



Athi Water Works Development Agency



Tanathi Water Works Development Agency



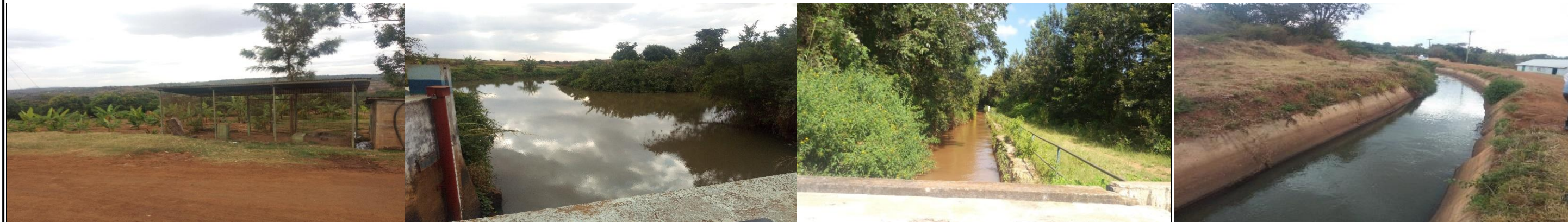
African Development Bank

Kenya Towns Sustainable Water Supply & Sanitation Programme

CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA

CONTRACT NO.:AWSB/KTSWSSP/CS/10/2018

FINAL DESIGN REVIEW REPORT-MATUU TOWN WATER SUPPLY BOOK OF DRAWINGS



JULY 2020

SUBMITTED BY

JOINT VENTURE BETWEEN





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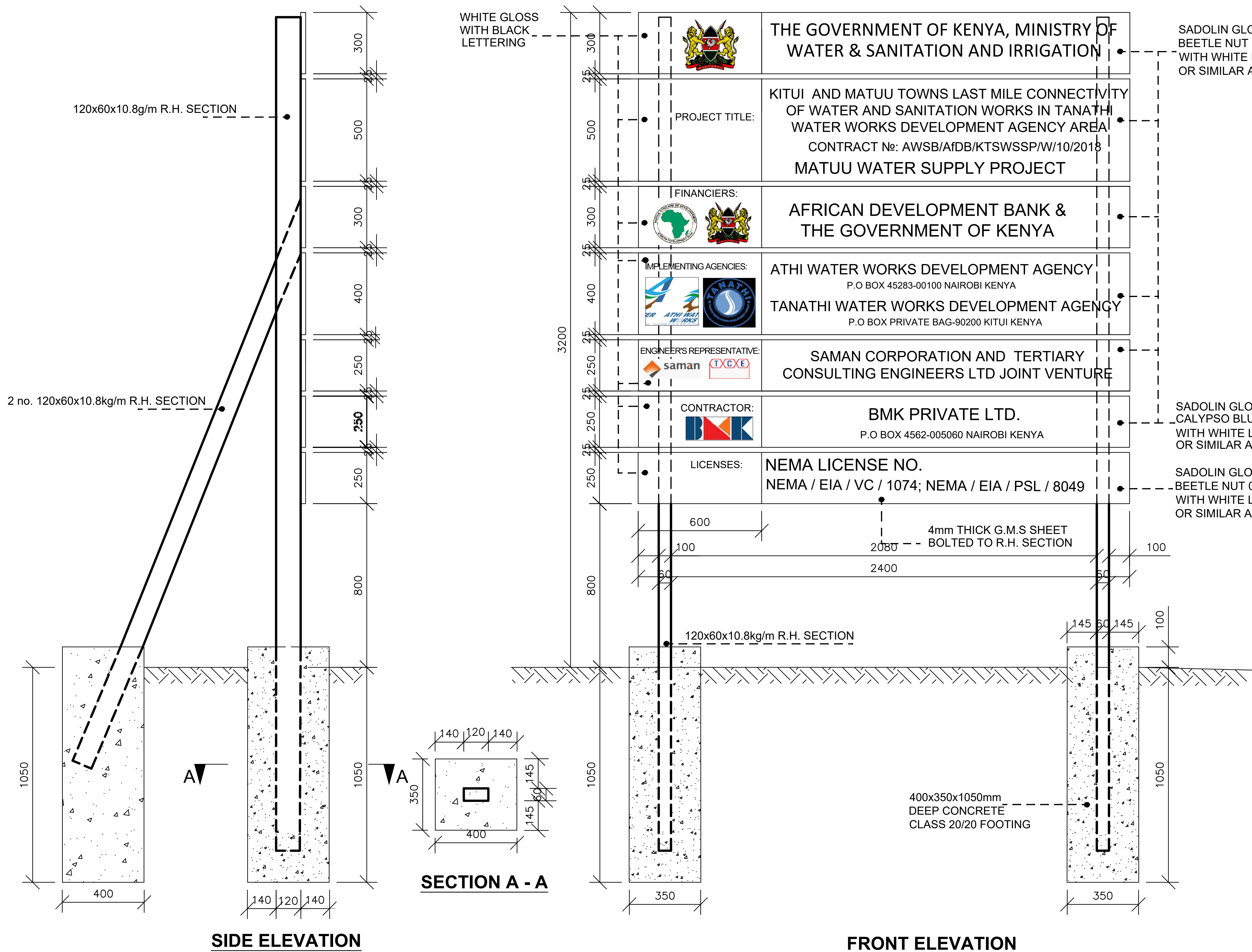
AND



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MATUU WATER SUPPLY PROJECT LIST OF DRAWINGS									
DRAWING NO.		TITLE	SHEET NO.	DRAWING NO.		TITLE	SHEET NO.		
PROJECT INFORMATION				GUARD HOUSE					
MAT-WS-PSB-001		PUBLICITY BOARD	1 OF 1	MAT-WTP-GH-001		PLAN, ELEVATION, SECTION AND ELECTRICAL INSTALLATION DETAILS	1 OF 1		
LOCATION MAP				SEPTIC TANK					
MAT- WS-LAY-001		PROJECT LAYOUT MAP	1 OF 2	MAT-SEP-001		SEPTIC TANK AND SOAKAWAY PIT LAYOUT DETAILS	1 OF1		
MAT- WS-LAY-002		PROJECT LAYOUT MAP	2 OF 2						
MAT- WS-PS-001		PROJECT SCHEMATIC	1 OF 1						
				PLAN AND PROFILE DRAWINGS					
MATUU WATER TREATEMENT PLANT DRAWINGS				RAW WATER RISING MAIN					
MAT-WTP-LAY-01		GENERAL LAYOUT MAP	1 OF 2	MAT-RWM-P&P-001		PLAN & PROFILE DRAWINGS KM 0+000 - 1+56.88	1 OF 3		
MAT-WTP-LAY-02		LAYOUT SECTION	2 OF 2						
				TREATED WATER GRAVITY MAIN					
MAT-WTP-FL-001		PLAN AND SECTIONS	1 OF 5	MAT-TWRM-P&P-001		PLAN & PROFILE DRAWINGS KM 0+000 - 1+300	1 OF 21		
MAT-WTP-FL-002		INLET PLANS AND SECTION DETAILS	2 OF 5	MAT-TWRM-P&P-002		PLAN & PROFILE DRAWINGS KM 1+300 - 2+600	2 OF 21		
MAT-WTP-FL-003		BASE SLAB LAYOUT AND RC DETAIL	3 OF 5	MAT-TWRM-P&P-003		PLAN & PROFILE DRAWINGS KM 2+600 - 3+900	3 OF 21		
MAT-WTP-FL-004		RC DETAILS	4 OF 5	MAT-TWRM-P&P-004		PLAN & PROFILE DRAWINGS KM 3+900 - 5+200	4 OF 21		
MAT-WTP-FL-005		RC DETAILS	5 OF 5	MAT-TWRM-P&P-005		PLAN & PROFILE DRAWINGS KM 5+200 - 6+500	5 OF 21		
				MAT-TWRM-P&P-006		PLAN & PROFILE DRAWINGS KM 6+500 - 7+800	6 OF 21		
				MAT-TWRM-P&P-007		PLAN & PROFILE DRAWINGS KM 7+800 - 9+100	7 OF 21		
				MAT-TWRM-P&P-008		PLAN & PROFILE DRAWINGS KM 9+100 - 10+400	8 OF 21		
				MAT-TWRM-P&P-009		PLAN & PROFILE DRAWINGS KM 10+400 - 11+700	9 OF 21		
				MAT-TWRM-P&P-010		PLAN & PROFILE DRAWINGS KM 11+700 - 13+000	10 OF 21		
				MAT-TWRM-P&P-011		PLAN & PROFILE DRAWINGS KM 13+000 - 14+300	11 OF 21		
				MAT-TWRM-P&P-012		PLAN & PROFILE DRAWINGS KM 14+300 - 15+600	12 OF 21		
				MAT-TWRM-P&P-013		PLAN & PROFILE DRAWINGS KM 15+600 - 16+900	13 OF 21		
				MAT-TWRM-P&P-014		PLAN & PROFILE DRAWINGS KM 16+900 - 18+200	14 OF 21		
				MAT-TWRM-P&P-015		PLAN & PROFILE DRAWINGS KM 18+200 - 19+500	15 OF 21		
				MAT-TWRM-P&P-016		PLAN & PROFILE DRAWINGS KM 19+500 - 20+800	16 OF 21		
				MAT-TWRM-P&P-017		PLAN & PROFILE DRAWINGS KM 20+800 - 22+100	17 OF 21		
				MAT-TWRM-P&P-018		PLAN & PROFILE DRAWINGS KM 22+100 - 23+400	18 OF 21		
				MAT-TWRM-P&P-019		PLAN & PROFILE DRAWINGS KM 23+400 - 24+700	19 OF 21		
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MAT-WTP-ST-003		BOTTOM SLAB LAYOUT AND RC DETAIL	3 OF 5						
MAT-WTP-ST-004		INLET CHAMBER AND WEIR OVERFLOW RC DETAILS 1	4 OF 5						
MAT-WTP-ST-005		INLET CHAMBER AND WEIR OVERFLOW RC DETAILS 2	5 OF 5						
				SOFIA-NDALANI OFFTAKE					
				MAT-NDAL-P&P-001		PLAN & PROFILE DRAWINGS KM 0+000 - KM 1+300	1 OF 5		
				MAT-NDAL-P&P-002		PLAN & PROFILE DRAWINGS KM 1+300 - KM 2+600	2 OF 5		
				MAT-NDAL-P&P-003		PLAN & PROFILE DRAWINGS KM 2+600 - KM 3+900	3 OF 5		
				MAT-NDAL-P&P-004		PLAN & PROFILE DRAWINGS KM 3+900 - KM 5+200	4 OF 5		
				MAT-NDAL-P&P-005		PLAN & PROFILE DRAWINGS KM 5+200 - KM 5+301	5 OF 5		
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MAT-WTP-FU-002		PLAN AND SECTION DETAILS	2 OF 7	MAT-STD-002		AIR VALVE, FIRE HYDRANT & CONTROL VALVE CHAMBERS	1 OF 1		
MAT-WTP-FU-003		PIPEWORK SCHEDULE	3 OF 7	MAT-STD-003		WATER MAIN THRUST AND SUPPORT BLOCKS	1 OF 1		
MAT-WTP-FU-004		FOUNDATION/BOTTOM SLAB LAYOUT AND RC DETAILS	4 OF 7	MAT-STD-004		RIVER AND ROAD CROSSING DETAILS	1 OF 1		
MAT-WTP-FU-005		TOP SLAB LAYOUT AND RC DETAILS	5 OF 7	MAT-STD-005		MAKER POSTS AND PLATES	1 OF 1		
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MAT-WTP-FU-007		SECTIONS AND RC DETAILS 2	7 OF 7	MAT-STD-007		WATER SUPPLY CONNECTION	1 OF 1		
				MAT-PB-001		PUBLICITY BLOCK	1 OF 1		
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MAT-WTP-CWT-002		FOUNDATION LAYOUT AND SECTION DEAILS	2 OF 3						
MAT-WTP-CWT-003		ROOF SLAB RC DETAILS	3 OF 3						
MAT-EST-02		18M HIGH 108M3 ELEVATIONS AND FOUNDATION DETAILS	1 OF 2	ELEVATED STEEL TANK					
				MAT-EST-01		18M HIGH 108M3 ELEVATIONS AND FOUNDATION DETAILS	1 OF 1		
MAT-WTP-SDB-001		PLANS, SECTIONS AND ELEVATION DETAILS	1 OF 3	MAT-WST-001		PLAN	1 OF4		
MAT-WTP-SDB-002		BED LAYOUT AND RC DETAILS	2 OF 3	MAT-WST-002		LAYOUTS AND DETAILS	2 OF4		
MAT-WTP-SDB-003		SECTIONS AND RC DETAILS	3 OF 3	MAT-WST-003		BOTTOM SLAB AND TOP SLAB RC DETAILS	3 OF4		
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MAT-WTP-CH-02		STRUCTURAL DETAILS ROOF TRUSS LAYOUT AND DETAILS	2 OF 3						
MAT-WTP-CH-03		CHEMICAL HOUSE STRUCTURAL DEATAILS LAYOUTS, BEAM SECTIONS AND FOUNDATION DETAILS	3 OF 3						
MAT-WTP-CB-01		CHLORINATION BUILDING ARCHITECTURAL PLAN AND SECTIONS	1 OF 4						
MAT-WTP-CB-02		CHLORINATION BUILDING ARCHITECTURAL SECTION	2 OF 4						
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MAT-WTP-AB-02		STRUCTURAL LAYOUT AND DETAILS	2 OF 2						
MAT-WTP-OH-01		PLANS AND SECTION	1 OF 2						
MAT-WTP-OH-02		STRUCTURAL LAYOUT AND DETAILS	2 OF 2						
MAT-WTP-SH-01		PLANS AND SECTION	1 OF 2						
MAT-WTP-SH-02		STRUCTURAL LAYOUT DETAILS	2 OF 2						

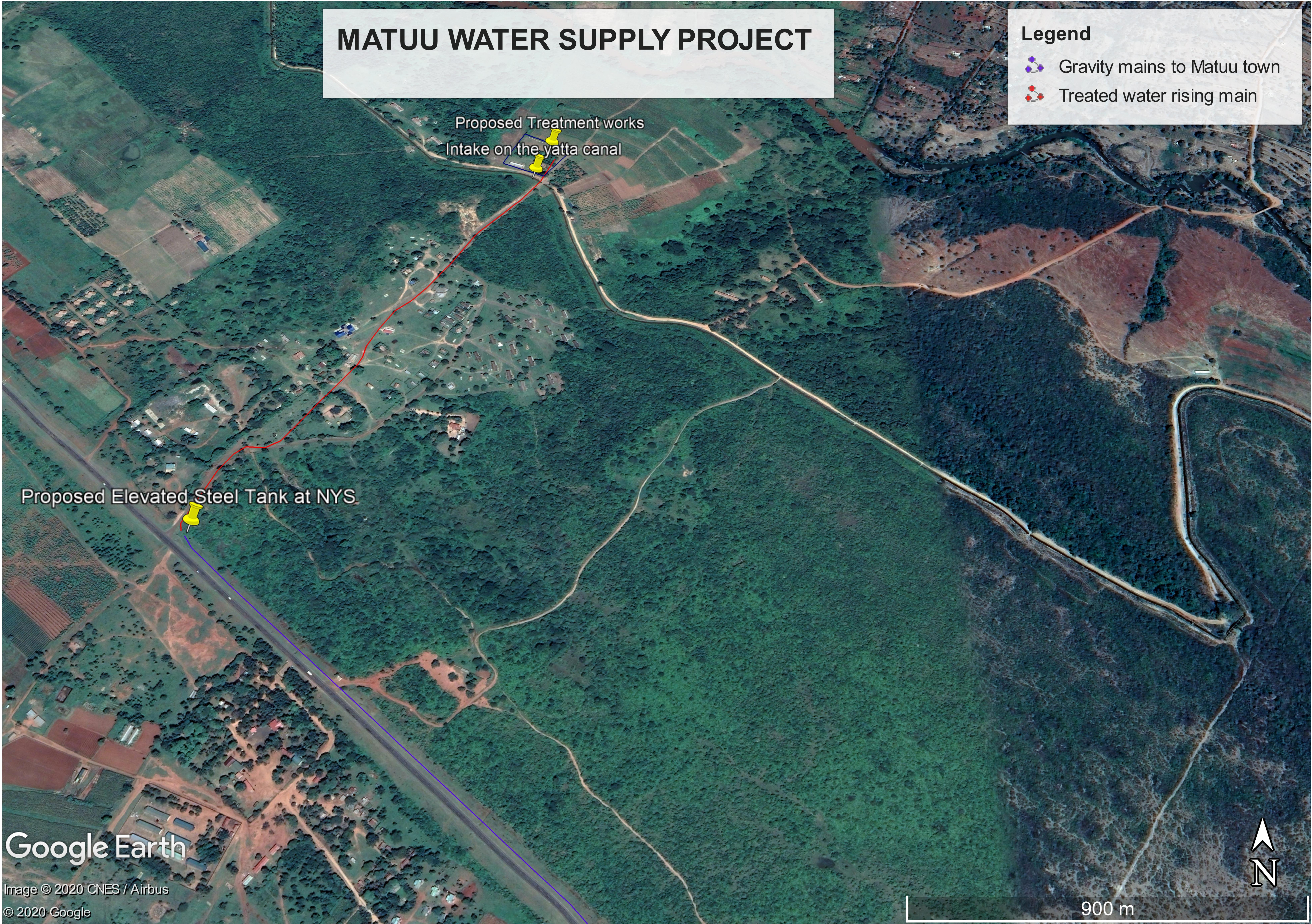
REVISIONS		Consultant:				Employer:		Project Manager:		Designed:	B.MURILA	Project:	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Stage:	FINAL DETAILED DESIGN
DESCRIPTION	DATE		SAMAN CORPORATION 5,Byeoriyangsanga(sam)-ro, Gwangju-si, Gwanggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82) 2 6488 8080 And E-mail: kitumatuusaman@gmail.com			TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa P. O. Box 46439 00100, Nairobi, Kenya. Tel: +254 20 2727438 Email: tce@tertiary.co.ke		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Kileleshwa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke			Drawn:	B.MURILA	Date:	JULY 2020
													Checked:	D. LIAMBILA	Drawing No.	MAT–D1–001
													Approved:	B. KIM	Scale:	NOT TO SCALE
														Sheet No.	1 of 1	
												Drawing Title:	MATUU WATER SUPPLY DRAWING INDEX		Index No.	



NOTES:

1. FINAL WORDING ON SIGN BOARD AS APPROVED BY THE EMPLOYER.
2. DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
3. THE EXACT LOCATION FOR THE SIGNBOARD ERECTION TO BE APPROVED ON SITE.

Revisions		Consultant		Employer		Project Manager		Project		Stage : FINAL DESIGN REVIEW	
Description	Date	  	SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. Tel: +254 20 2727438 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B. MURILA Drawn : B. MURILA Checked: D. LIAMBILA Approved: B. KIM	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Drawing Title: MATUU WATER SUPPLY PROJECT PUBLICITY SIGNBOARD	Date : JULY 2020	
										Drawing No. : MAT-PSB-001	
										Scale : NTS	Sheet Size : A1
										Sheet No. : 1 OF 1	
										Index No. :	



Revisions		Consultant		Employer	Project Manager	Designed: B. MURILA Drawn : B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW	
Description	Date	<div><div><div><div>SAMAN CORPORATION</div><div>5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea</div><div>Tel: (+82) 2 6488 8255</div><div>Fax: (+82)2 6488 8080</div><div>E-mail: kituimatususaman@gmail.com</div></div></div><div>And</div><div><div><div><div>TERTIARY CONSULTING ENGINEERS LTD</div><div>Mwingi Court, No. 34, Mwingi Rd, Kileleshwa.</div><div>P. O. Box 46439 00100, Nairobi, Kenya.</div><div>+254 202169864</div><div>Email: tce@tertiary.co.ke</div></div></div></div></div>	<div><div><div><div>ATHI WATER WORKS DEVELOPMENT AGENCY</div><div>P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya</div><div>Tel: +254 20 2727438</div><div>email: info@awsboard.go.ke</div></div></div></div>	<div><div><div><div>TANATHI WATER WORKS DEVELOPMENT AGENCY</div><div>Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya</div><div>Tel: +254 712351104</div><div>email: info@tanathi.go.ke</div></div></div></div>	Date : JULY 2020				
					Drawing No. : MATUU-WS-LAY-001				
					Scale : NTS	Sheet Size : A1			
					Sheet No. : 1 of 2				
					Index No. :				

MATUU WATER SUPPLY PROJECT

Legend

- Gravity mains to Matuu town
- Ndalani offtake at Sofia

Ndalani

Sofia

Kithimani

Matuu

Existing Elevated steel tank

Google Earth

Image © 2020 CNES / Airbus
© 2020 Google

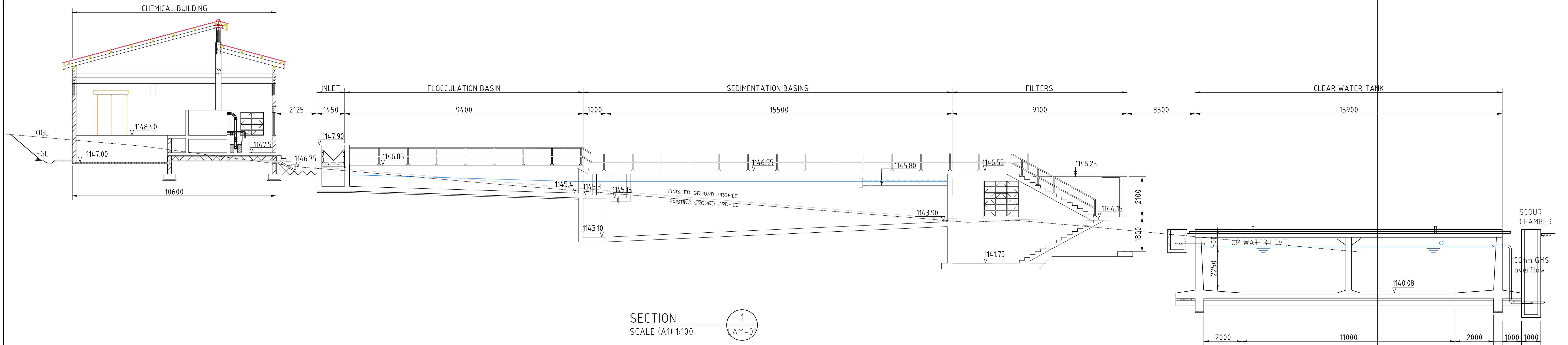
4 km

N

Revisions		Consultant		Employer	Project Manager	Project:		
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82)2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</div> <div>And</div>  <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		
					Drawn : B. MURILA			
					Checked: D. LIAMBILA		Drawing Title: MATUU WATER SUPPLY PROJECT	
					Approved: B. KIM			PROJECT LAYOUT MAP
						Stage : FINAL DESIGN REVIEW		
						Date : JULY 2020		
						Drawing No. : MATUU-WS-LAY-002		
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						Sheet No. : 2 of 2		
						Index No. :		

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES,UNLESS OTHERWISE STATED.
2. REFER TO DRAWING NO. MAT-WTP-LAY-01 FOR LAYOUT.

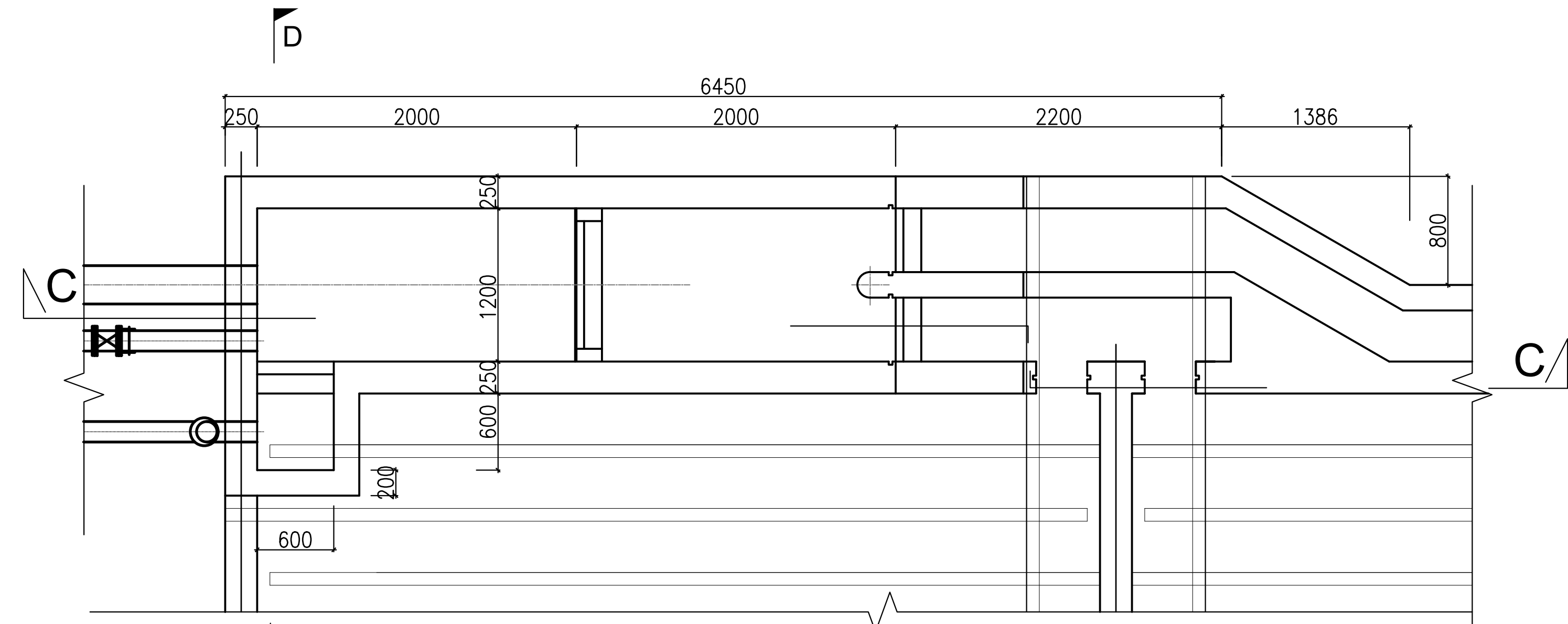


Revisions		Consultant		Employer		Project Manager		Project		Stage :	
Description	Date		And 			Designed: B.MURILA	TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date :	FINAL DESIGN REVIEW	
	Drawn : B.MURILA					Date :			JULY 2020		
	Checked: D.LIAMBILA					Drawing No. :			MAT-WTP-LAY-02		
	Approved: B.KIM					Scale :			1:400		
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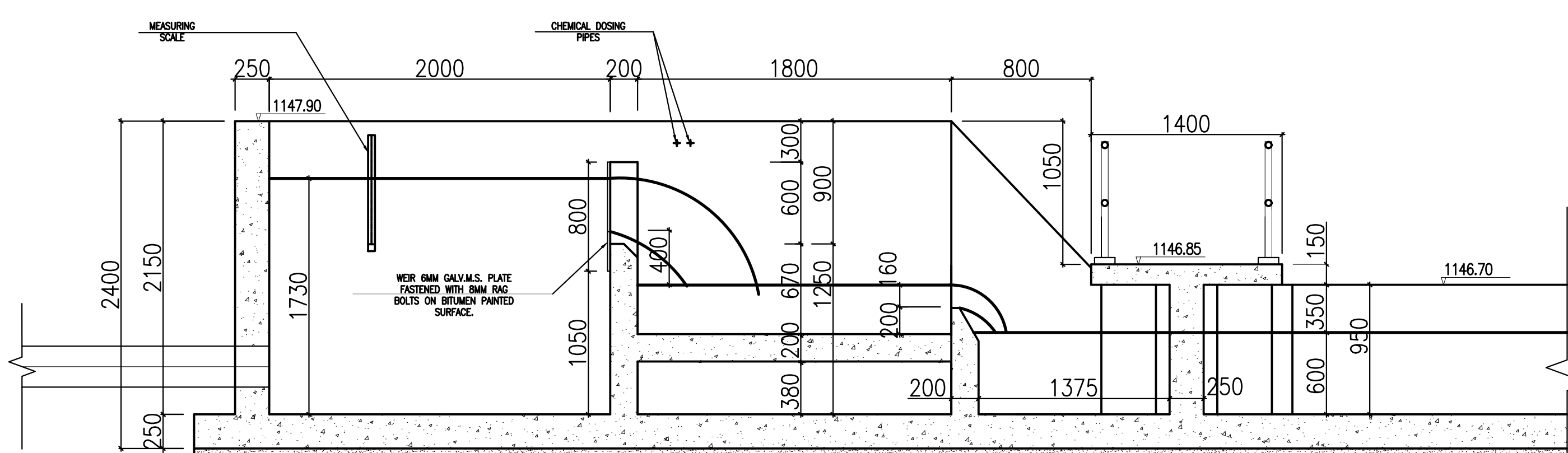
1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
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3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.



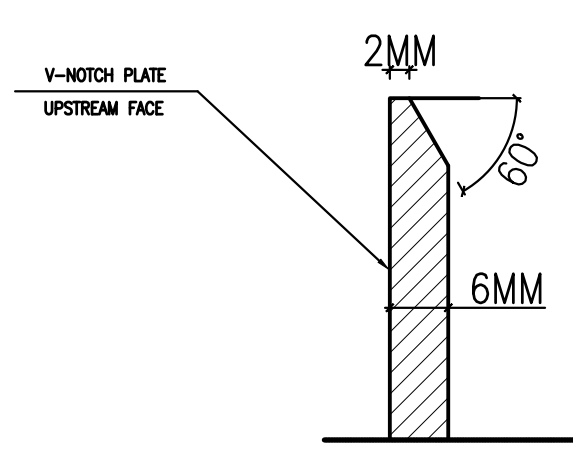
Revisions		Consultant		Employer	Project Manager	Designed: B. MURILA Drawn : B. MURILA Checked: D. LIAMBILA Approved: B. KIM	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA Drawing Title: FLOCCULATION TANK PLAN AND SECTION DETAILS	Stage :	FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, P. O. Box 46439 00100, Nairobi, Kenya. Tel: +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke			Date :	JULY 2020	
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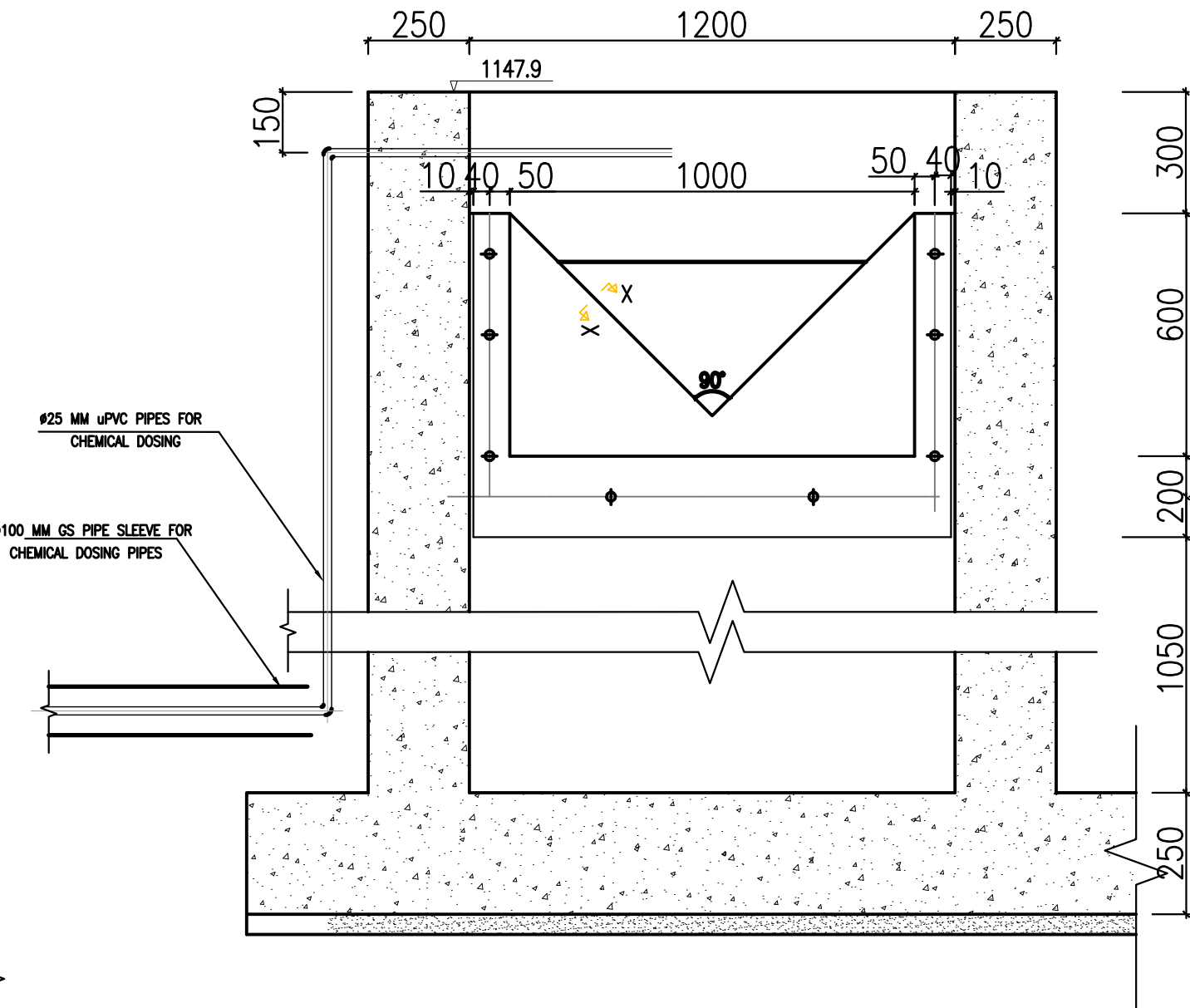
INLET ARRANGEMENTS



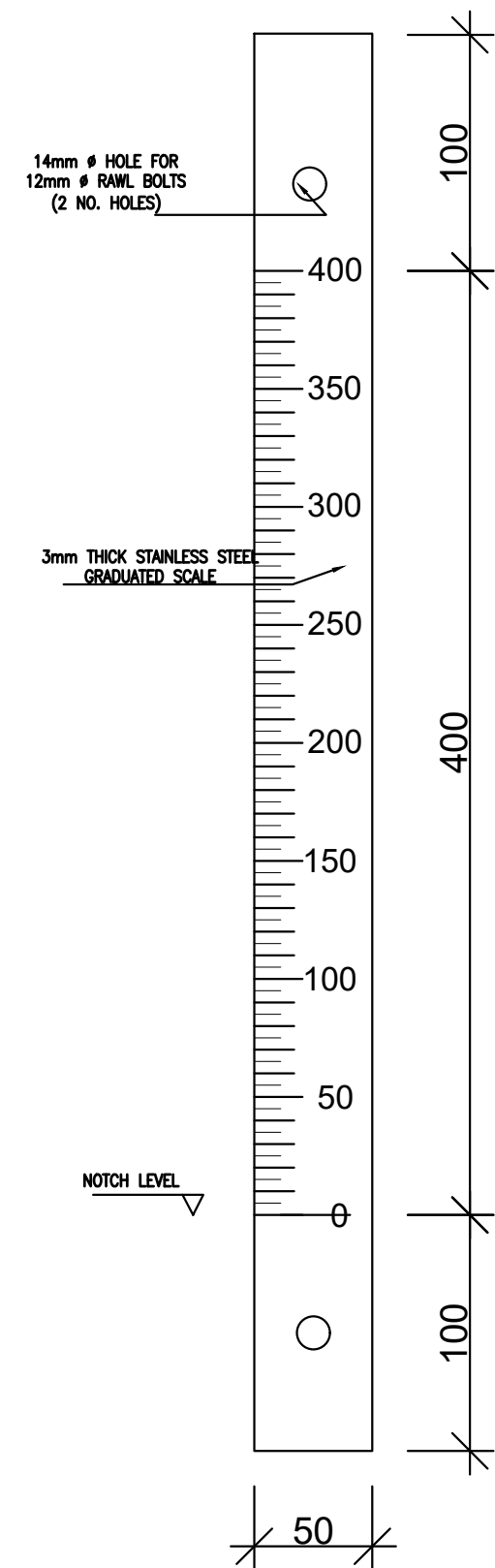
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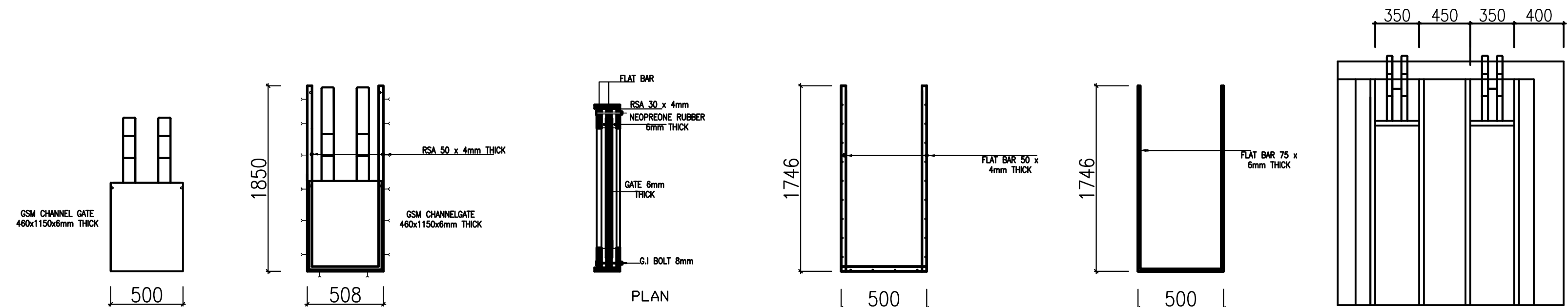
SECTION X-X



SECTION D-D



MEASURING SCALE

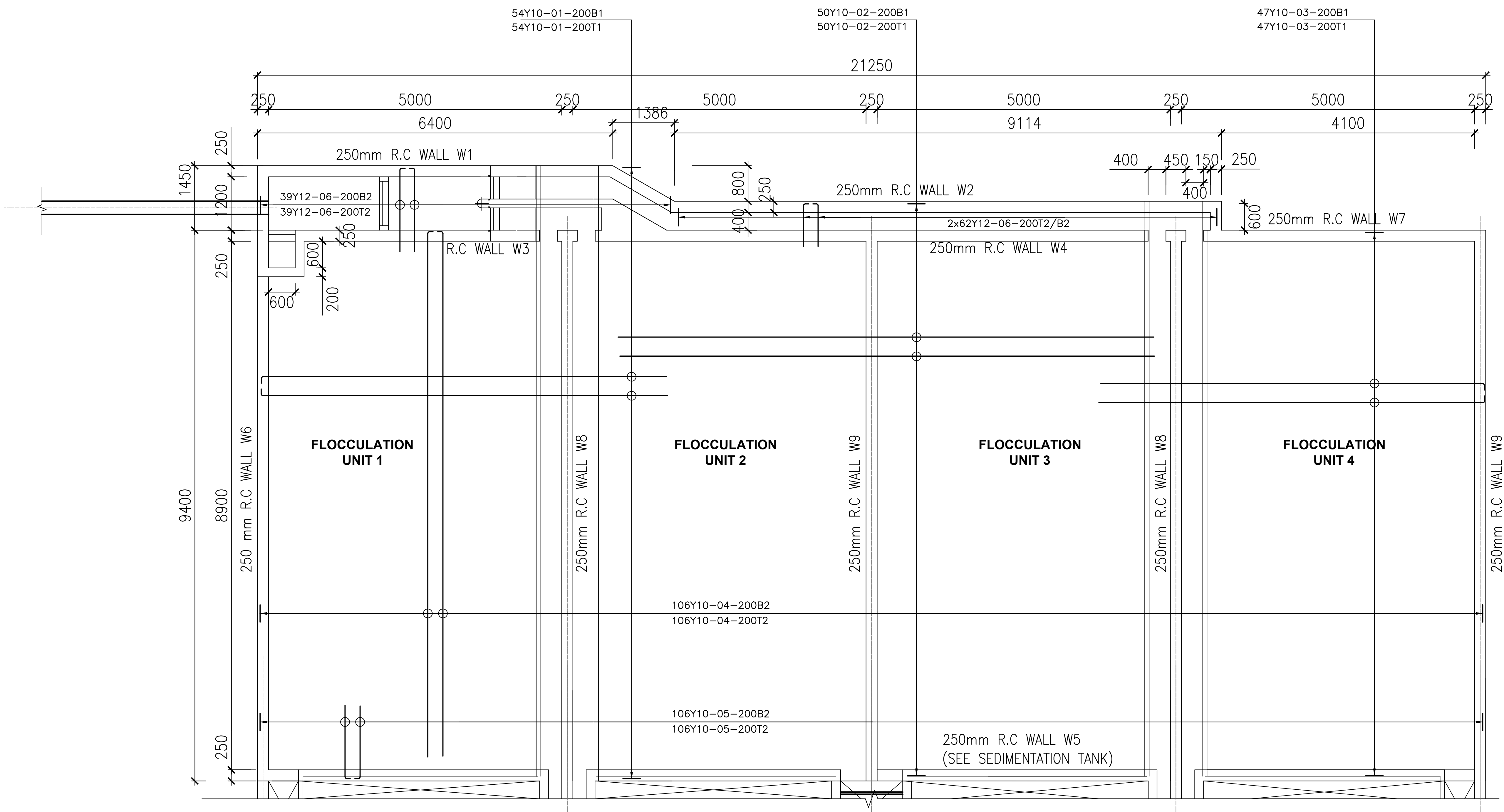


DETAILS OF CHANNEL GATES

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
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6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.

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		SAMAN CORPORATION 5, Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82) 2 6488 8080 E-mail: kituimatuousaman@gmail.com		TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date: JULY 2020	
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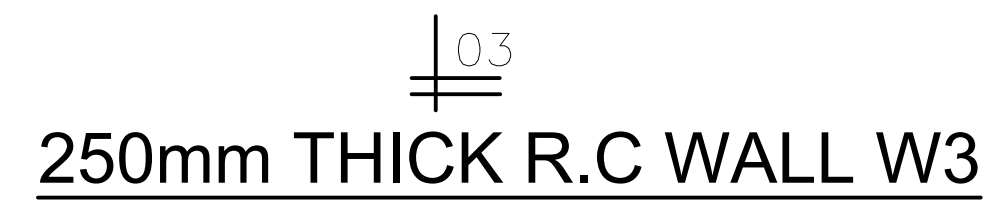
BASE SLAB LAYOUT & R.C DETAIL.

