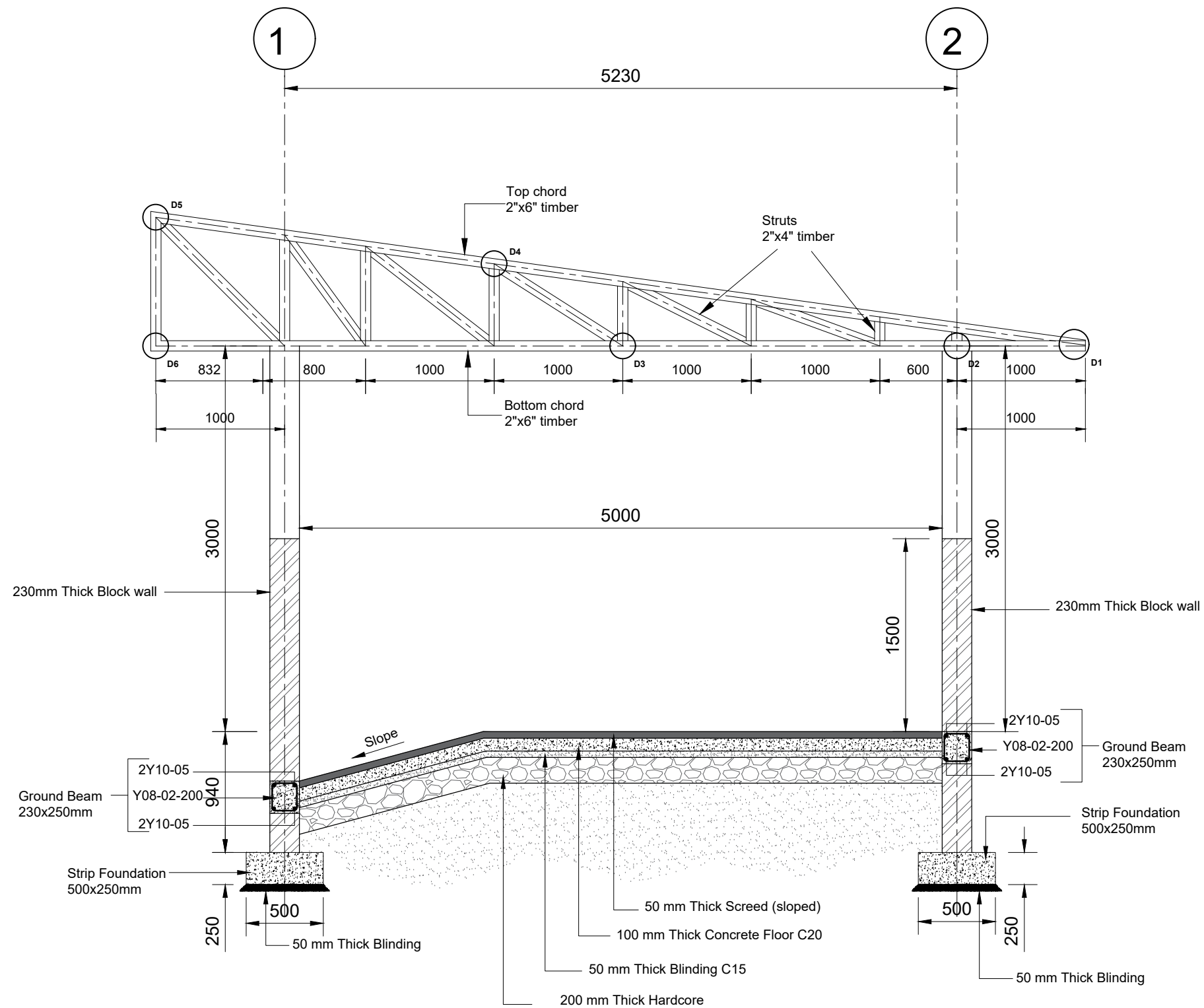
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 17
			DRAWING TITLE: SDY SEPARATOR			DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:8	DATE: 24/03/2022	



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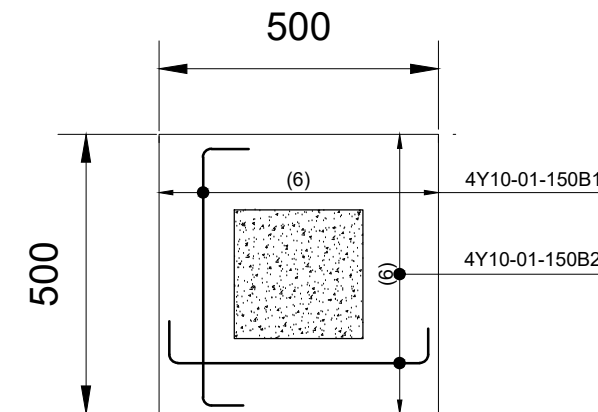
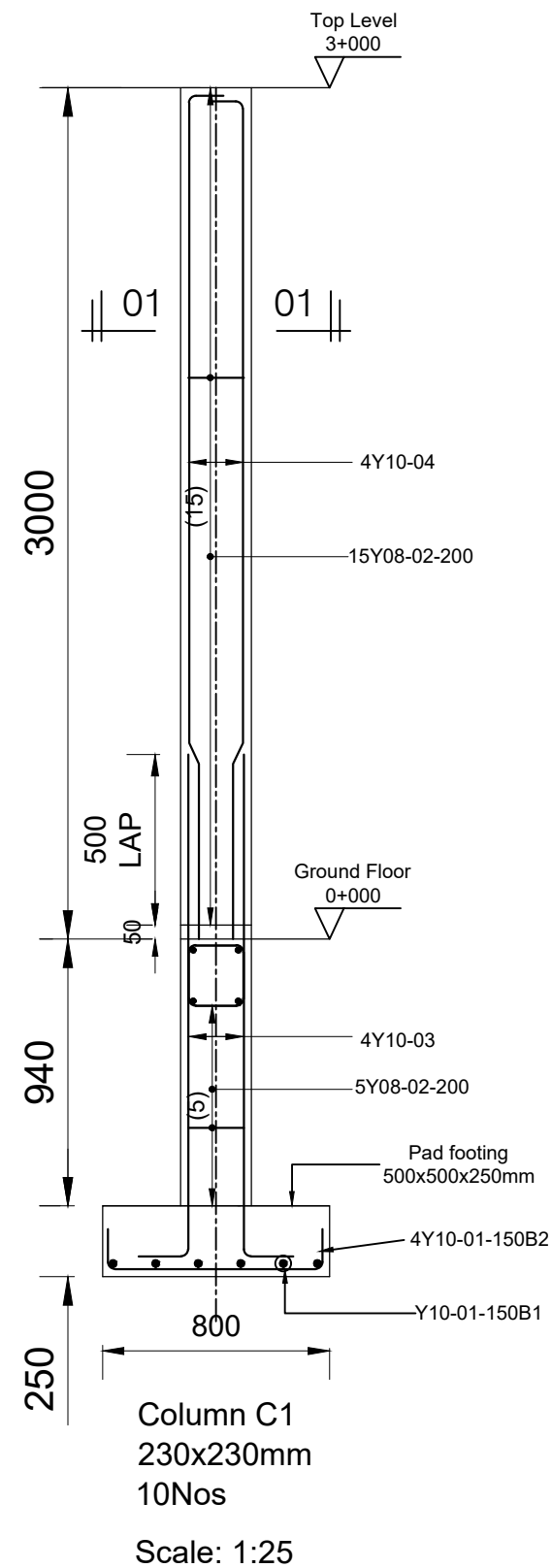


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			DRAWING TITLE: SDY: GA - Roof layout Plan				DRAWN:	APPROVED BY:	
							I.Y	I.Y	
							SCALE (AT A3):	DATE:	
							1:50	24/03/2022	