NOTES:

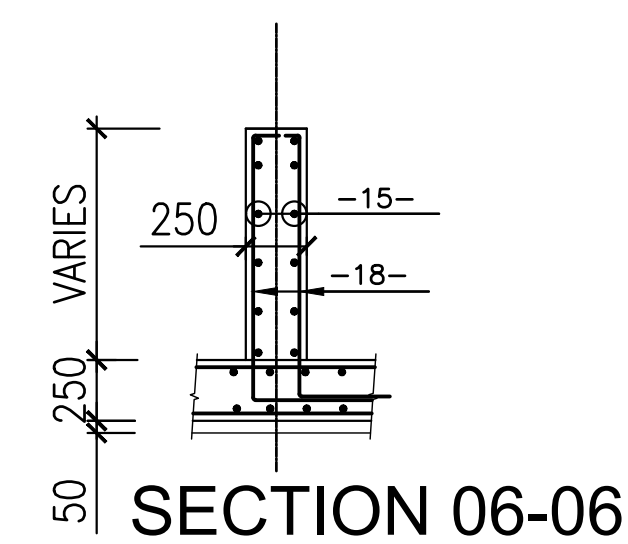
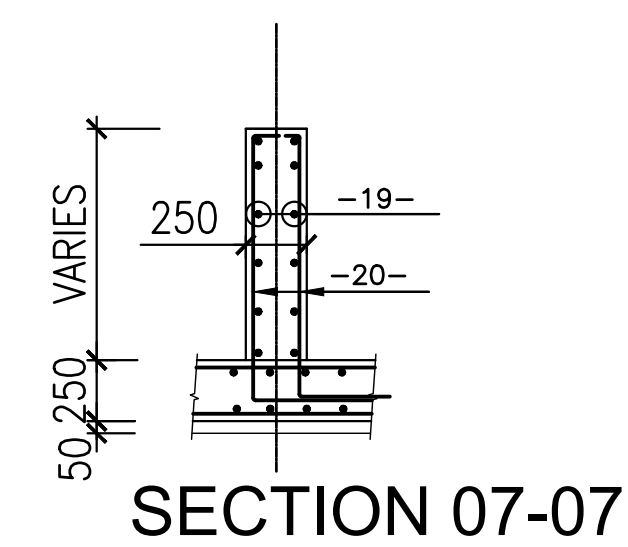
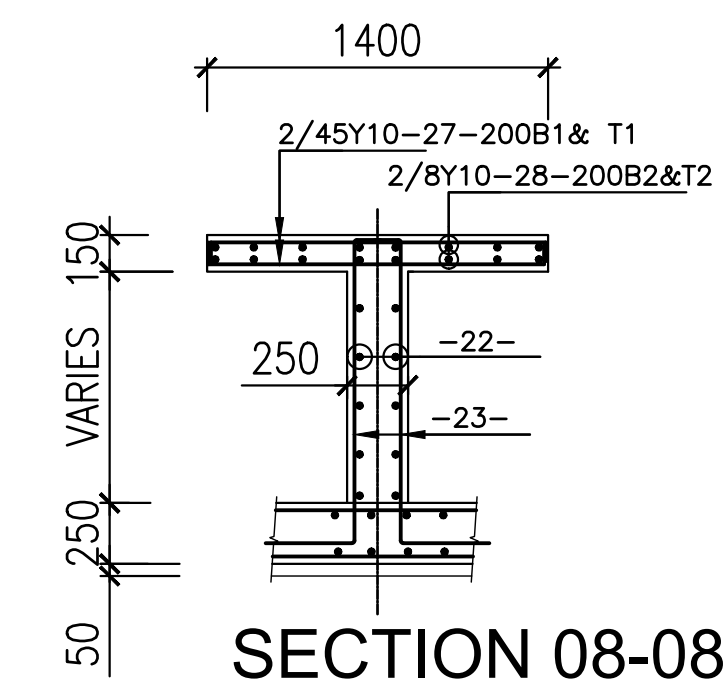
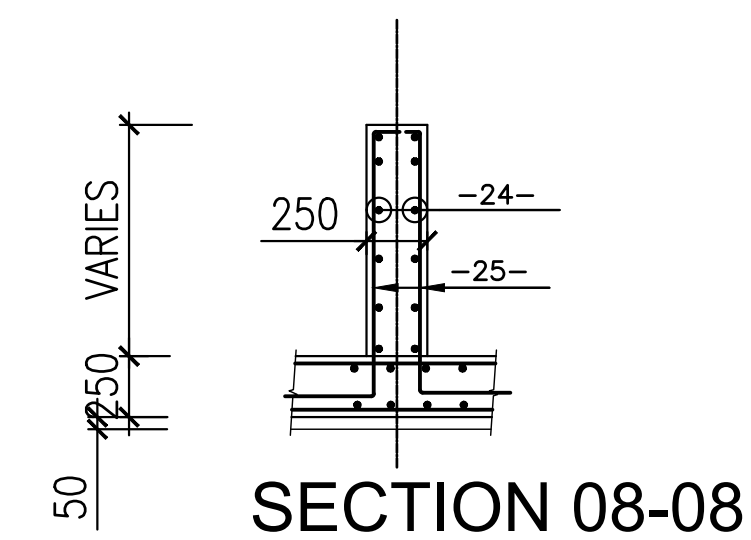
1. ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
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6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.,

Revisions		Consultant		Employer		Project Manager		Project		Stage :	
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuousaman@gmail.com</div>	And	 <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	FINAL DESIGN REVIEW		
							Date : JULY 2020				
							Drawing No. : MAT-WTP-FL-003				
							Checked: D. LIAMBILA		Drawing Title: FLOCCULATION BASINS BASE SLAB LAYOUT AND RC DETAIL	Scale : 1:50	Sheet Size : A1
							Approved: B. KIM			Sheet No. : 3 OF 5	
								Index No. :			

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Revisions		Consultant		Employer	Project Manager	Project:		
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82)2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	And  <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	
						Drawn : B. MURILA		
						Checked: D. LIAMBILA		
						Approved: B. KIM		
						Drawing Title: FLOCCULATION BASINS RC DETAILS	Stage : FINAL DESIGN REVIEW	
							Date : JULY 2020	
							Drawing No. : MAT-WTP-FL-004	
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							Index No. :	

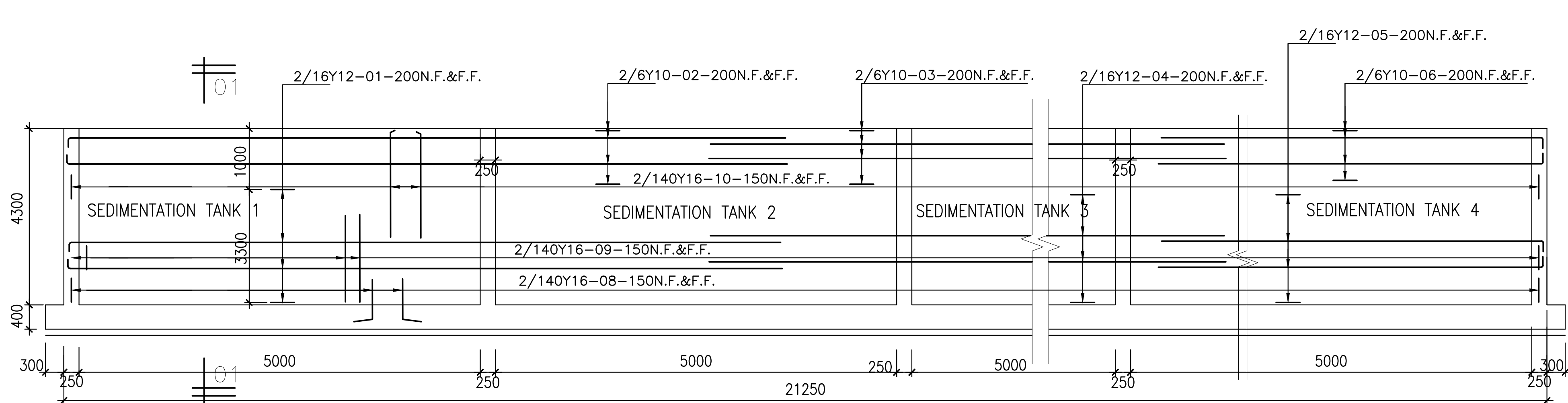


Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW					
Description	Date	 SAMAN CORPORATION 5.Byeonyangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82)2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kitumatuusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Designed: B. MURILA	Date:	JULY 2020				
							Drawn : B. MURILA	Drawing No.:	MAT-WTP-FL-005				
							Checked: D. LIAMBILA	Scale:	1:60	Sheet Size : A1			
							Approved: B. KIM	Drawing Title:	FLOCCULATION BASINS RC DETAILS 2				
							Sheet No.:	5 of 5					
							Index No.:						

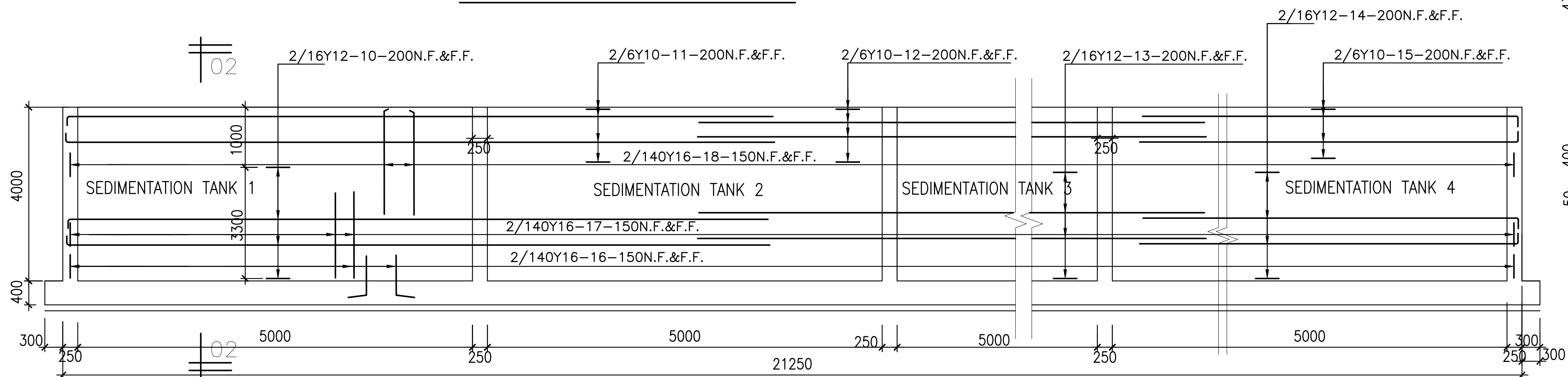
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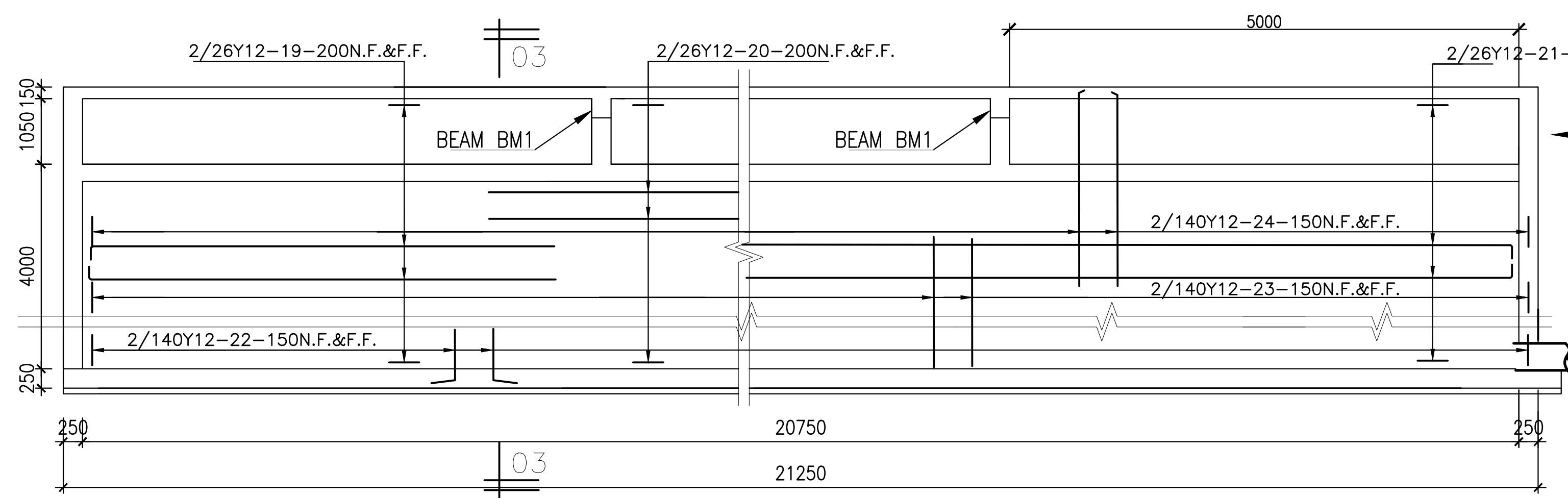
Revisions		Consultant		Employer	Project Manager	Project:		Stage :					
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	 <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kailawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		FINAL DESIGN REVIEW				
						Date : JULY 2020							
										Drawn : B. MURILA	Drawing No. : MAT-WTP-ST-002		
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								Index No. :					



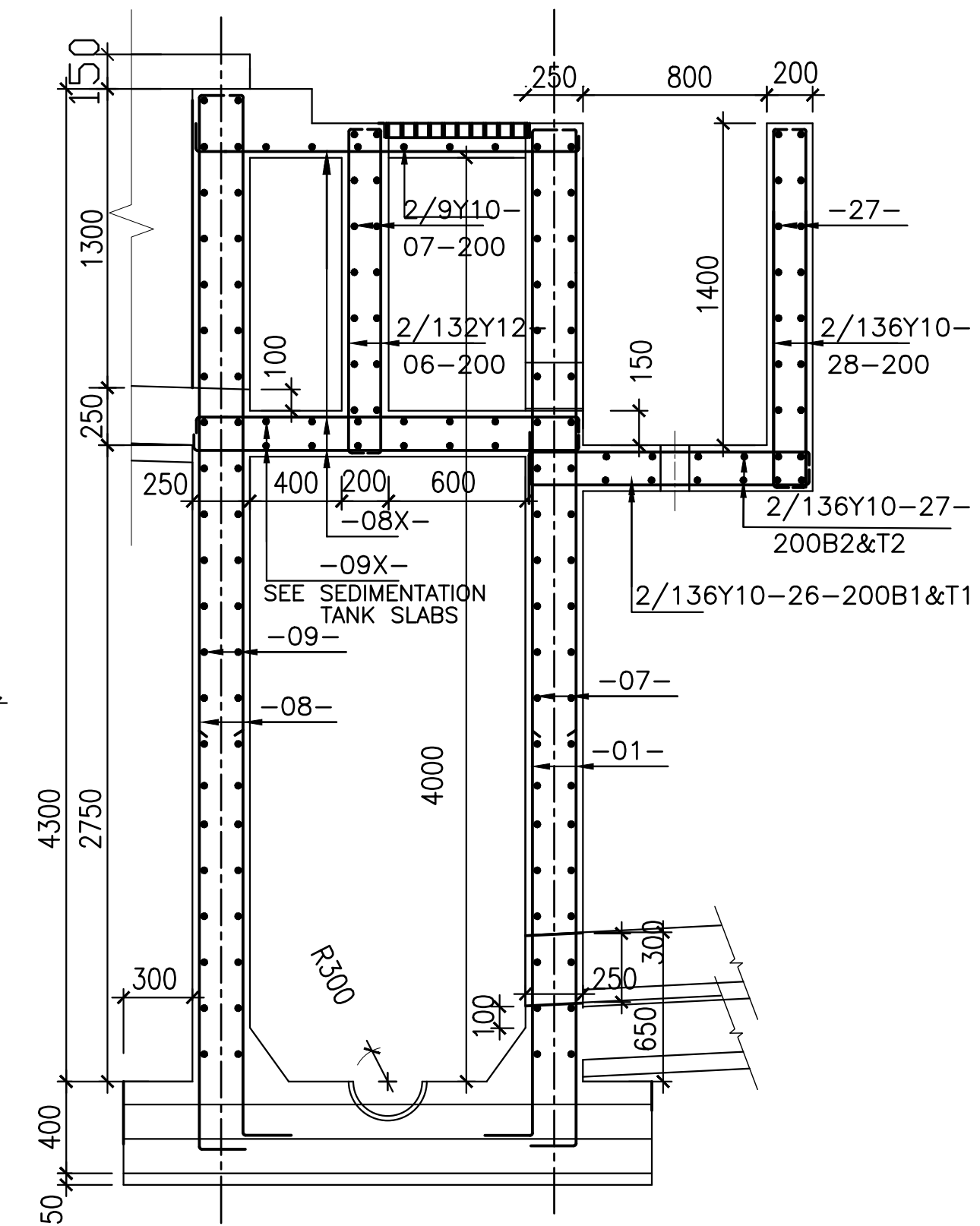
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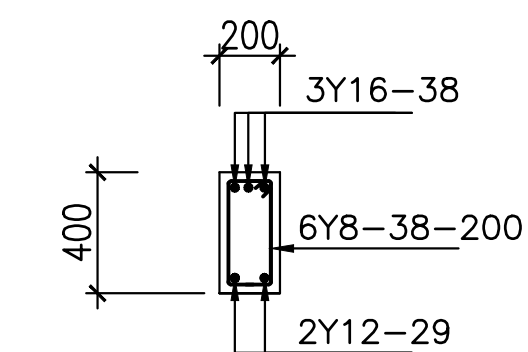
250mm THICK R.C WALL W2



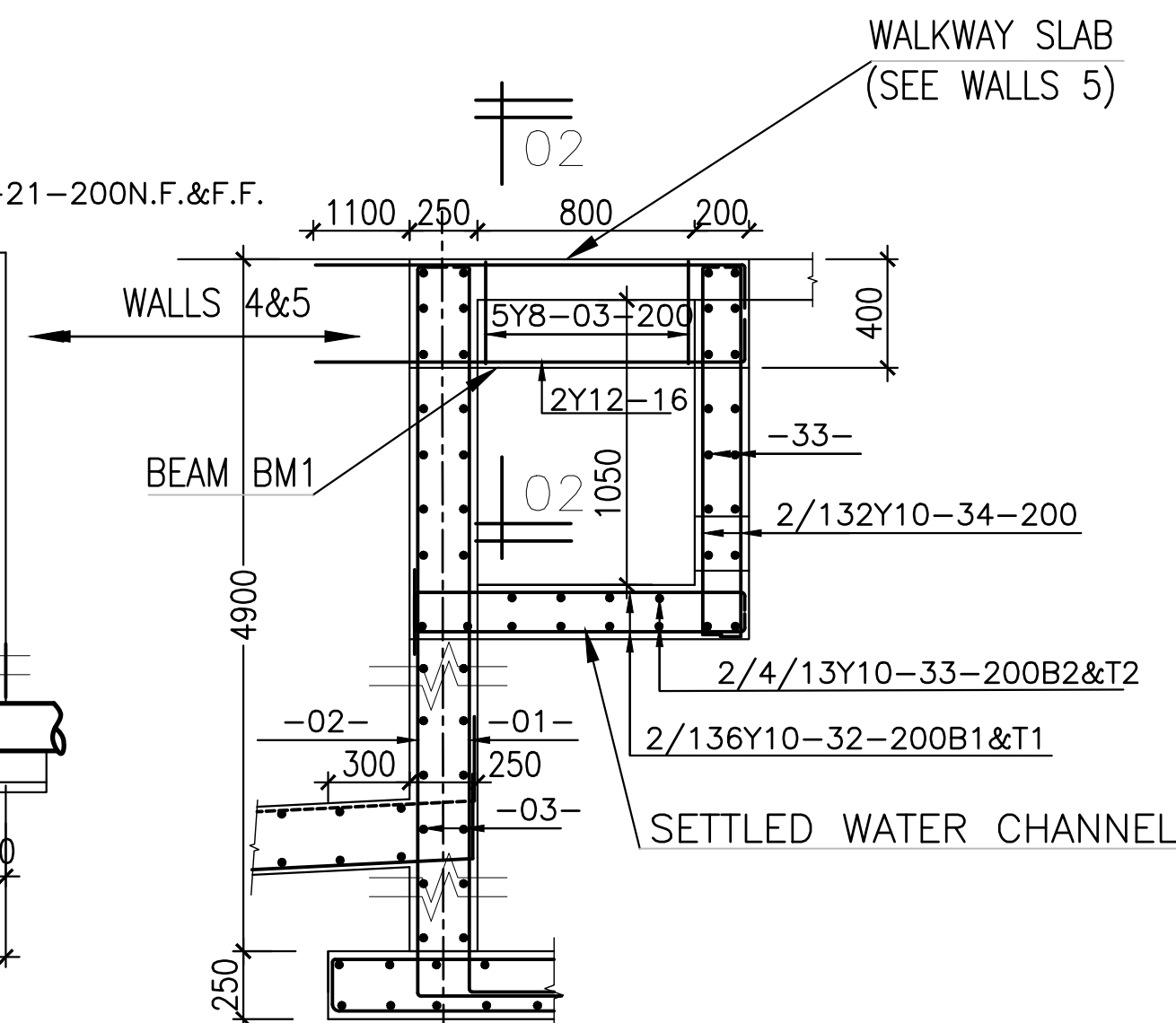
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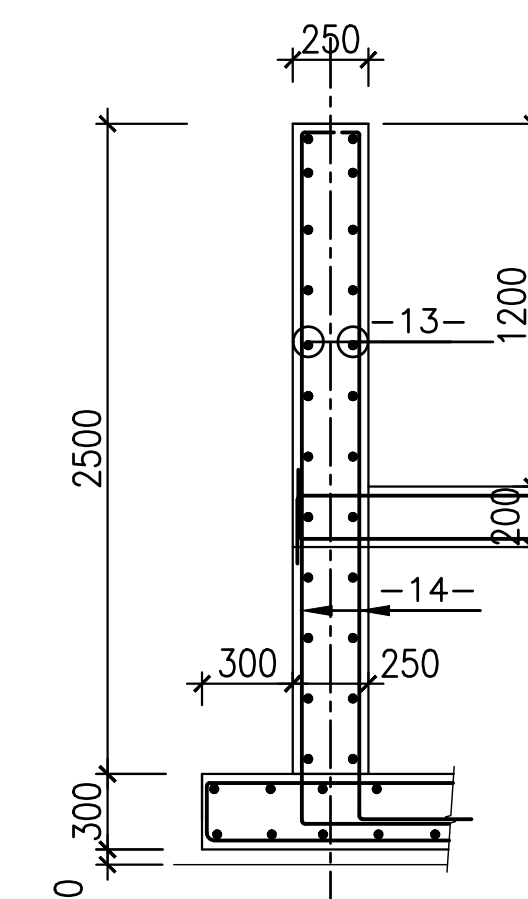
SECTION 01-01



200X500 BEAM 1



SECTION 02-02

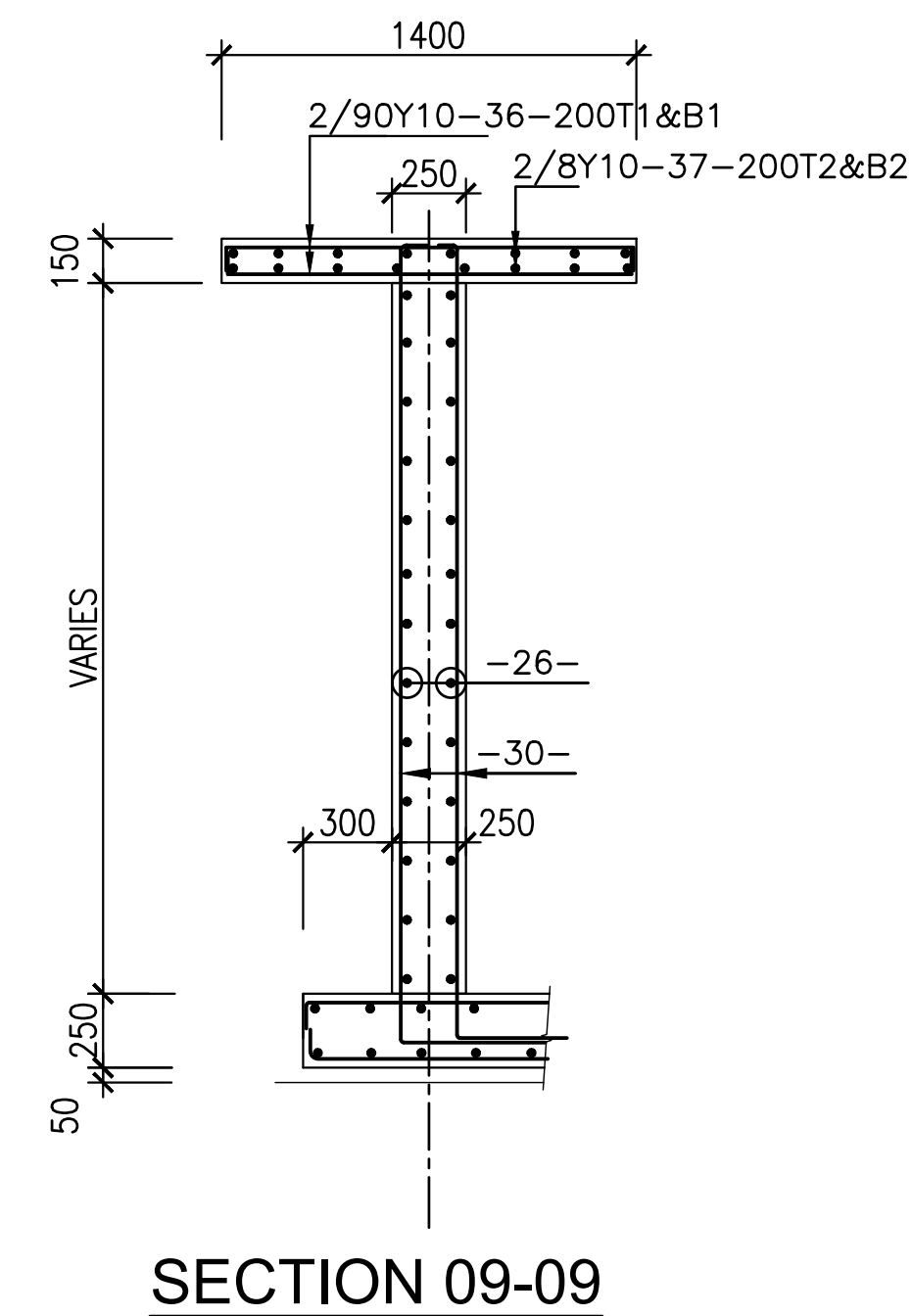
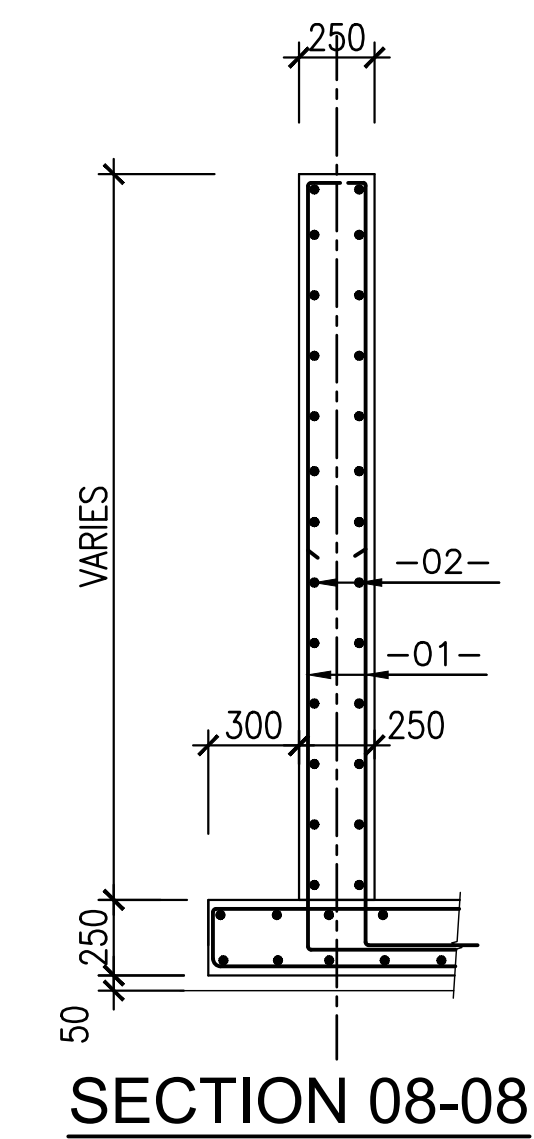
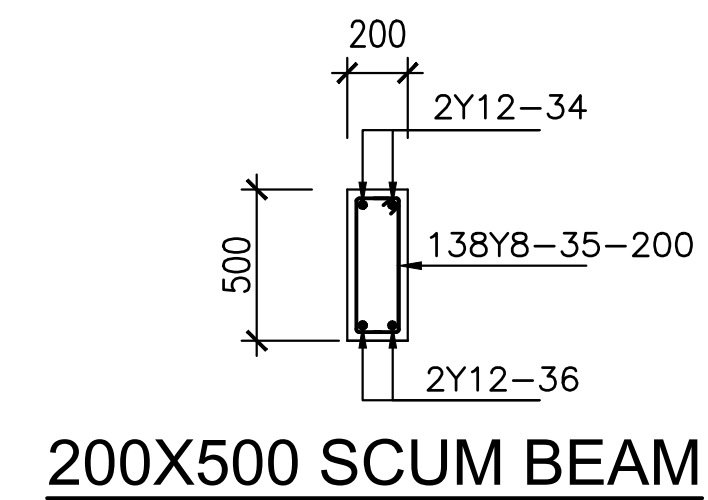


SECTION 03-03

NOTES:

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6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.

Revisions		Consultant		Employer		Project Manager		Project		Stage	
Description	Date		And					Designed: B. MURILA	Drawing Title: SEDIMENTATION TANKS INLET CHAMBER AND WEIR OVERFLOW RC DETAILS 1	FINAL DESIGN REVIEW	
										Date: JULY 2020	
										Drawing No.: MAT-WTP-ST-004	
										Scale: 1:50	
										Sheet No.: 4 of 5	
								Checked: D. LIAMBILA		Index No.:	
								Approved: B. KIM		A1	



- ## NOTES:
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Revisions		Consultant		Employer	Project Manager	Project:			
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82) 2 6488 8080 E-mail: kituimatusaman@gmail.com	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Project:	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		
						Designed:	B. MURILA	Drawing Title:	SEDIMENTATION TANKS INLET CHAMBER AND WEIR OVERFLOW RC DETAILS 2
						Drawn :	B. MURILA		
						Checked:	D. LIAMBILA		
						Approved:	B. KIM		
						Stage :	FINAL DESIGN REVIEW		
						Date :	JULY 2020		
						Drawing No. :	MAT-WTP-ST-005		
						Scale :	1:50		
						Sheet No. :	5 of 5		
						Index No. :			
						Sheet Size :	A1		

SETTLED WATER CHANNEL

FILTER GALLERY

FILTER No 2

RAPID SAND FILTER 750 MM
0.7 MM DIAMETER UNIFORMITY
COEFFICIENT 1.5

FILTER No. 3

FILTER No. 4

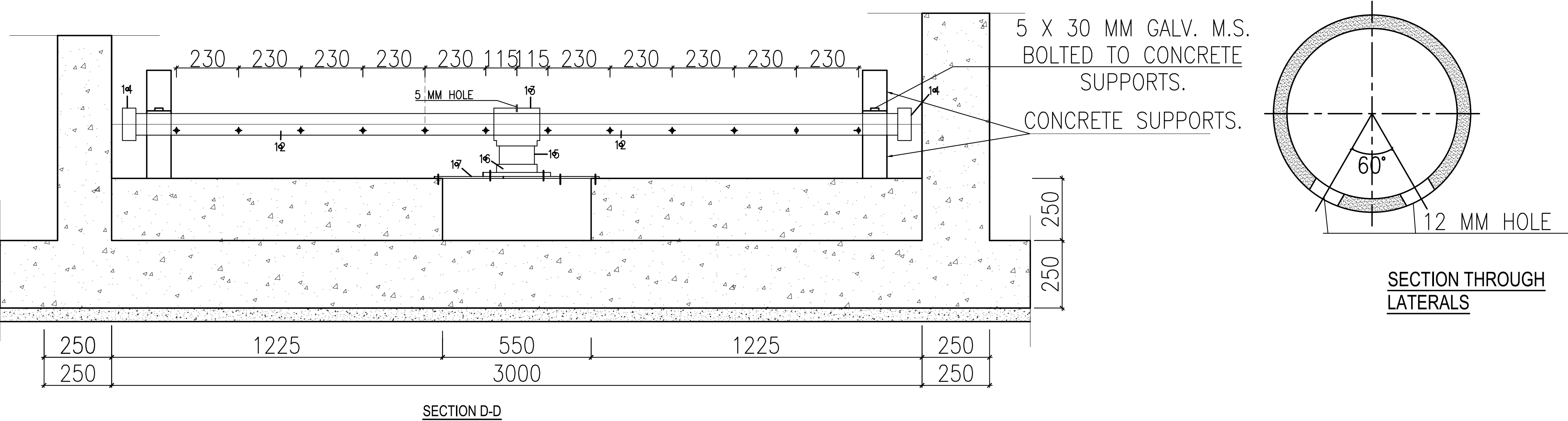
FILTERS AND FILTER GALLERY

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7. RAPID SAND FILTER CONSISTS OF 750 MM THICK 0.7 MM DIAMETER SAND WITH A UNIFORMITY COEFFICIENT OF 1.5 SITTING ON A 550MM GRADED GRAVEL BED.

Revisions		Consultant		Employer	Project Manager	Project:		Stage: FINAL DESIGN REVIEW		
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	 <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date: JULY 2020		
						Drawn : B. MURILA		Drawing No.: MAT-WTP-FU-001		
						Checked: D. LIAMBILA		Drawing Title: FILTERS AND FILTER GALLERY PLAN DETAILS	Scale: 1:25	Sheet Size : A1
						Approved: B. KIM			Sheet No.: 1 of 7	
									Index No.:	

PIPEWORK SCHEDULE

ITEM No.	No. OF	DIAM. MM	MATER	DESCRIPTION	LENGTH MM	ITEM No.	No. OF	DIAM. MM	MATER	DESCRIPTION	LENGTH MM
01	8	200		Ø200 PENSTOCK WITH SPINDLE, HEADSTOCK & WHEEL		24	1	300	G.S.	BLIND FLANGE	
02	8	200	G.S.	SPIGOT PIPE WITH TWO PUNDLE FLANGES	2600	25	8	300		SLUICE VALVE	
03	8	200	G.S.	FLANGE/SPIGOT PIPE WITH PUDDLE FLANGE	350	26	8	200		V.J. FLANGE ADAPTOR	
04	8	200	G.S.	FLANGE / SPIGOT PIPE APPROX. 900 mm	CUT TO FIT	27	8	200	G.S.	FLANGE / SPIGOT PIPE APPROX. 900 MM	CUT TO FIT
05	8	200		V.J. FLANGE ADAPTOR		28	8	400/200	G.S.	FLANGED REDUCING TEE	
06	8	200/300	G.S.	FLANGED TAPER		29	8	400		V.J. FLANGE ADAPTOR	
07	8	300	G.S.	EQUAL TEE		30	8	400	G.S.	FLANGE / SPIGOT PIPE APPROX. 2600	CUT TO FIT
08	8	300	G.S.	FLANGE / SPIGOT PIPE	500	31	1	400	G.S.	BLIND FLANGE	
09	8	300		BUTTER FLY VALVE, LEVER OPERATED	CUT TO FIT	32	1	25	G.S.	ELBOW MALE AND FEMALE THREADED	
10	8	300	G.S.	FLANGE / FLANGE PIPE	300	33	1	25	G.S.	SPIGOT / SPIGOT PIPE, ONE END MALE THREADED	
11	8	300	G.S.	FLANGE / SPIGOT BEND 45°		34	2	400	G.S.	FLANGED/ FLANGED BEND 90°	
12	224	65	G.S.	SPIGOT / SPIGOT PIPE MALE THREADED		35	1	400	G.S.	FLANGE / SPIGOT PIPE APPROX. 600 MM	
13	112	65	G.S.	EQUAL TEE FEMALE THREADED		36	1	400	G.S.	FLANGE / SPIGOT PIPE APPROX. 1200 MM	5000
14	224	65	G.S.	CAPS – FEMALE THREADED	150	37	1	400		STANDARD P.V.C. G.S. ADAPTOR. TYPE A2	
15	112	65	G.S.	SPIGOT / SPIGOT PIPE MALE THREADED		38	8	200	G.S.	BLIND FLANGE	600
16	112	65	G.S.	FLANGE THREADED SPIGOT		39	8	80	G.S.	ELBOW MALE AND FEMALE THREADED	CUT TO FIT
17	8		M.S.	GALVANIZED M.S. PLATE 6 X 3600 X 600		40	8	80	G.S.	SPIGOT / SPIGOT MALE THREADED 200 MM	
18	16	300/200	G.S.	FLANGED REDUCING TEE		41	8	80		SLUICE VALVE THREADED	750
19	8	300	G.S.	FLANGE / SPIGOT PIPE APPROX. 900 MM	CUT TO FIT	42	8	80	G.S.	THREADED MALE / SPIGOT PIPE	
20	16	300		V.J. FLANGE ADAPTOR	1180	43	8	300	G.S.	FLANGE / SPIGOT PIPE 450 mm	CUT TO FIT
21	8	300		SLUICE VALVE		44	8	300		V.J. COUPLING	
22	8	300	G.S.	EQUAL TEE		45	8	300	G.S.	SPIGOT / SPIGOT PIPE WITH PUDDLE FLANGE 1600 MM	CUT TO FIT
23	8	300	G.S.	FLANGE / SPIGOT PIPE APPROX. 2400 MM	CUT TO FIT						



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Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW			
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuusaman@gmail.com</div>	And	 <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: toe@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>		 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Date : JULY 2020		
								Drawing No. : MAT-WTP-FU-003		
								<div>Scale : 1:100</div> <div>Sheet No. : 3 of 7</div> <div>Index No. :</div>	Drawing Title: FILTERS AND FILTER GALLERY PIPEWORK SCHEDULE	Sheet Size : A1

64Y12-01-200B1
64Y12-02-200T2

FILTER GALLERY

64Y12-03-200B1
64Y12-04-200T2

R.C WALL W4

R.C WALL W2

67Y12-05-200B2

67Y12-06-200T2

FILTER No 1

FILTER No 2

FILTER No. 3

FILTER	No. 4
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62Y12-07-200T2

62Y12-08-200B2

R.C WALL W3

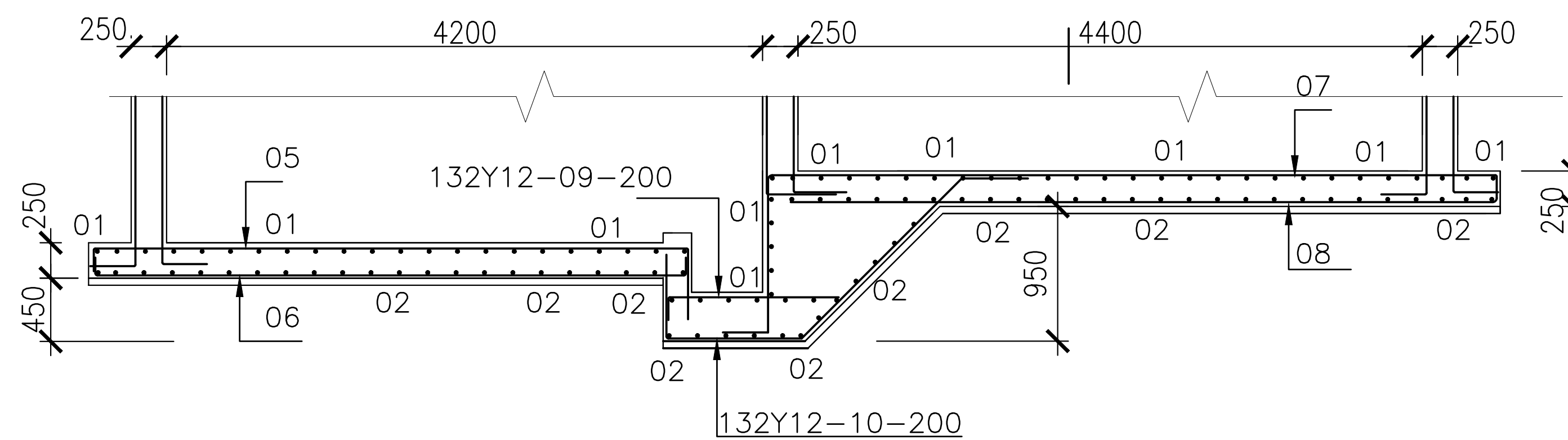
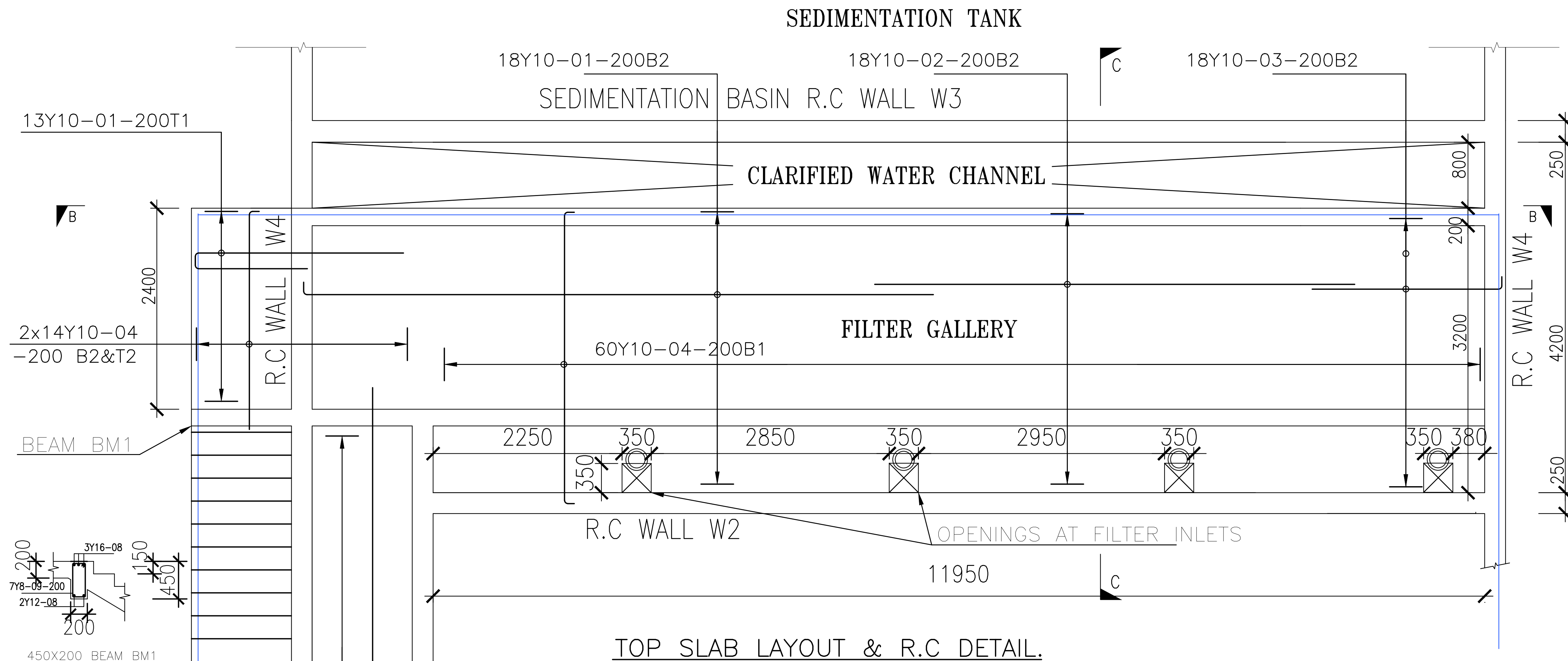
FOUNDATION / BOTTOM SLAB LAYOUT & R.C DETAIL.

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7. RAPID SAND FILTER CONSISTS OF 750 MM THICK 0.7 MM DIAMETER SAND WITH A UNIFORMITY COEFFICIENT OF 1.5 SITTING ON A 550MM GRADED GRAVEL BED.

Revisions		Consultant		Employer	Project Manager	Project:		Stage : FINAL DESIGN REVIEW	
Description	Date	 saman 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And 	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Date : JULY 2020	
						Drawing Title: FILTERS AND FILTER GALLERIES FOUNDATION/BOTTOM SLAB LAYOUT AND RC DETAILS		Drawing No. : MAT-WTP-FU-004	
						Scale : 1:25		Sheet Size : A1	
						Sheet No. : 4 of 7			
						Index No. :			
						Designed: B. MURILA	Drawing Title: FILTERS AND FILTER GALLERIES FOUNDATION/BOTTOM SLAB LAYOUT AND RC DETAILS		
						Drawn : B. MURILA			
						Checked: D. LIAMBILA			
						Approved: B. KIM			

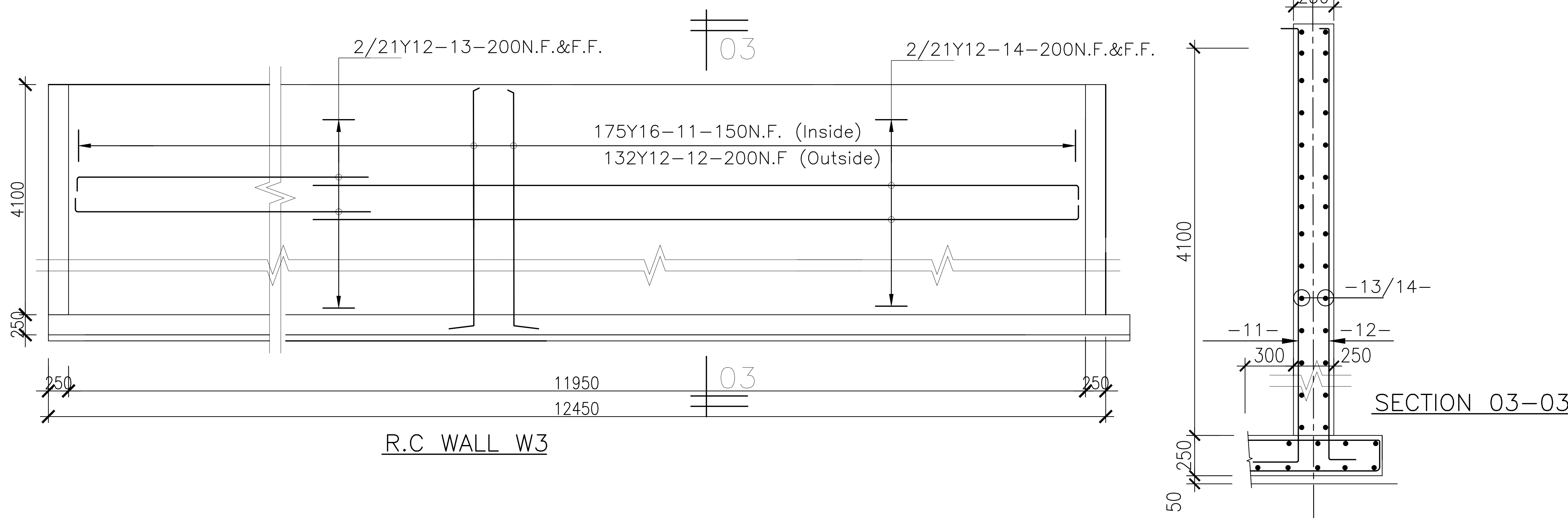
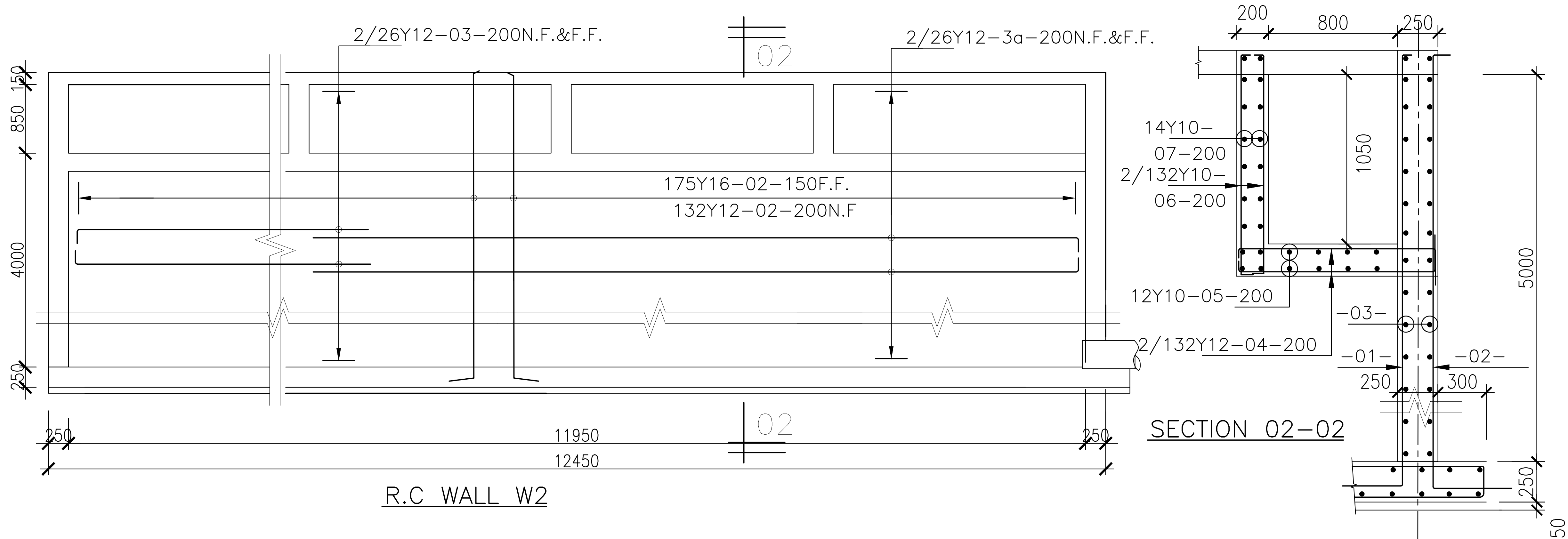
NOTES:

1. ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN.25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.
7. RAPID SAND FILTER CONSISTS OF 750 MM THICK 0.7 MM DIAMETER SAND WITH A UNIFORMITY COEFFICIENT OF 1.5 SITTING ON A 550MM GRADED GRAVEL BED.