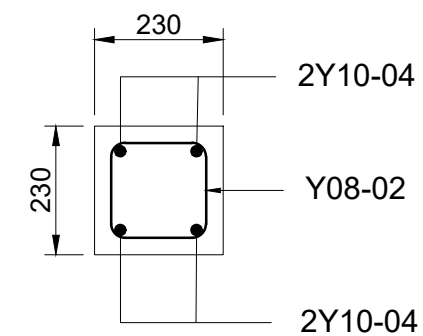


Cross Section B-B

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: SDY: SECTION B-B details	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): 1:37 DATE: 24/03/2022	DRAWING NO.: 20
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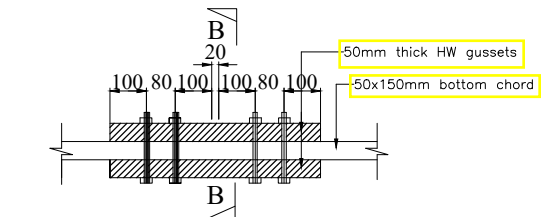
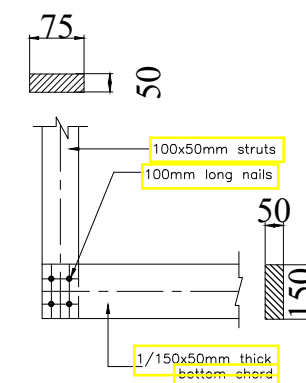
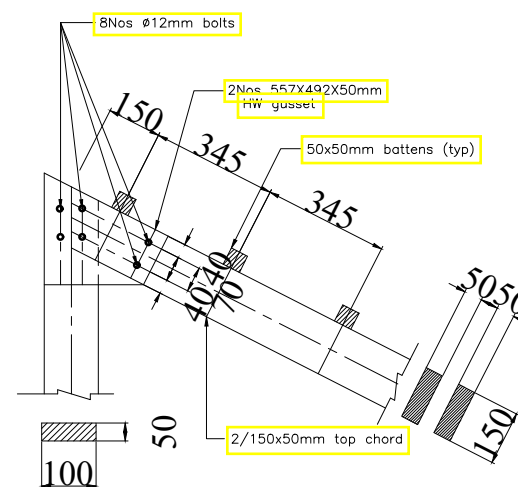
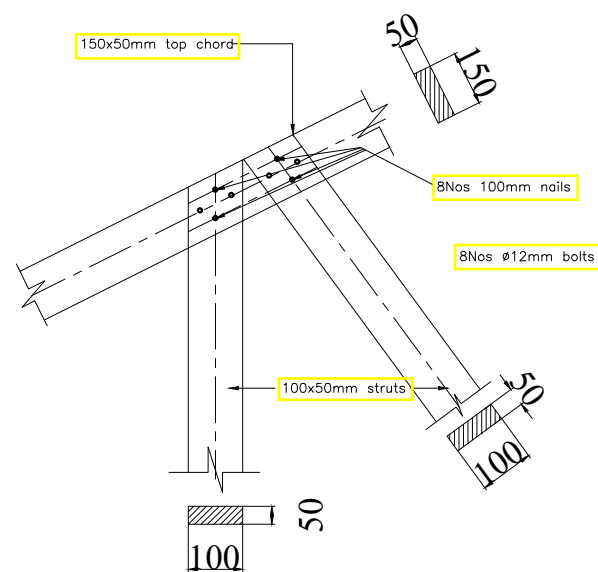
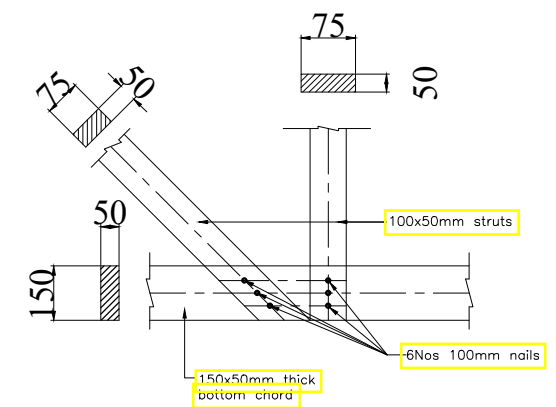
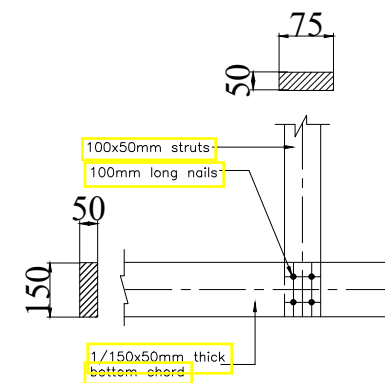
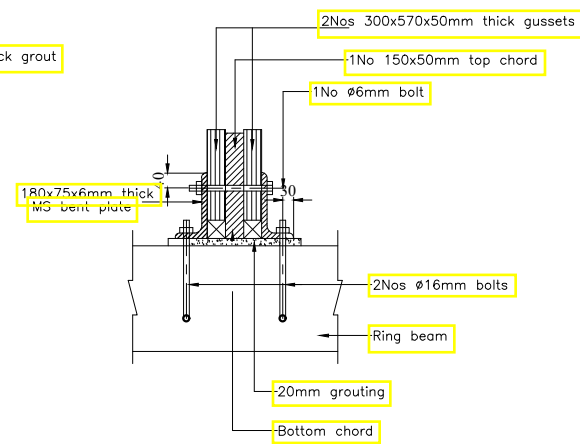
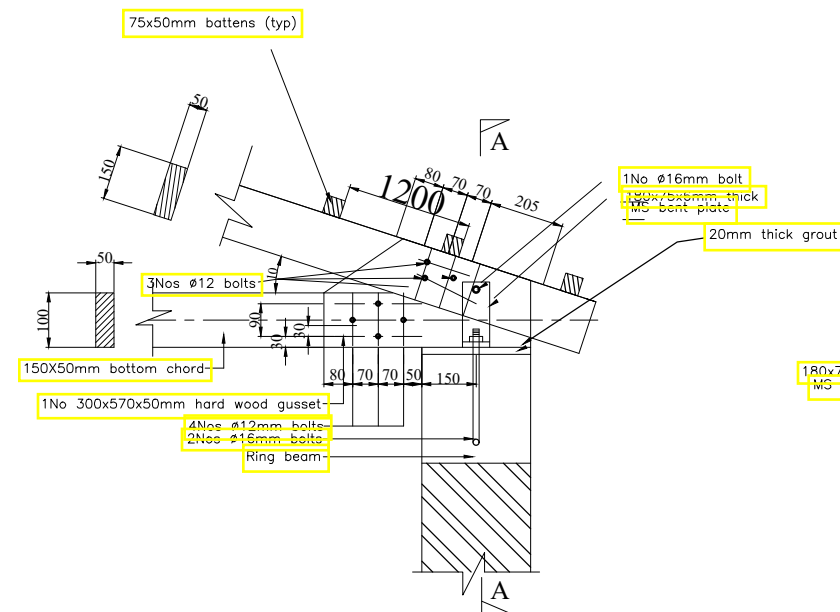


Footing details
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Section 01-01
scale: 1: 13

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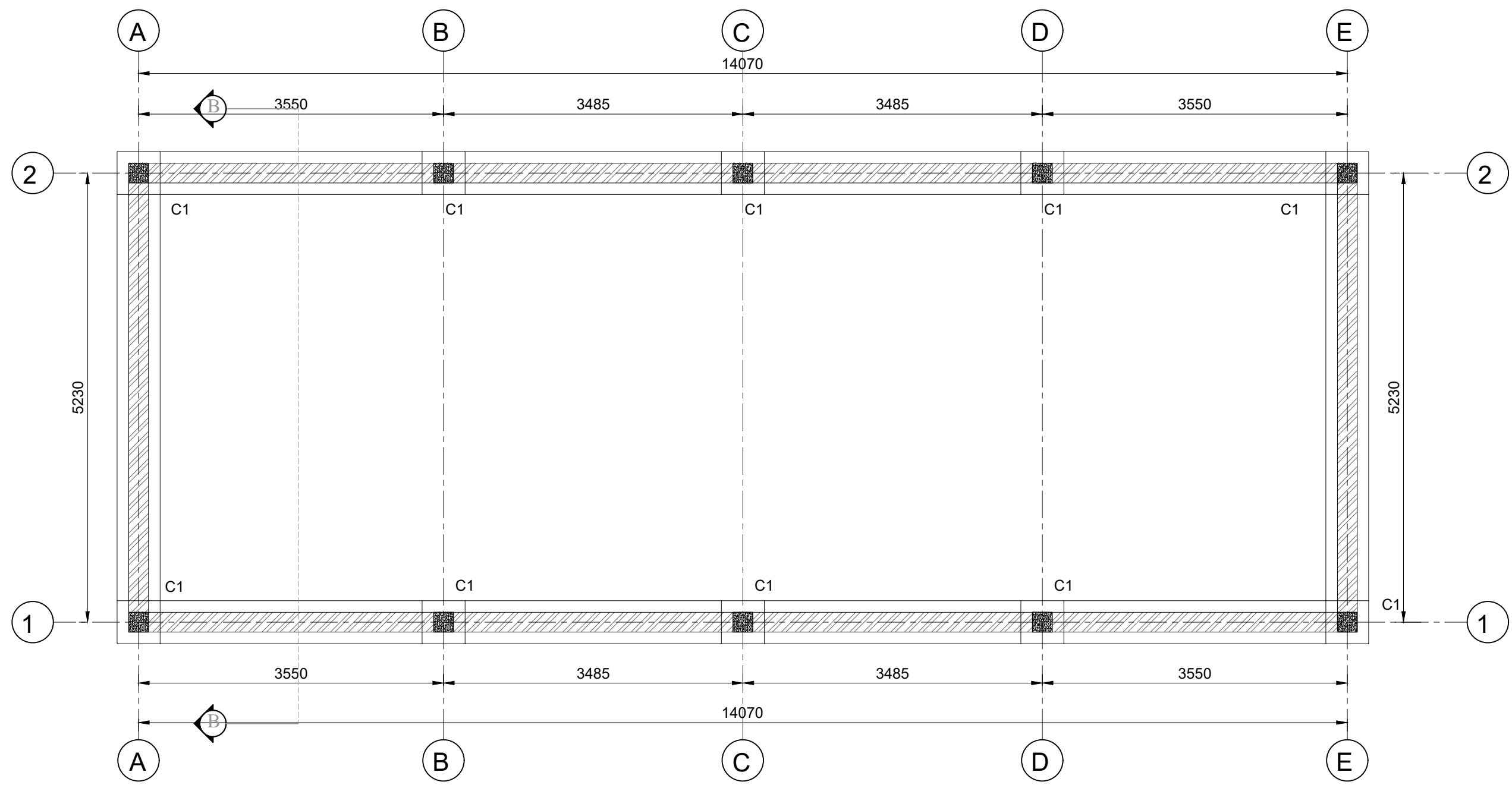
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT:	FUNDED BY:	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter	BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN	DRAWING NO.: <
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SDY Bar Bending schedule