BASE SLAB TYPICAL SECTION C-C

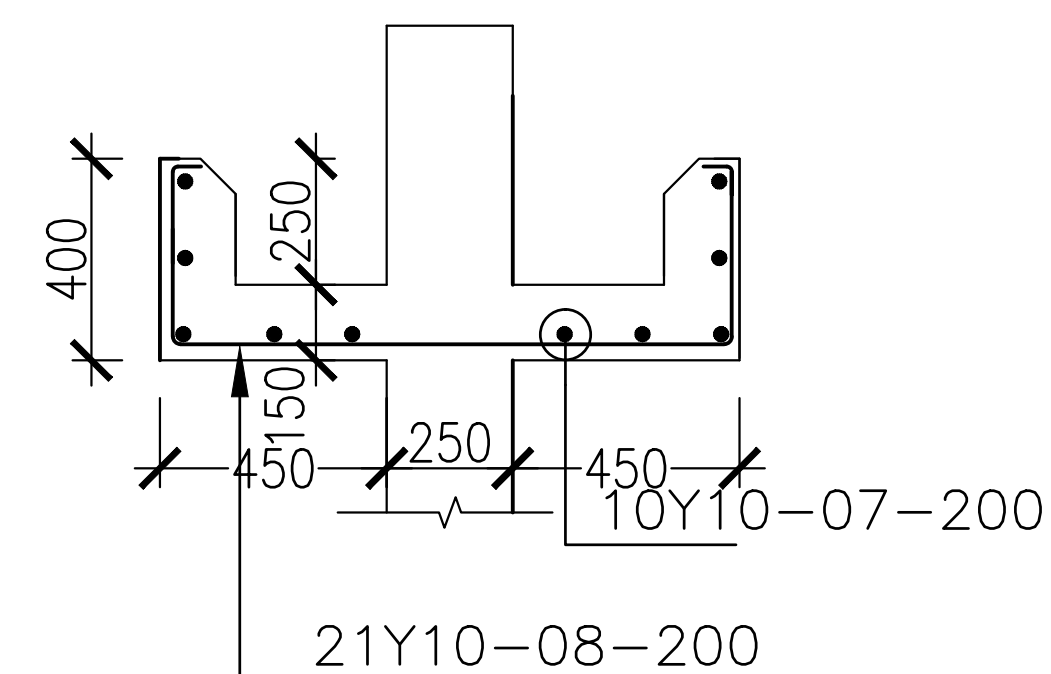
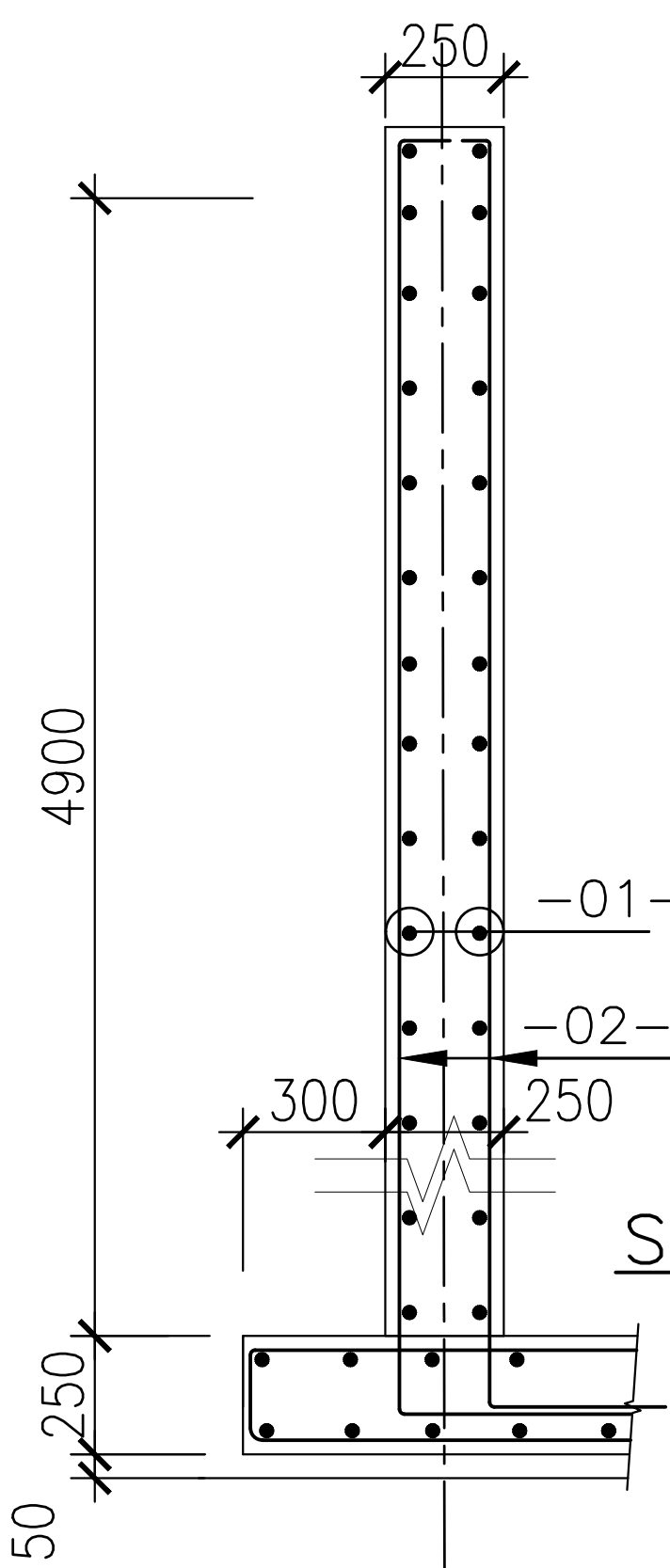
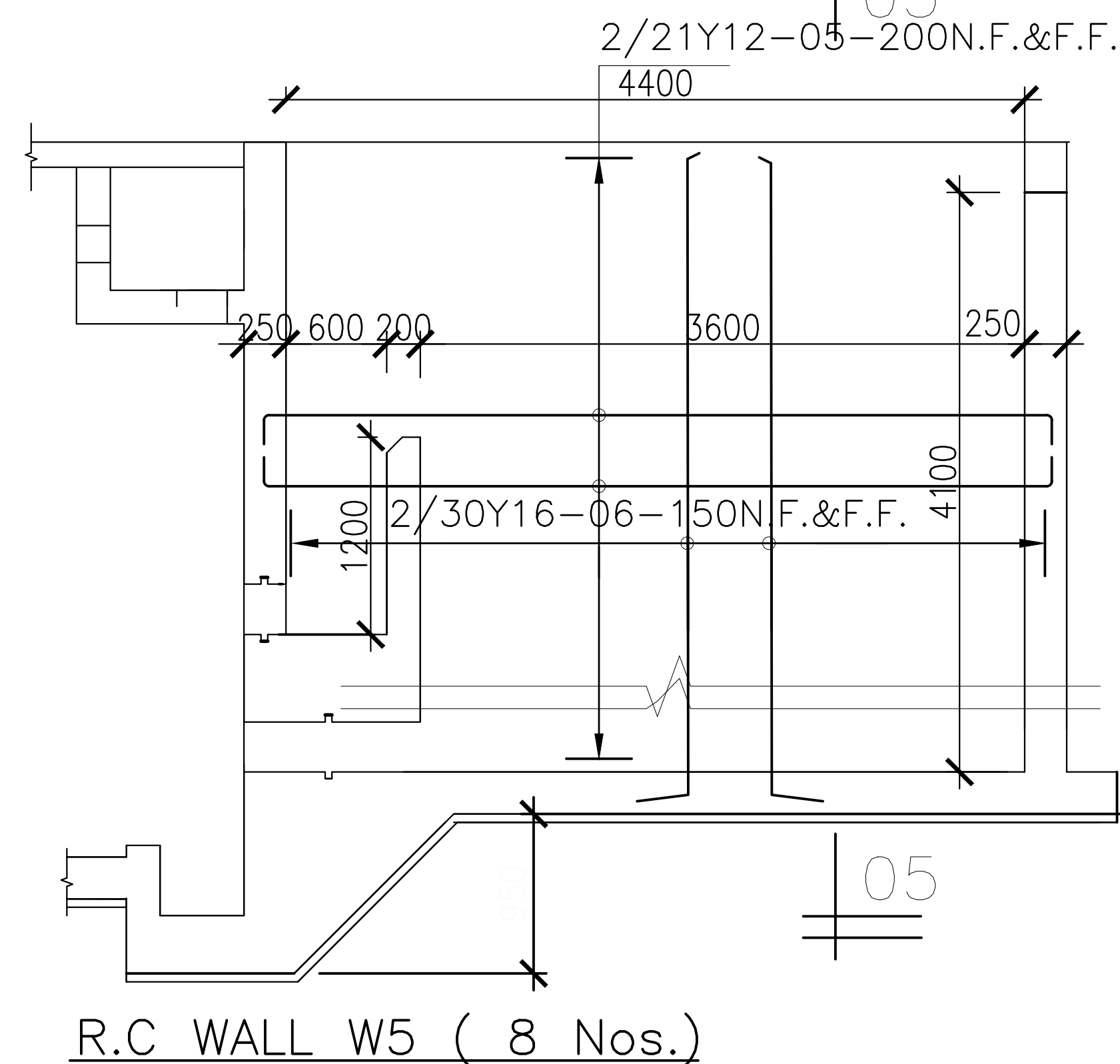
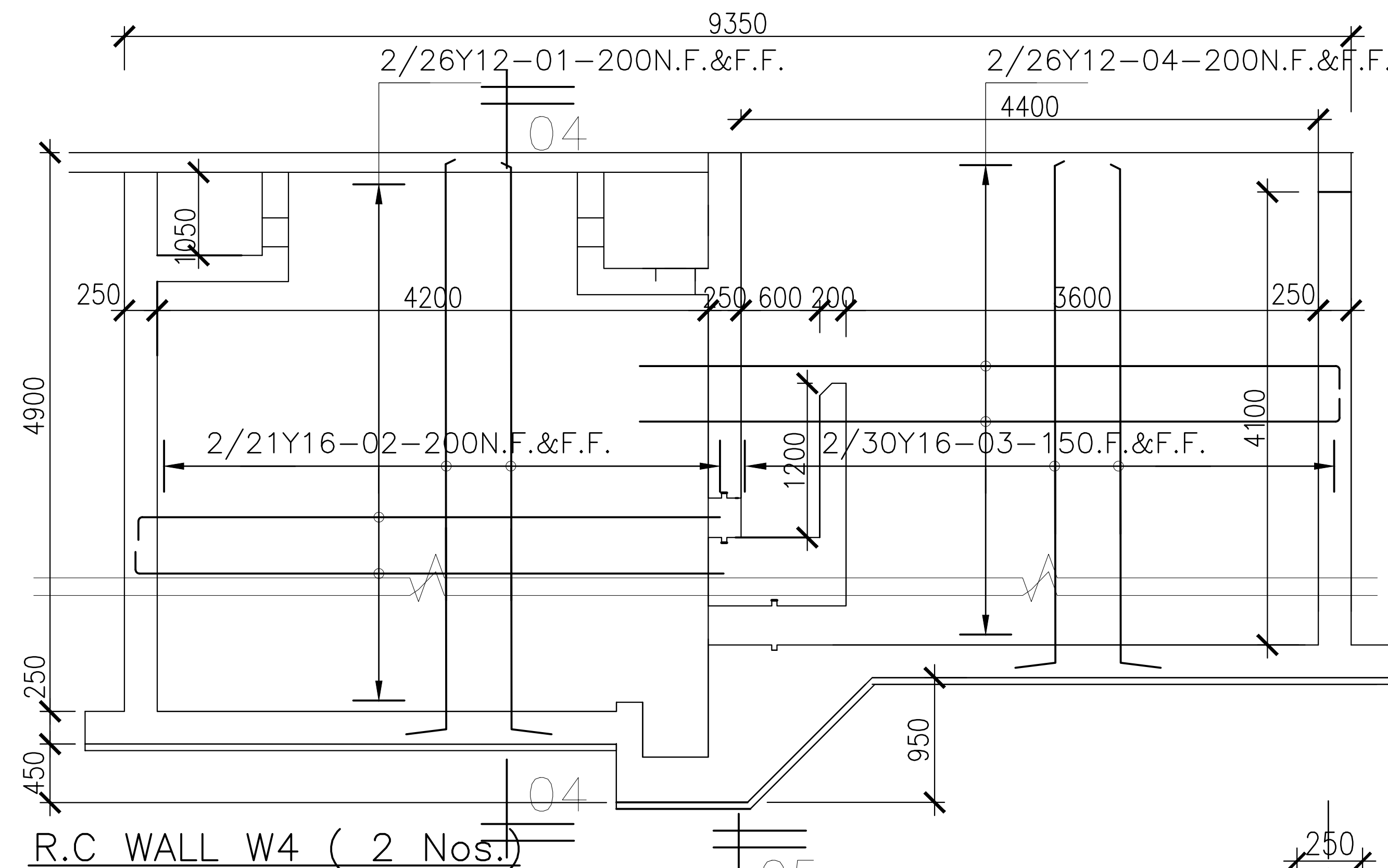
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Designed: B. MURILA	Date : JULY 2020	
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							Index No. :		



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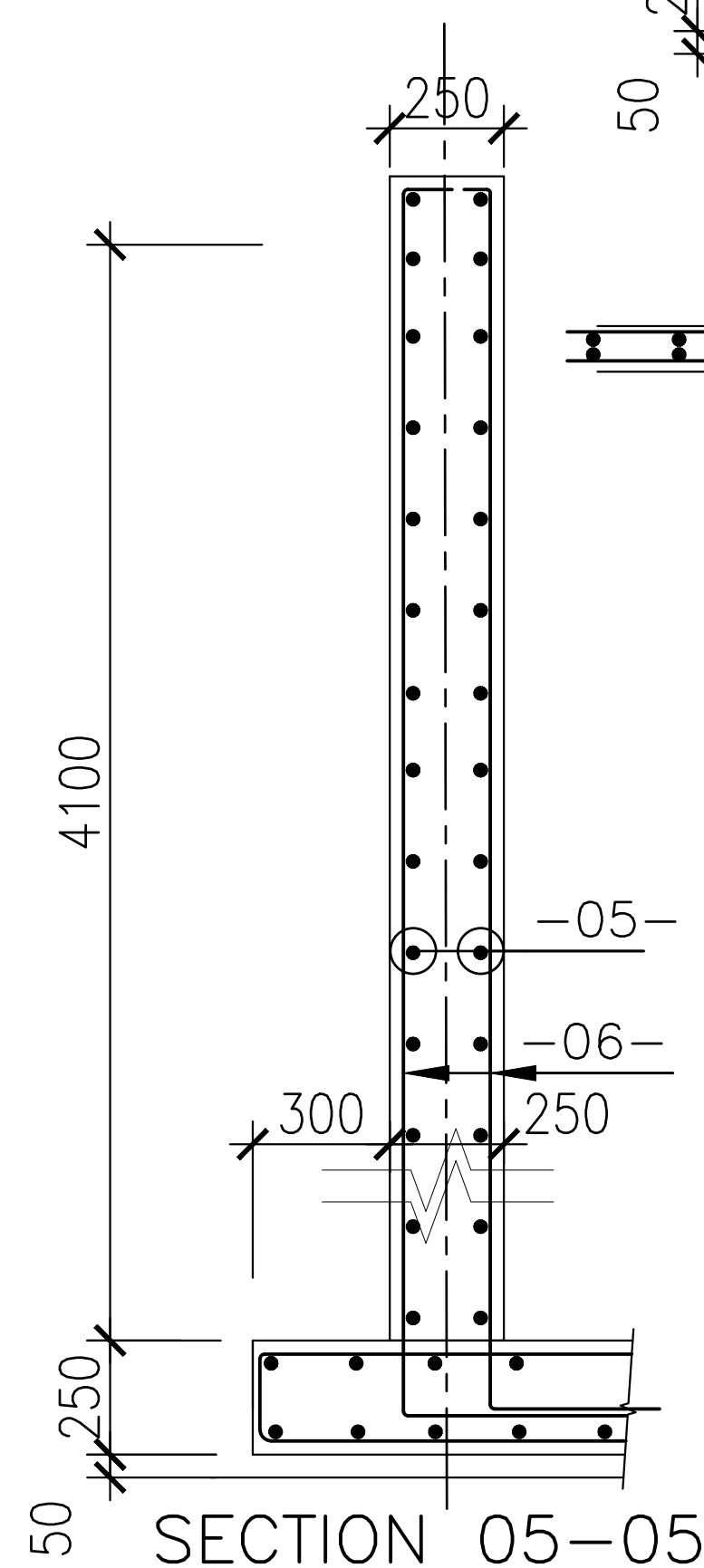
- ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
- ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
- CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
- BLINDING CONCRETE CLASS 15/20
- REINFORCEMENT COVER MIN 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
- GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.,
- RAPID SAND FILTER CONSISTS OF 750 MM THICK 0.7 MM DIAMETER SAND WITH A UNIFORMITY COEFFICIENT OF 1.5 SITTING ON A 550MM GRADED GRAVEL BED.

Revisions		Consultant		Employer	Project Manager	Project		Stage :	FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date :	JULY 2020	
						Drawn : B. MURILA		Drawing No. :	MAT-WTP-FU-006	
						Checked: D. LIAMBILA		Drawing Title:	FILTERS AND FILTER GALLERIES SECTIONS AND RC DETAILS 1	
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								Index No. :		

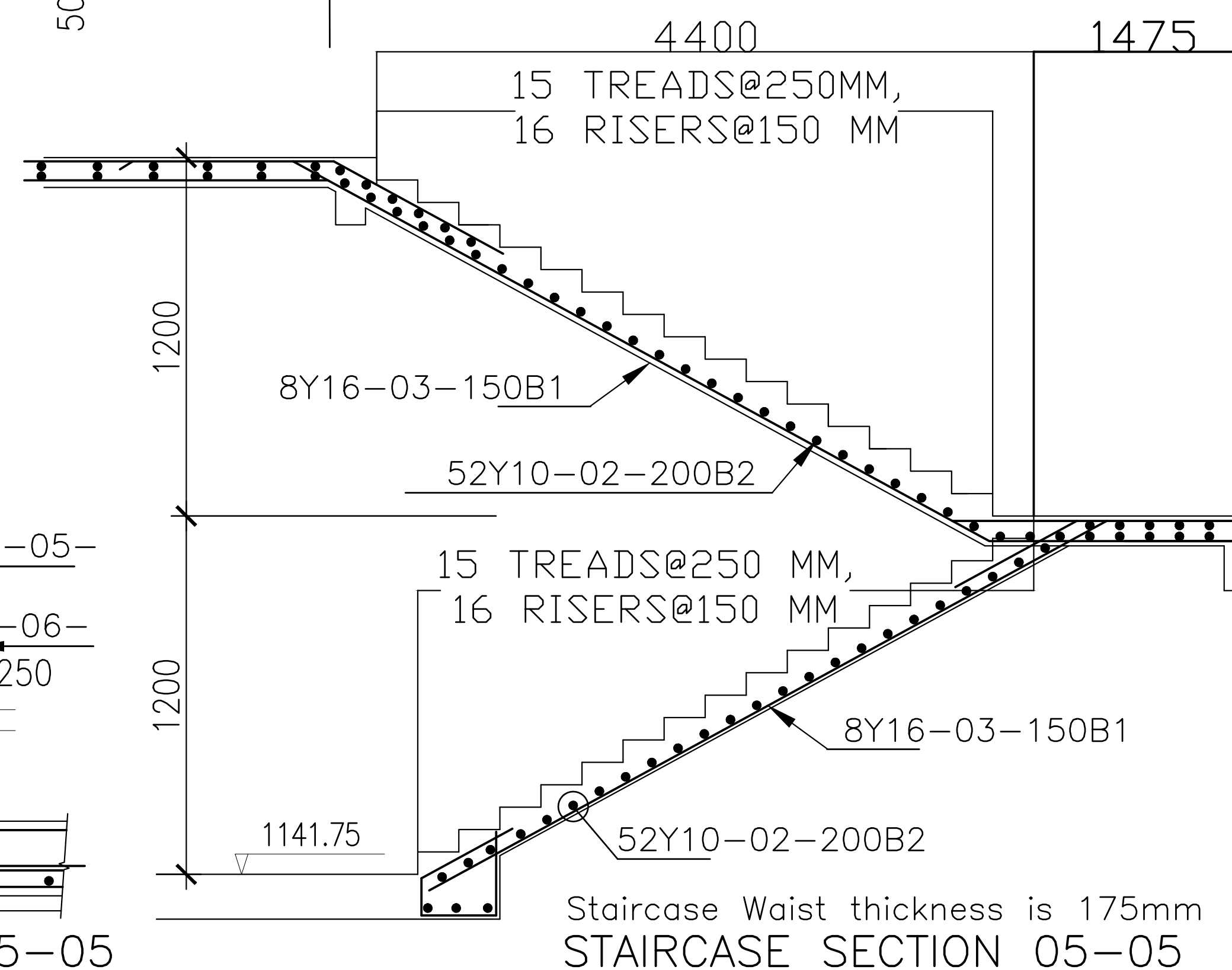


TYPICAL WASHWASTER CHANNELS
R.C DETAILS (8 Nos)

SECTION 04-04



SECTION 05-05



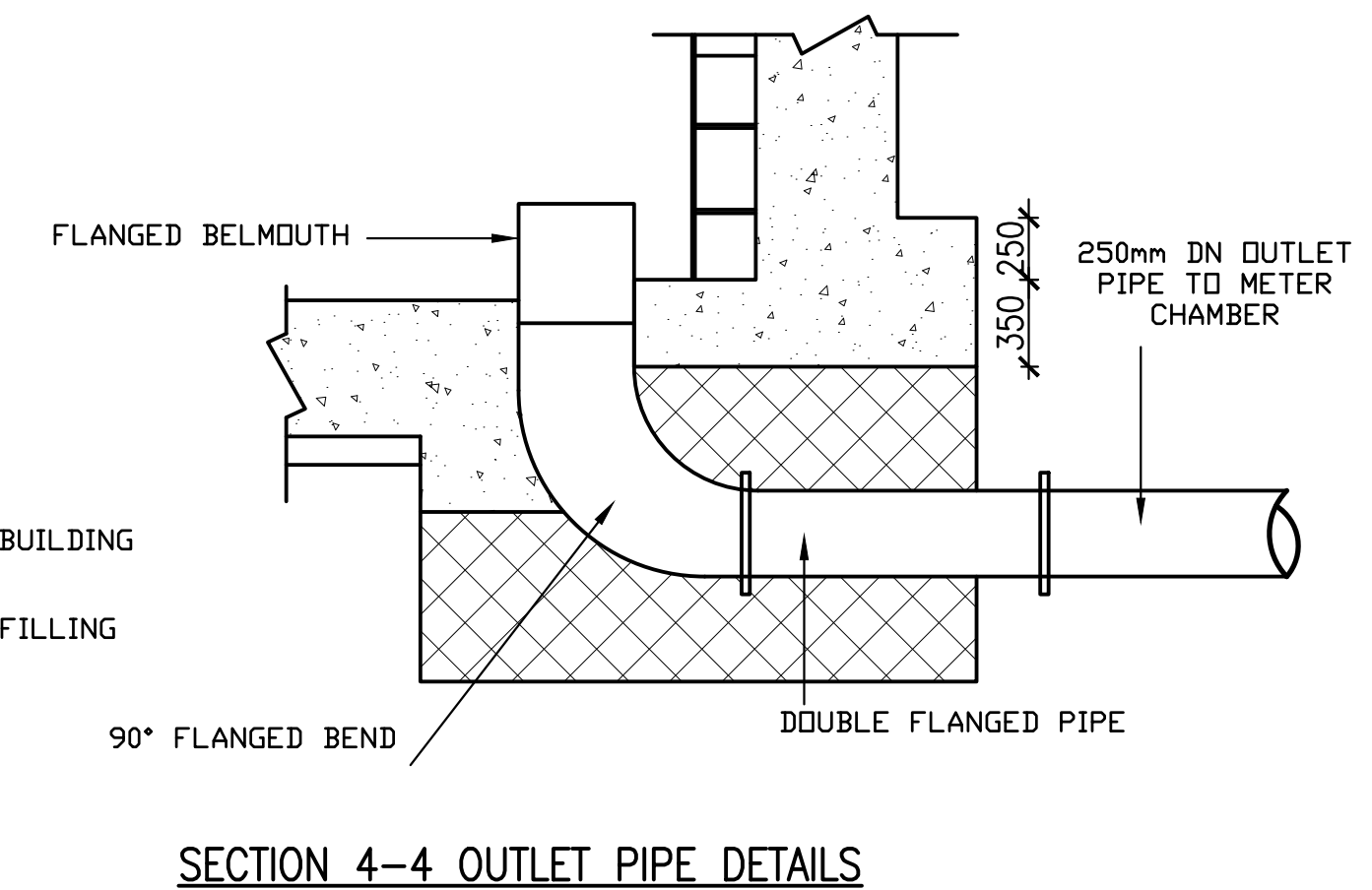
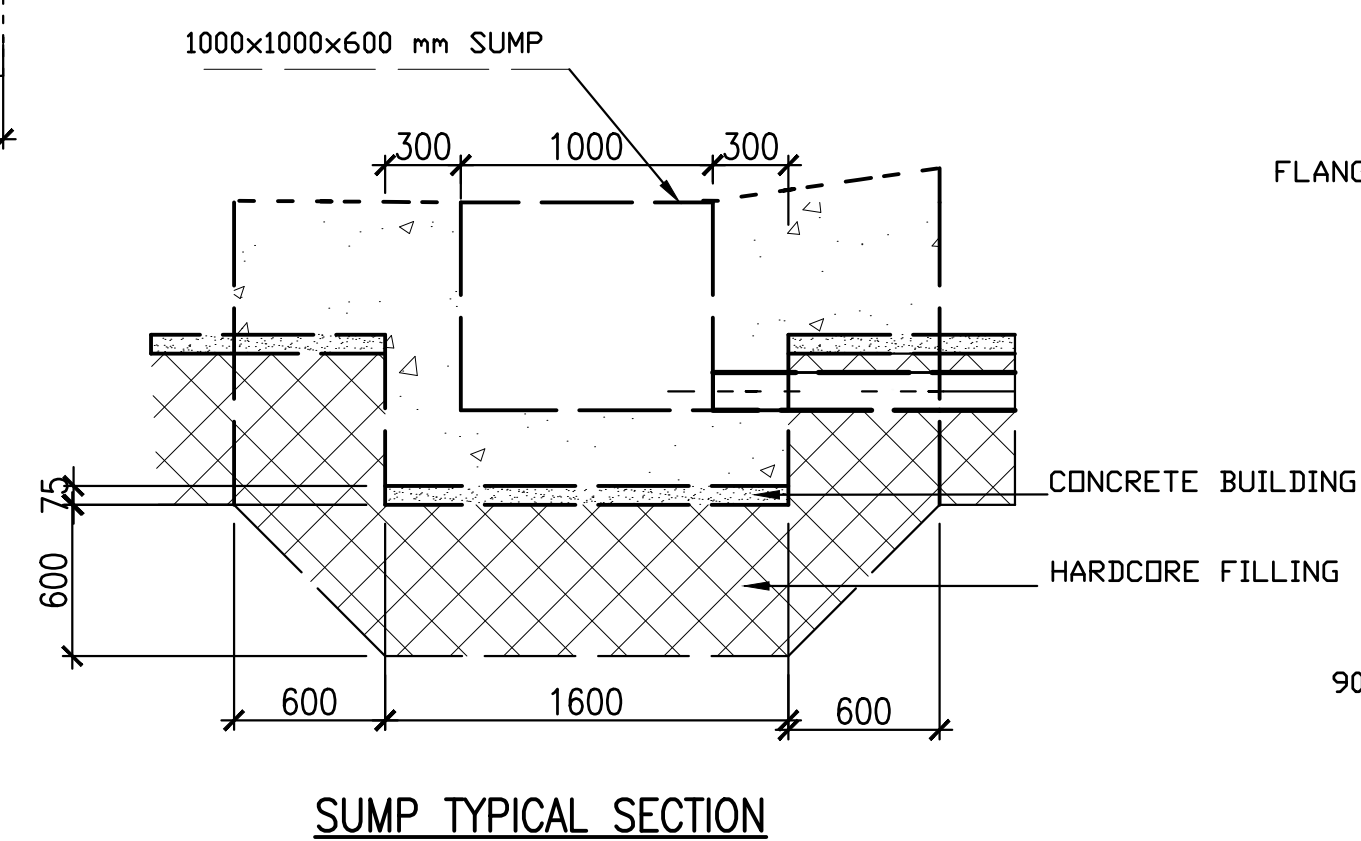
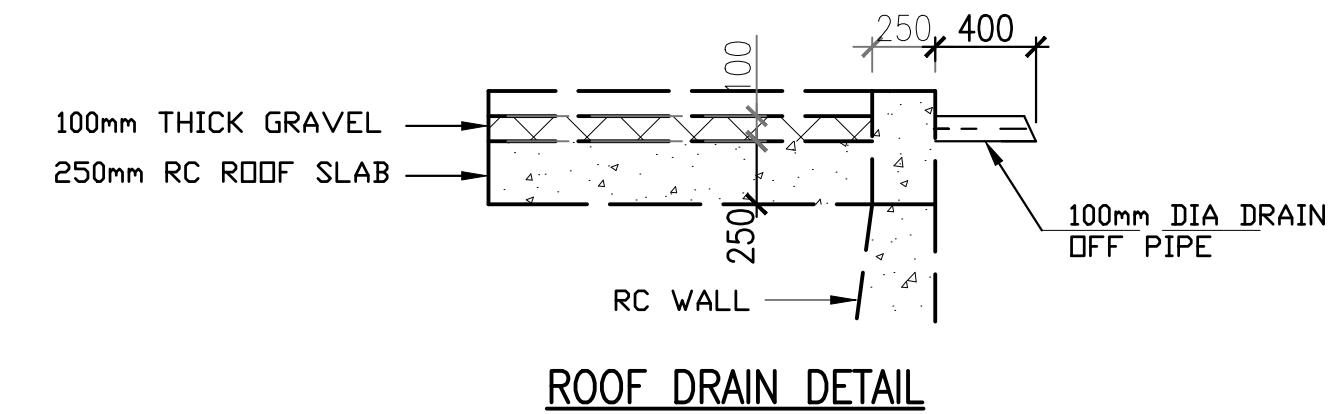
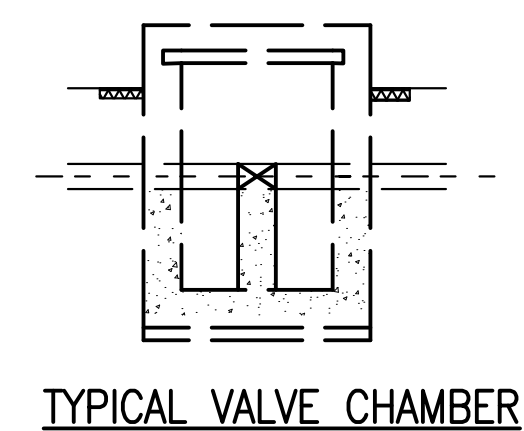
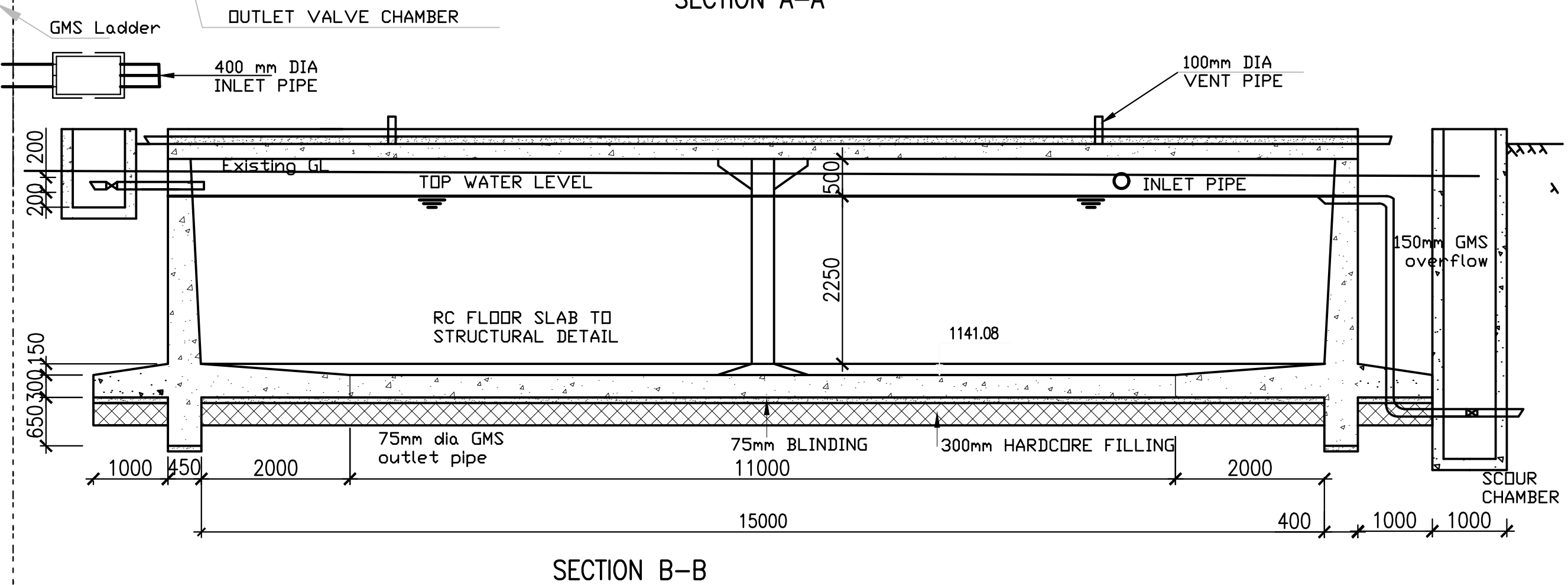
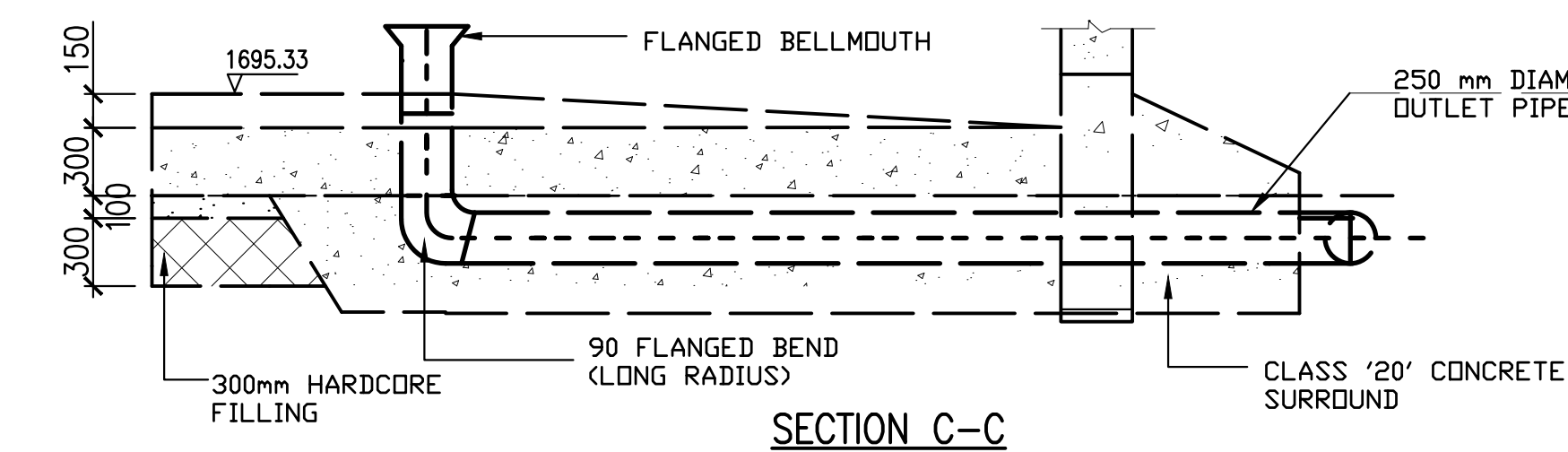
Staircase Waist thickness is 175mm
STAIRCASE SECTION 05-05

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN. 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6. GUARDRAILS TO BE MADE FROM 50 X 50 X 4MM THICK GALVANISED MILD STEEL TUBULAR BALUSTRADES ALL FRAMED AND WELDED TOGETHER.
7. RAPID SAND FILTER CONSISTS OF 750 MM THICK 0.7 MM DIAMETER SAND WITH A UNIFORMITY COEFFICIENT OF 1.5 SITTING ON A 550MM GRADED GRAVEL BED.

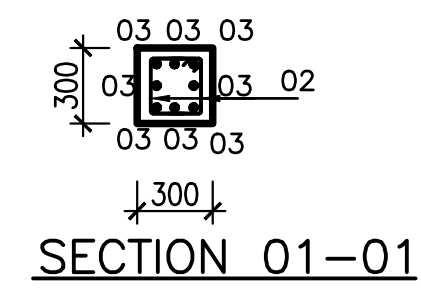
Revisions		Consultant		Employer		Project Manager		Project:		Stage :	
Description	Date		And 			Designed: B. MURILA	Drawing Title: FILTERS AND FILTER GALLERIES SECTION AND RC DETAILS 2	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : JULY 2020	Drawing No. : MAT-WTP-FU-007	Sheet Size : A1
		SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com		TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke			

1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN. 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER



Revisions		Consultant		Employer	Project Manager	Project:		
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	And  <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	
						Drawn : B. MURILA		Drawing Title: CLEAR WATER TANK PLAN, ELEVATION AND SECTION DETAILS
						Checked: D. LIAMBILA		
						Approved: B. KIM		
						Stage : FINAL DESIGN REVIEW		
						Date : JULY 2020		
						Drawing No. : MAT-WTP-CWT-001		
						Scale : 1:50	Sheet Size : A1	
						Sheet No. : 1 of 3		
						Index No. :		

1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN. 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER

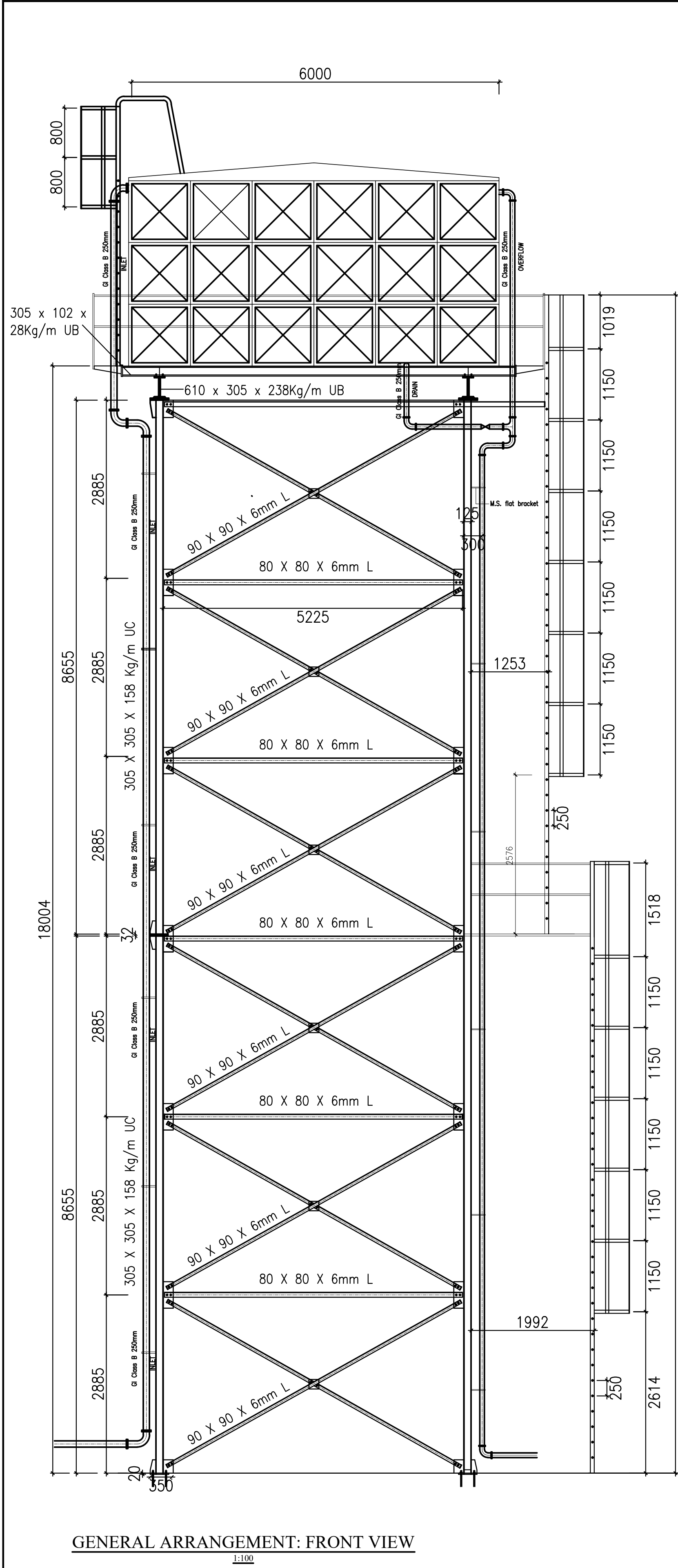


Revisions		Consultant		Employer	Project Manager	Project:		
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	And  <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	
						Drawn: B. MURILA		
						Checked: D. LIAMBILA		Drawing Title: CLEAR WATER TANK FOUNDATION LAYOUT AND SECTION DETAILS
						Approved: B. KIM		
						Stage: FINAL DESIGN REVIEW	Sheet Size : A1	
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						Index No.:		

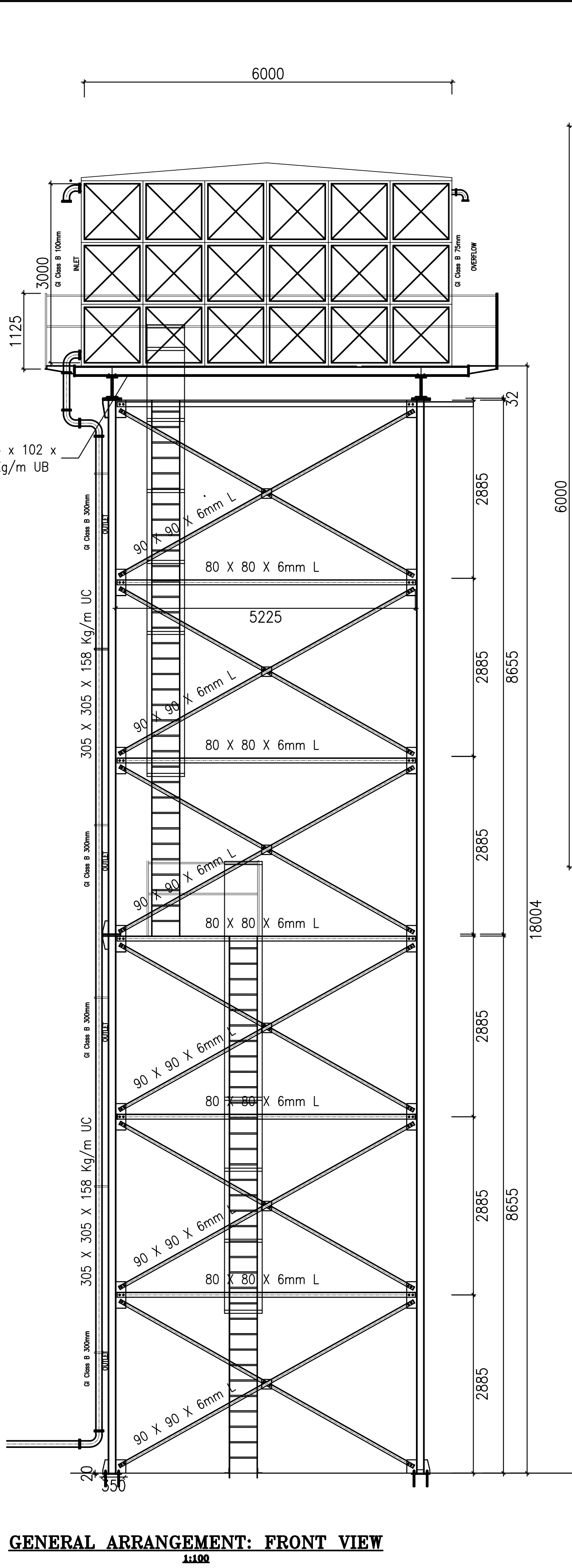
1. ALL DIMENSIONS IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN. 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER



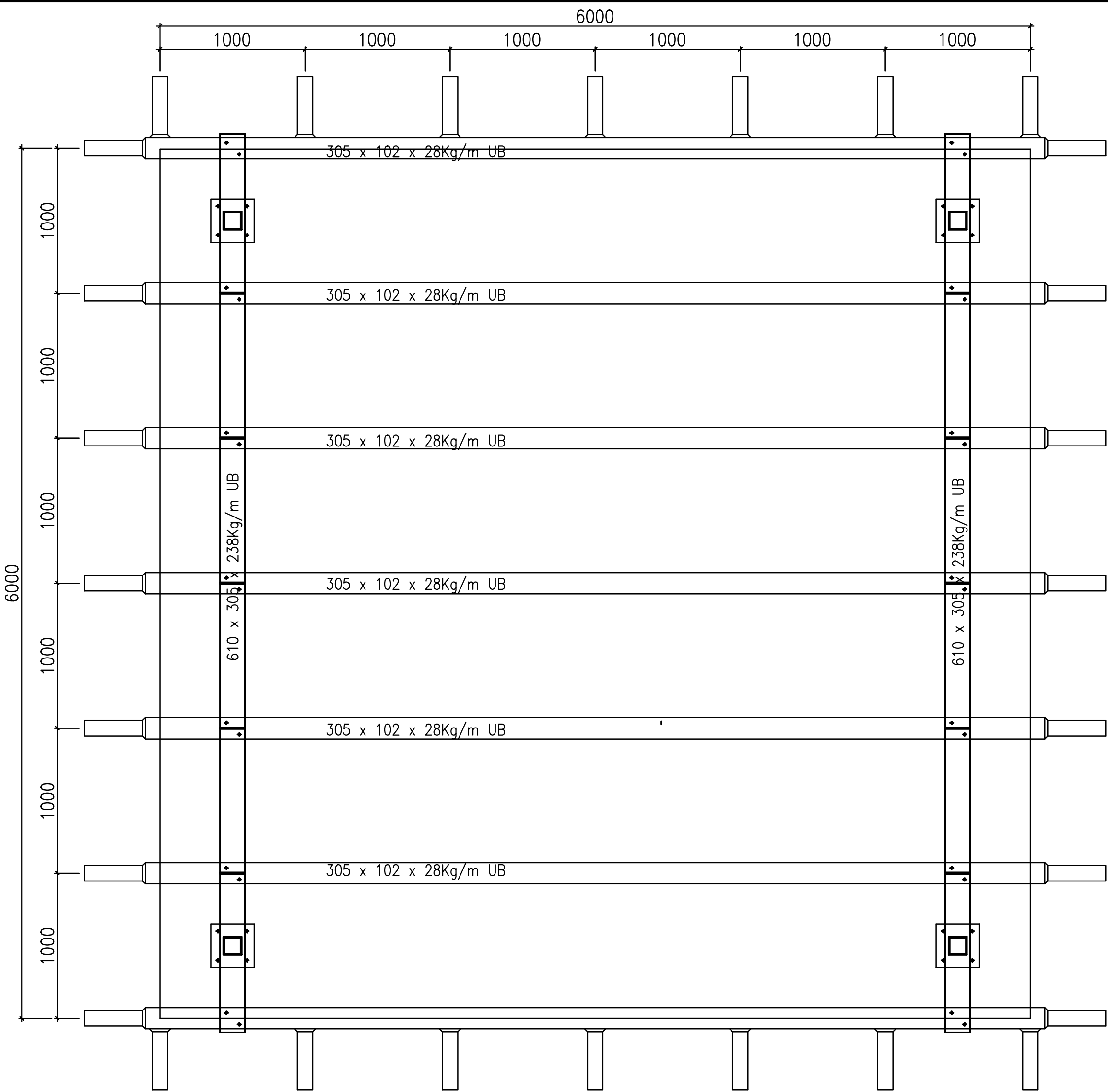
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW					
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuusaman@gmail.com	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. Tel: +254 20 2727438 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	JULY 2020					
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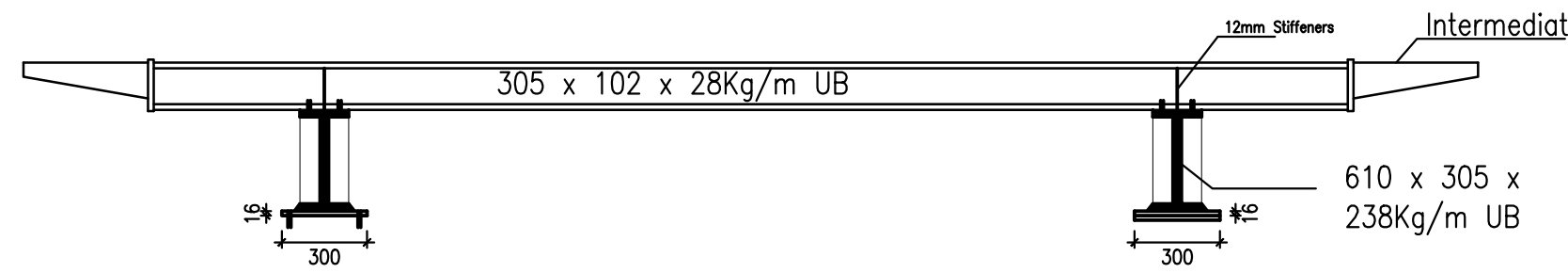
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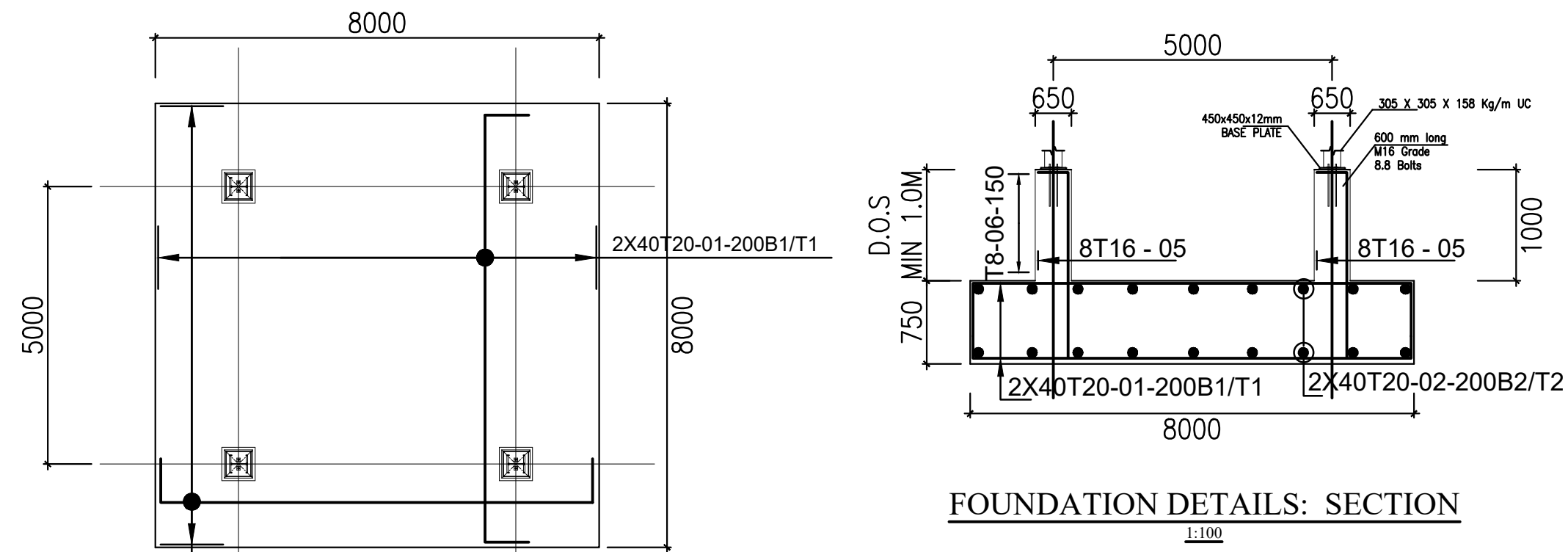
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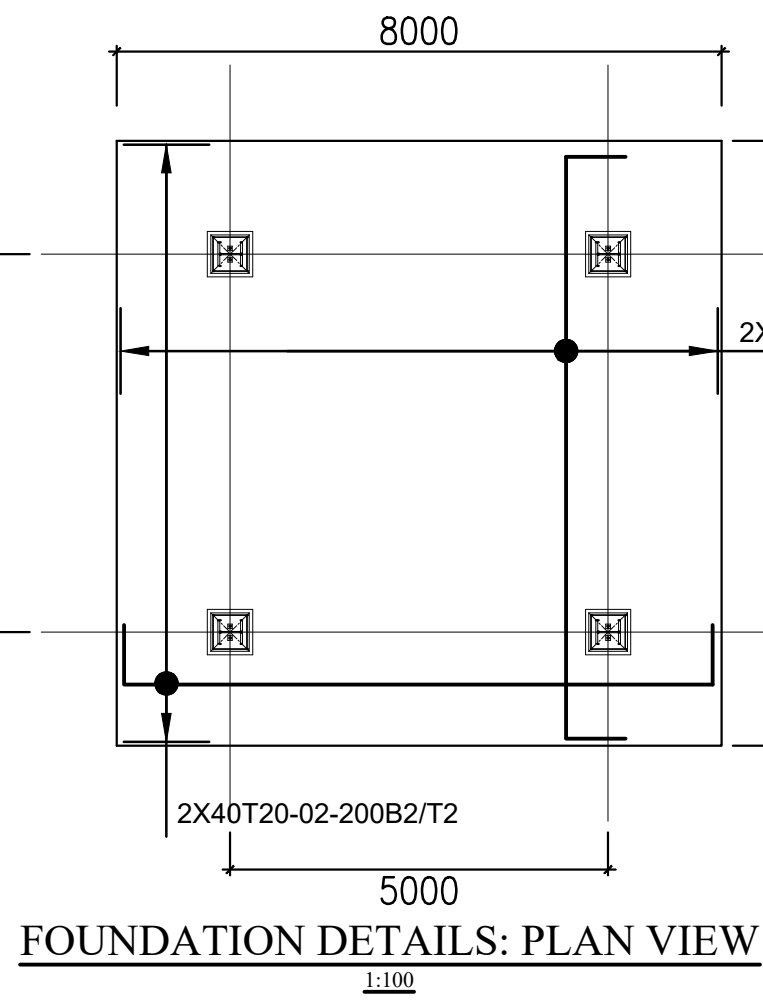
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GRILLAGE: SECTION
1:25



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FOUNDATION DETAILS: PLAN VIEW
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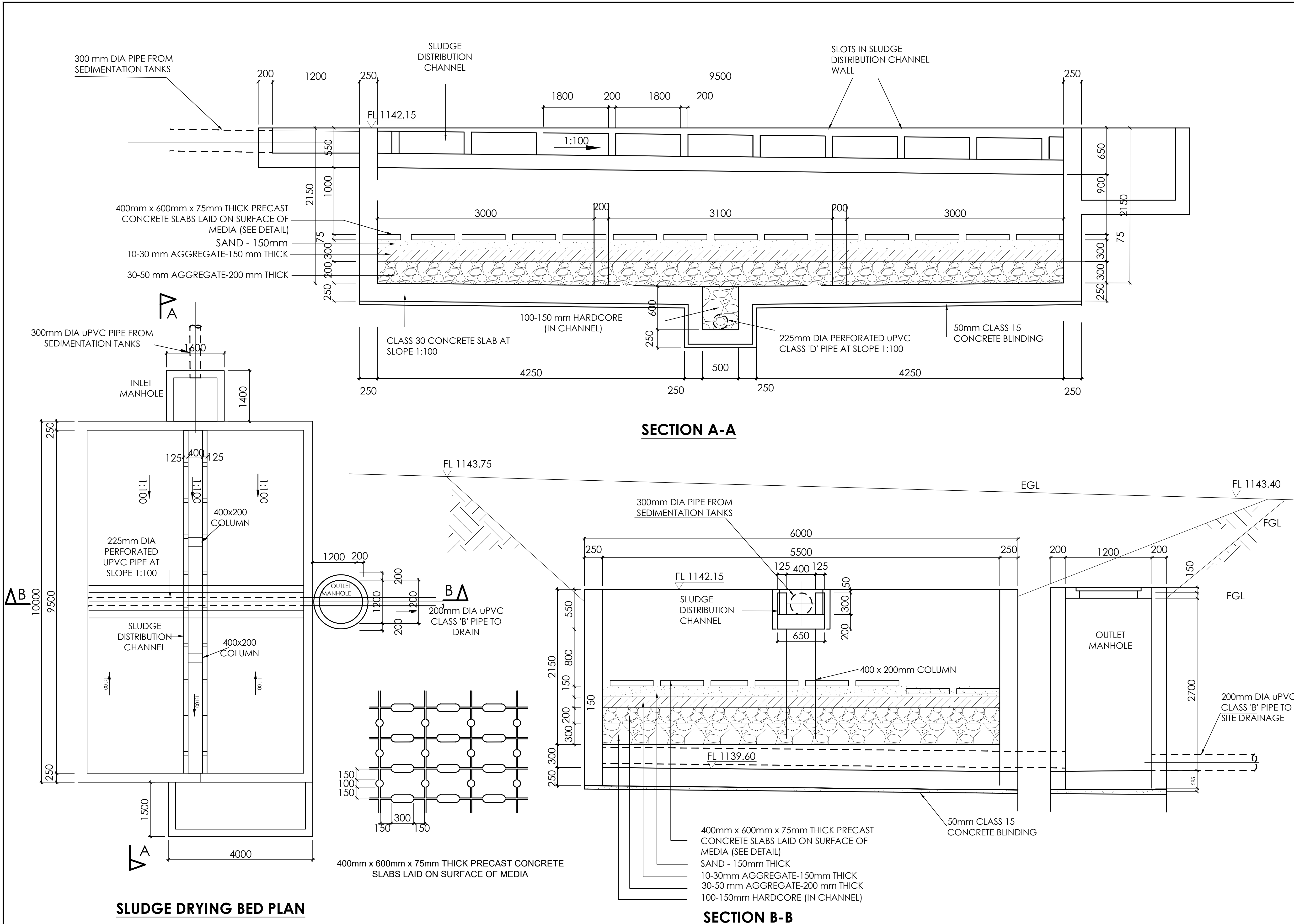
NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.
2. THE CONTRACTOR MUST CONFIRM ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK.
3. CONCRETE FOR TANK FOUNDATION IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20

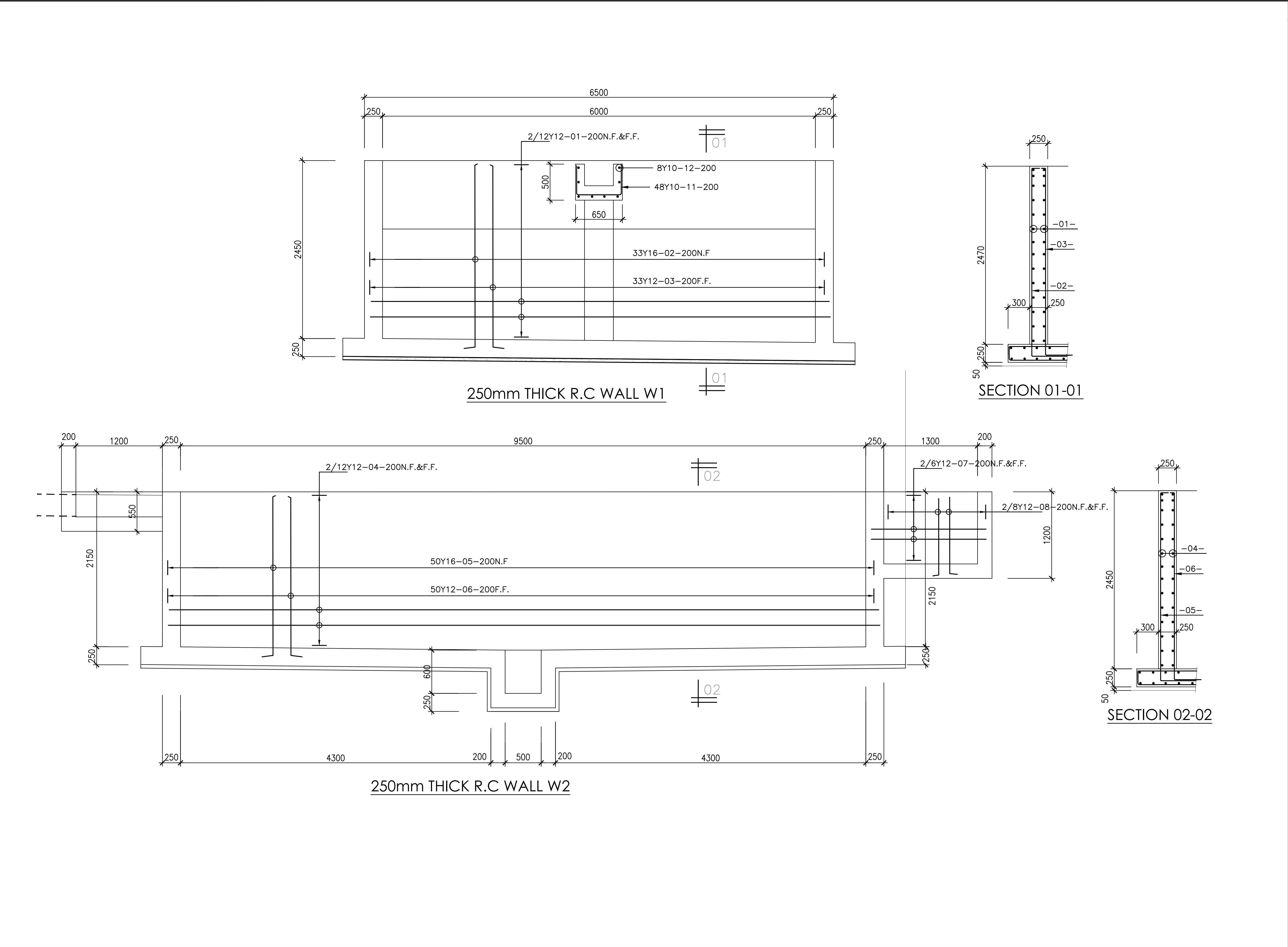
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Revisions		Consultant		Employer		Project Manager		Project		Stage :	
Description	Date		And 			Designed: B.MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :		FINAL DESIGN REVIEW	
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						Checked: D.LIAMBILA					
						Approved: B.KIM					



Revisions		Consultant		Employer		Project Manager		Project		Stage :		
Description	Date		SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuusaman@gmail.com	And 		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	FINAL DESIGN REVIEW		
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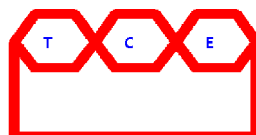
NOTES:	
1.	ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
2.	ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3.	CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
4.	BLINDING CONCRETE CLASS 15/20
5.	REINFORCEMENT COVER MIN.25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6.	ALL PIPE DIAMETERS ARE NOMINAL SIZES

Revisions	Consultant	Employer	Project Manager	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW
Description	Date			Drawn : B. MURILA		Date : JULY 2020
				Checked: D. LIAMBILA	Drawing Title: SLUDGE DRYING BED SECTIONS AND RC DETAILS	Drawng No. : MAT-WTP-SDB-003
				Approved: B. KIM		Scale : 1:50
						Sheet No. : 3 of 3
						Index No. :



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5,Byeoryangsangga3(sam)-ro,
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DEVELOPMENT AGENCY
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K.I.D.P Building,
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Tel: +254 712351104
email: info@tanathi.go.ke

Designed: B. MURILA
Drawn : B. MURILA
Checked: D. LIAMBILA
Approved: B. KIM

Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA

Drawing Title: SLUDGE DRYING BED SECTIONS AND RC DETAILS

Stage : FINAL DESIGN REVIEW

Date : JULY 2020

Drawng No. : MAT-WTP-SDB-003

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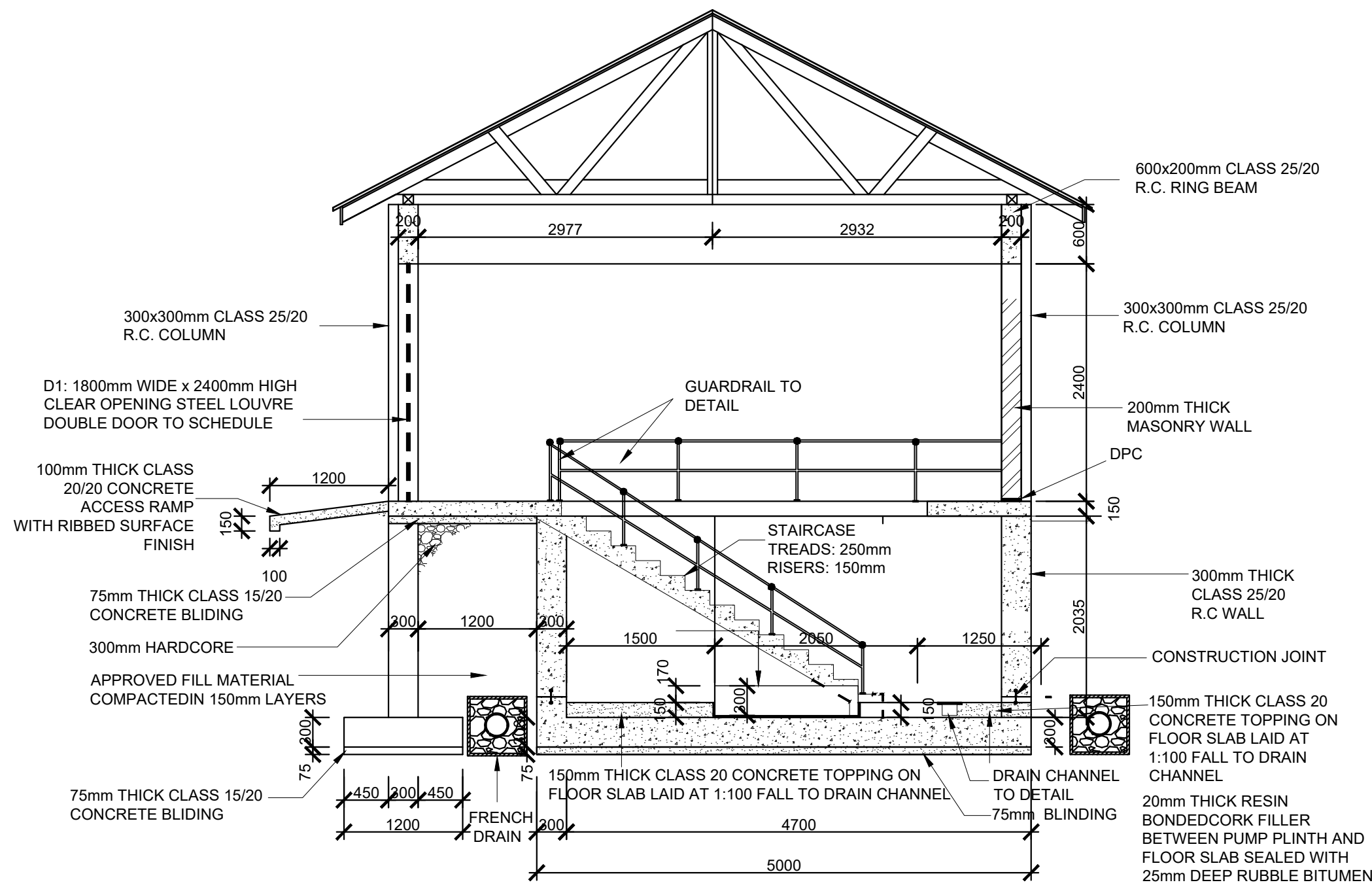
Sheet No. : 3 of 3

Index No. :

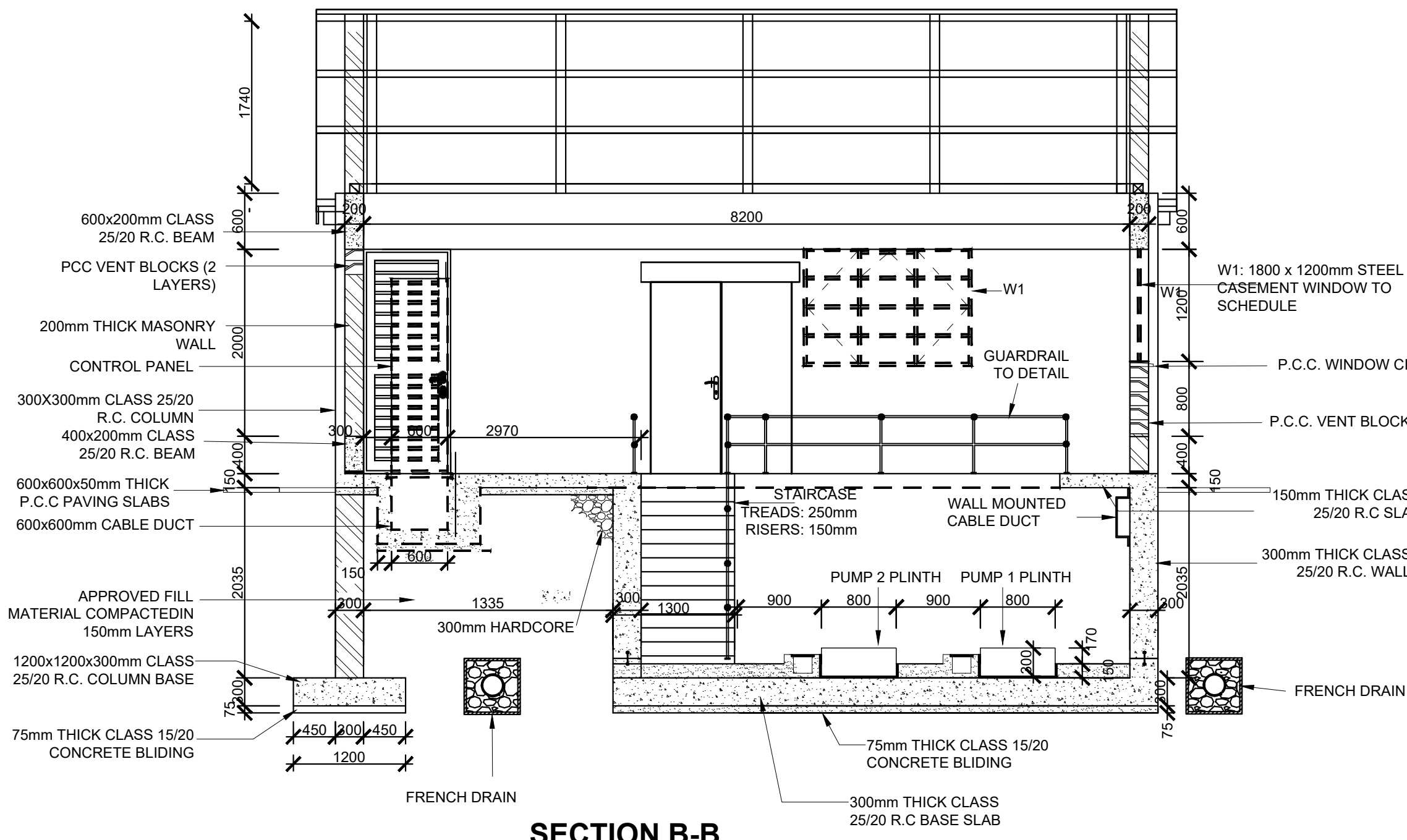
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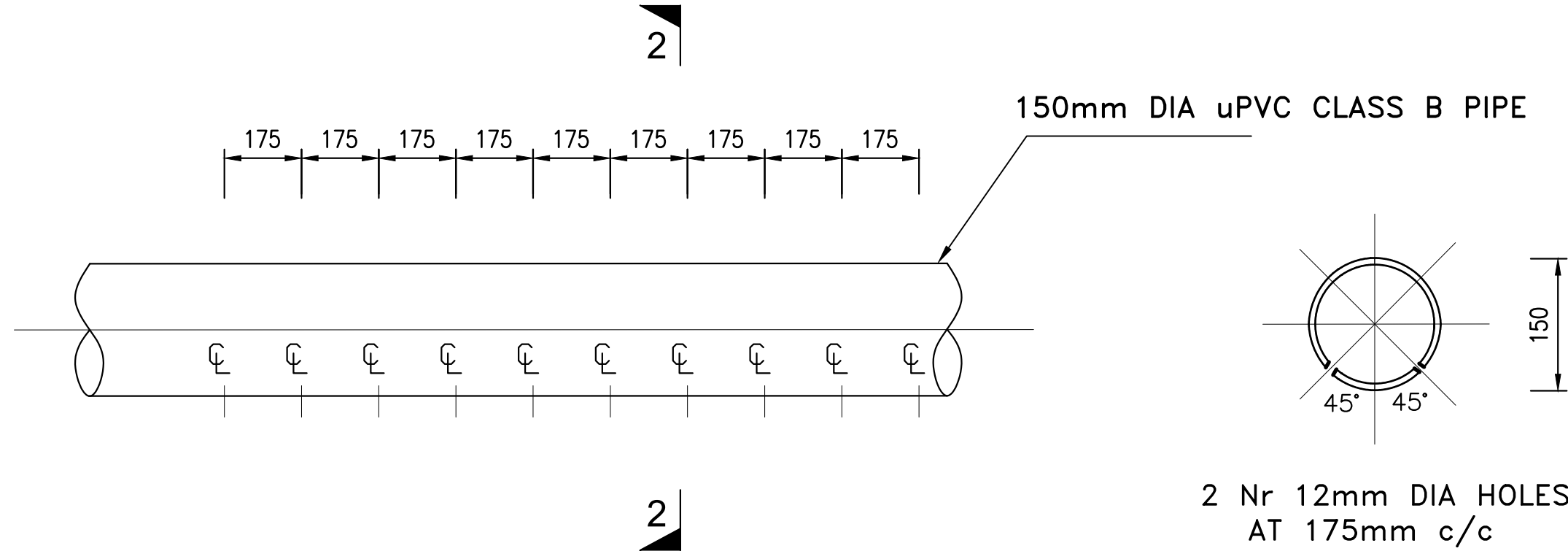
1. ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
3. REINFORCED CONCRETE IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN.25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6. ALL PIPE DIAMETERS ARE NOMINAL SIZES



SECTION A-A
SCALE 1:50

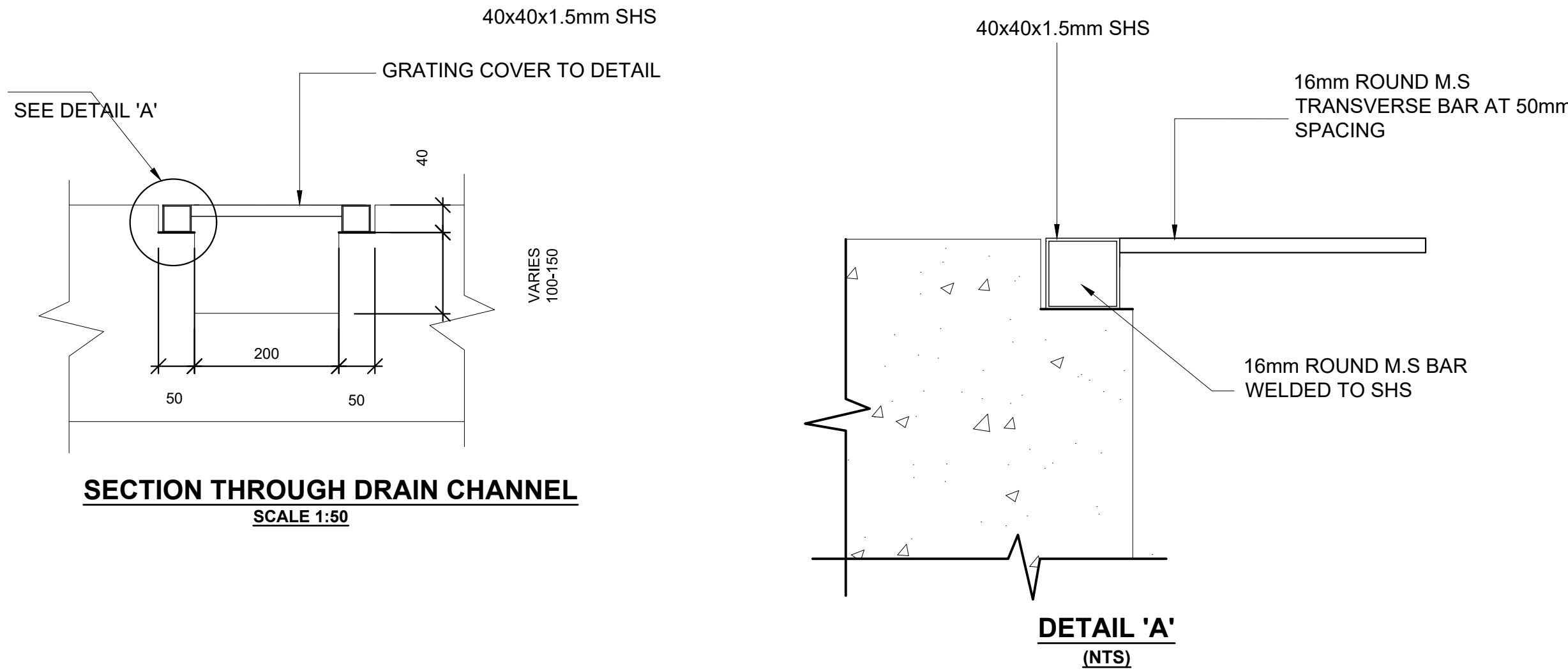


SECTION B-B
SCALE 1:50



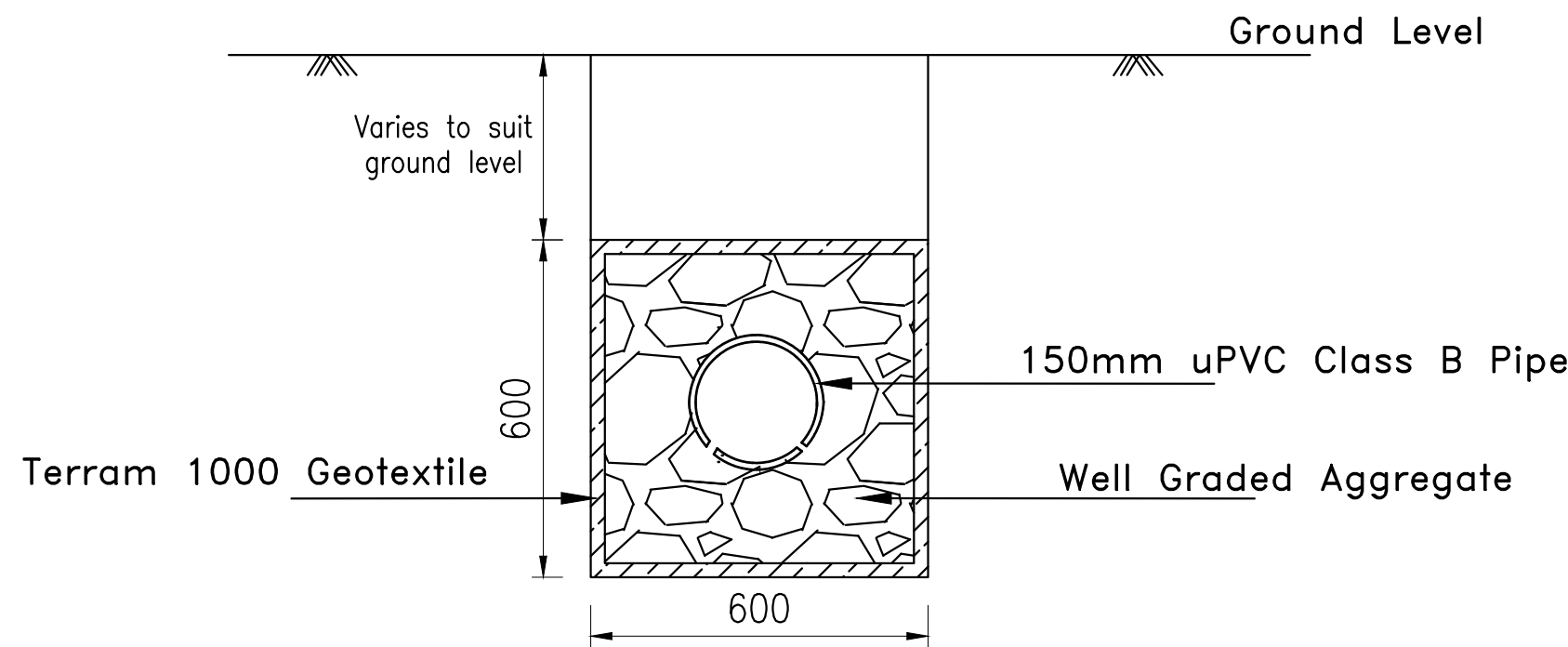
DETAILS OF uPVC DRAIN PIPES

SECTION 2 - 2

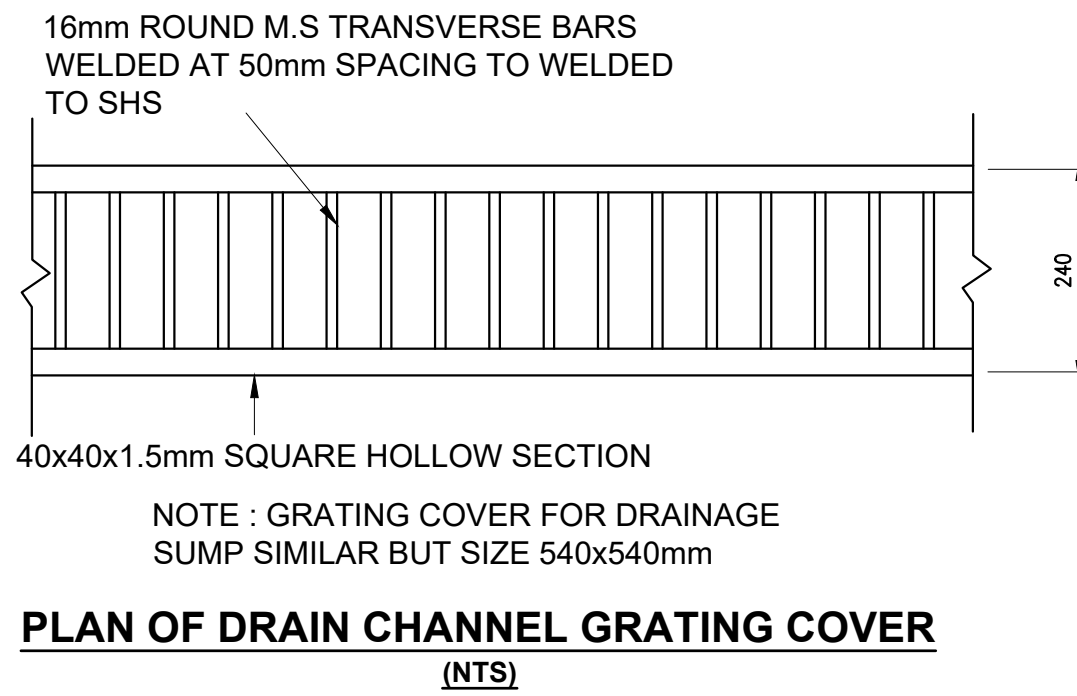


SECTION THROUGH DRAIN CHANNEL
SCALE 1:50

DETAIL 'A'
(NTS)

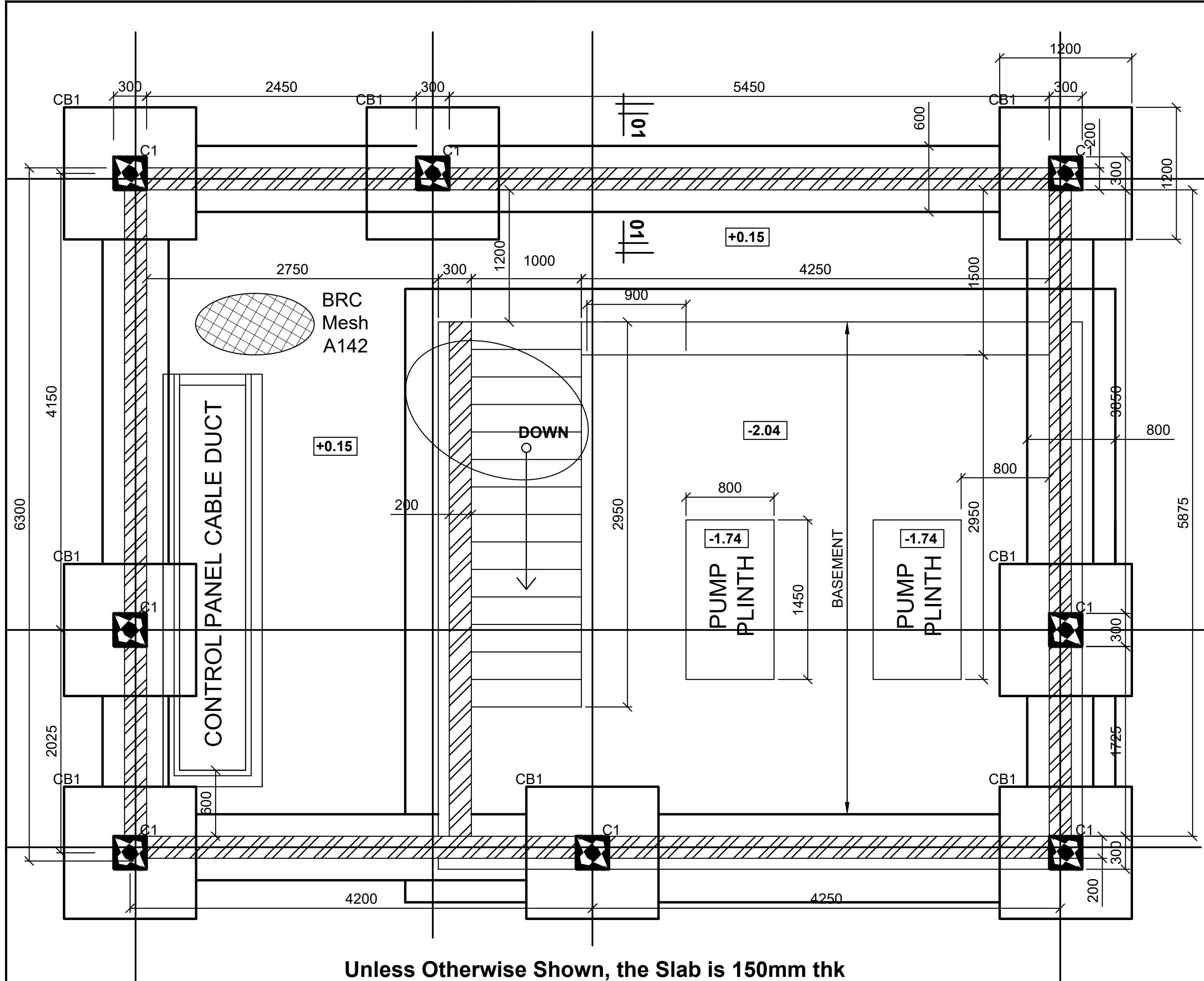


TYPICAL FRENCH DRAIN DETAIL
SCALE 1:25

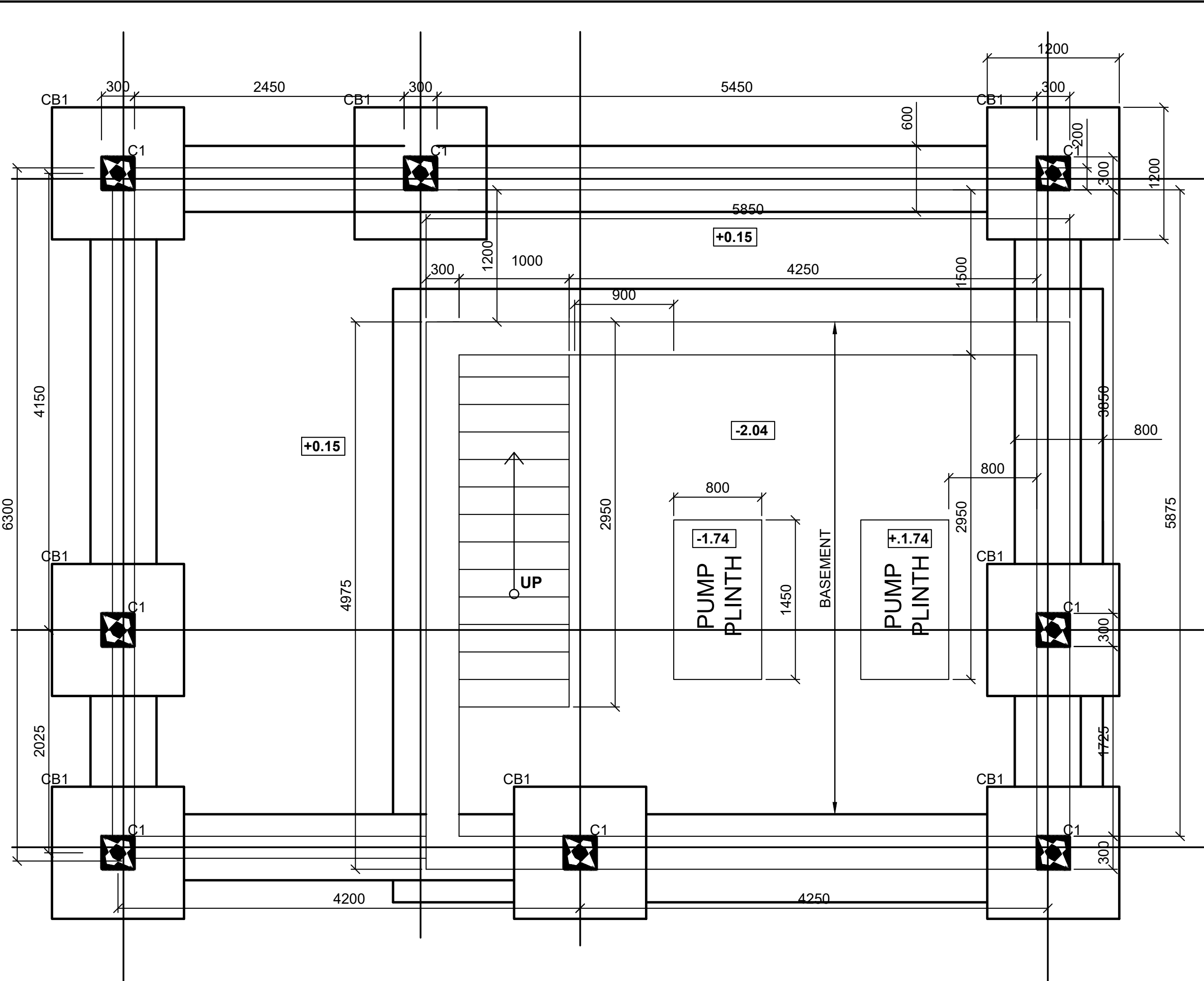


PLAN OF DRAIN CHANNEL GRATING COVER
(NTS)