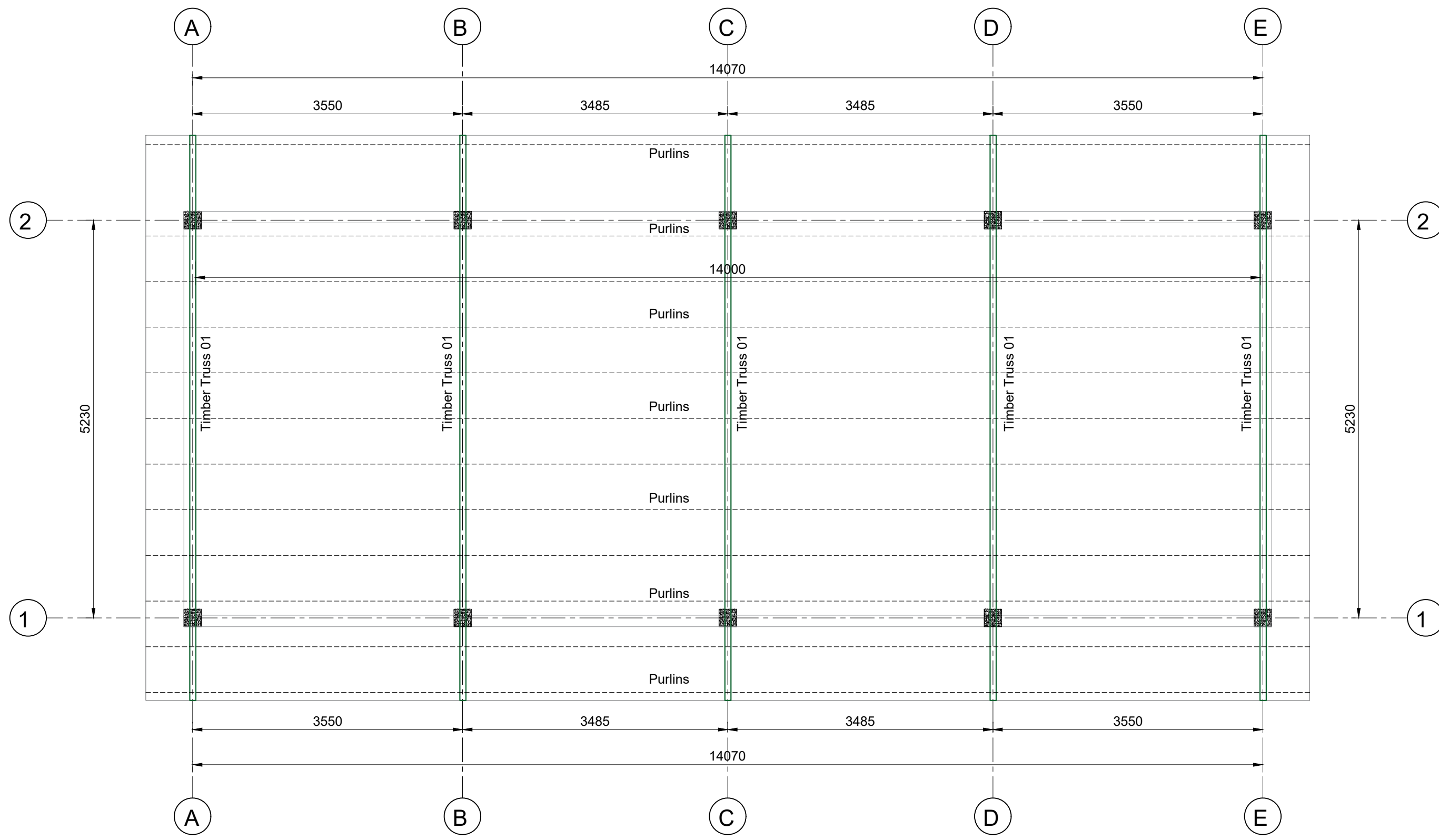
member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Footing	01	Y10	120	700	0.616	52	
Columns	02	Y08	45	920	0.395	17	
	03	Y10	8	1950	0.616	10	
	04	Y10	40	3100	0.616	77	
Ground beam	05	Y10	16	8700	0.616	86	
	05a	Y10	8	5500	0.616	27	
	02	Y08	204	920	0.395	74	
					Total	343	
BRC mesh A252 G.floor slab	01	Y08	80 sqm		3.95	316	

SSY

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						SCALE (AT A3): 1:8	DATE: 24/03/2022	



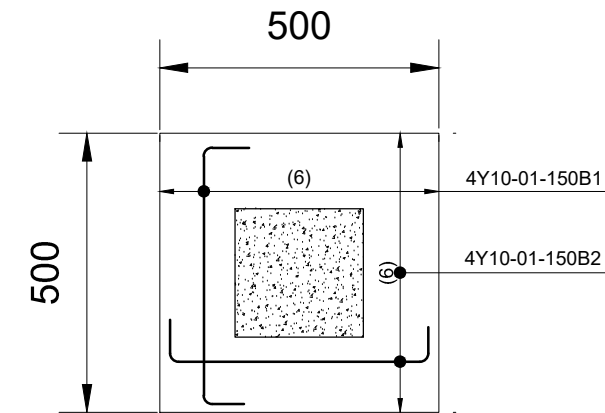
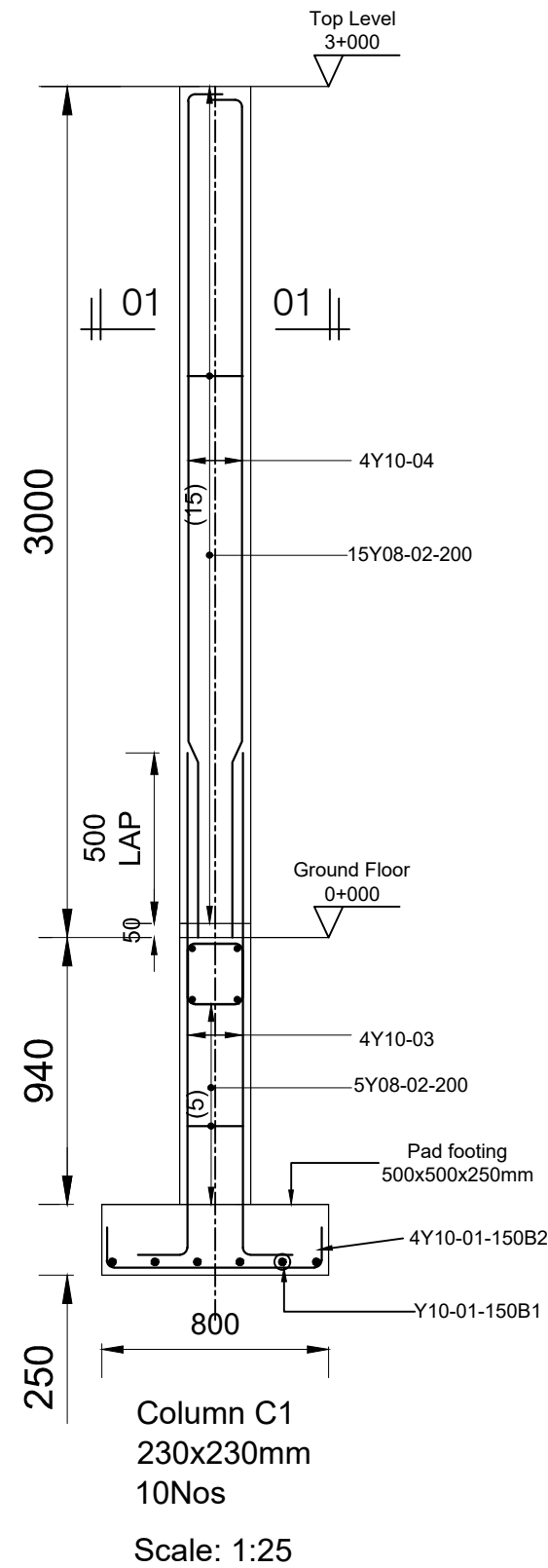
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 25
			DRAWING TITLE:			DRAWN: I.Y	APPROVED BY: I.Y	
			SSY: GA - Foundation layout Plan			SCALE (AT A3): 1:50	DATE: 24/03/2022	



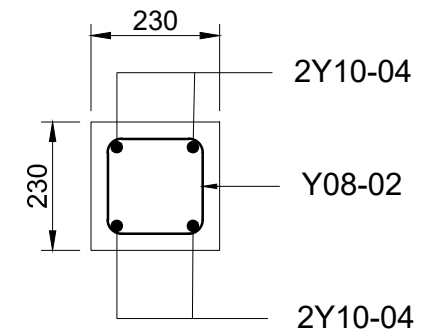
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: SSY: GA - Roof layout Plan	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 26
						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:50	DATE: 24/03/2022	



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			DRAWING TITLE:					DRAWN: I.Y	APPROVED BY: I.Y	
			SSY: SECTION B-B details					SCALE (AT A3): 1:37	DATE: 24/03/2022	

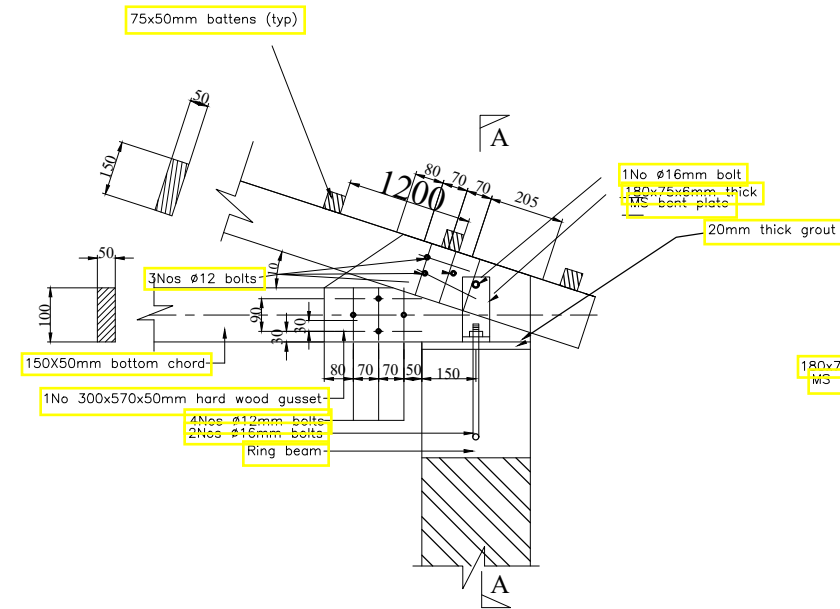


Footing details
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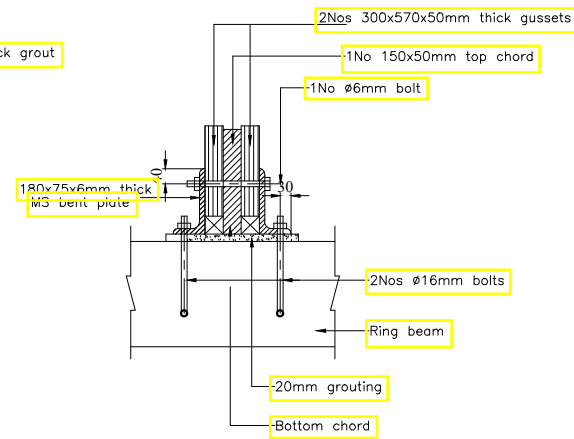