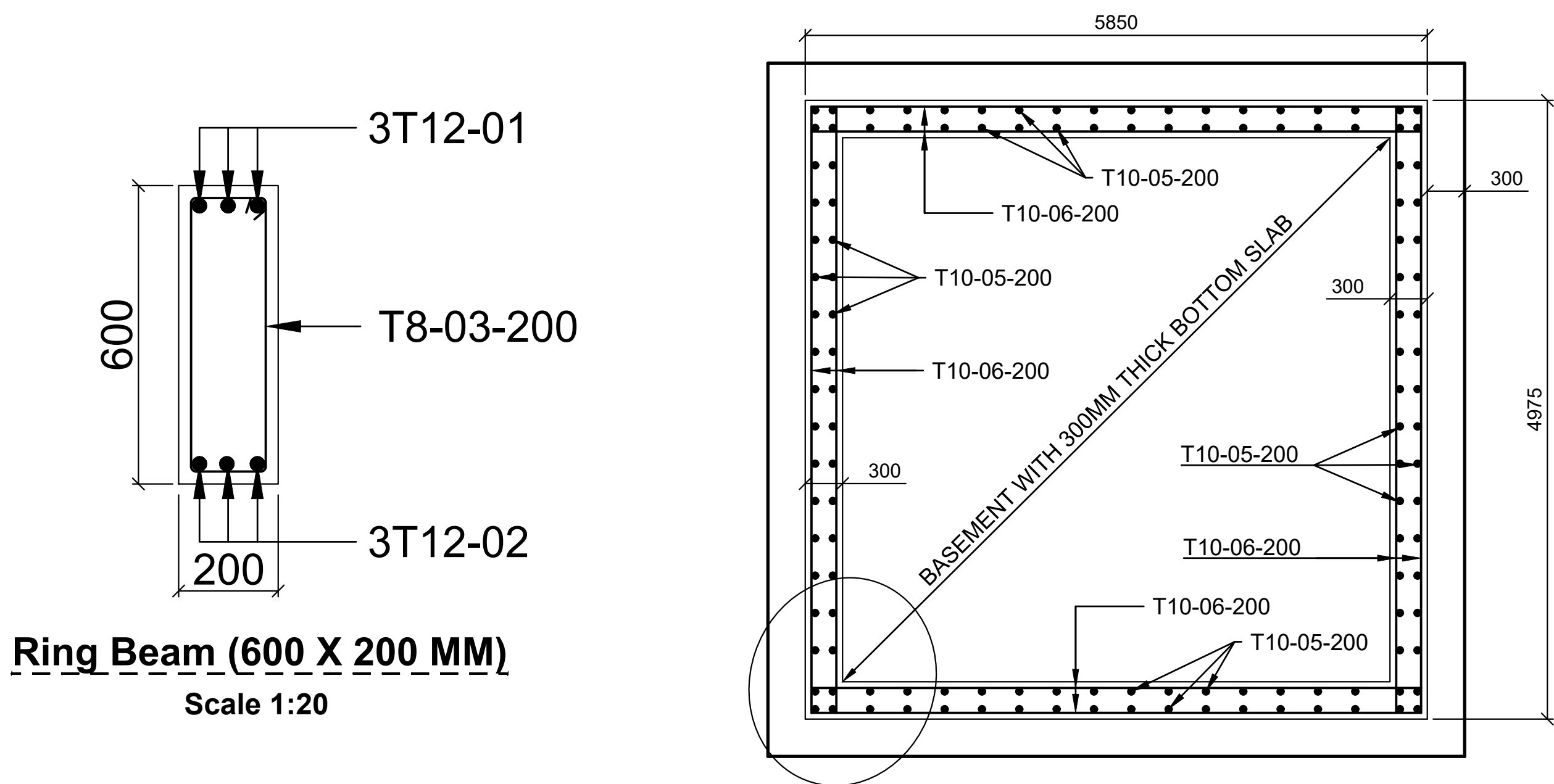
Revisions		Consultant		Employer	Project Manager	Project		Stage : FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And 	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : JULY 2020		
						Drawn : B. MURILA		Drawing No. : MAT-WTP-PH-02	Drawing Title: PUMPHOUSE AND CONTROL ROOM ARCHITECTURAL SECTIONS AND DETAILS	
						Checked: D. LIAMBILA		Scale : 1:25, 1:50		Sheet Size : A1
						Approved: B. KIM		Sheet No. : 1 of 4		
										Index No. :



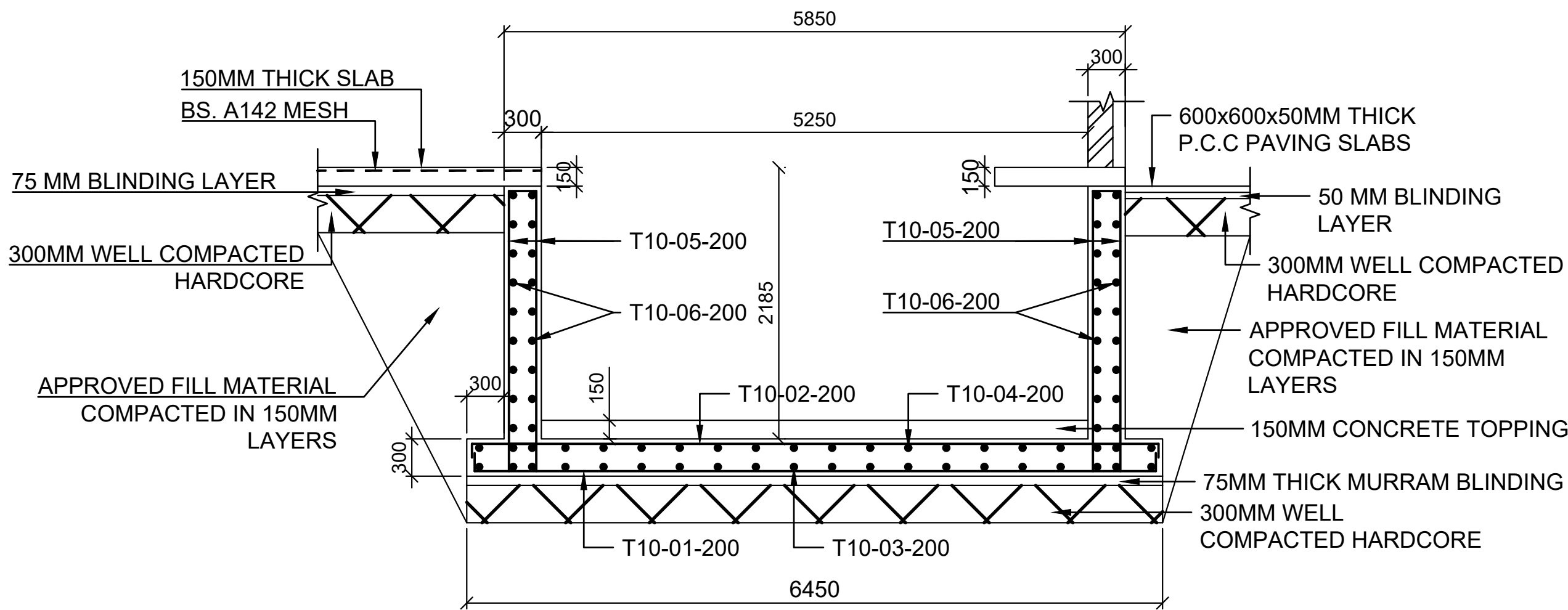
Unless Otherwise Shown, the Slab is 150mm thk
Foundation/Ground Floor Slab Layout
Scale 1:40



Basement Layout
Scale 1:40



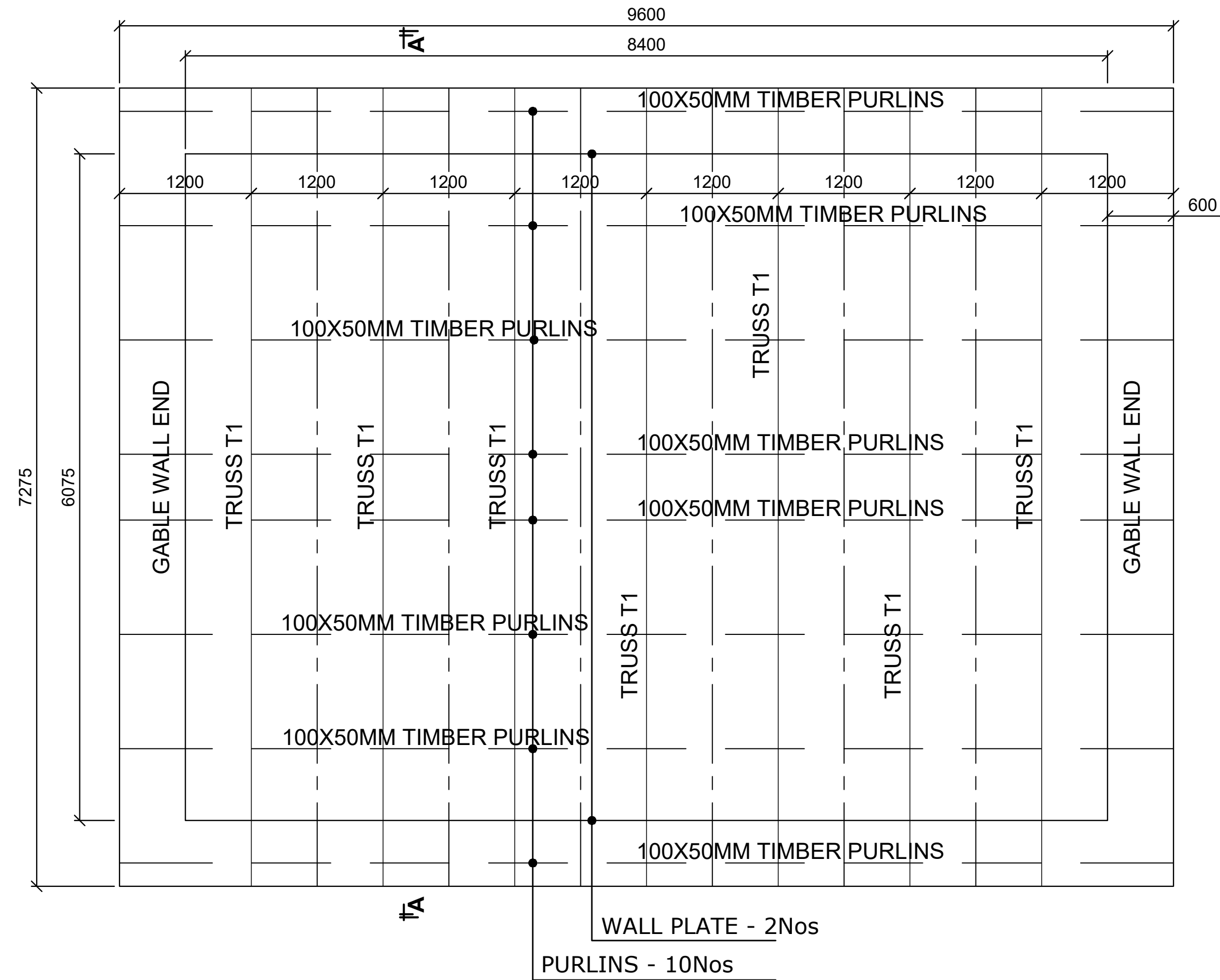
Basement Wall Layout with R.C Detail
Scale 1:25



Basement Wall and Slab Reinforcement Detail
Scale 1:25

- NOTES:**
1. ALL DIMENSIONS IN MILLIMETERS,UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
 3. REINFORCED CONCRETE IS CLASS 25/20
 4. BLINDING CONCRETE CLASS 15/20
 5. REINFORCEMENT COVER MIN.25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
 6. ALL PIPE DIAMETERS ARE NOMINAL SIZES

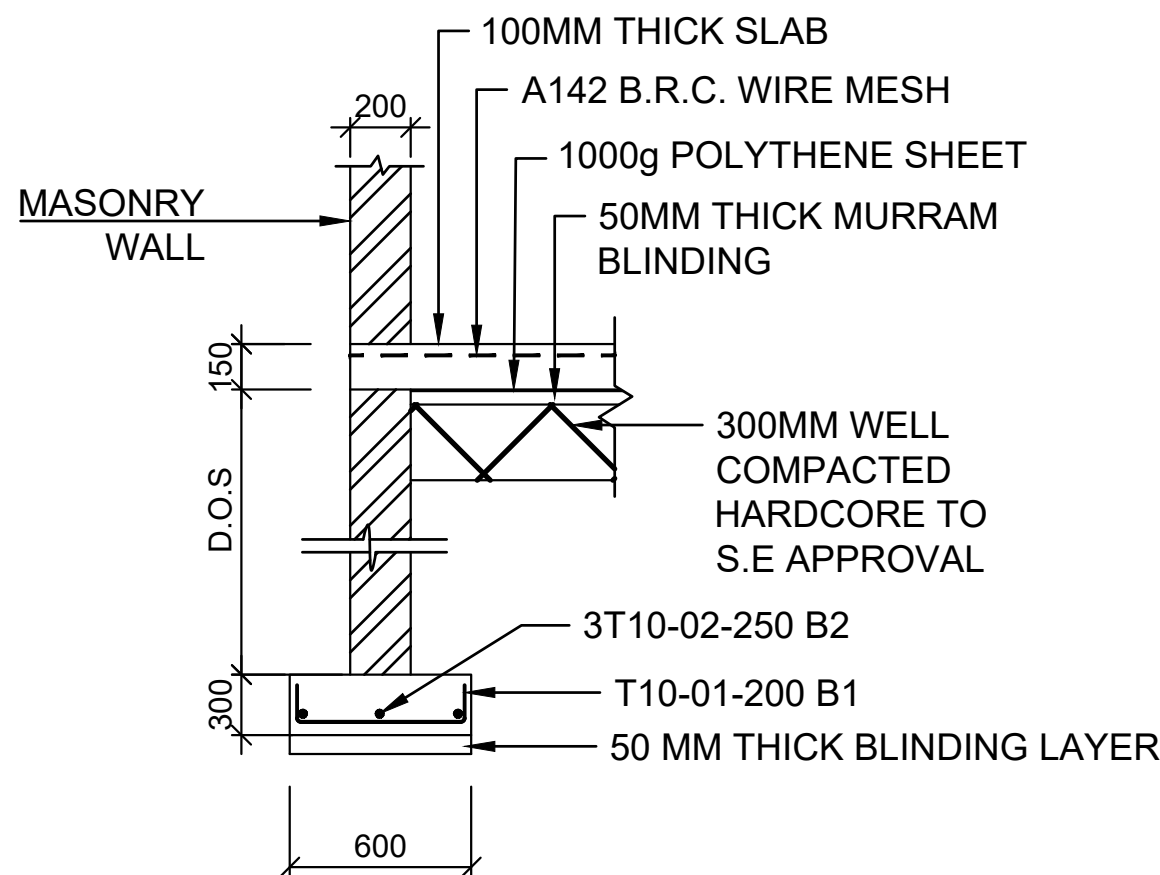
Revisions		Consultant		Employer		Project Manager		Project		Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And 	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : JULY 2020	Drawing No. : MAT-WTP-PH-03	
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-	-						Checked: D. LIAMBILA		Drawing Title: PUMPHOUSE AND CONTROL ROOM LAYOUTS AND BASEMENT DETAILS		
-	-						Approved: B. KIM				
-	-										Sheet No. : 3 of 4
-	-			Index No. :							



ALL RAFTERS ARE 100X50 TIMBER MEMBERS AT MAX 600MM SPACING

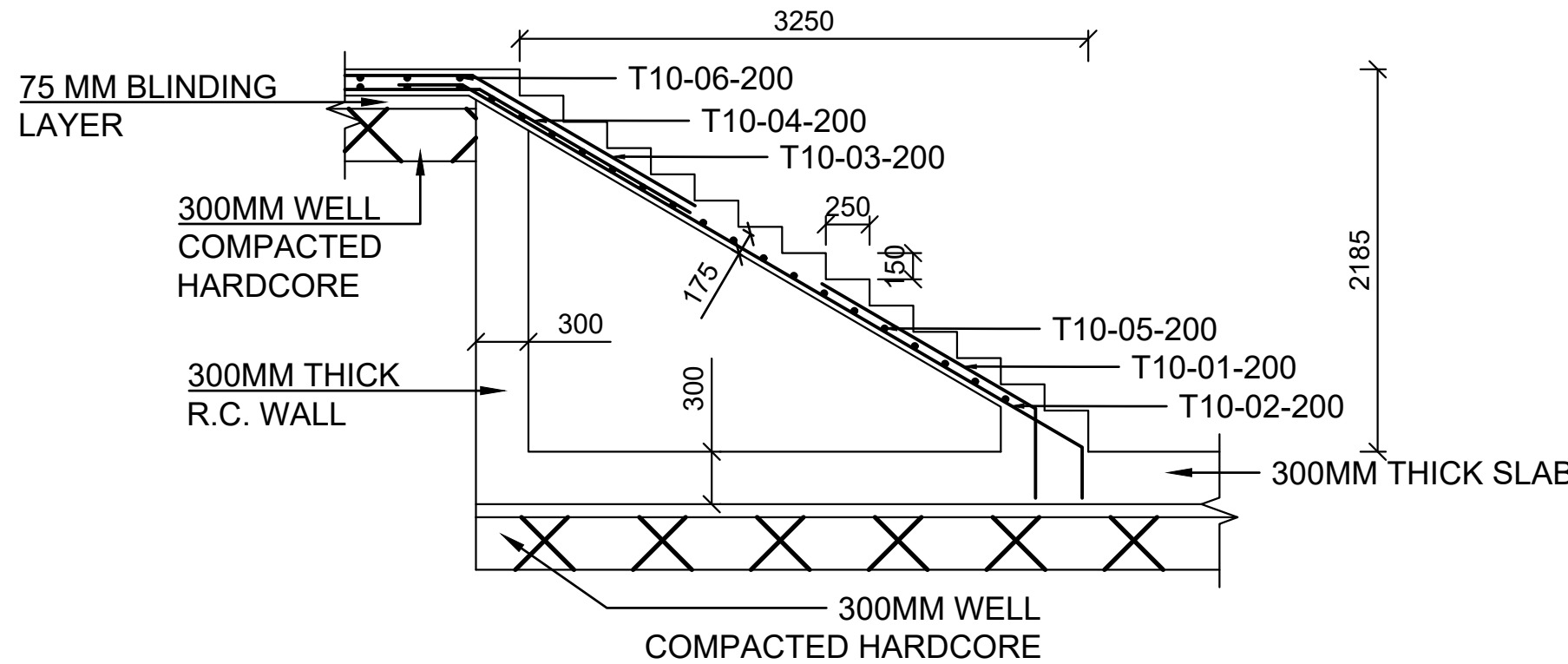
ROOF PLAN AND TRUSS DETAILS

Scale 1:75



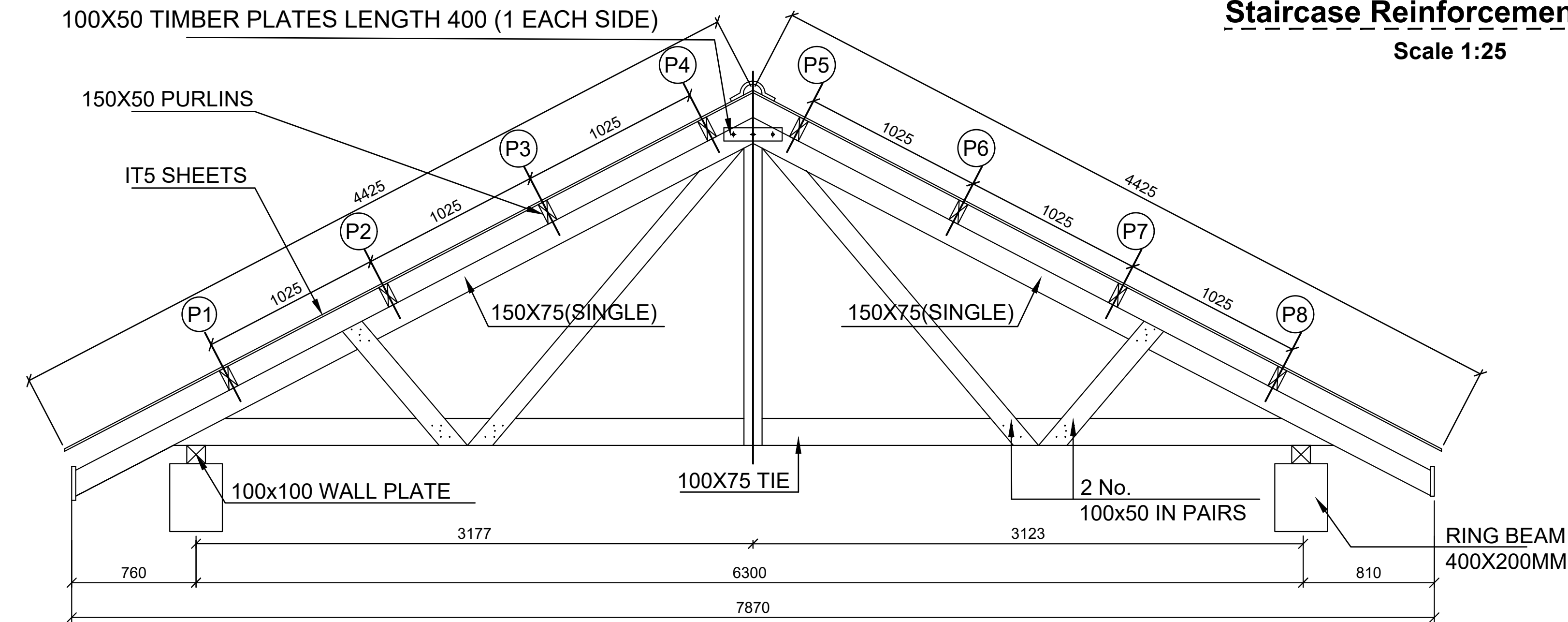
Section 1 - 1

Scale 1:40



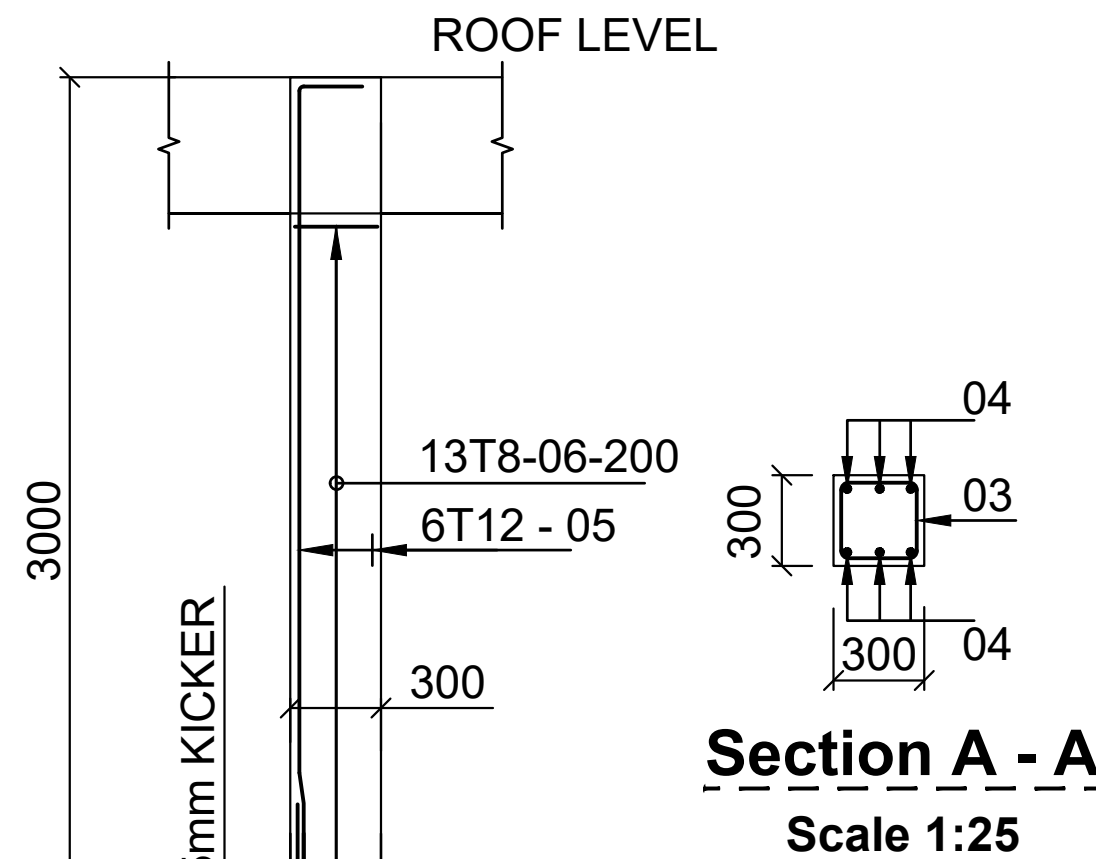
Staircase Reinforcement Detail

Scale 1:25



Section A-A

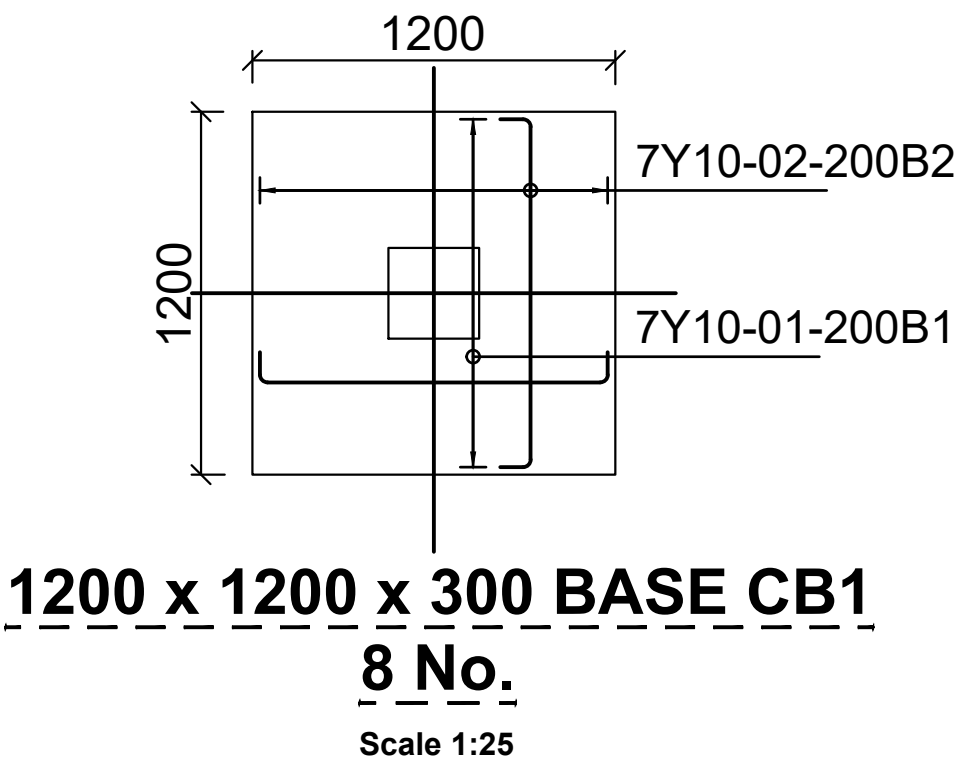
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300 x 300 COLUMN C1

8 No.

Scale 1:25



1200 x 1200 x 300 BASE CB1

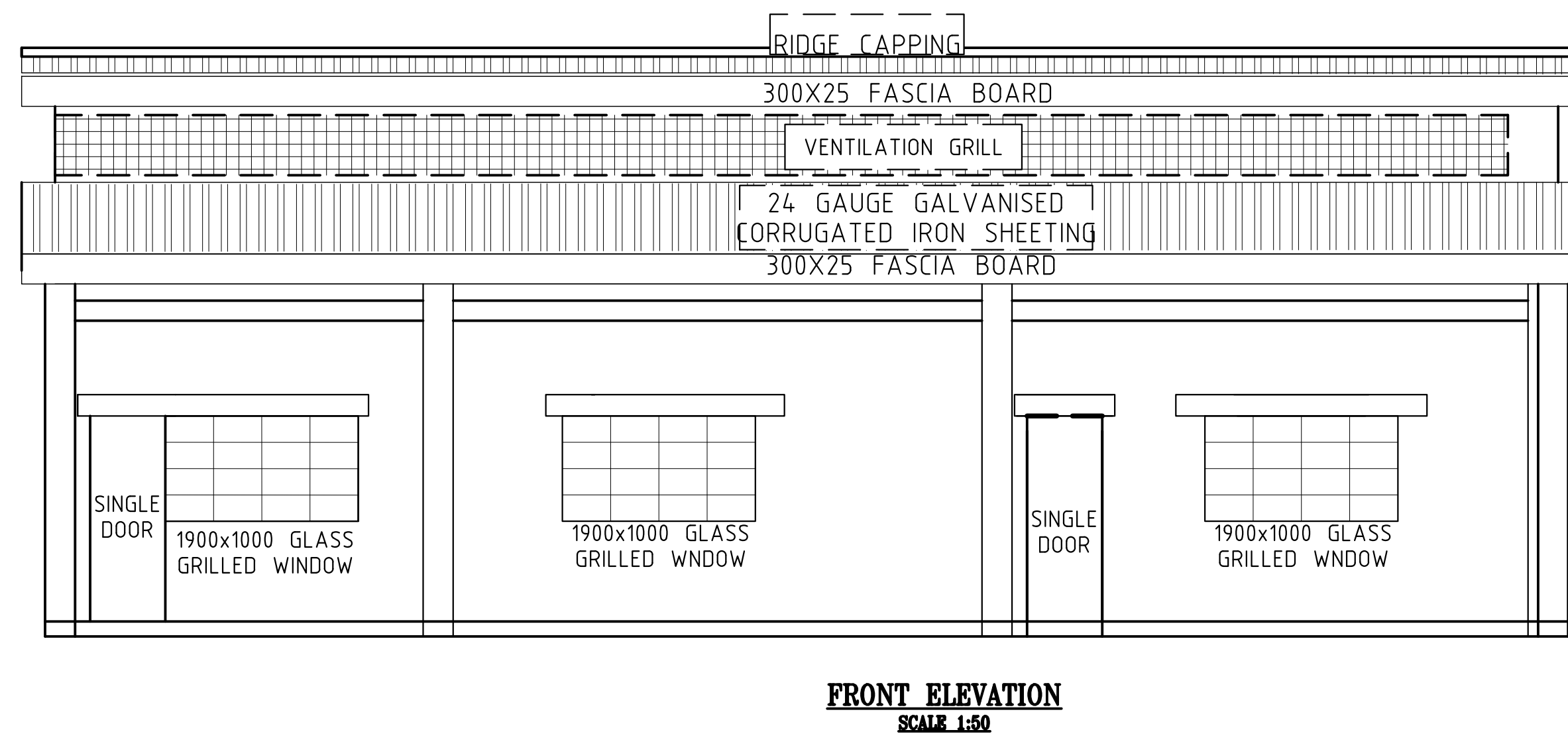
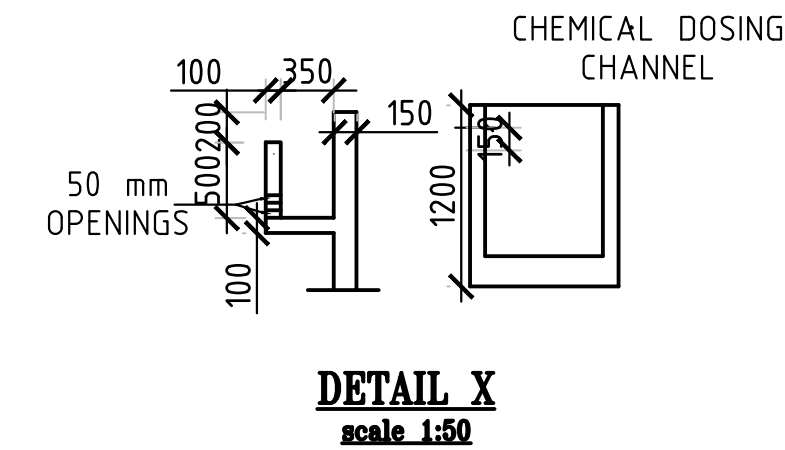
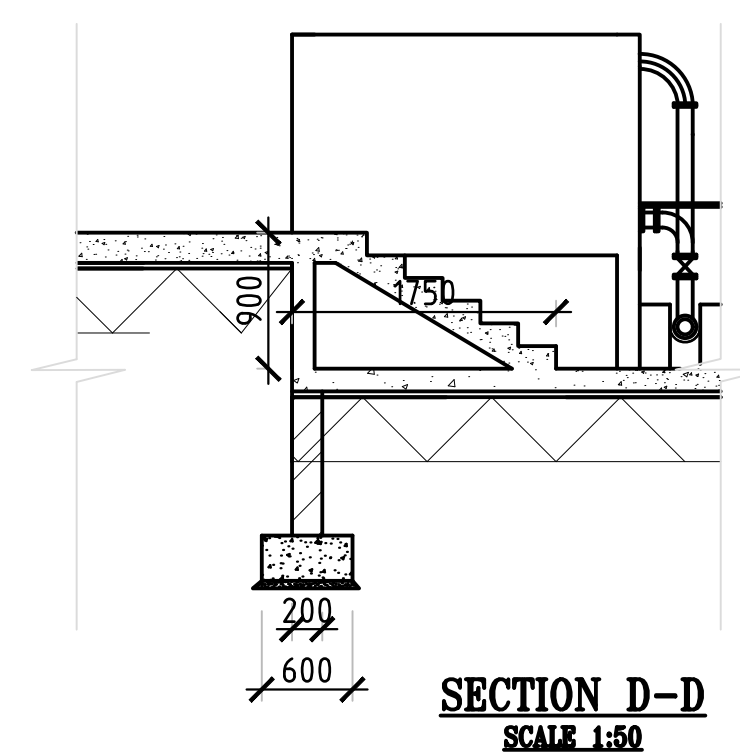
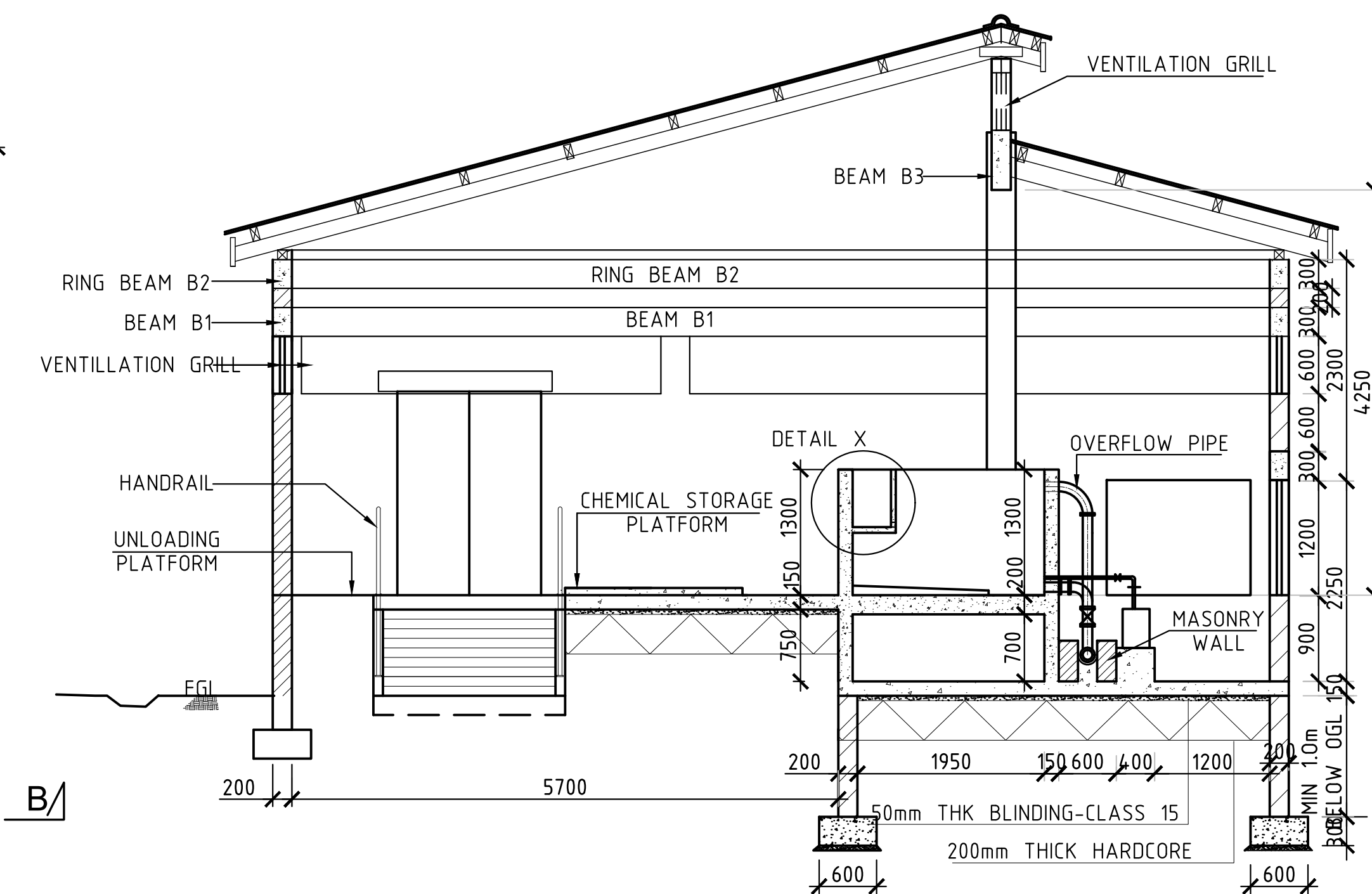
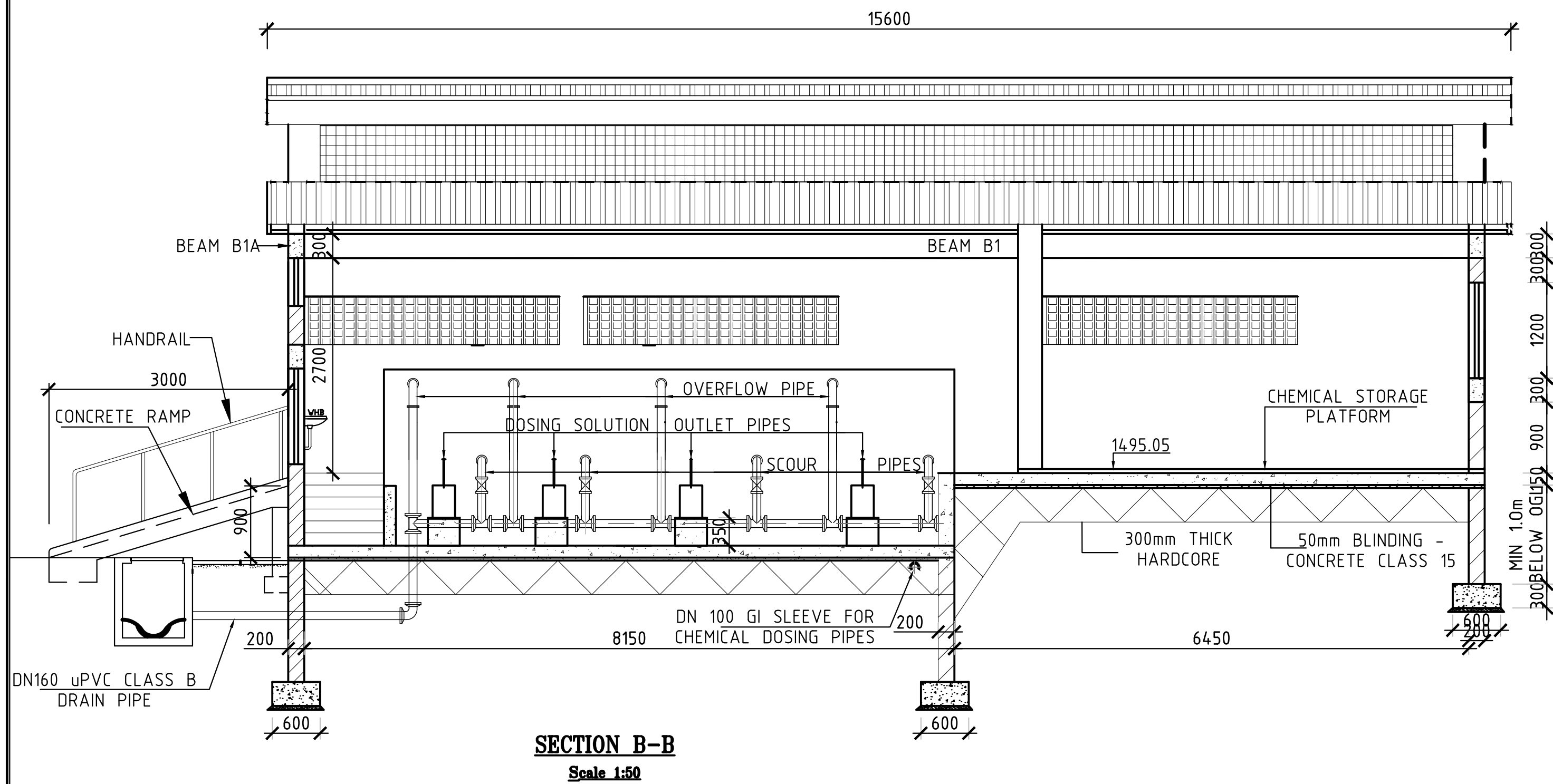
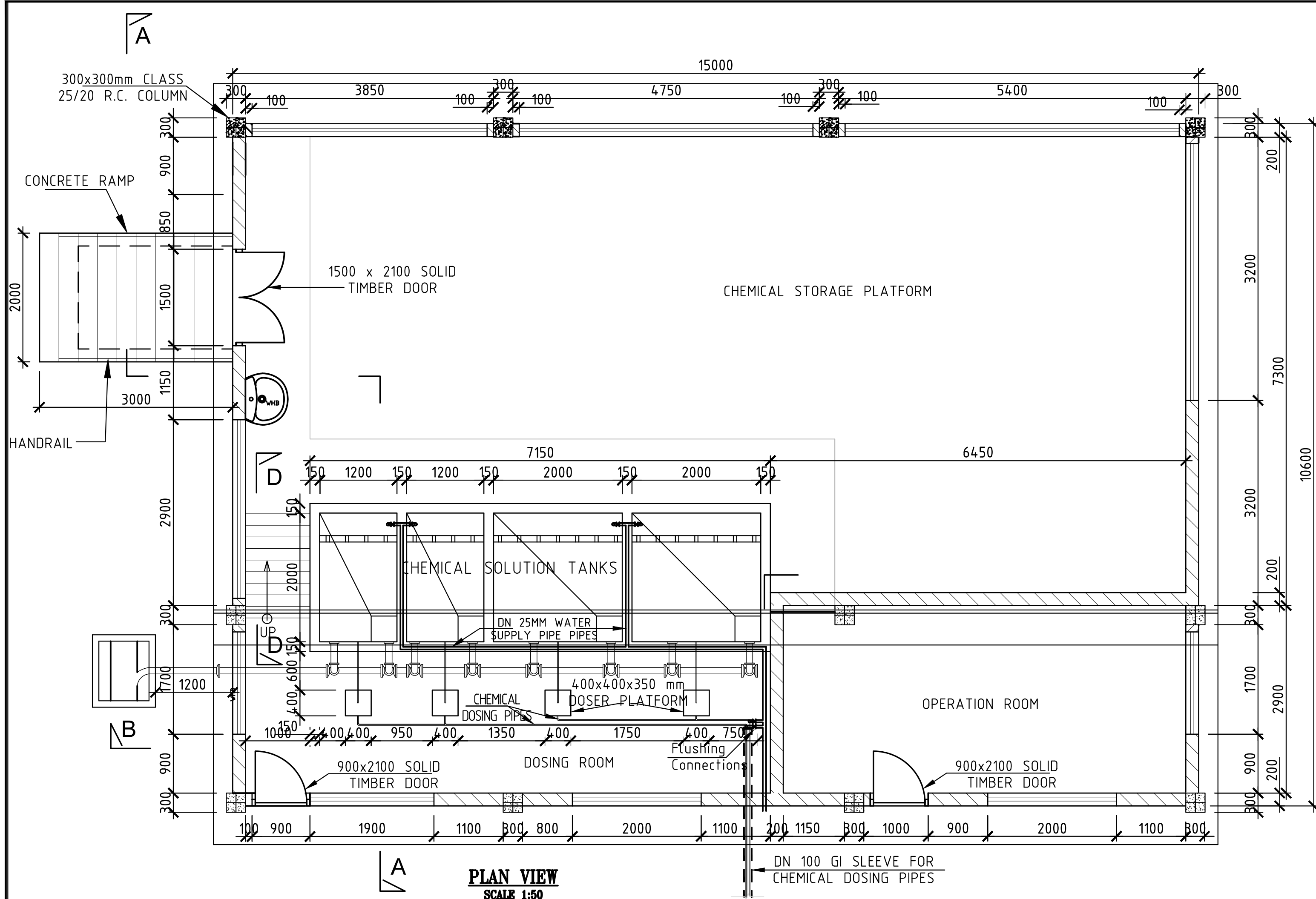
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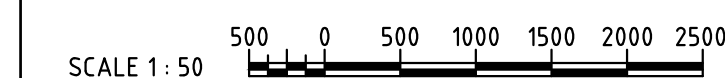
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6. ALL PIPE DIAMETERS ARE NOMINAL SIZES