Section 01-01
scale: 1: 13

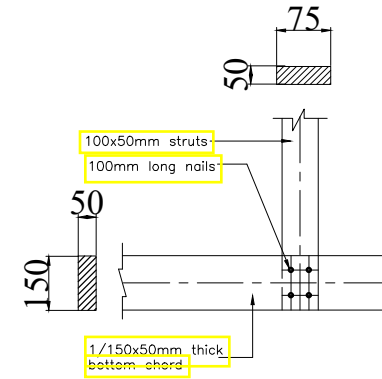
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: SSY: Columns and Footing details	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): AS_SHOWN DATE: 24/03/2022	DRAWING NO.: 28
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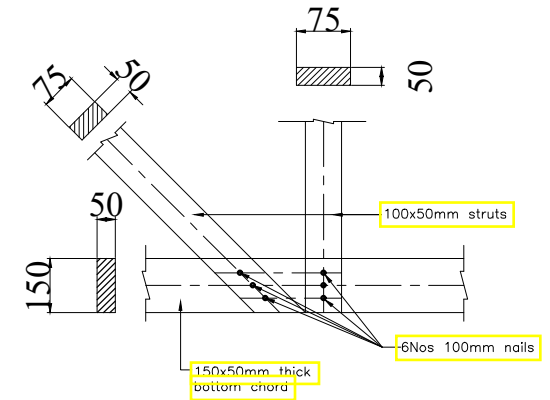
DETAIL D1



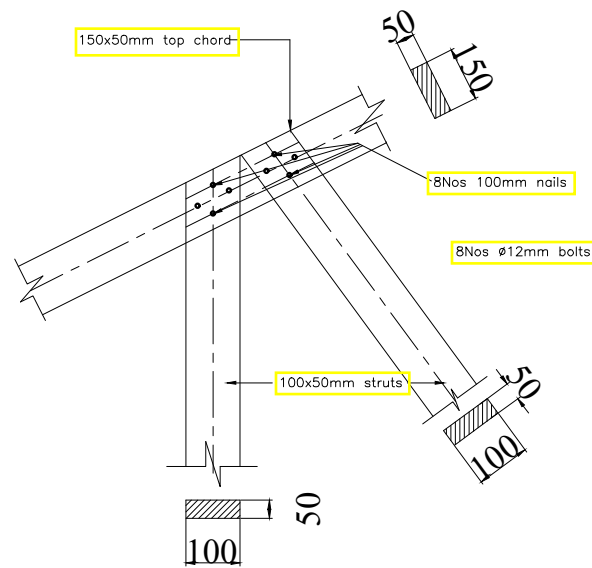
SECTION A-A



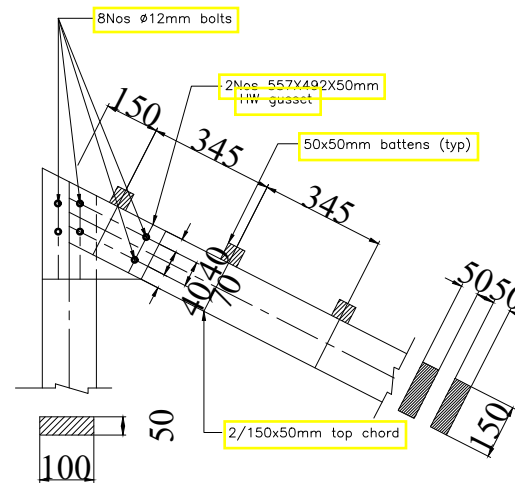
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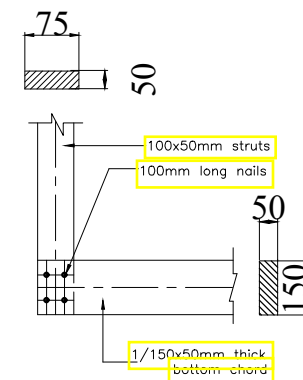
DETAIL D3



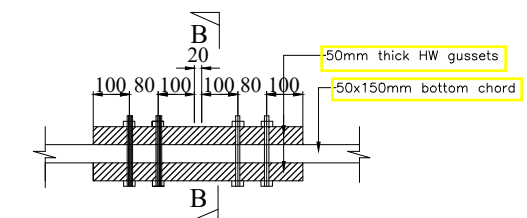
DETAIL D4



DETAIL D5



DETAIL D6



PLAN OF TYPICAL CONNECTION DETAIL

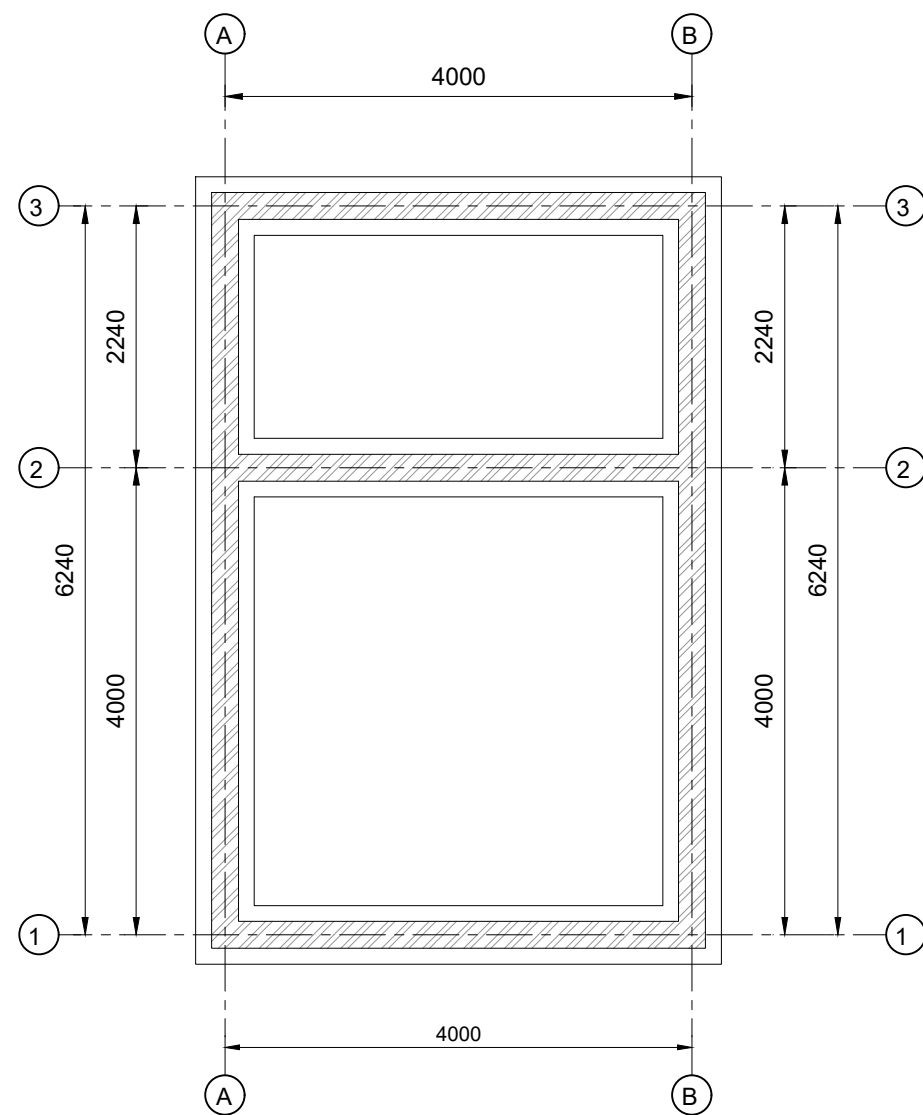
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE	DETAILED_STRUCTURAL_DESIGN	DRAWING NO.: 29
			DRAWING TITLE: SSY: connection details			DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:20	DATE: 24/03/2022	

SSY Bar Bending schedule

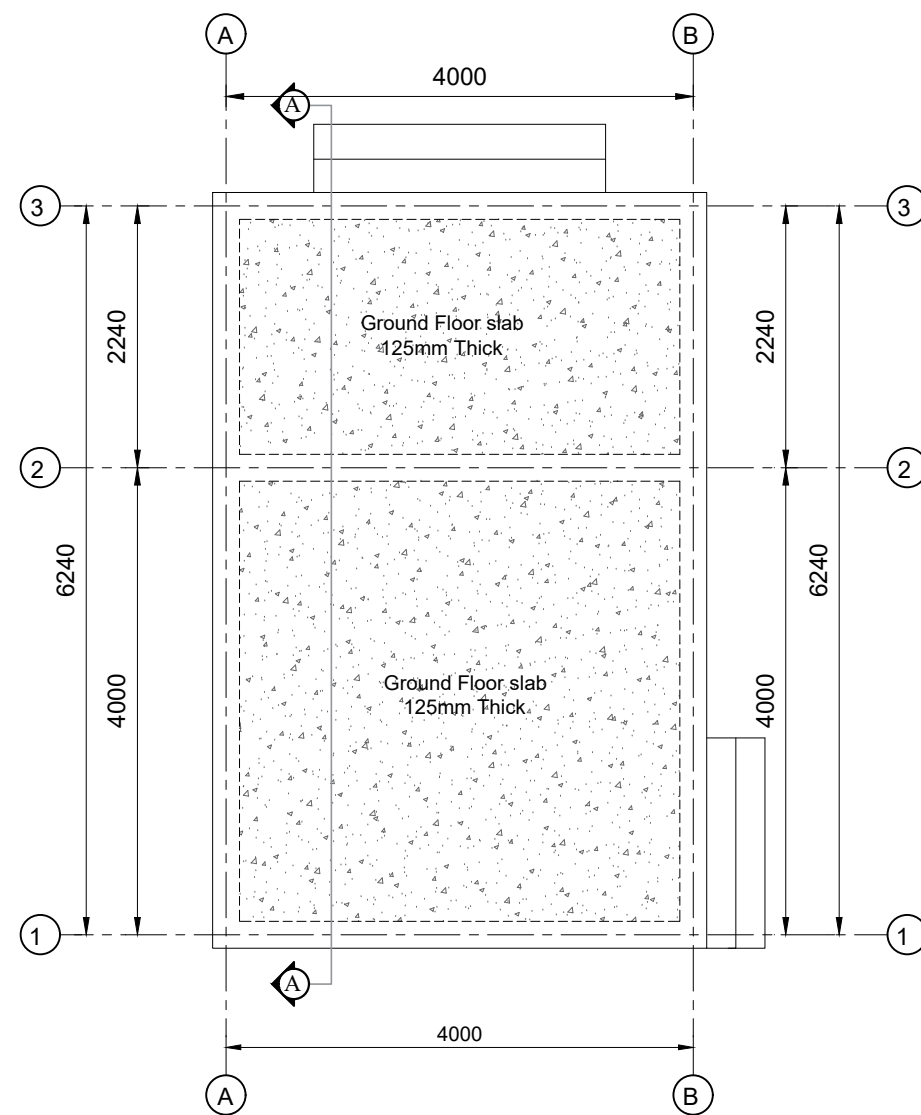
member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Footing	01	Y10	120	700	0.616	52	
Columns	02	Y08	45	920	0.395	17	
	03	Y10	8	1950	0.616	10	
	04	Y10	40	3100	0.616	77	
Ground beam	05	Y10	16	7500	0.616	74	
	05a	Y10	8	5500	0.616	27	
	02	Y08	192	920	0.395	70	
					Total	327	
BRC mesh A252 G.floor slab	01	Y08	73 sqm		3.95	289	