Revisions		Consultant		Employer		Project Manager		Project		Stage :	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B. MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	FINAL DESIGN REVIEW			
						Date : JULY 2020					
						Drawing No. : MAT-WTP-PH-04					
						Scale : AS INDICATED		Sheet Size : A1			
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		Index No. :					Drawing Title: PUMPHOUSE AND CONTROL ROOM COLUMN AND ROOF DETAILS				

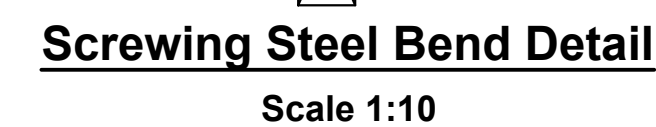
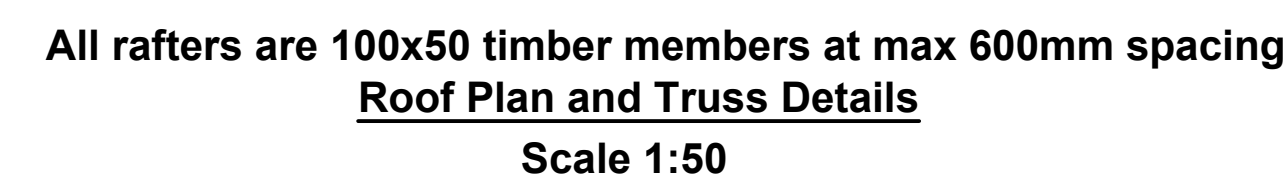


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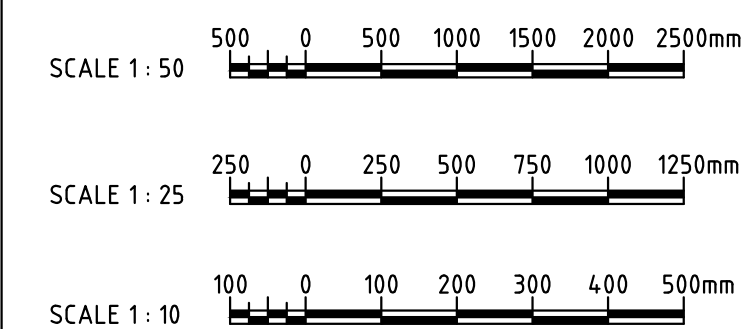
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- ALL LEVELS ARE IN METRES AND BASED ON A NATIONAL DATUM.
- REINFORCED CONCRETE IS CLASS 20/20
- BLINDING CONCRETE CLASS 15/20



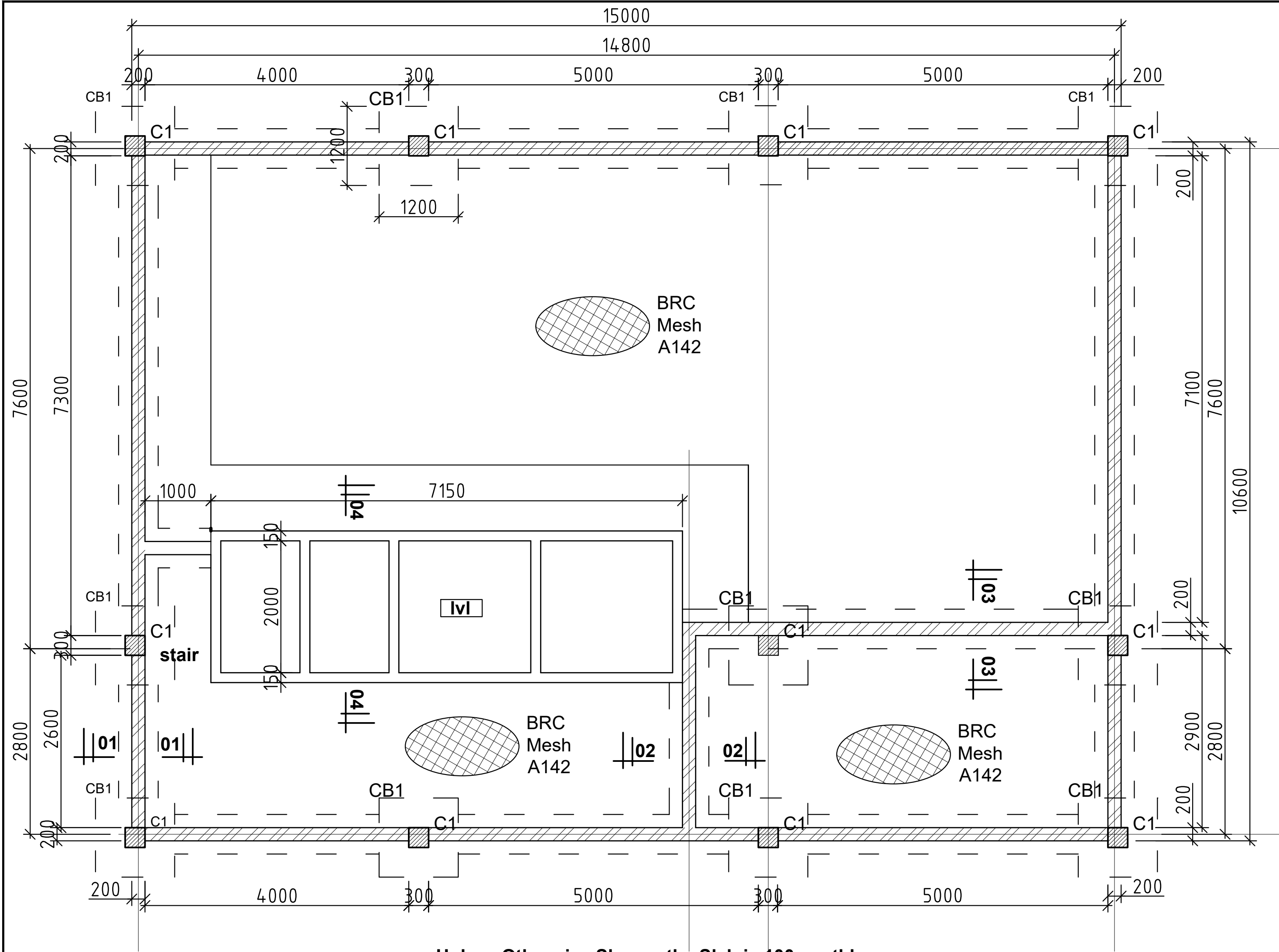
Revisions		Consultant		Employer		Project Manager		Project		Stage	
Description	Date										
		SAMAN CORPORATION		TERTIARY CONSULTING ENGINEERS LTD		TANATHI WATER WORKS DEVELOPMENT AGENCY		CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		FINAL DESIGN REVIEW	
		5, Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea		P.O. Box 45283-00100, Mwingi Court, No. 34, Mwingi Rd, Kileleshwa.		Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya				Date: JULY 2020	
		Tel: (+82) 2 6488 8255		P. O. Box 46439 00100, Nairobi, Kenya.		Tel: +254 712351104				Drawing No.: MAT-WTP-CH-01	
		Fax: (+82) 2 6488 8080		Tel: +254 20 2727438		email: info@tanathi.go.ke				Scale: 1:10, 1:50	
		E-mail: kitumatuusaman@gmail.com		email: info@awsboard.go.ke						Sheet No.: 1 of 3	
										Index No.:	
										A1	



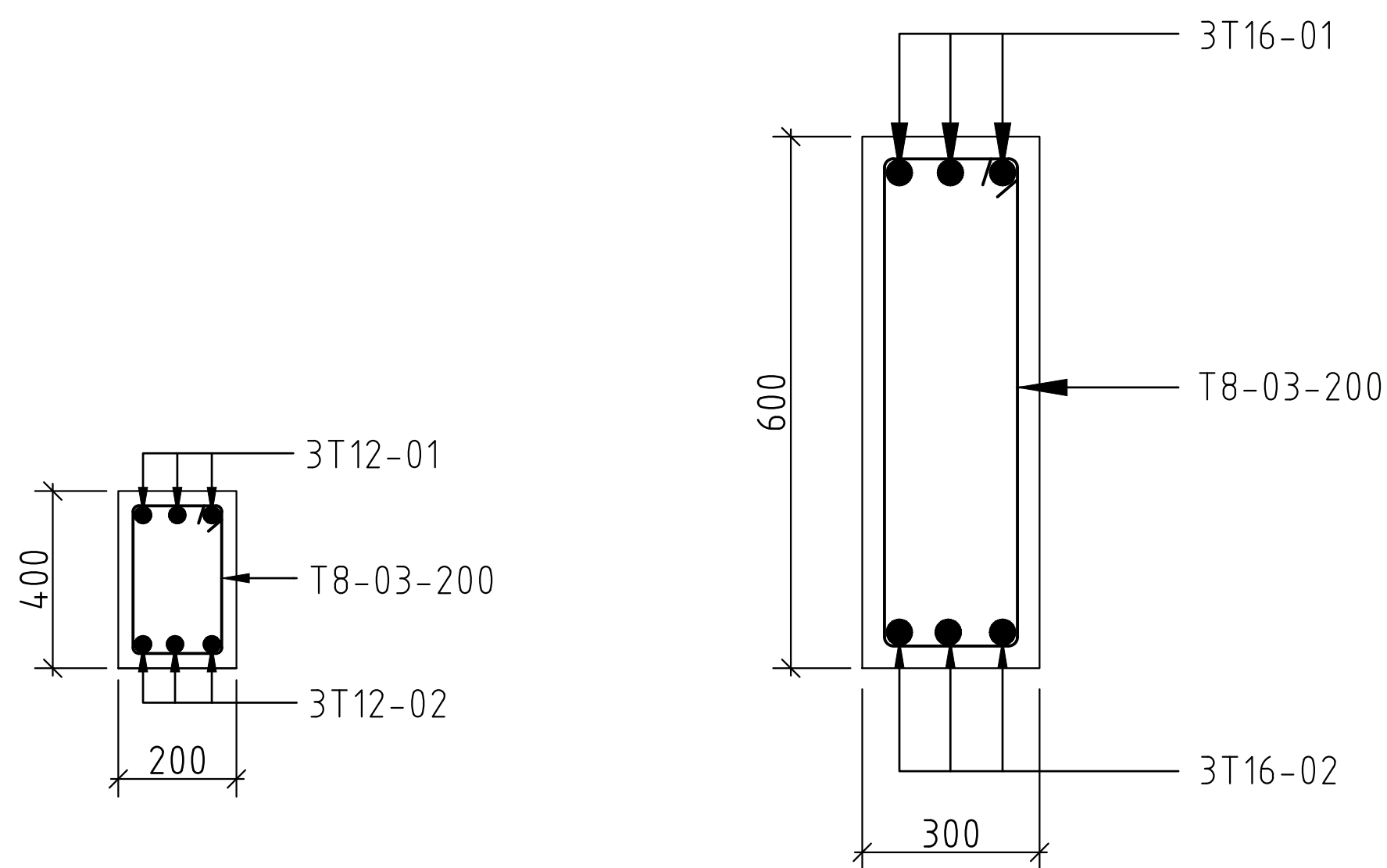
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3. REINFORCED CONCRETE IS CLASS 25/20
4. BLINDING CONCRETE CLASS 15/20
5. REINFORCEMENT COVER MIN. 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER
6. BOLT HOLES MUST NOT BE MORE THAN 2MM LARGER THAN THE BOLT DIAMETER.
7. WASHERS OF DIAMETERS OF MIN 3X BOLT DIAMETER AND THICKNESS OF MIN 1/4X BOLT SIZE TO BE FITTED UNDER EACH NUT.
8. ALL BOLTED CONNECTIONS TO USE GRADE 4.6 BOLTS UNLESS OTHERWISE STATED.
9. ALL BOLTS CONNECTING TIMBER SPLICES TO TRUSSES TO HAVE 1 NUT & 2 WASHERS.
10. USE SCREWS FOR ANGLE CLEAT TO WALL PLATE.
11. IN EVERY JOINT, PROVIDE AT LEAST 2 NAILS ONE FROM EITHER SIDE.
12. HOLES FOR NAILING THROUGH MILD STEEL GUSSET PLATES TO BE PRE-DRILLED



Revisions		Consultant		Employer	Project Manager	Project:		Stage: FINAL DESIGN REVIEW	
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	 <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Stage: FINAL DESIGN REVIEW	
						Drawing Title: CHEMICAL HOUSE STRUCTURAL DETAILS ROOF TRUSS LAYOUT AND DETAILS		Date: JULY 2020	
						Checked: D. LIAMBILA		Drawing No.: MAT-WTP-CH-02	
						Approved: B. KIM		Scale: AS SHOWN	
								Sheet No.: 2 of 3	
								Index No.:	
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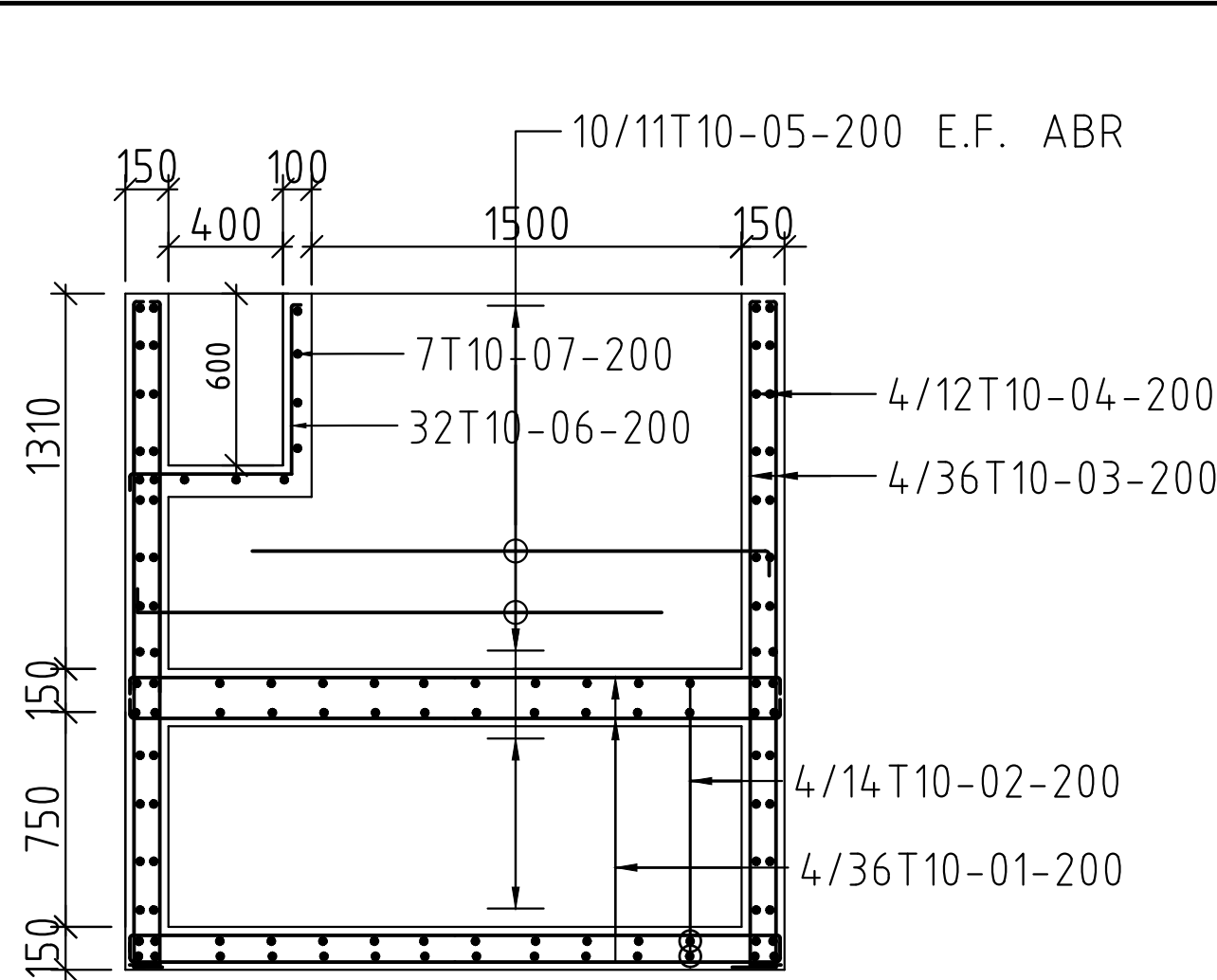
Unless Otherwise Shown, the Slab is 100mm thk
Foundation/Ground Floor Slab R.C Layout
Scale 1:50



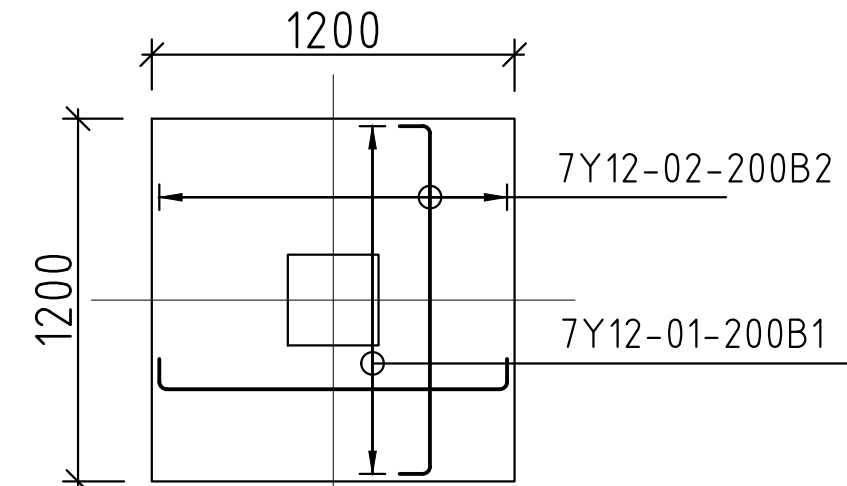
Ring Beam BM1, BM2
(400 X 200 MM)

Ring Beam BM3
(600 X 300 MM)

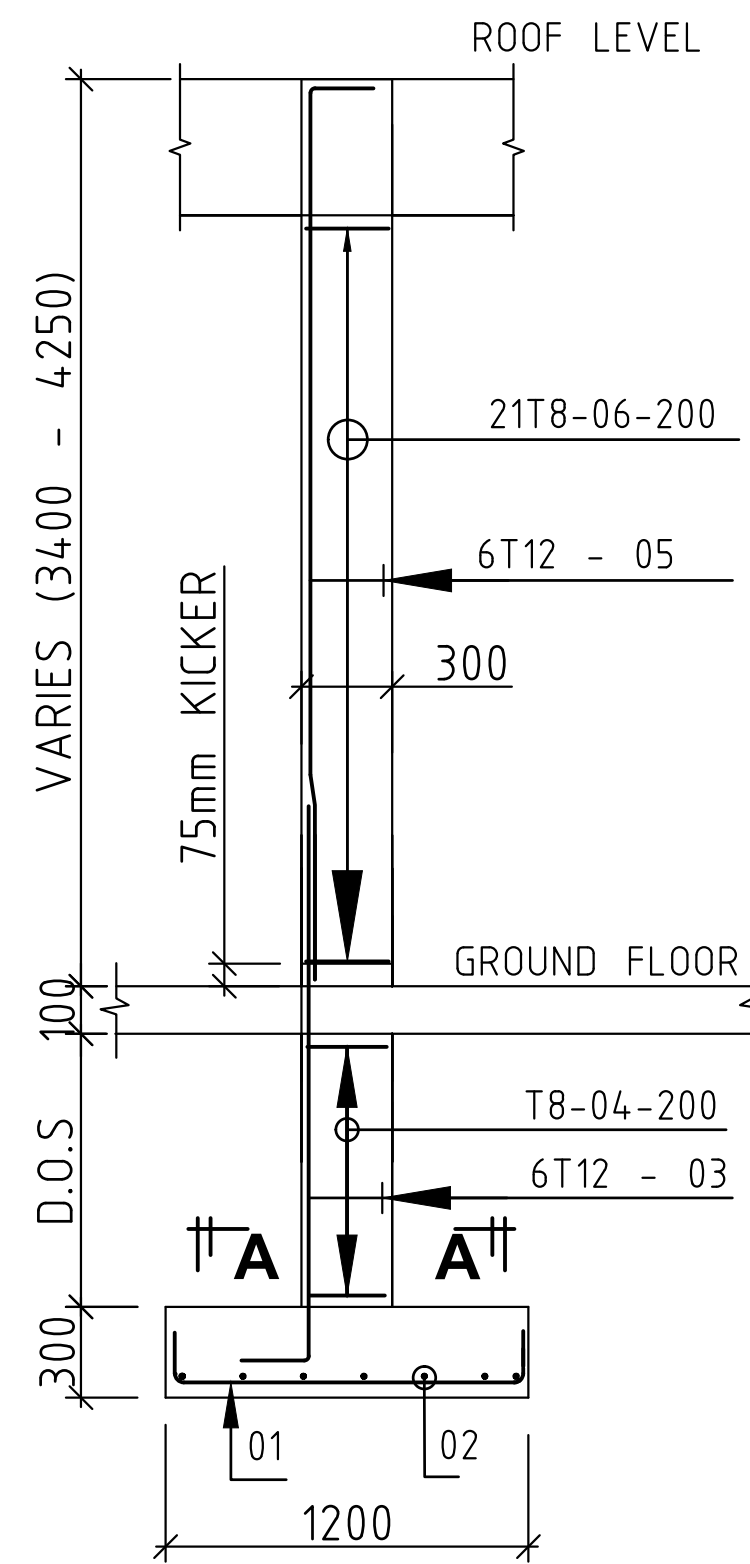
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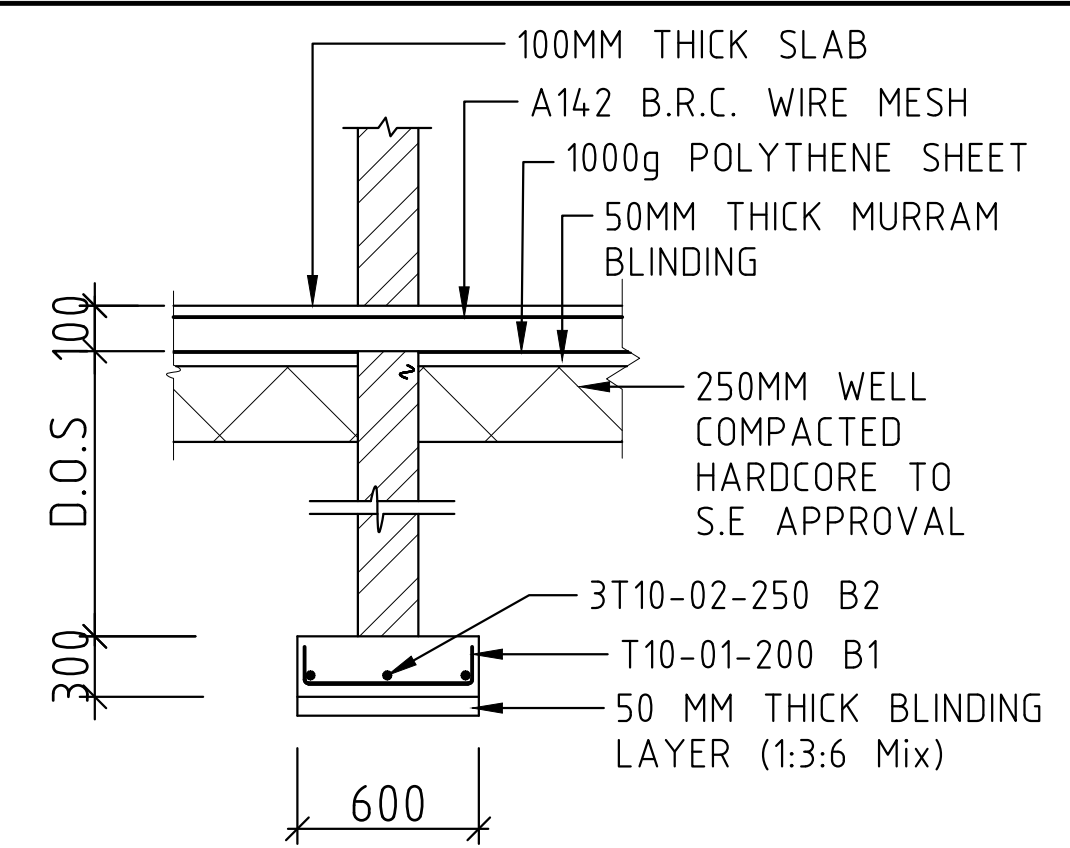
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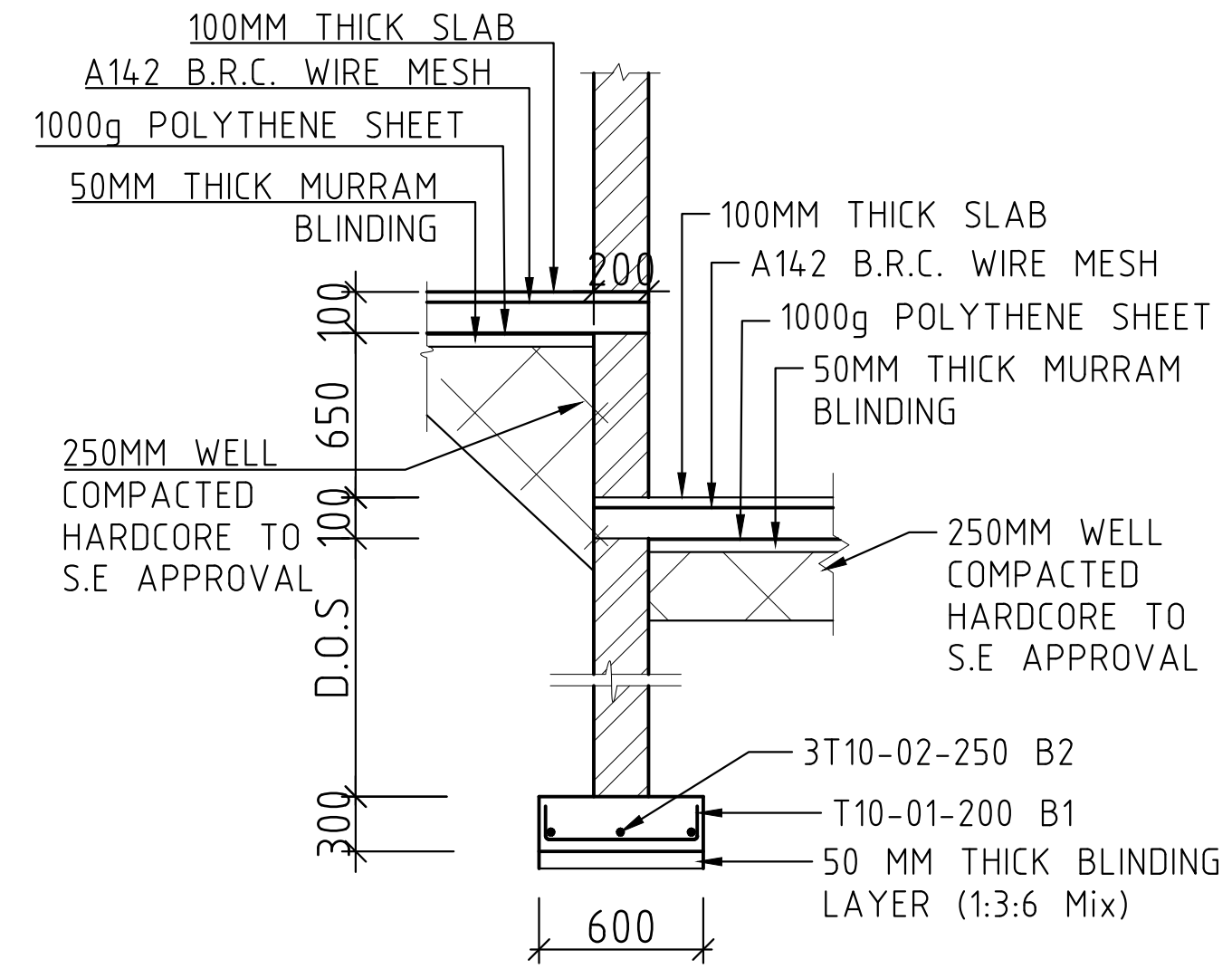
1200 x 1200 x 300 BASE CB1
11 No.
Scale 1:25



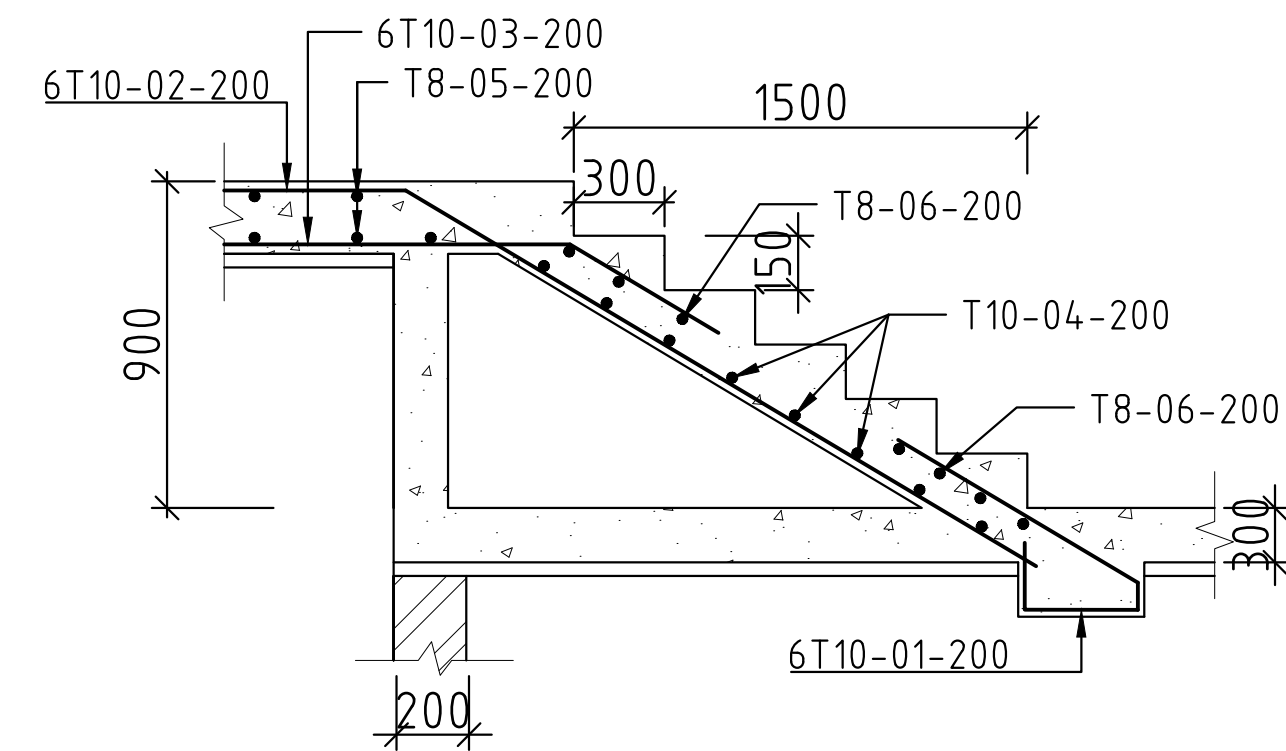
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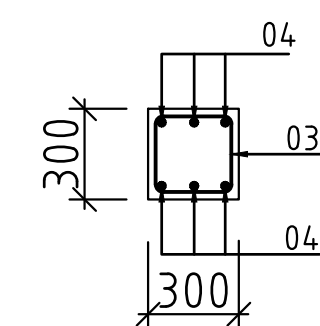
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Scale 1:25



Section 3 - 3
Scale 1:25



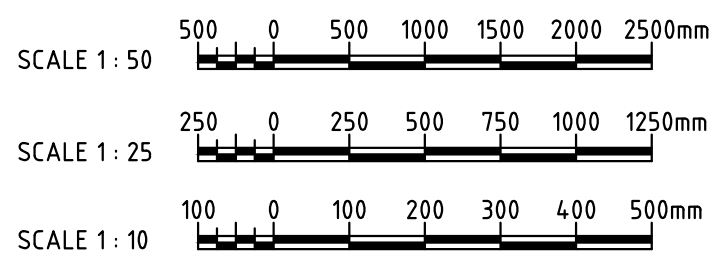
Staircase Reinforcement Detail
Scale 1:25



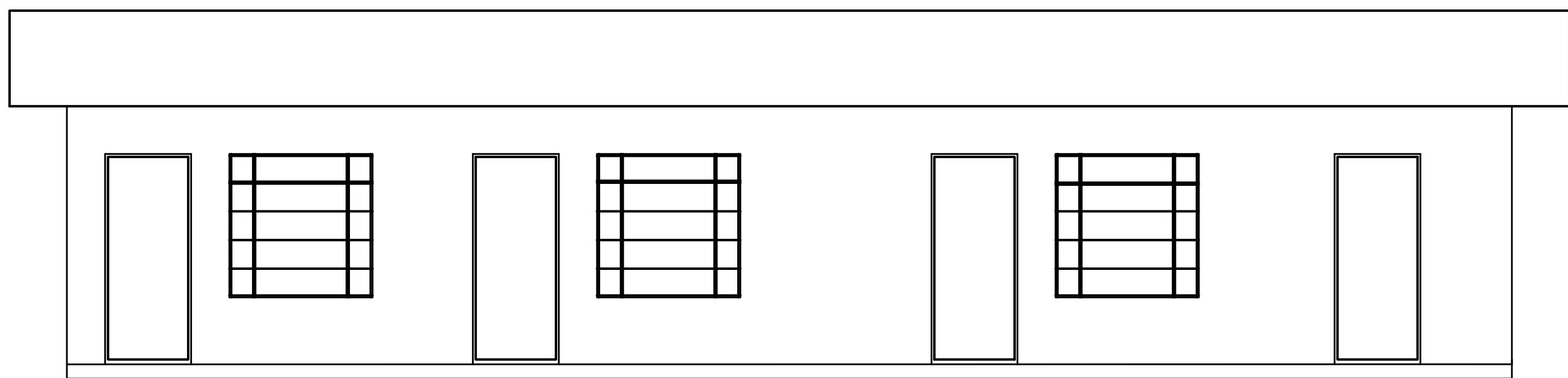
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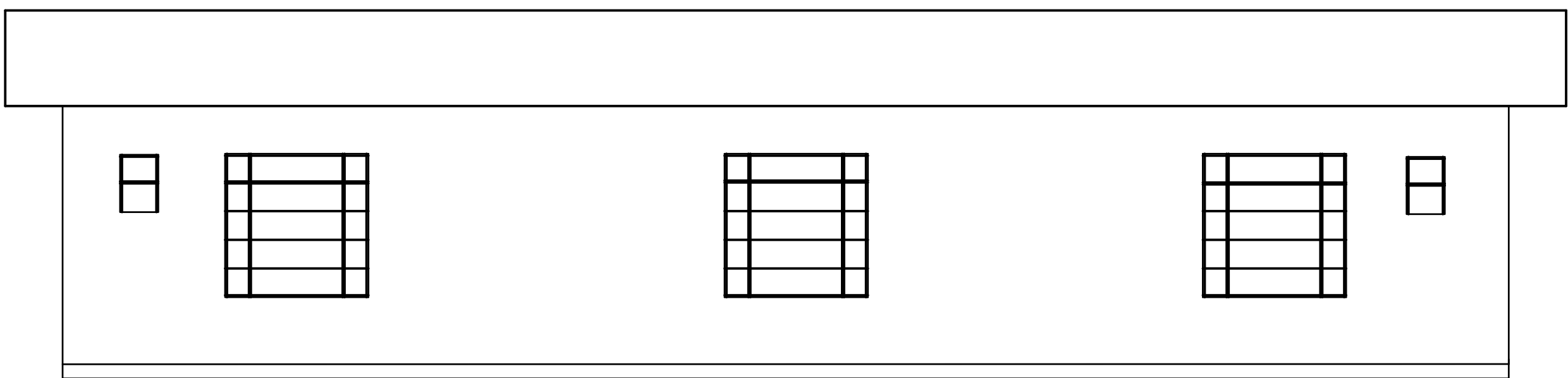
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3. REINFORCED CONCRETE IS CLASS 20/20
4. BLINDING CONCRETE CLASS 15/20



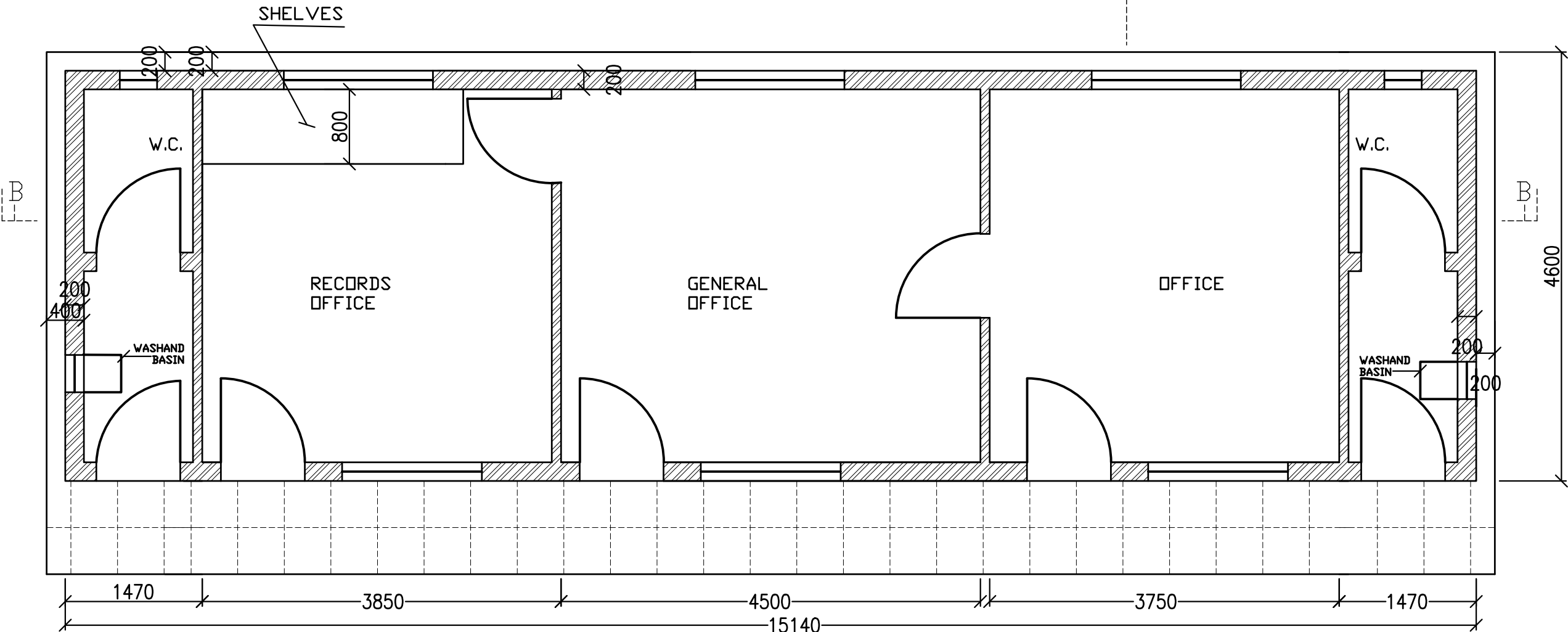
Revisions		Consultant		Employer	Project Manager	Project:	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA					
Description	Date						Designed: B. MURILA	Drawn: B. MURILA	Checked: D. LIAMBILA			
		 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuousaman@gmail.com	And 	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Drawing Title:	CHEMICAL HOUSE STRUCTURAL DETAILS LAYOUT PLAN,BEAM SECTIONS AND FOUNDATION DETAILS					
										Approved: B. KIM		



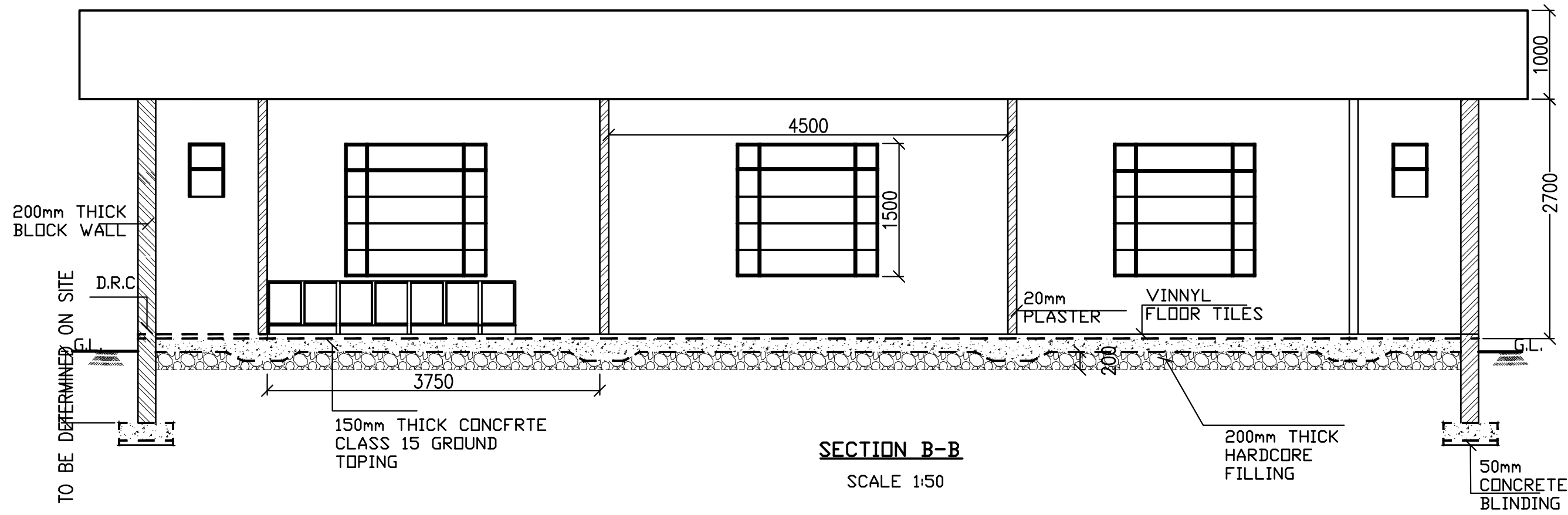
FRONT ELEVATION
SCALE 1:50



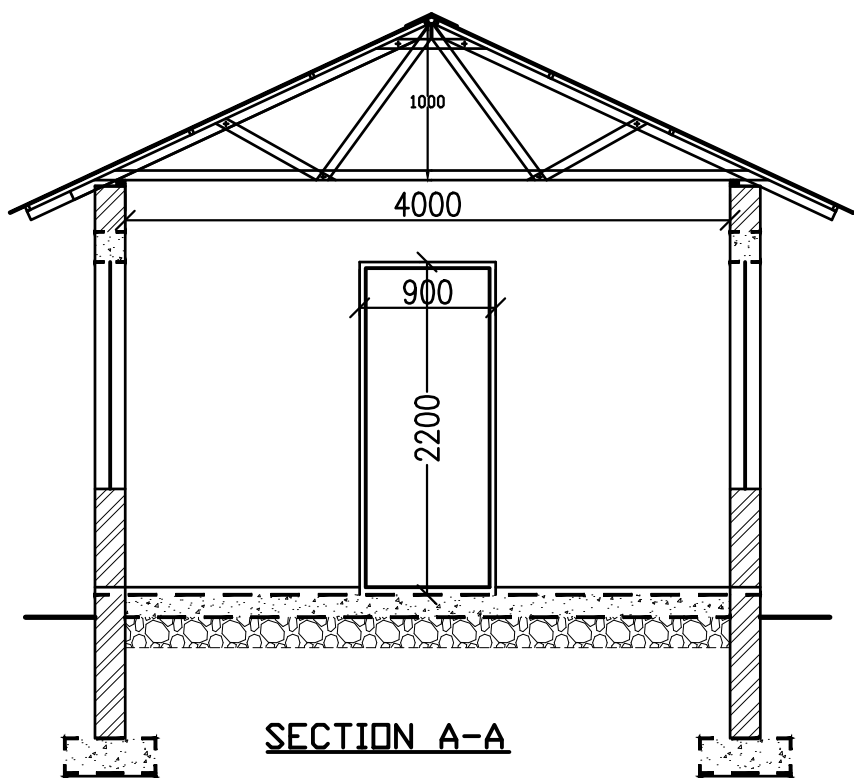
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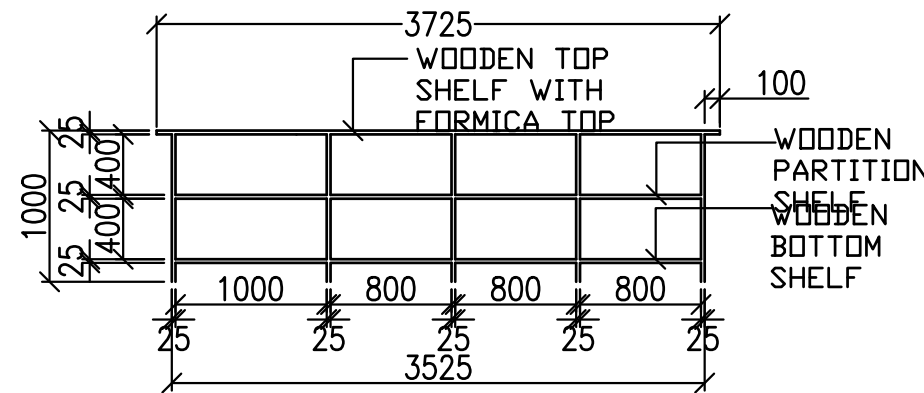
FLOOR PLAN
SCALE 1:50