OR

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 31
			DRAWING TITLE:			DRAWN: I.Y	APPROVED BY: I.Y	
			OR SEPARATOR			SCALE (AT A3): 1:8	DATE: 24/03/2022	

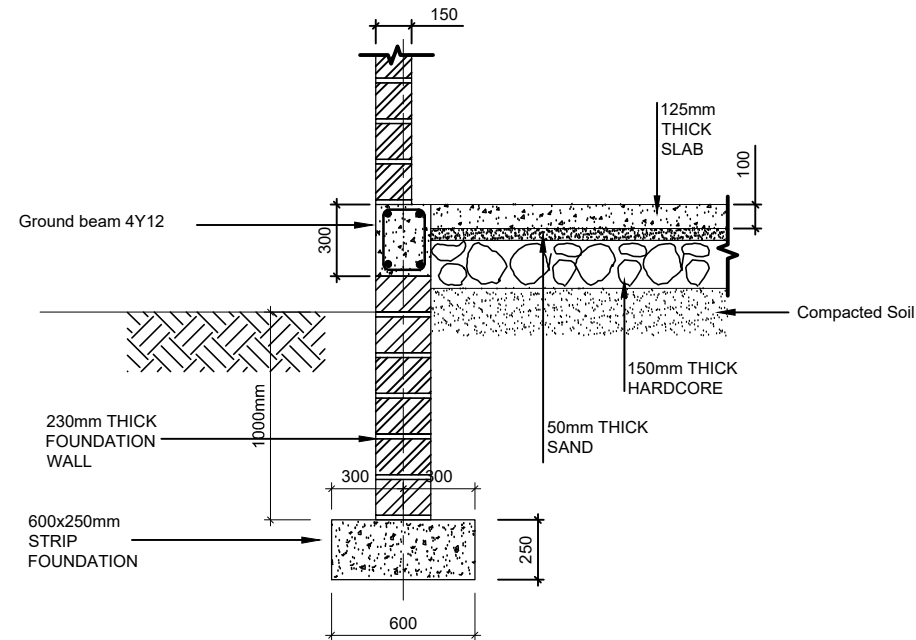


Foundation Layout
Plan

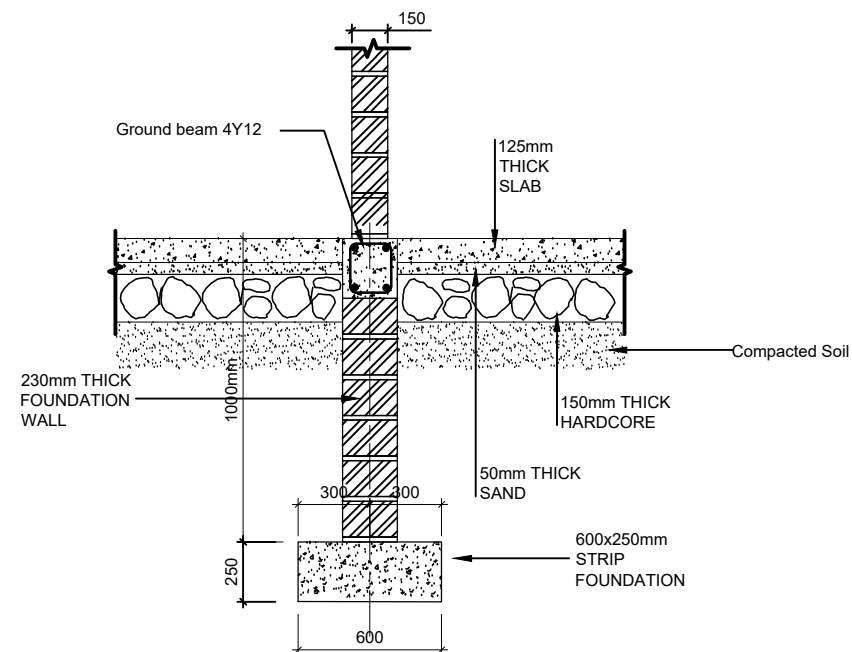


Ground Floor Layout
Plan

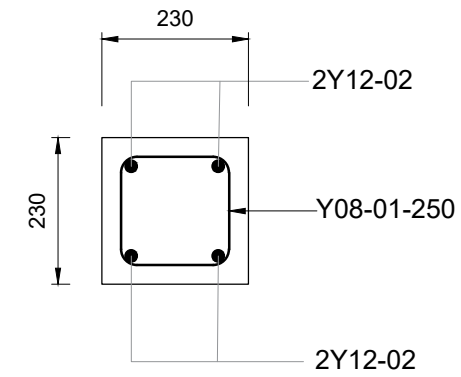
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: OR: GA - Foundation and Ground floor layout Plan	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): 1:62 DATE: 24/03/2022	DRAWING NO.: 32
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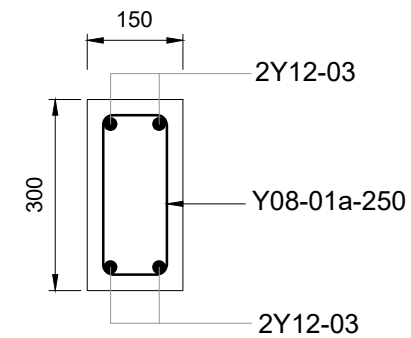
**SECTION
EXTERNAL WALL**
SCALE 1:50



**SECTION
INTERNAL WALL**
SCALE 1:50



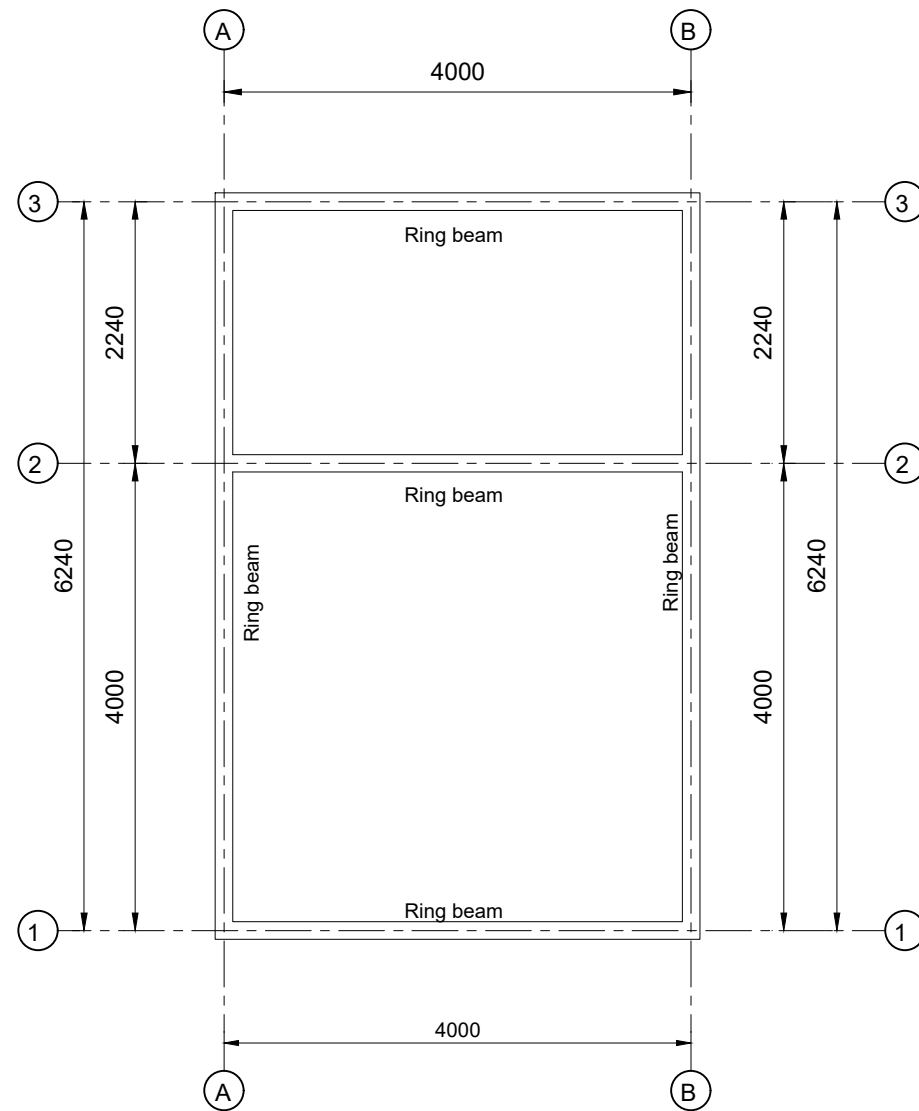
**Ground beam typical
section**
scale: 1:25