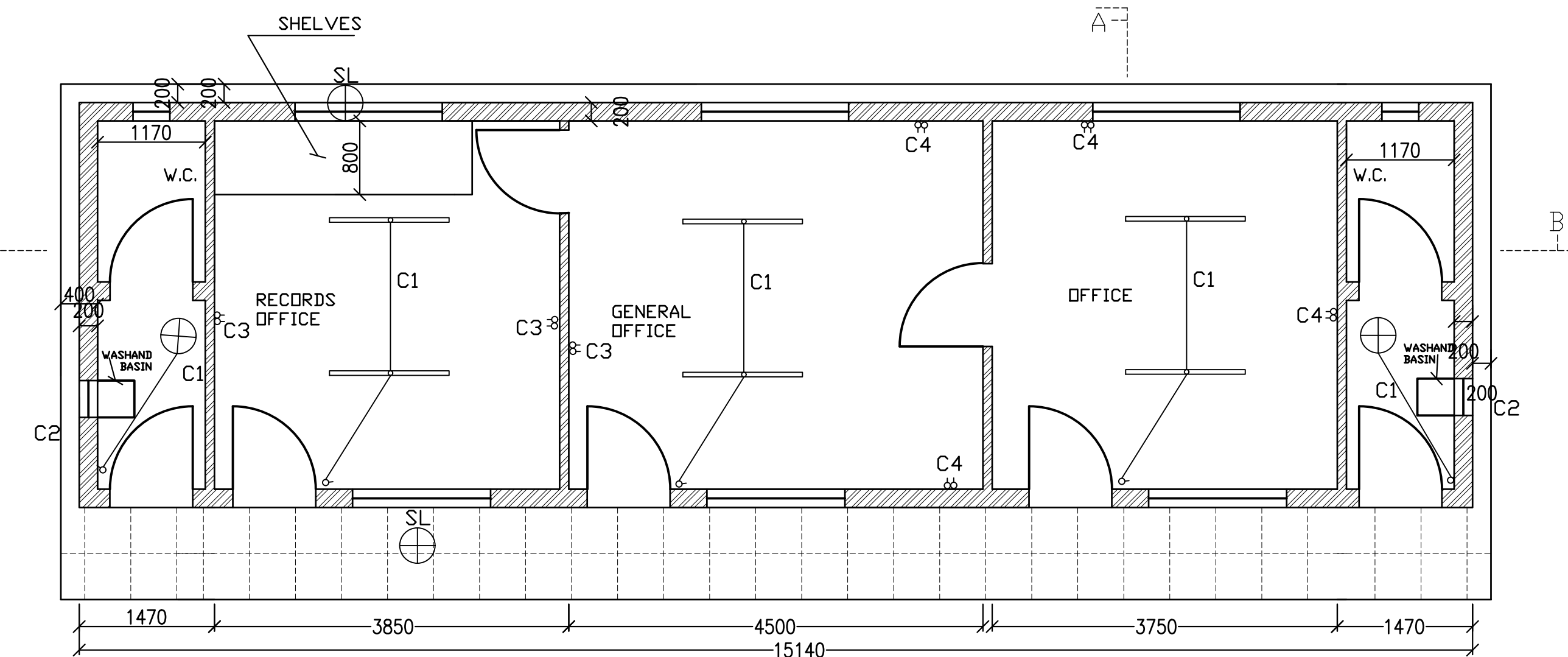
SECTION B-B
SCALE 1:50



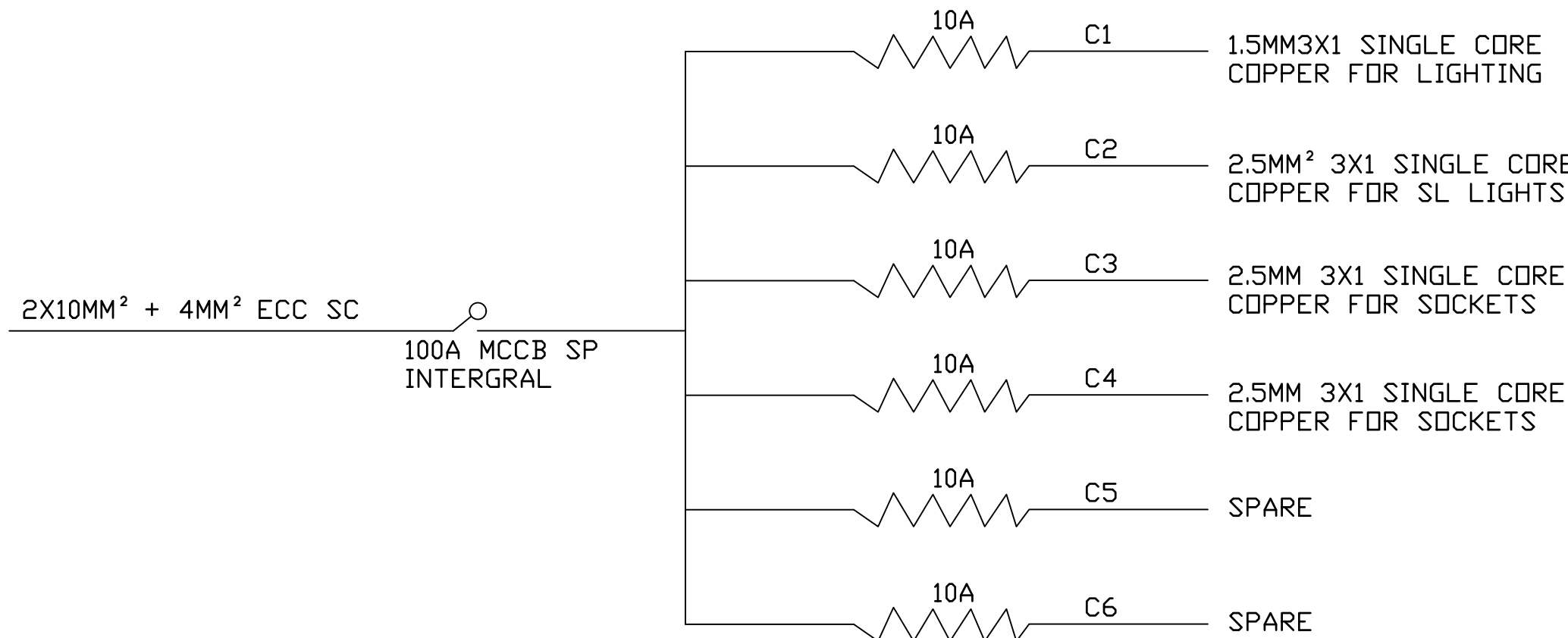
SECTION A-A
SCALE 1:50



DETAILS OF SHELF IN RECORDS OFFICE
SCALE 1:50



ELECTRICAL INSTALLATION
SCALE 1:50

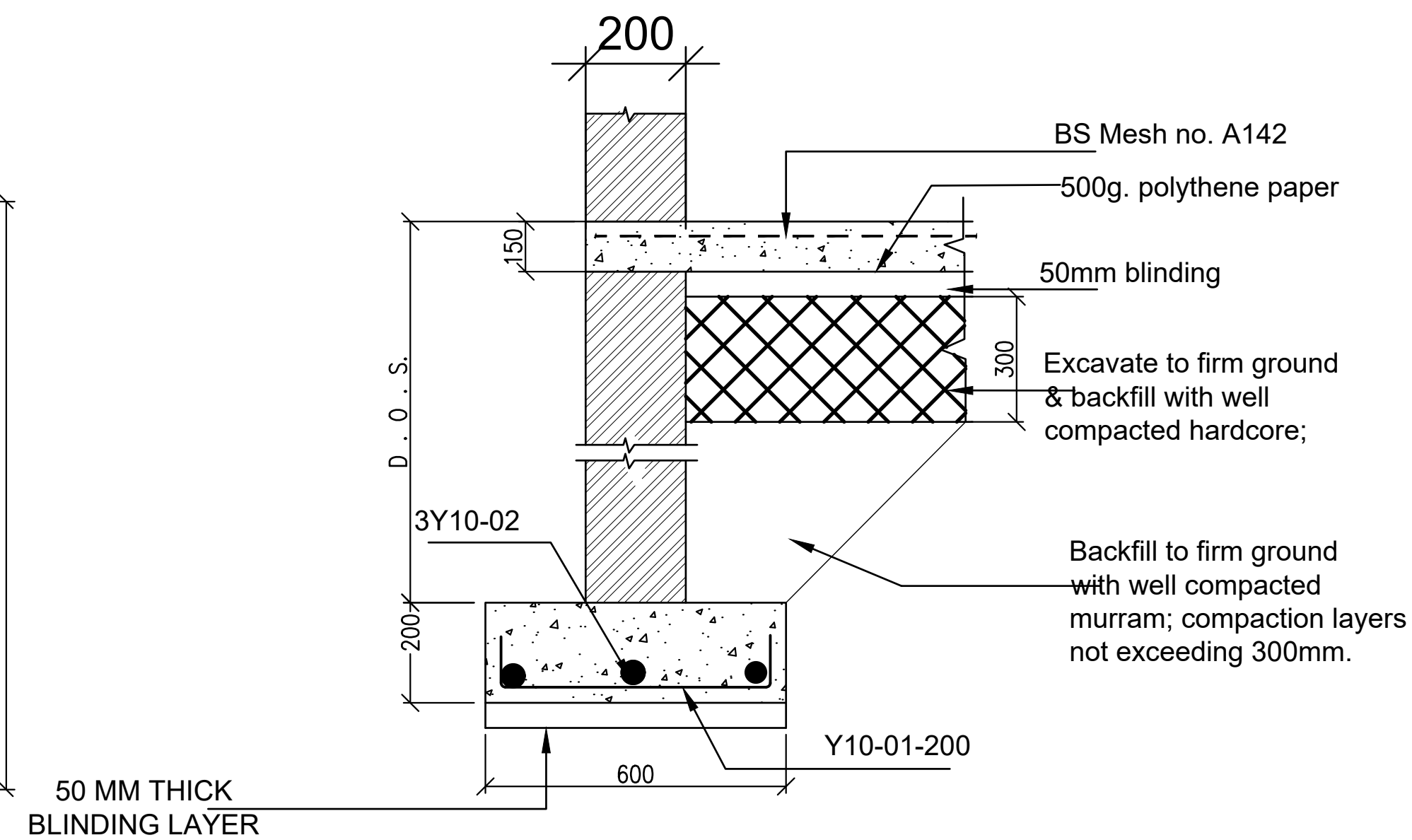


SCHEMATIC DIAGRAM

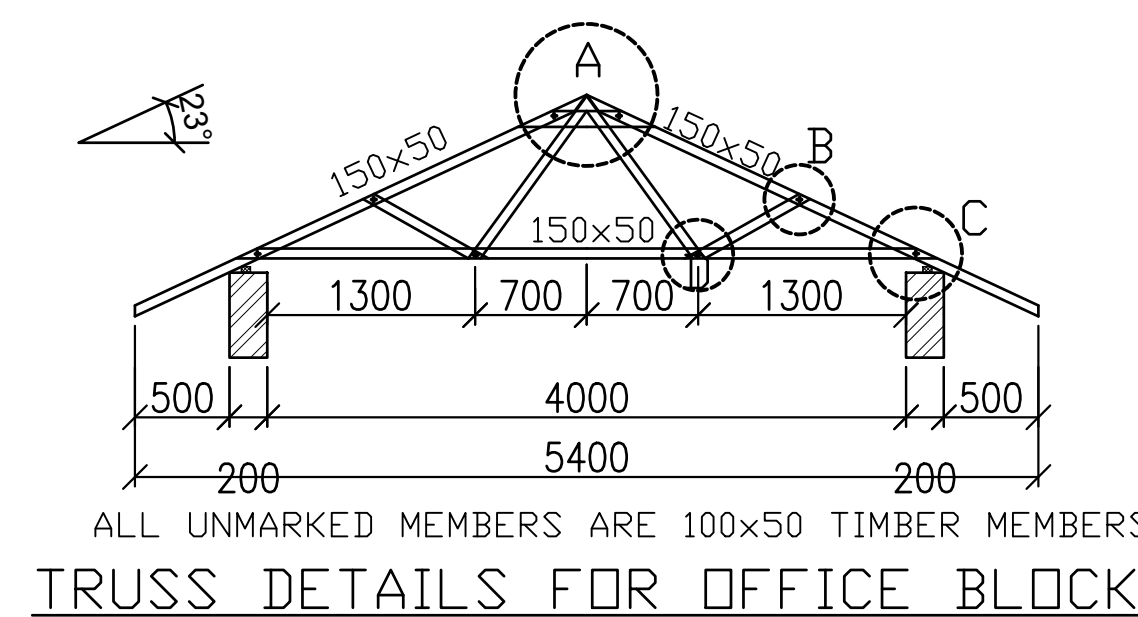
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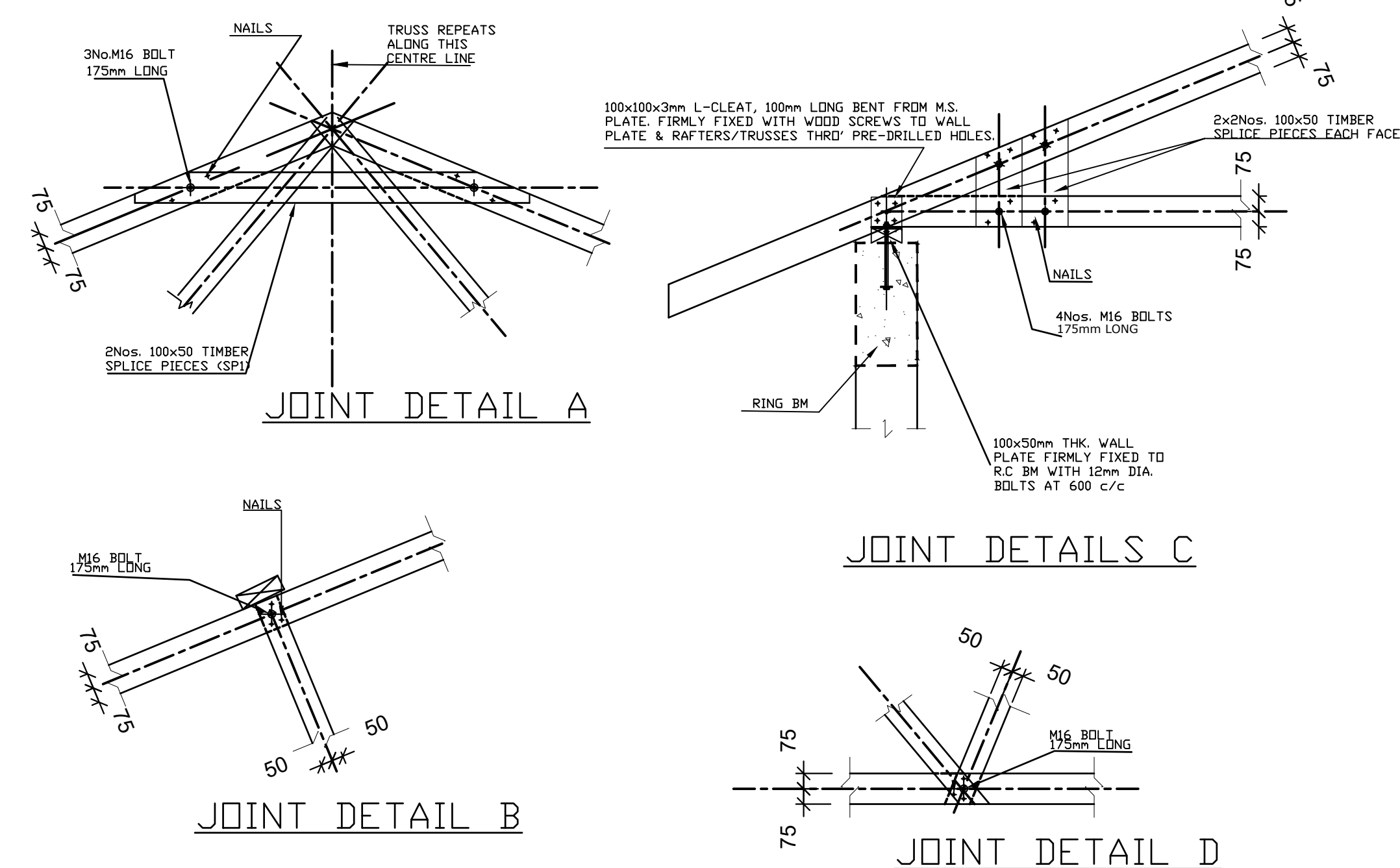
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW			
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: +(82) 2 6488 8255 Fax: +(82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	JULY 2020			
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									Sheet No. :	1 of 2	
						Drawing Title:	ADMINISTRATION BLOCK PLAN AND SECTION DETAILS				
						Designed: B. MURILA					
						Drawn : B. MURILA					
						Checked: D. LIAMBILA					
						Approved: B. KIM					



**TYPICAL EXTERNAL STRIP
FOUNDATION DETAILS
SECTION A-A**



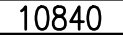
ROOF LAYOUT








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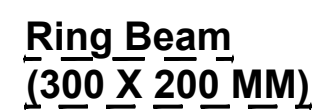
Revisions		Consultant		Employer	Project Manager	Project:	
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82) 2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	And  <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA
						Drawn : B. MURILA	
						Checked: D. LIAMBILA	
						Approved: B. KIM	
						Drawing Title:	ADMINISTRATION BLOCK STRUCTURAL LAYOUT AND DETAILS
						Stage :	FINAL DESIGN REVIEW
						Date :	JULY 2020
						Drawing No. :	MAT-WTP-AB-02
						Scale :	1:40
						Sheet No. :	2 of 2
						Index No. :	
						Sheet Size :	A1



SYMBOL	DESCRIPTION
	1.SPHERICAL SCREW NECK FITTING
	2.13A TWIN SOCKET OUTLET
	3.SWITCH
	4.SECURITY LIGHTING
	5.SPN CONSUMER UNIT

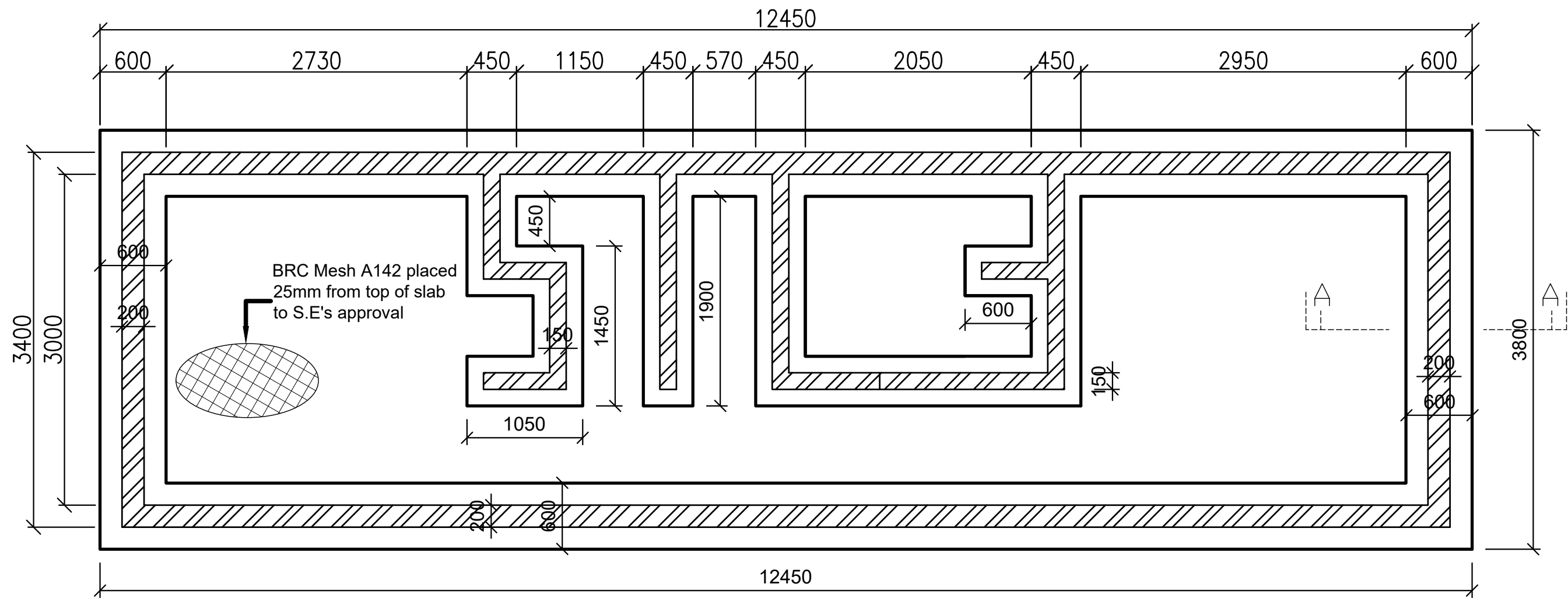
WATER SUPPLY
PIPES SHALL RUN INSIDE BUILDING
AS INDICATED

Revisions		Consultant		Employer	Project Manager	Project:		Stage :	FINAL DESIGN REVIEW			
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</div>	And  <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date :	JULY 2020			
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						Checked: D. LIAMBILA		Drawing Title: OPERATOR'S HOUSE PLAN AND SECTION DETAILS	Scale :	1:50		Sheet Size : A1
						Approved: B. KIM			Sheet No. :	1 of 2		
									Index No. :			

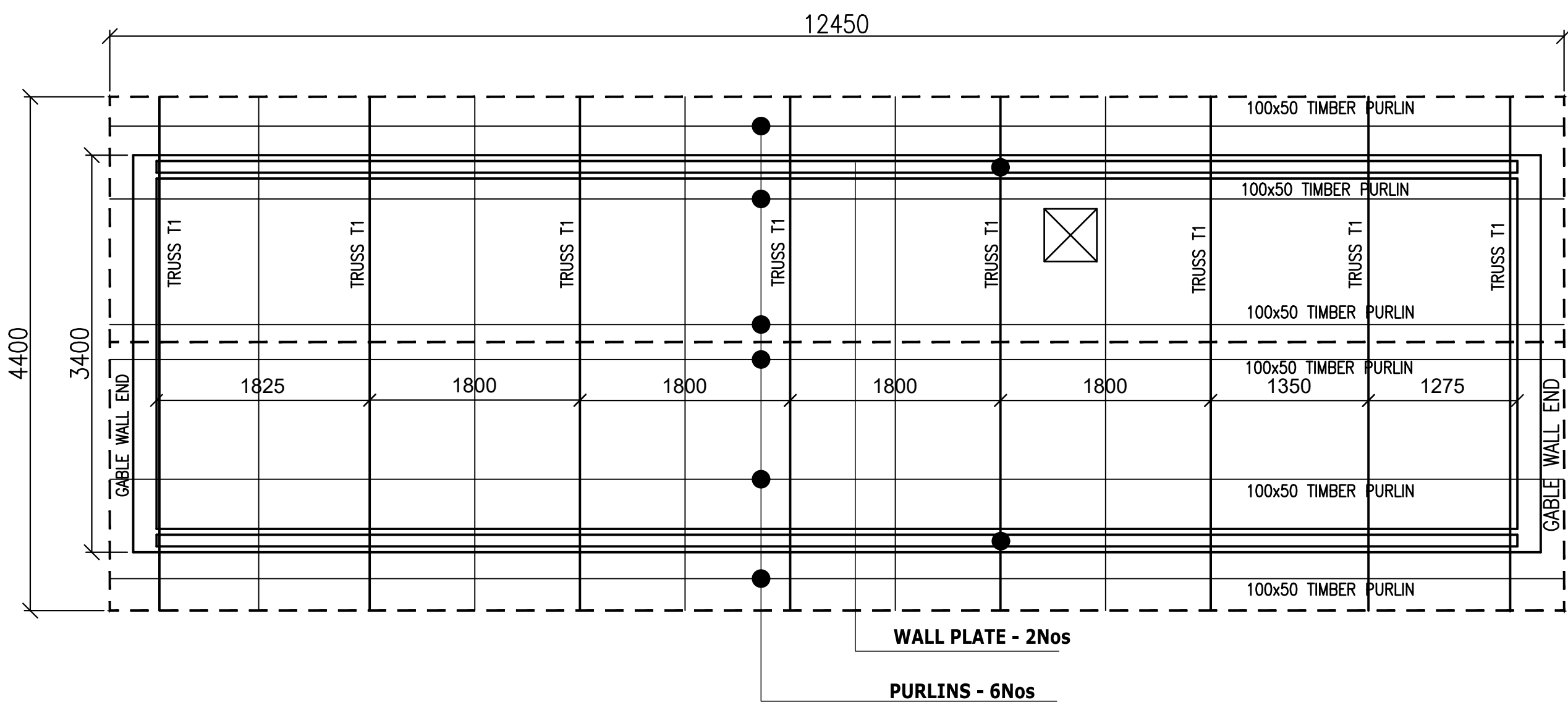


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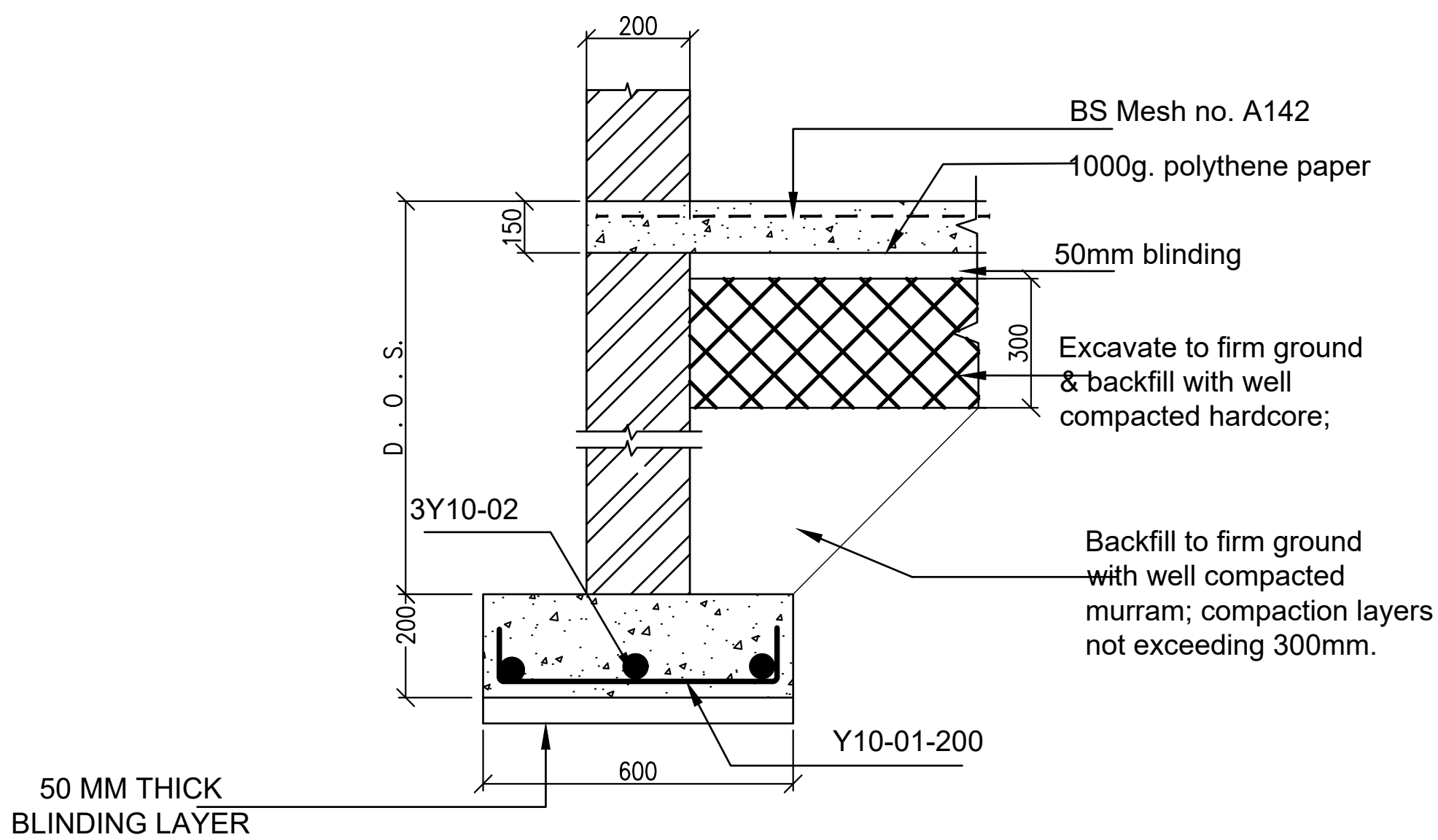
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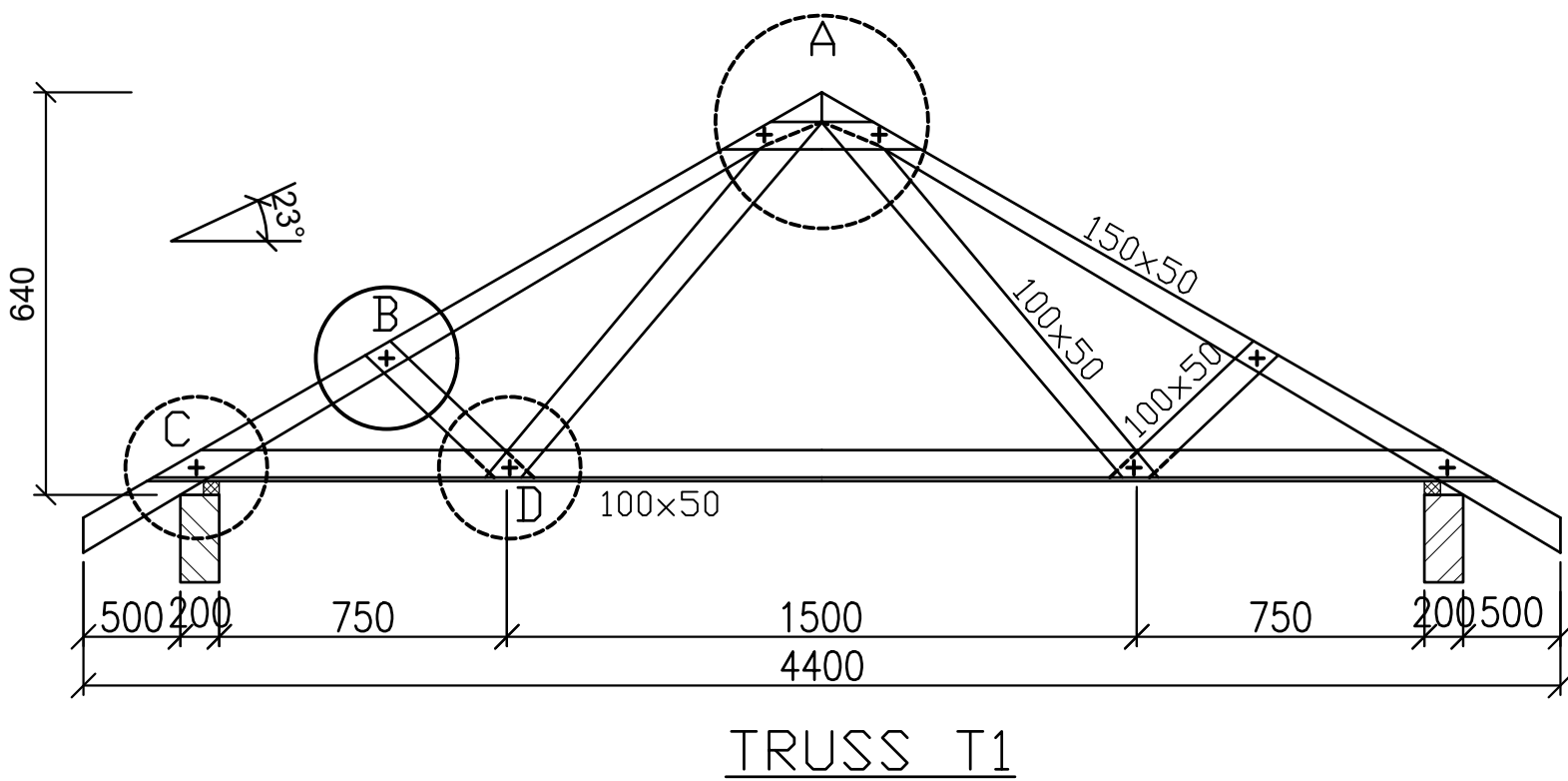
FOUNDATION LAYOUT



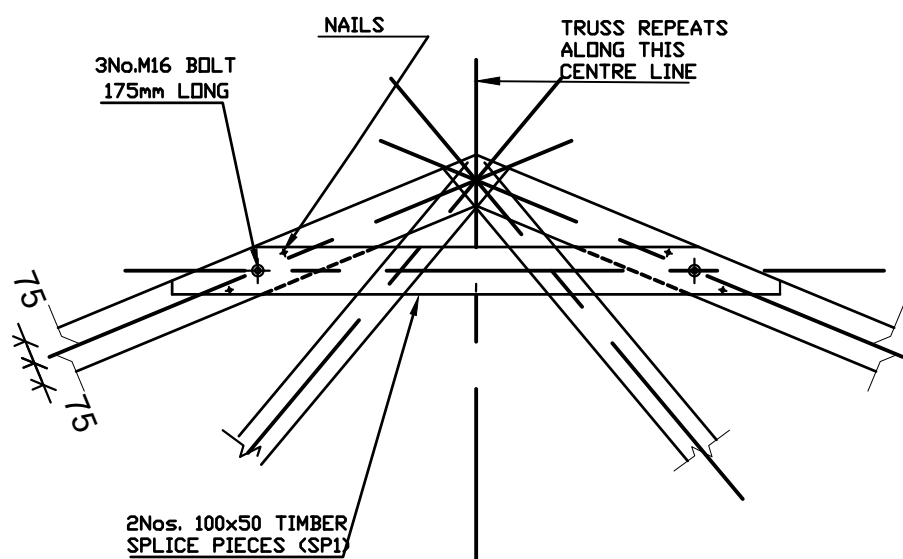
ROOF LAYOUT



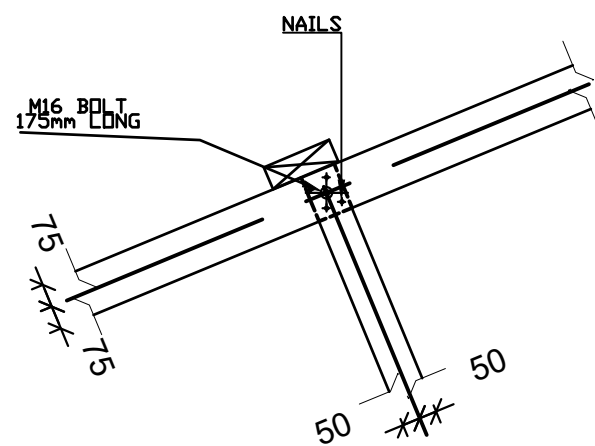
TYPICAL EXTERNAL STRIP FOUNDATION DETAILS SECTION A-A



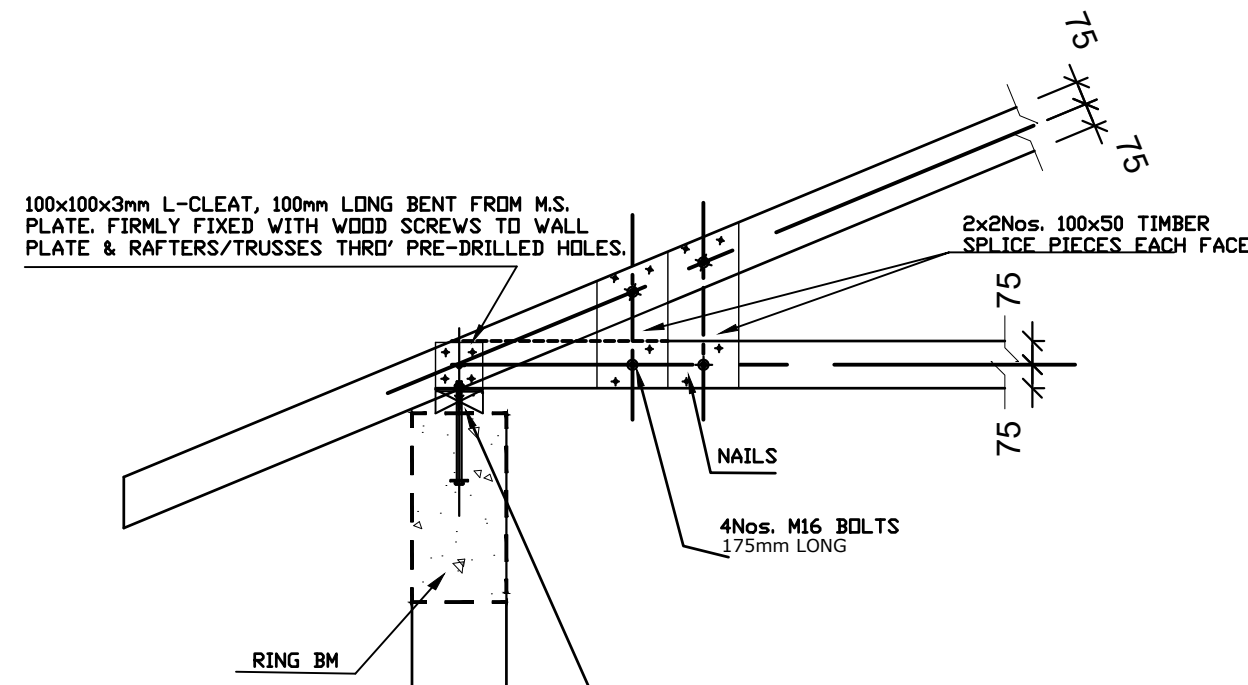
TRUSS T1



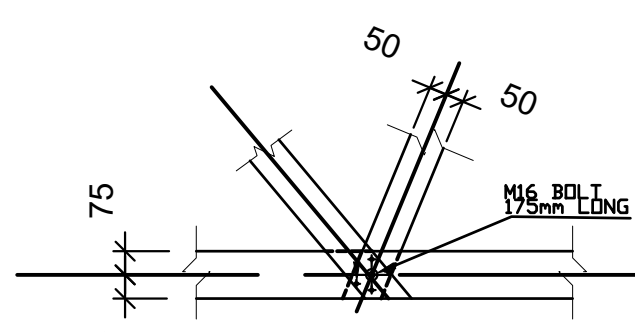
JOINT DETAIL A



JOINT DETAIL B



JOINT DETAILS C

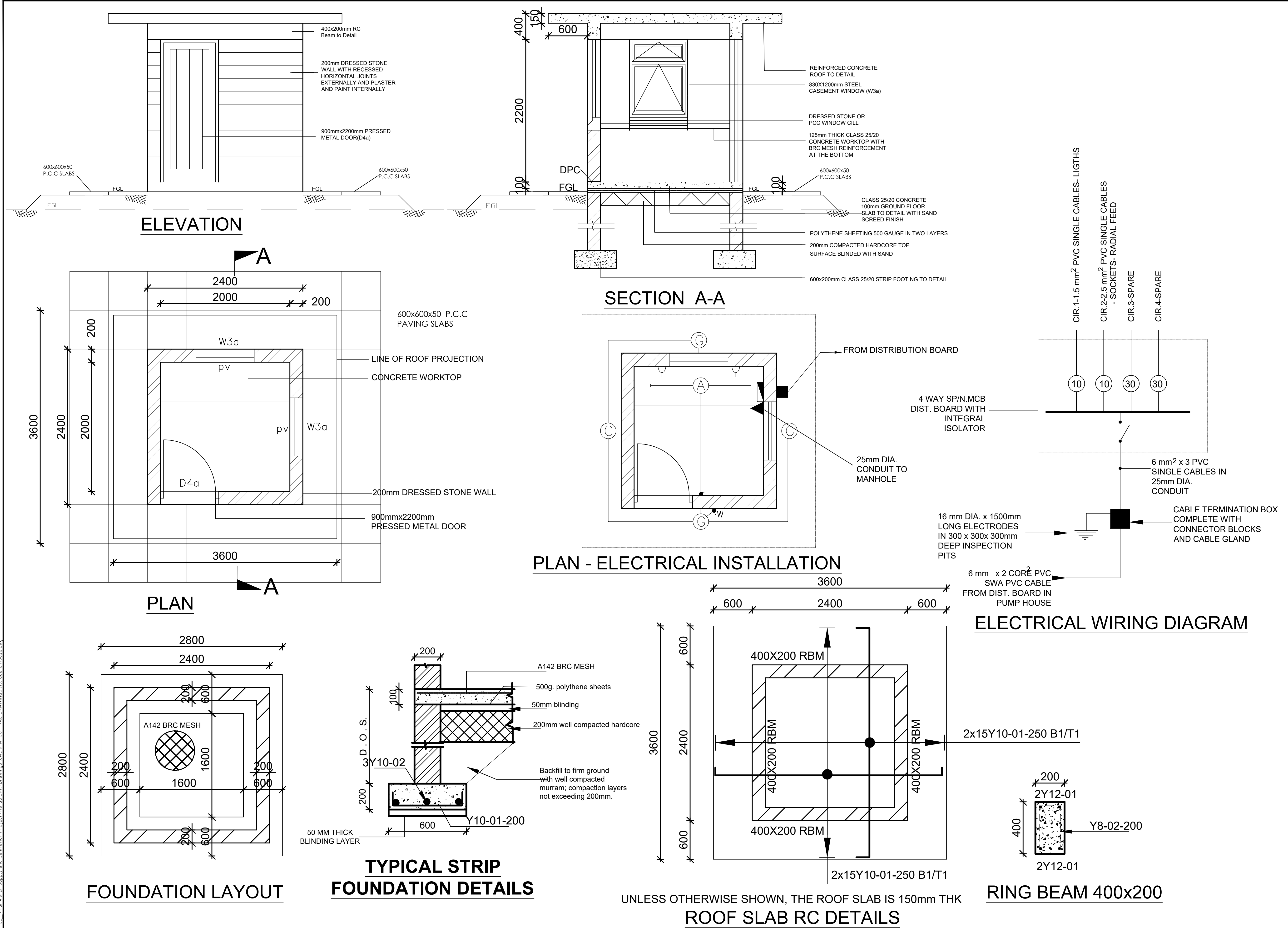


JOINT DETAIL D

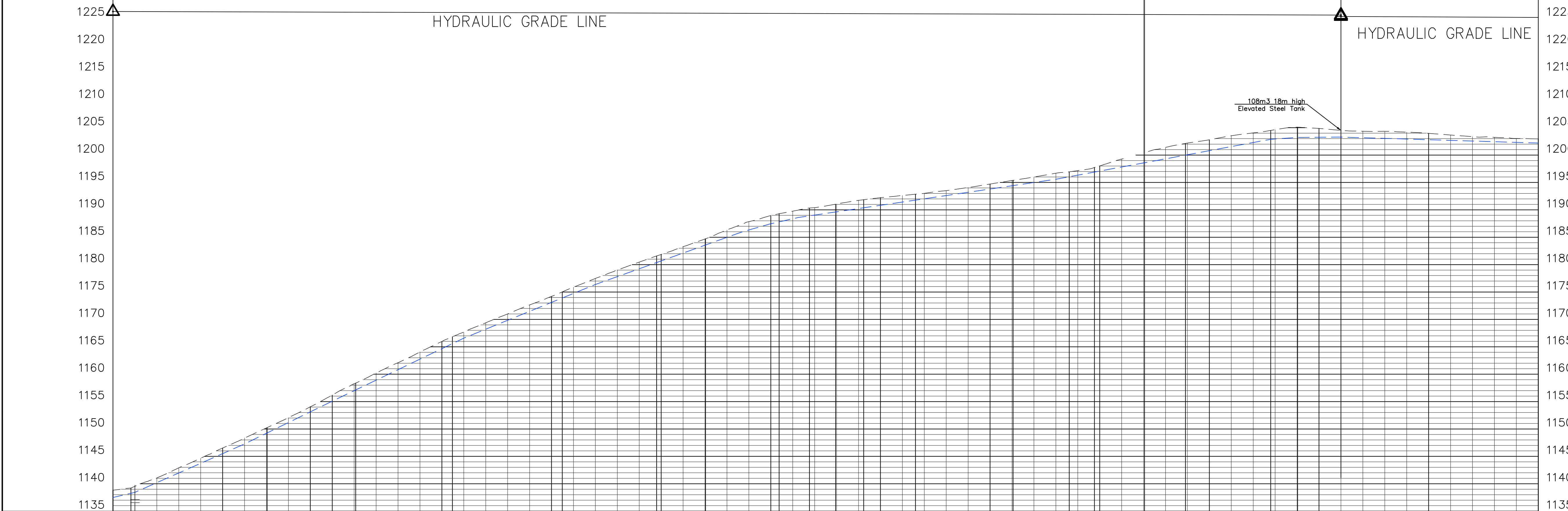
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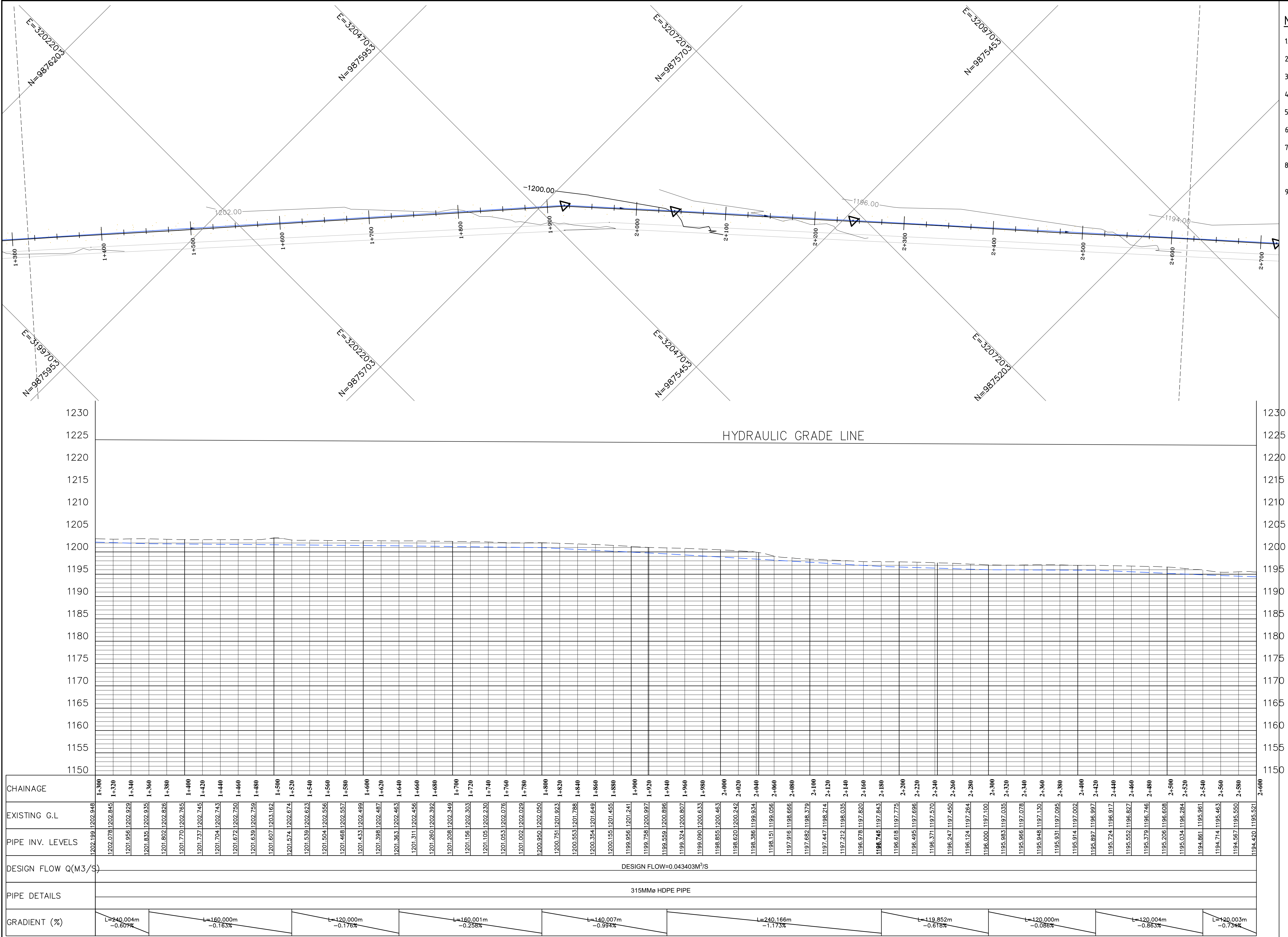
Revisions		Consultant		Employer		Project Manager		Project		Stage : FINAL DESIGN REVIEW	
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								Sheet No. : 2 of 2			
								Index No. :			