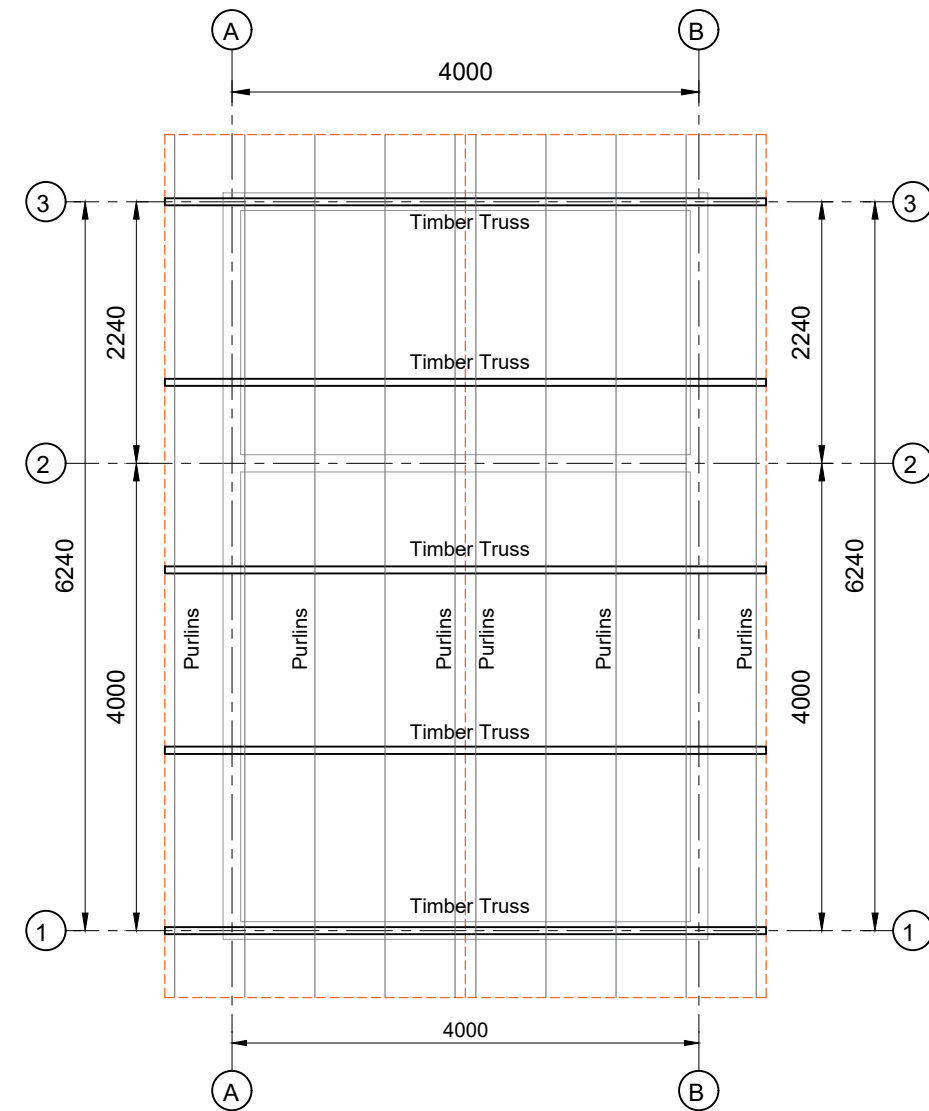
**Ring beam typical
section**
scale: 1:25

Foundation section details

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: OR: Foundation and Beam section Details	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): AS_SHOWN DATE: 24/03/2022	DRAWING NO.: 33
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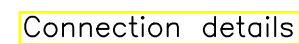


Ring beams Layout Plan




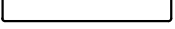




Roof Layout Plan

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: OR: GA - Columns and Beams layout Plan	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): 1:62 DATE: 24/03/2022	DRAWING NO.: 34
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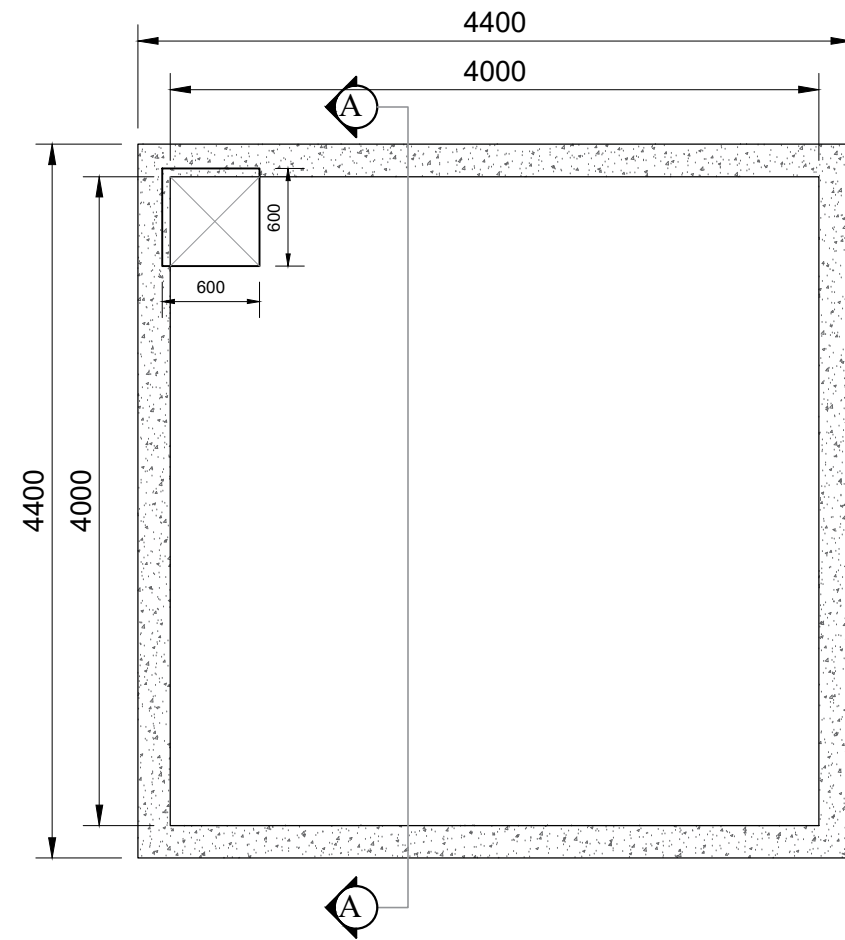
35

OR Bar Bending schedule

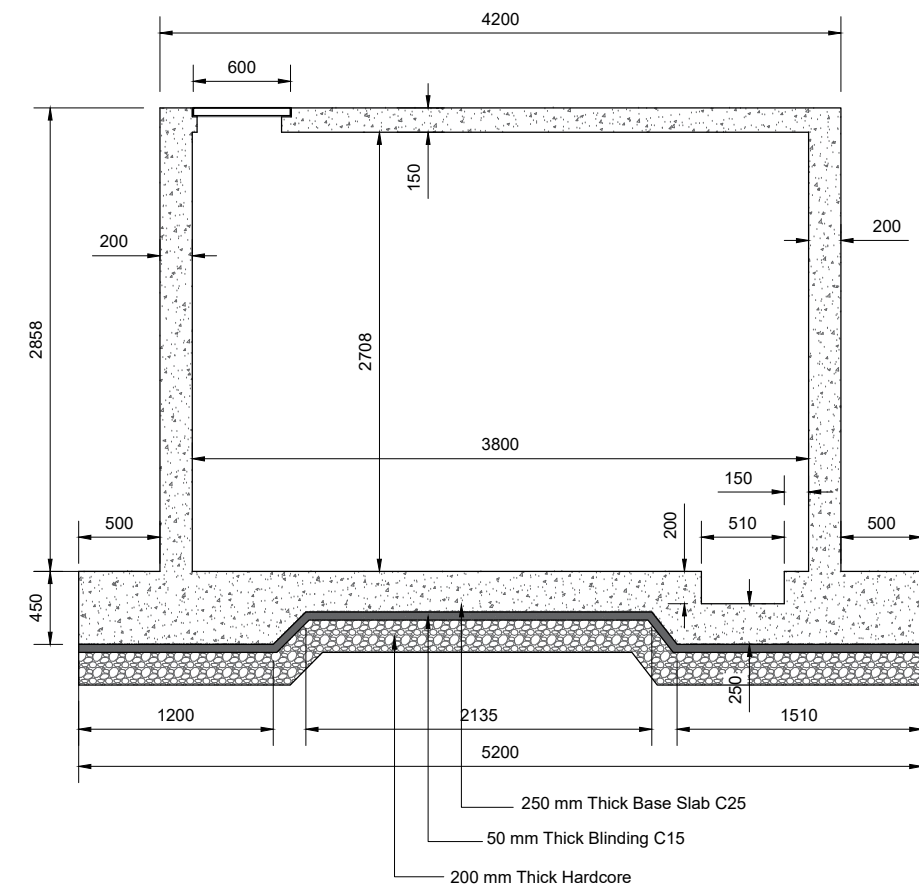
member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Ground beam	02	Y12	12	4400	0.888	47	
	02a	Y12	8	6700	0.888	48	
	01	Y08	123	920	0.395	45	
Ring beam	03	Y12	12	4400	0.888	47	
	03a	Y12	8	6700	0.888	48	
	01a	Y08	123	1040	0.395	51	
Total						286	
BRC mesh A252 G.floor slab	01	Y08	36 sqm		3.95	143	

CT

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 37
			DRAWING TITLE:			DRAWN: I.Y	APPROVED BY: I.Y	
			CT SEPARATOR			SCALE (AT A3): 1:8	DATE: 24/03/2022	

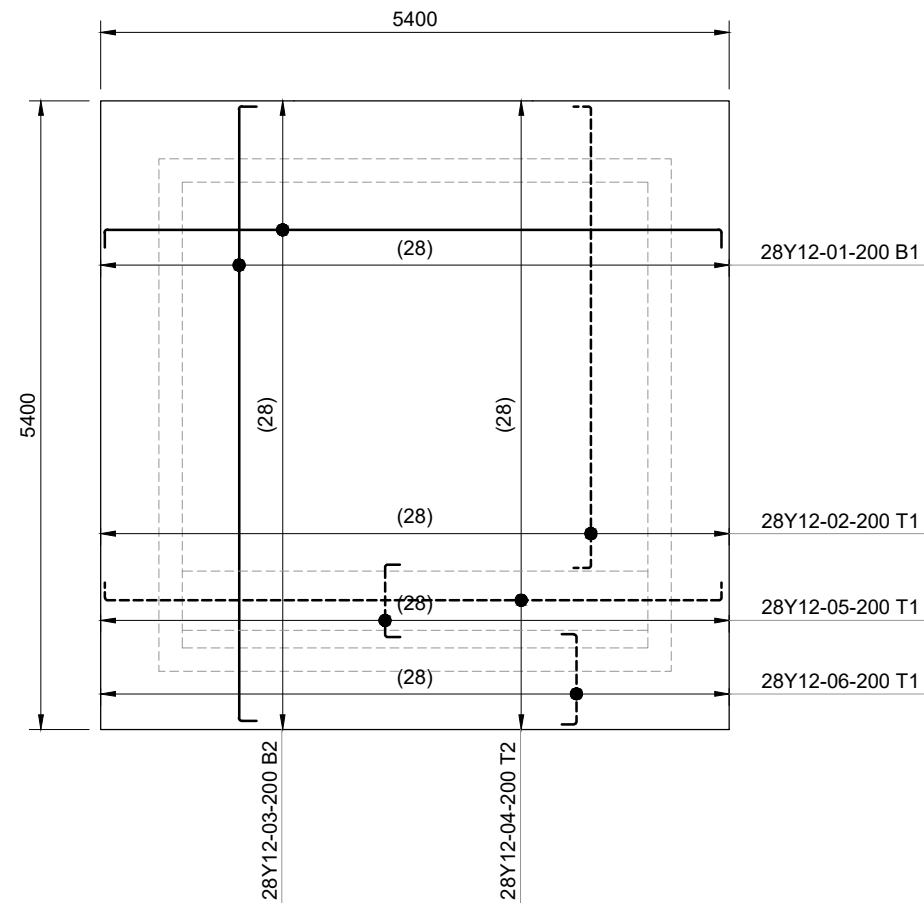


Walls layout plan

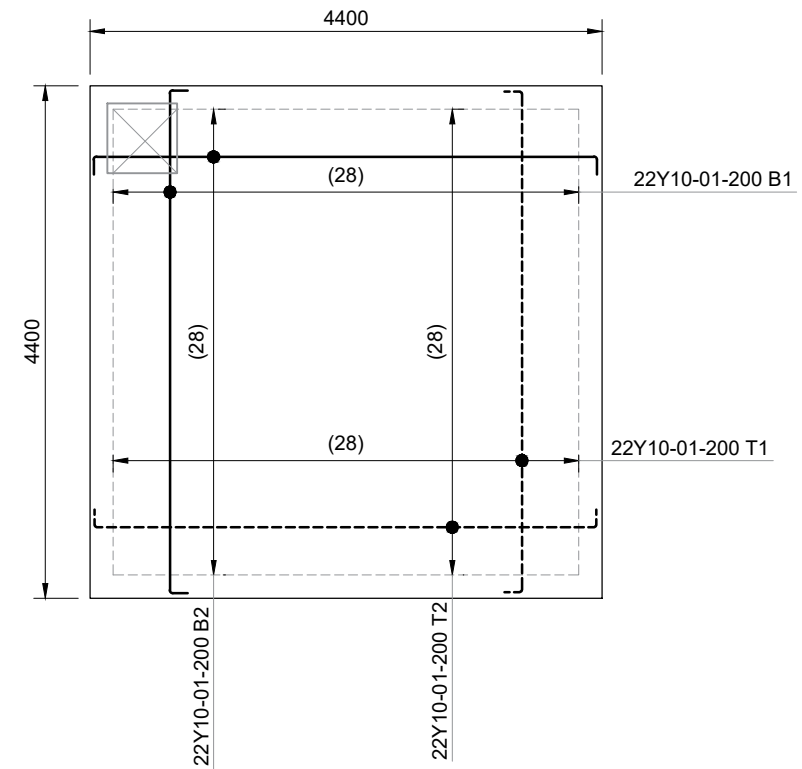


Section A-A

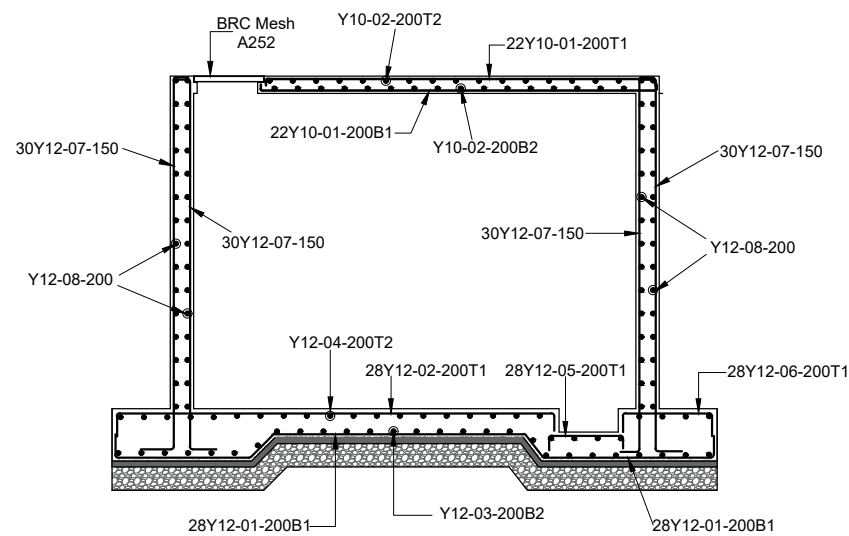
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: CT: Layout plan and section	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 38
						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:45	DATE: 24/03/2022	



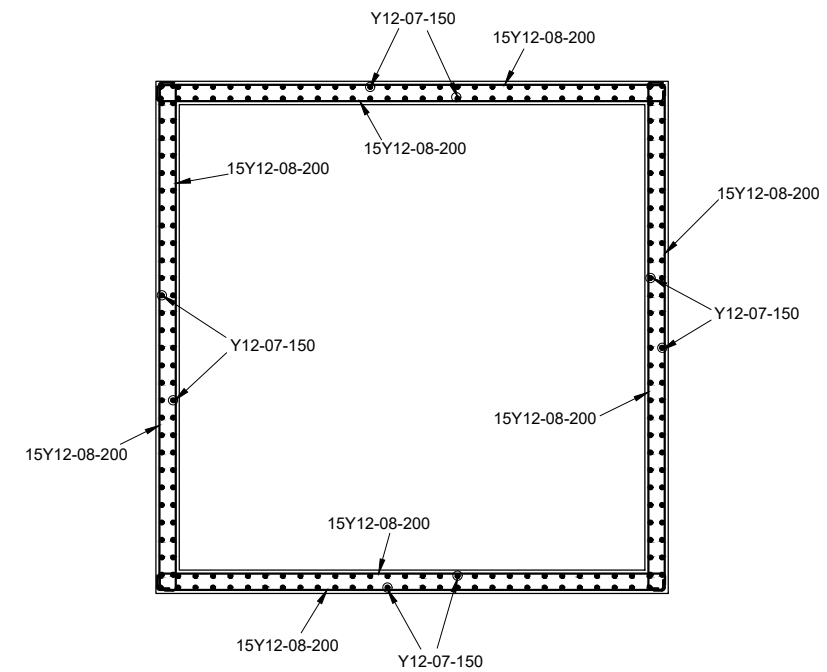
Base slab Reinforcements details



Top slab Reinforcements details



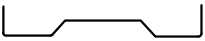

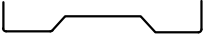





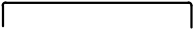
Section A-A Reinforcements details



Plan: walls Reinforcements details

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			DRAWING TITLE: CT: reinforcement details			DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:62	DATE: 24/03/2022	

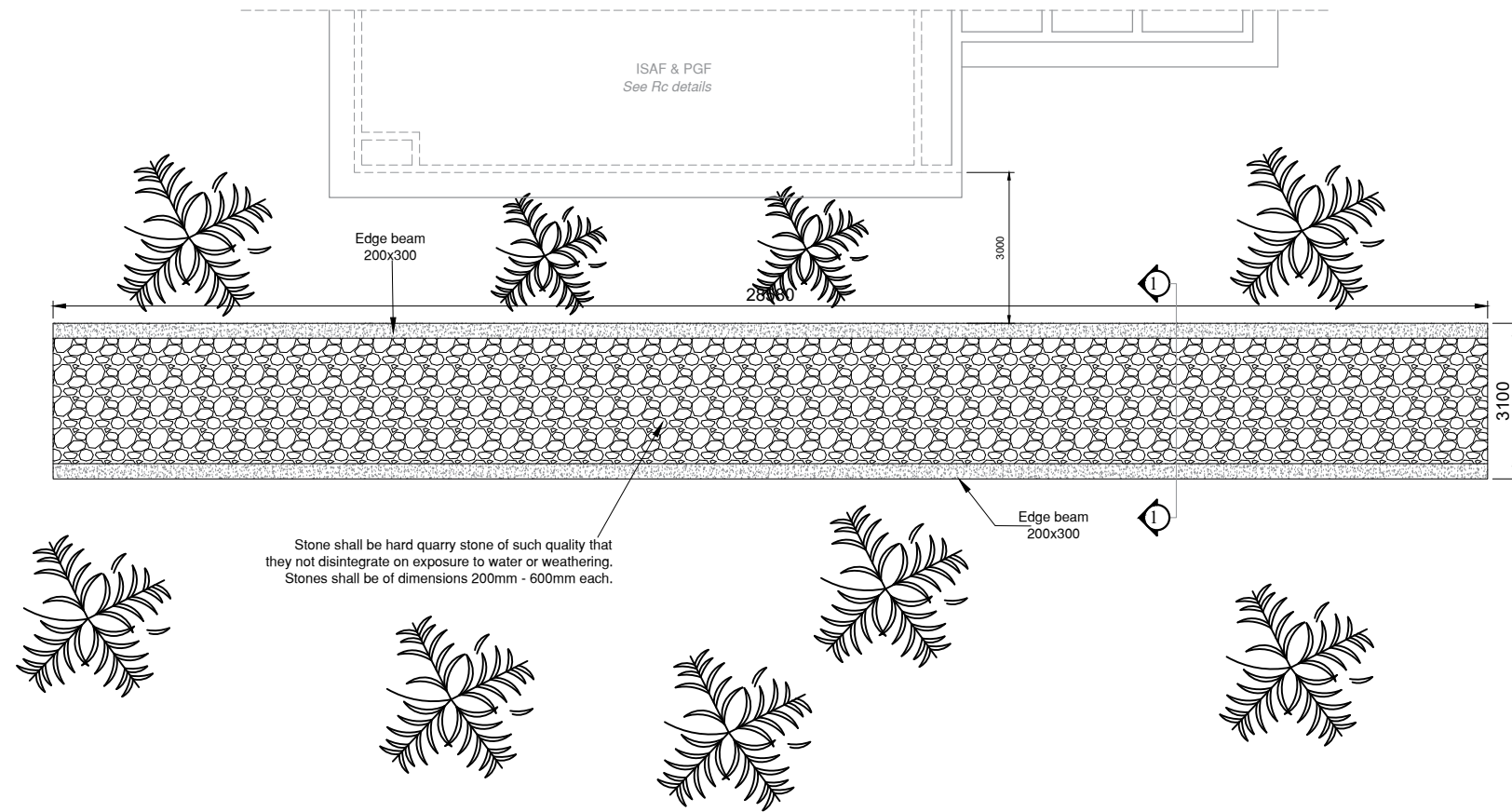
CT Bar Bending schedule

member	Mark	Diameter	Total Numbers/Area	Length (mm)	Unit weight (kg/m)	Total weight (kg)	Bar bending shape
Base	01	Y12	28	5650	0.888	141	
	02	Y12	28	4050	0.888	101	
	03	Y12	28	5350	0.888	133	
	04	Y12	28	5500	0.888	137	
	05	Y12	28	850	0.888	22	
	06	Y12	28	1050	0.888	27	
Walls	07	Y12	240	3550	0.888	757	
	08	Y12	120	4500	0.888	480	
Top Slab	01	Y10	88	4500	0.616	244	
Total						2,042	

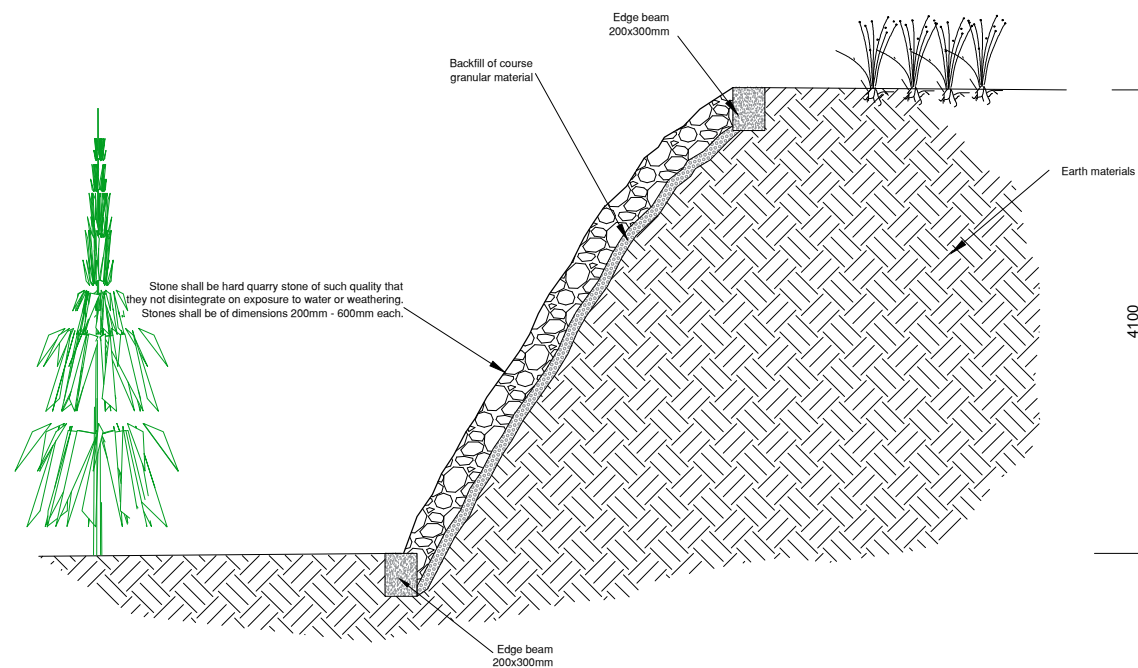
CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: CT: Bar bending schedule	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 40
						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): NA	DATE: 24/03/2022	

STONE PITCHING

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 41
			DRAWING TITLE:			DRAWN: I.Y	APPROVED BY: I.Y	
			STONE PITCHING SEPARATOR			SCALE (AT A3): 1:8	DATE: 24/03/2022	



Stone pitching: plan
Scale:1:34

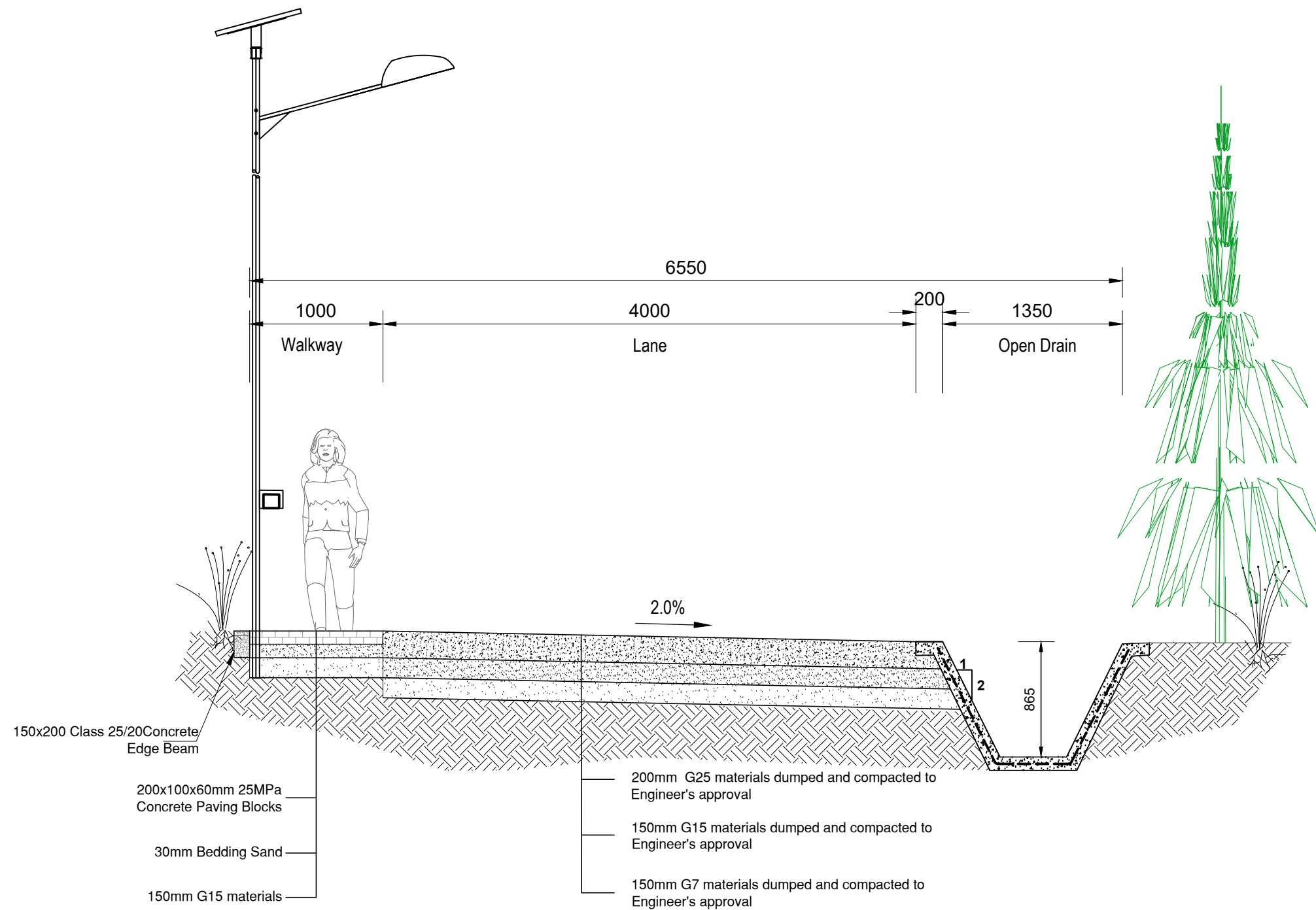


Section 1-1
Scale:1:68

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: Stone pitching Plan and sections details	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level GA - General arrangement	PHASE DETAILED_STRUCTURAL_DESIGN DRAWN: I.Y APPROVED BY: I.Y SCALE (AT A3): AS_SHOWN DATE: 24/03/2022	DRAWING NO.: 42
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ROAD TYPICAL SECTION

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma DRAWING TITLE: ROAD SEPARATOR	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 43
						DRAWN: I.Y	APPROVED BY: I.Y	
						SCALE (AT A3): 1:8	DATE: 24/03/2022	



TYPICAL ROAD SECTION

SCALE 1 : 36

CLIENT: TUNDUMA WATER SUPPLY AND SANITATION AUTHORITY P.O. Box TUNDUMA	CONSULTANT: BORDA Bremen Overseas Research and Development Association www.borda-africa.or.tz	FUNDED BY: GIZ P.O.BOX 1519 Dar es salaam Tanzania www.giz.de	PROJECT NAME: COVID 19 measures and sanitation project in Mbeya and Tunduma	DRAWING TITLE: ROAD SEPARATOR	NOTES: 1. This is the product of BORDA and is not to be copied or reproduced without the permission of BORDA. 2. All dimensions are in [mm] unless otherwise specified. 3. All concrete works to be cured to British standard BS 8110 4. All earthworks shall be inspected and approved by Engineer 5. Engineer to inspect reinforcements fixing prior to casting of concrete.	LEGEND: ABR - Anaerobic Baffled Reactor AF - Anaerobic Filter BGD - Biogas Digester PGF - Planted Gravel Filter VSF - Vertical Sand Filter BL - Bottom Level GL - Ground Level PBL - Pipe Inner Bottom Level RL - Reference Line WL - Water Level	PHASE DETAILED_STRUCTURAL_DESIGN		DRAWING NO.: 44
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							SCALE (AT A3): AS_SHOWN	DATE: 24/03/2022	