NOTES DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED													
ABBREVIATIONS DPC - DAMP PROOF COURSE PV - PERMANENT VENTILATION PCC - PRECAST CONCRETE FGL - FINAL GROUND LEVEL													
LEGEND - ELECTRICAL <div><div></div>1 GANG 1 WAY LIGHTING SWITCH</div> <div><div></div>1 GANG 2 WAY LIGHTING SWITCH (WEATHER PROOF)</div> <div><div></div>13 AMP SINGLE SWITCHED SOCKET OUTLET</div> <div><div></div>18 WATT - 60mm SINGLE FLOURESCENT FITTING AS THORN CAT No. PP118 (HIGHER POWER FACTOR)</div> <div><div></div>BULKHEAD FITTING SUITABLE FOR EXTERNAL AND INTERNAL APPLICATION WITH LAMP 2D - 16 WATT LONG LIFE LOW ENERGY CONSUMPTION AS THORN CAT No. FV02D16B</div> <div><div></div>SINGLE PHASE MCB DISTRIBUTION BOARD WITH INTEGRAL ISOLATOR</div> <div><div></div>WATER TIGHT CABLE TERMINATION BOX COMPLETE WITH CONNECTOR BLOCKS</div>													
Revisions <table><thead><tr><th>Description</th><th>Date</th></tr></thead><tbody><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></tbody></table>		Description	Date										
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Stage: FINAL DESIGN REVIEW Date: JULY 2020 Drawing No.: MAT-GH-001 Scale: 1:40 Sheet No.: 1 of 1 Index No.:													
Sheet Size: A1													



CHAINAGE	0+000	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+320	0+340	0+360	0+380	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600	0+620	0+640	0+660	0+680	0+700	0+720	0+740	0+760	0+780	0+800	0+820	0+840	0+860	0+880	0+900	0+920	0+940	0+960	0+980	1+000	1+020	1+040	1+060	1+080	1+100	1+120	1+140	1+160	1+180	1+200	1+220	1+240	1+260	1+280	1+300																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
EXISTING G.L	1137.500	1138.826	1139.531	1140.063	1141.063	1142.909	1144.669	1146.522	1148.369	1150.193	1152.032	1153.875	1155.077	1156.177	1158.262	1159.972	1160.235	1162.096	1164.061	1165.975	1167.681	1169.378	1171.003	1172.644	1174.197	1175.885	1177.475	1179.028	1180.464	1181.859	1183.289	1184.680	1186.328	1187.947	1189.531	1191.083	1192.630	1194.166	1195.690	1197.206	1198.712	1199.204	1200.684	1202.189	1203.634	1205.093	1206.564	1208.064	1209.534	1210.945	1212.398	1213.840	1215.269	1216.681	1218.079	1219.464	1220.837	1222.198	1223.548	1224.887	1226.215	1227.532	1228.838	1230.133	1231.417	1232.690	1233.952	1235.203	1236.443	1237.672	1238.891	1240.099	1241.296	1242.482	1243.657	1244.821	1245.974	1247.116	1248.247	1249.367	1250.476	1251.574	1252.661	1253.737	1254.802	1255.856	1256.900	1257.933	1258.956	1260.000	1261.033	1262.056	1263.069	1264.071	1265.062	1266.043	1267.014	1267.975	1268.926	1269.867	1270.798	1271.719	1272.630	1273.531	1274.422	1275.303	1276.174	1277.035	1277.886	1278.727	1279.558	1280.379	1281.190	1282.001	1282.802	1283.593	1284.374	1285.145	1285.906	1286.657	1287.408	1288.149	1288.880	1289.601	1290.312	1291.013	1291.704	1292.385	1293.056	1293.717	1294.368	1295.009	1295.640	1296.261	1296.872	1297.473	1298.064	1298.645	1299.216	1299.777	1300.328	1300.869	1301.400	1301.921	1302.432	1302.933	1303.424	1303.905	1304.376	1304.837	1305.288	1305.729	1306.160	1306.581	1307.002	1307.413	1307.814	1308.205	1308.586	1308.957	1309.318	1309.669	1310.010	1310.341	1310.662	1310.973	1311.274	1311.565	1311.846	1312.117	1312.378	1312.629	1312.870	1313.101	1313.322	1313.533	1313.734	1313.925	1314.106	1314.277	1314.438	1314.589	1314.730	1314.861	1314.982	1315.093	1315.194	1315.285	1315.366	1315.437	1315.498	1315.549	1315.590	1315.621	1315.642	1315.653	1315.654	1315.645	1315.626	1315.597	1315.558	1315.509	1315.450	1315.381	1315.302	1315.213	1315.114	1315.005	1314.886	1314.757	1314.618	1314.469	1314.310	1314.141	1313.962	1313.773	1313.574	1313.365	1313.146	1312.917	1312.678	1312.429	1312.170	1311.901	1311.622	1311.333	1311.034	1310.725	1310.406	1310.077	1309.738	1309.389	1309.030	1308.661	1308.282	1307.893	1307.494	1307.085	1306.666	1306.237	1305.798	1305.349	1304.890	1304.421	1303.942	1303.453	1302.954	1302.445	1301.926	1301.397	1300.858	1300.309	1299.750	1299.181	1298.602	1298.013	1297.414	1296.805	1296.186	1295.557	1294.918	1294.269	1293.610	1292.941	1292.262	1291.573	1290.874	1290.165	1289.446	1288.717	1287.978	1287.229	1286.470	1285.701	1284.922	1284.133	1283.334	1282.525	1281.706	1280.877	1280.038	1279.189	1278.330	1277.461	1276.582	1275.693	1274.794	1273.885	1272.966	1272.037	1271.098	1270.149	1269.190	1268.221	1267.242	1266.253	1265.254	1264.245	1263.226	1262.197	1261.158	1260.109	1259.050	1257.981	1256.902	1255.813	1254.714	1253.605	1252.486	1251.357	1250.218	1249.069	1247.910	1246.741	1245.562	1244.373	1243.174	1241.965	1240.746	1239.517	1238.278	1237.029	1235.770	1234.501	1233.222	1231.933	1230.634	1229.325	1227.996	1226.657	1225.308	1223.949	1222.570	1221.181	1219.782	1218.373	1216.954	1215.525	1214.086	1212.637	1211.178	1209.709	1208.230	1206.741	1205.242	1203.733	1202.214	1200.685	1199.146	1197.587	1196.018	1194.439	1192.850	1191.251	1189.642	1188.023	1186.394	1184.755	1183.106	1181.447	1179.778	1178.109	1176.430	1174.741	1173.042	1171.333	1169.614	1167.885	1166.146	1164.397	1162.638	1160.869	1159.090	1157.301	1155.502	1153.693	1151.874	1150.045	1148.206	1146.357	1144.508	1142.649	1140.780	1138.901	1137.012	1135.113	1133.204	1131.285	1129.356	1127.417	1125.468	1123.509	1121.540	1119.561	1117.572	1115.573	1113.564	1111.545	1109.516	1107.477	1105.428	1103.369	1101.300	1099.221	1097.132	1095.033	1092.924	1090.805	1088.676	1086.537	1084.388	1082.229	1080.060	1077.881	1075.692	1073.493	1071.284	1069.065	1066.836	1064.597	1062.348	1060.089	1057.820	1055.541	1053.252	1050.953	1048.644	1046.325	1043.996	1041.657	1039.308	1036.949	1034.570	1032.181	1029.782	1027.373	1024.954	1022.525	1020.086	1017.637	1015.178	1012.709	1010.230	1007.741	1005.242	1002.733	1000.214	997.685	995.146	992.587	989.918	987.239	984.550	981.851	979.142	976.423	973.694	970.955	968.206	965.447	962.678	959.899	957.110	954.311	951.502	948.683	945.854	942.915	939.966	936.997	933.918	930.829	927.730	924.621	921.502	918.373	915.234	912.085	908.926	905.757	902.578	899.389	896.190	892.981	889.762	886.533	883.294	879.995	876.636	873.217	869.738	866.199	862.590	858.921	855.192	851.403	847.554	843.645	839.676	835.647	831.558	827.409	823.200	818.931	814.602	810.213	805.764	801.255	796.686	792.057	787.368	782.619	777.810	772.941	768.012	763.023	757.974	752.865	747.696	742.467	737.178	731.829	726.420	720.951	715.422	709.833	704.184	698.475	692.706	686.877	680.988	675.039	669.030	662.961	656.832	650.643	644.394	638.085	631.716	625.287	618.798	612.249	605.640	598.971	592.242	585.453	578.604	571.695	564.726	557.697	550.608	543.459	536.250	528.981	521.652	514.263	506.814	499.305	491.736	484.107	476.418	468.669	460.860	452.991	445.062	437.073	429.024	420.915	412.746	404.517	396.228	387.879	379.470	371.001	362.472	353.883	345.234	336.525	327.756	318.927	309.938	300.889	291.780	282.611	273.382	264.093	254.744	245.335	235.866	226.337	216.748	207.099	197.390	187.621	177.792	167.903	157.954	147.945	137.876	127.747	117.558	107.309	96.990	86.601	76.142	65.613	55.014	44.345	33.606	22.887	12.188	1.509	-8.760	-18.991	-29.192	-39.363	-49.504	-59.615	-69.696	-79.747	-89.768	-99.759	-109.720	-119.651	-129.552	-139.423	-149.264	-159.075	-168.856	-178.607	-188.328	-197.919	-207.480	-216.991	-226.452	-235.863	-245.224	-254.535	-263.796	-272.997	-282.128	-291.179	-300.140	-309.011	-317.792	-326.493	-335.114	-343.655	-352.116	-360.497	-368.798	-376.999	-385.090	-393.071	-400.942	-408.703	-416.354	-423.895	-431.326	-438.647	-445.858	-452.959	-459.950	-466.831	-473.592	-480.233	-486.754	-493.155	-499.436	-505.597	-511.638	-517.559	-523.360	-529.041	-534.592	-540.013	-545.304	-550.465	-555.496	-560.397	-565.168	-569.809	-574.320	-578.791	-583.122	-587.313	-591.364	-595.275	-599.046	-602.677	-606.168	-609.519	-612.730	-615.801	-618.732	-621.523	-624.174	-626.685	-629.056	-631.287	-633.378	-635.329	-637.140	-638.811	-640.342	-641.733	-642.984	-644.095	-645.066	-645.897	-646.588	-647.139	-647.550	-647.821	-647.952	-647.943	-647.794	-647.505	-647.076	-646.507	-645.798	-644.949	-643.960	-642.831	-641.562	-640.153	-638.604	-636.915	-635.086	-633.117	-631.008	-628.759	-626.370	-623.841	-621.172	-618.363	-615.414	-612.325	-609.096	-605.727	-602.218	-598.569	-594.780	-590.851	-586.782	-582.573	-578.224	-573.735	-569.106	-564.337	-559.428	-554.379	-549.190	-543.861	-538.392	-532.783	-527.034	-521.145	-515.116	-508.947	-502.638	-496.189	-489.600	-482.871	-476.002	-469.003	-461.874	-454.615	-447.226	-439.707	-432.058	-424.279	-416.370	-408.331	-400.152	-391.833	-383.374	-374.775	-366.036	-357.157	-348.138	-338.979	-329.680	-320.241	-310.662	-300.943	-291.084	-281.085	-270.946	-260.667	-250.248	-239.689	-228.990	-218.151	-207.172	-196.053	-184.794	-173.395	-161.856	-150.177	-138.358	-126.399	-114.300	-102.061	-89.682	-77.163	-64.504	-51.705	-38.766	-25.687	-12.478	0.000	12.478	25.687	38.766	51.705	64.504	77.163	89.682	102.061	114.300	126.399	138.358	150.177	161.856	173.395	184.794	196.053	207.172	218.151	228.990	239.689	250.248	260.667	270.946	281.085	291.084	300.943	310.662	320.241	329.680	338.979	348.138	357.157	366.036	374.775	383.374	391.833	400.152	408.331	416.370	424.279	432.058	439.707	447.226	454.615	461.874	469.003	476.002	482.871	489.600	496.189	502.638	508.947	515.116	521.145	527.034	532.783	538.392	543.861	549.190	554.379	559.428	564.337	569.106	573.735	578.224	582.573	586.782	590.851	594.780	598.569	602.218	605.721

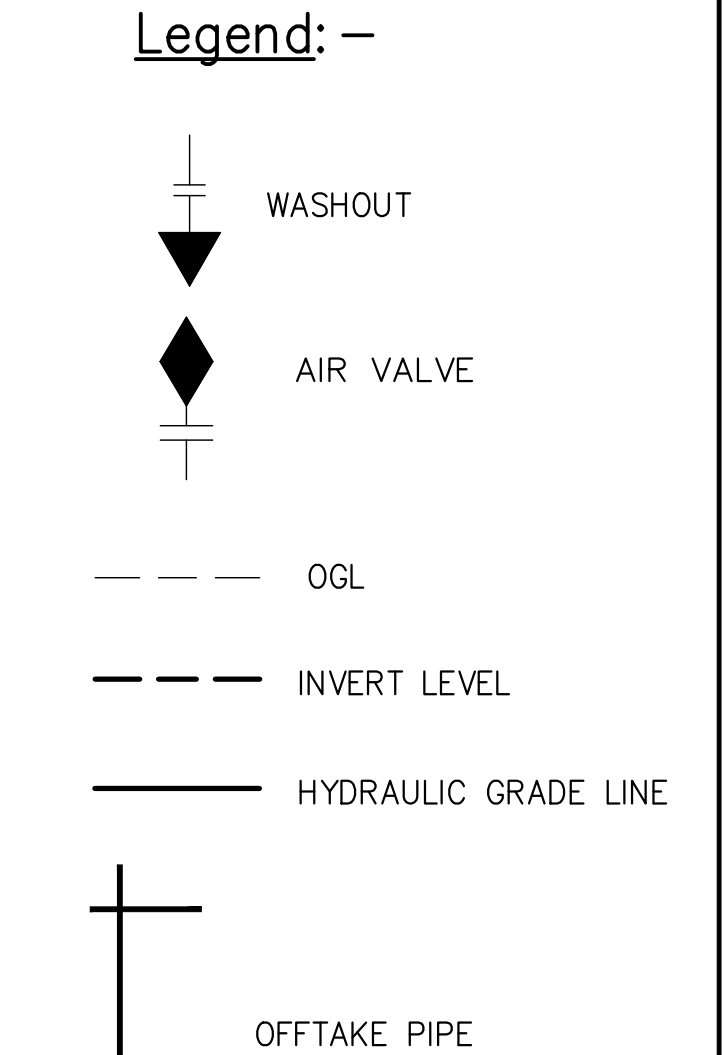
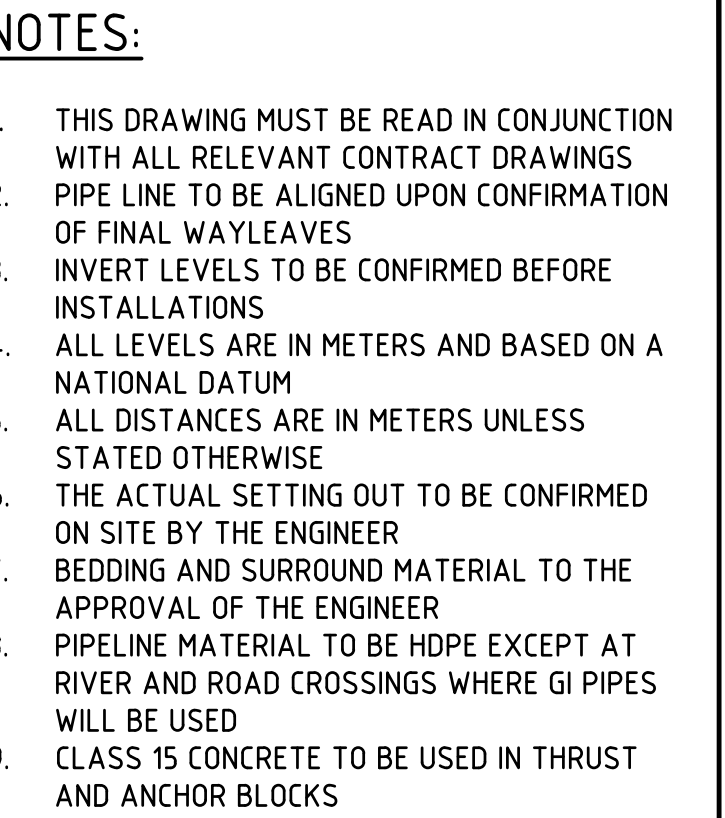


- NOTES:
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
 2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
 3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
 4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
 5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
 6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
 7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
 8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
 9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS

Legend: -

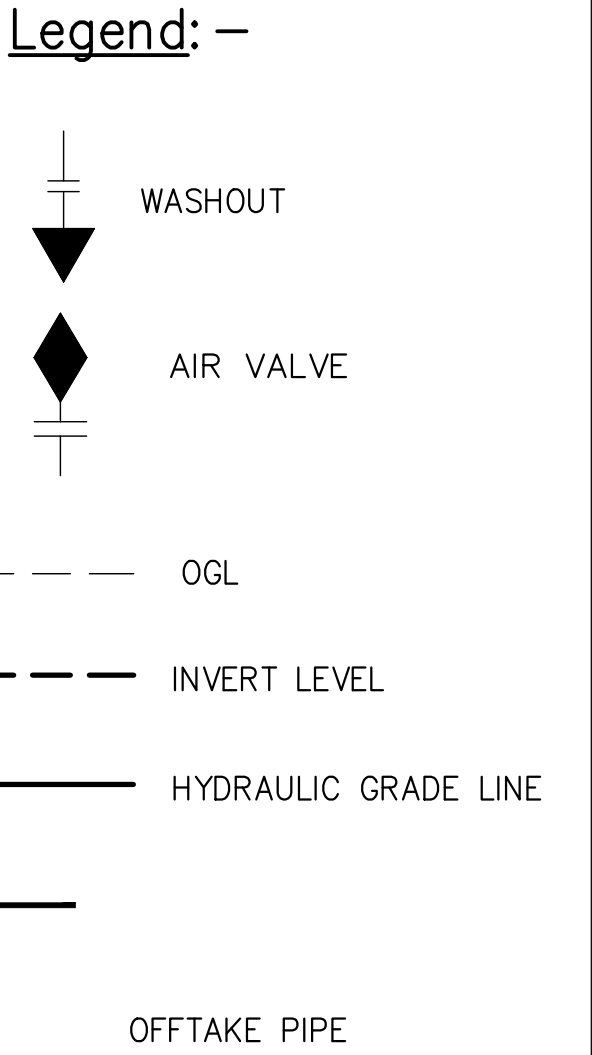
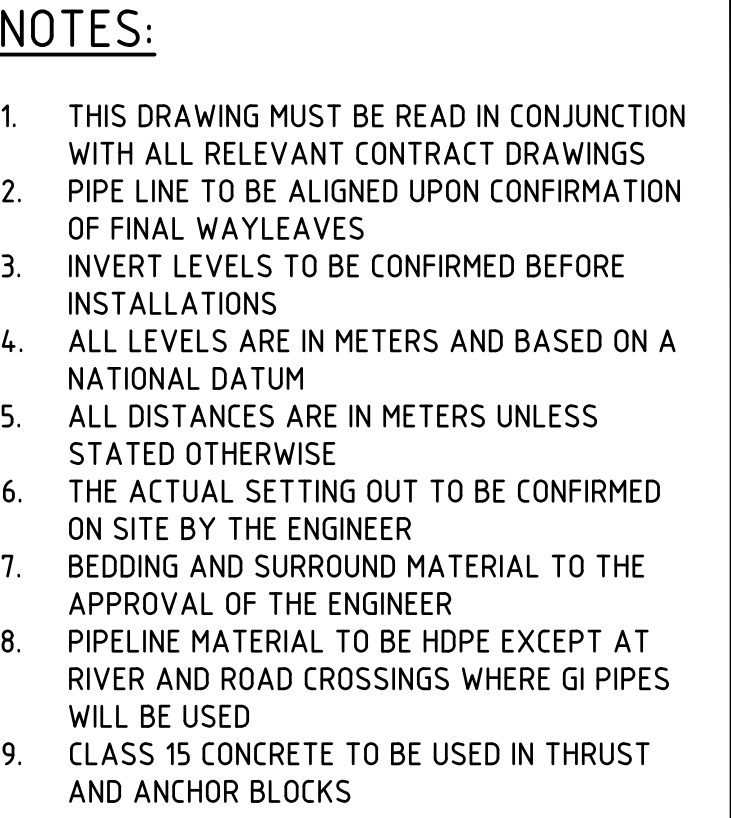
- WASHOUT
- AIR VALVE
- OGL
- INVERT LEVEL
- HYDRAULIC GRADE LINE
- OFFTAKE PIPE


Revisions		Consultant		Employer	Project Manager	Project:		Stage :		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: R. Okello	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		FINAL DESIGN REVIEW	
						Drawn : B.Muria			Date : JULY 2020	
						Checked: D. Liambila	Drawing Title: MATUU WATER GRAVITY MAIN PLAN AND PROFILE DRAWINGS KM 1+300 - 2+600		Drawing No. : MAT-TWGM-P&P-002	
						Approved: B. Kim			Scale : VERT-1:200 HOR-1:2000	
									Sheet No. : 2 of 21	
					Index No. :	Sheet Size : A1				

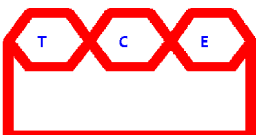


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Index No. :		

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Drawing No. :	MAT-TWGM-P&P-003	
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Sheet No. :	3 of 21	A1
Index No. :		



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Project Manager

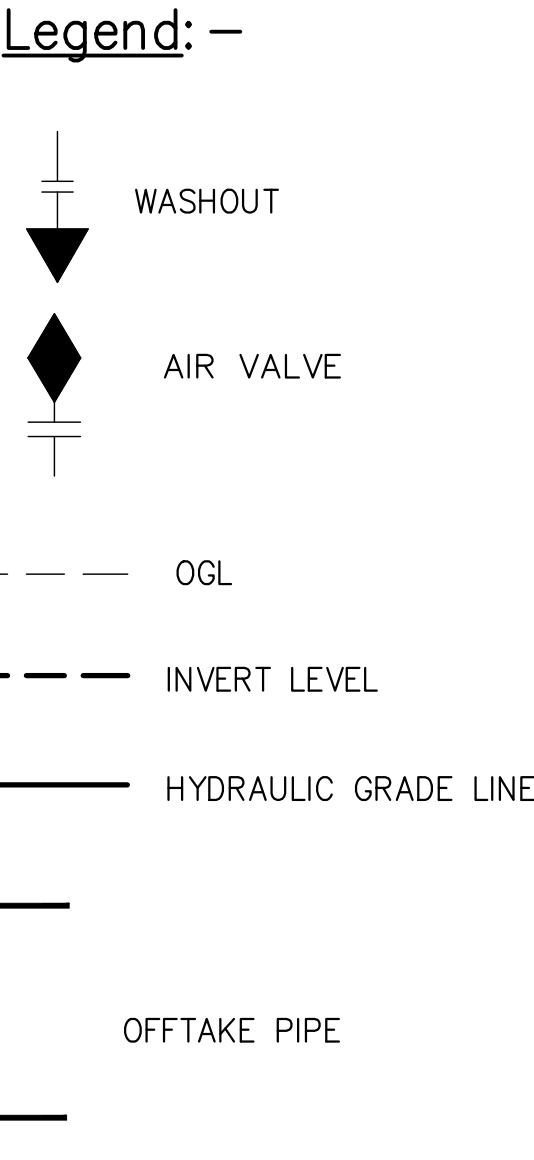
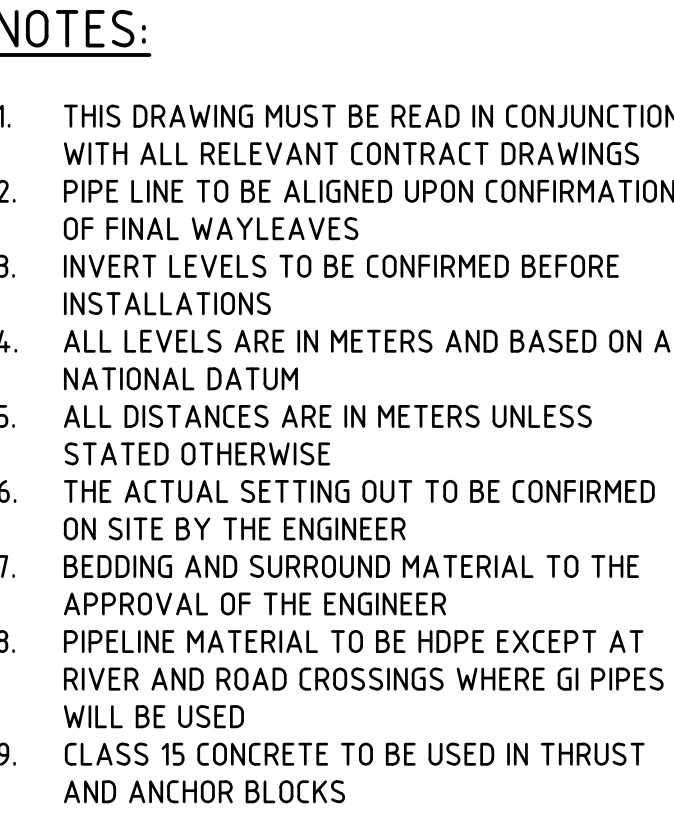
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Drawn :	B.Murila
Checked:	D. Liambila
Approved:	B. Kim


Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI
MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN
TANATHI WATER WORKS DEVELOPMENT AGENCY AREA

Drawing Title: MATUU WATER GRAVITY MAIN
PLAN AND PROFILE DRAWINGS
KM 3+900 - 5+200

Stage :	FINAL DESIGN REVIEW		
Date :	JULY 2020		
Drawing No. :	MAT-TWGM-P&P-004		
Scale :	VERT-1:200 HOR-1:2000	Sheet Size : A1	
Sheet No. :	4 of 21		
Index No. :			



Stage :	FINAL DESIGN REVIEW	
Date :	JULY 2020	
Drawing No. :	MAT-TWGM-P&P-005	
Scale :	VERT-1:200 HOR-1:2000	Sheet Size : A1
Sheet No. :	5 of 21	
Index No. :		

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Drawn : B.Mul

Checked: D. Llan

Approved: B. Kim

Project:

CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITU
MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN
TANATHI WATER WORKS DEVELOPMENT AGENCY AREA

Drawing Title:

MATUU WATER GRAVITY MAIN
PLAN AND PROFILE DRAWINGS
KM 5+200 - 6+500

Stage : FINAL DESIGN REVIEW

Date : JULY 2020

Drawing No. : MAT-TWGM-P&P-005

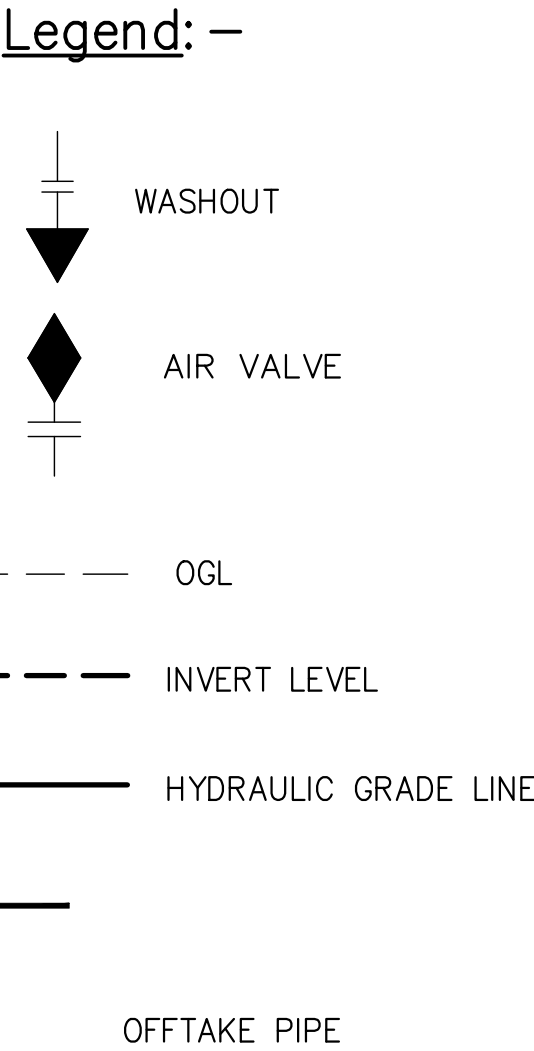
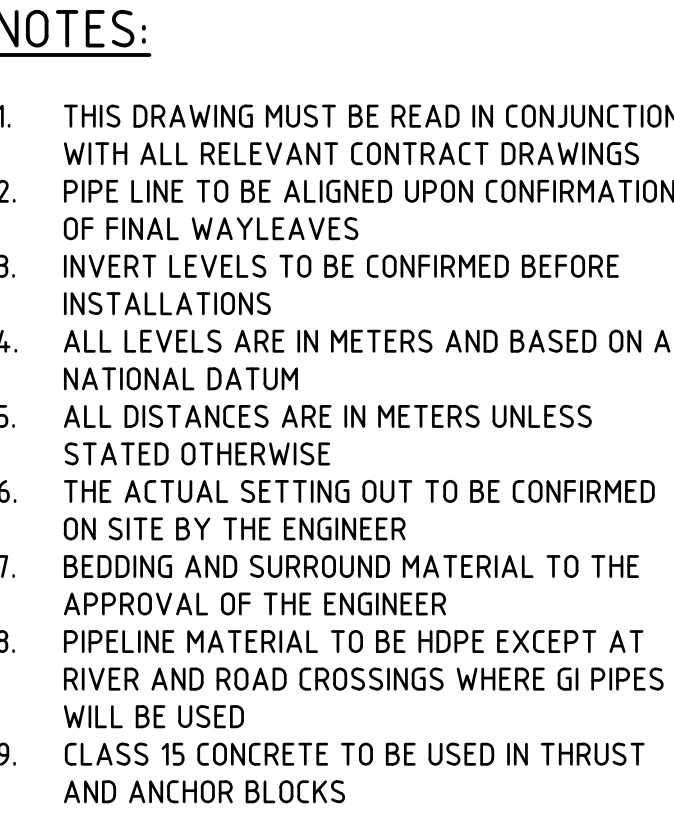
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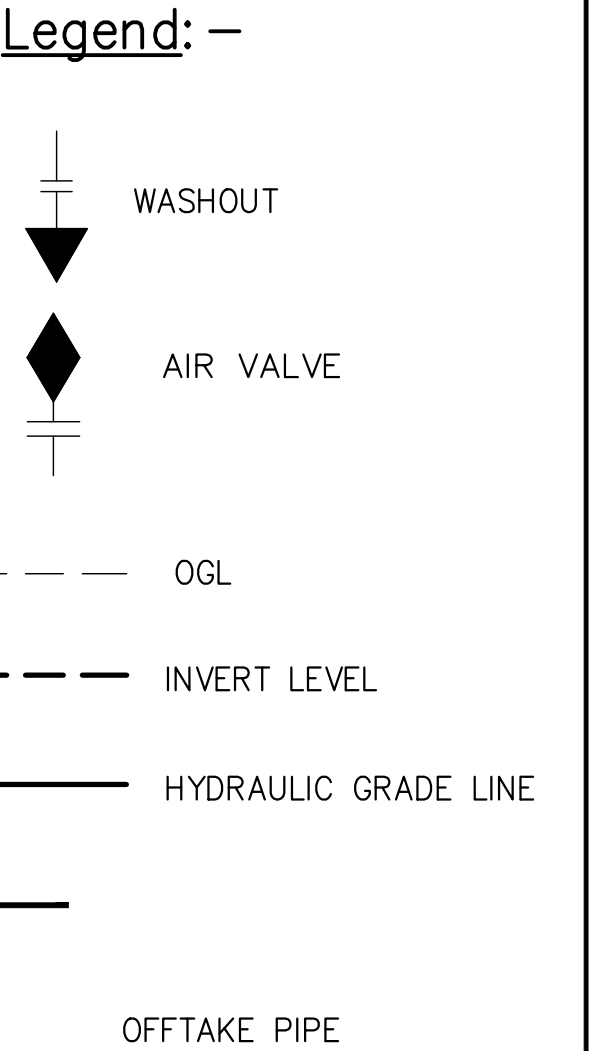
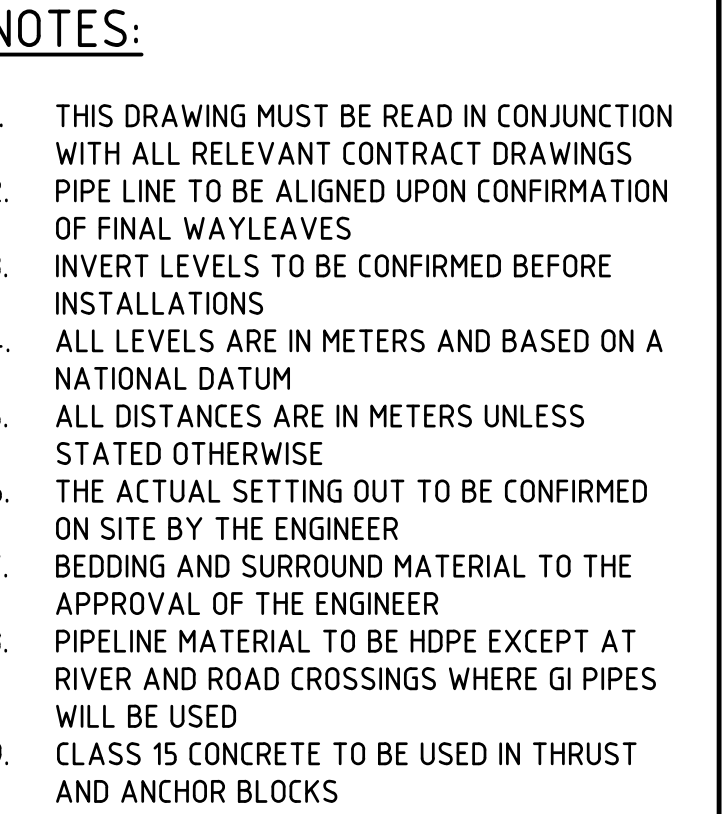
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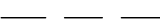



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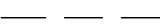



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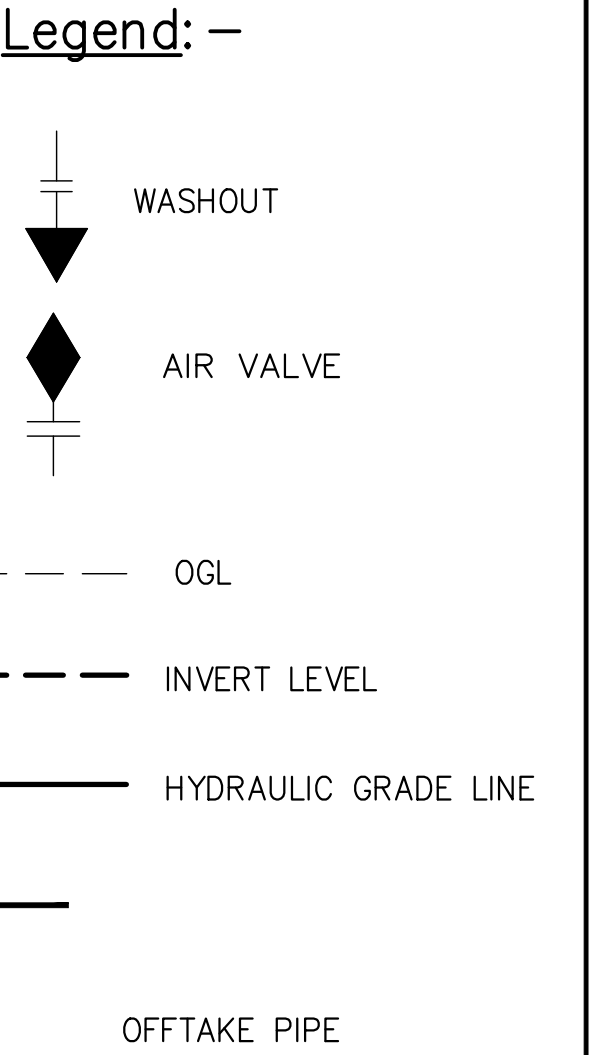
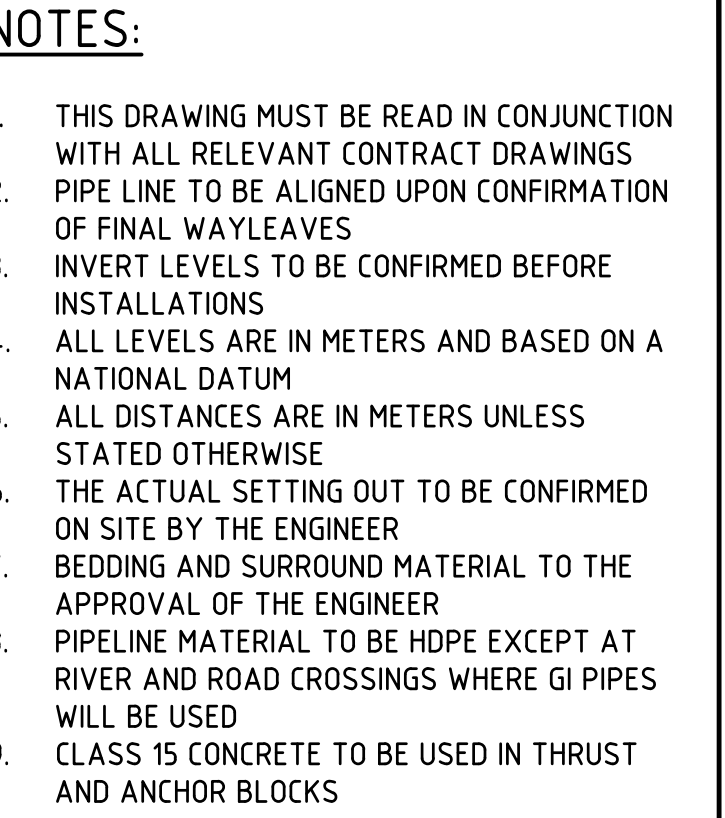


Legend: -

	WASHOUT
	AIR VALVE
	OG L
	INVERT LEVEL
	HYDRAULIC GRADE LINE
	OFFTAKE PIPE

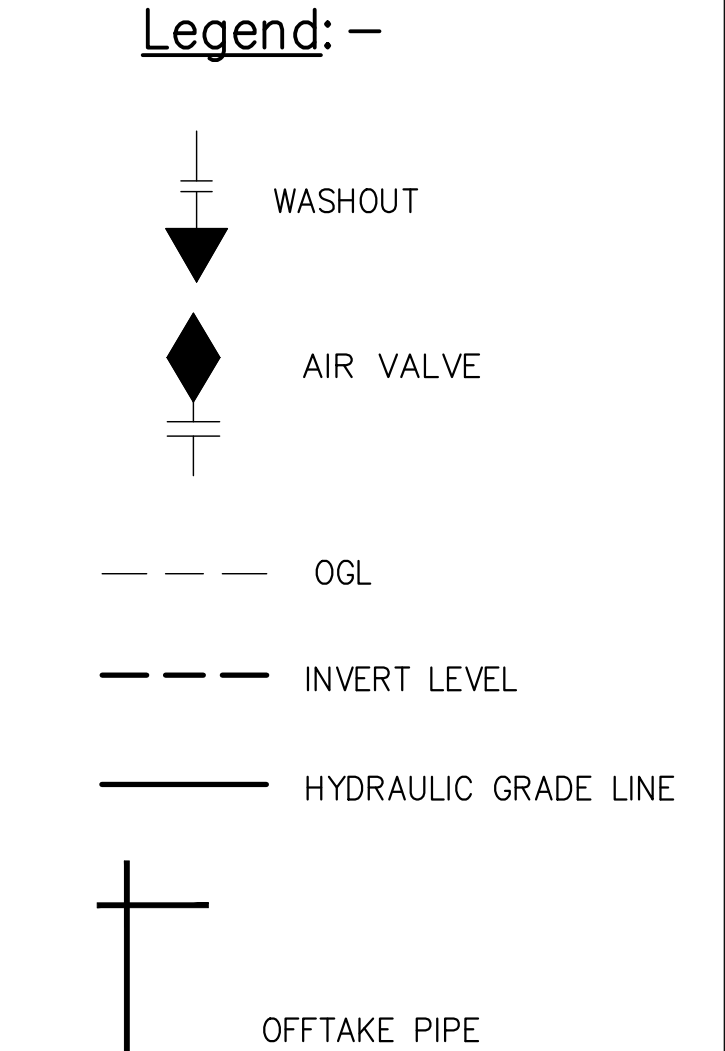
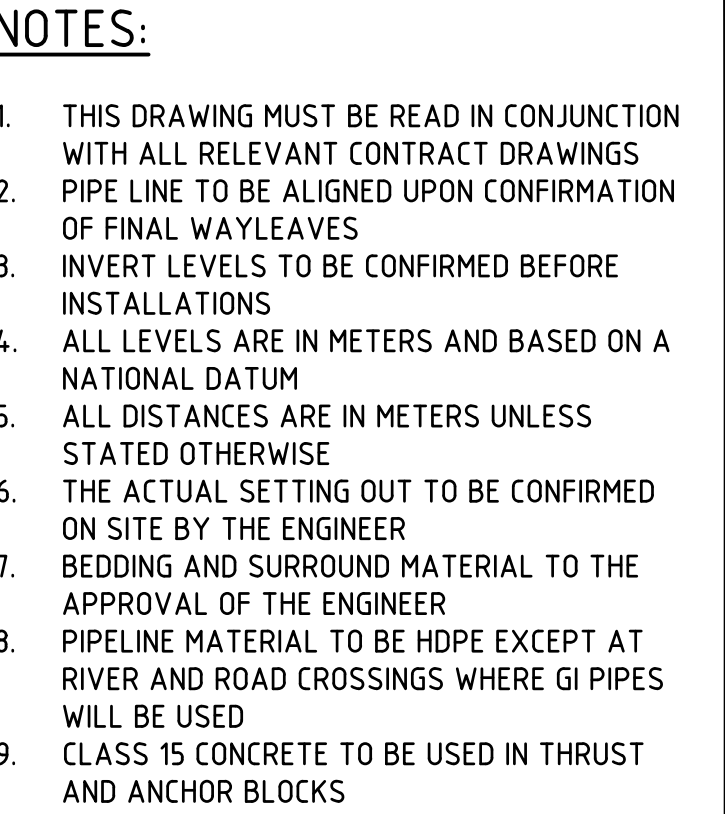
Legend: -

	WASHOUT
	AIR VALVE
	OG L
	INVERT LEVEL
	HYDRAULIC GRADE LINE
	OFFTAKE PIPE

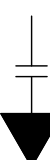



Date	Time	Location	Weather	Temperature	Humidity	Wind Speed	Wind Direction	Remarks
2023-10-27	08:00	Gardens	Clear	25°C	65%	10 km/h	SE	Birds singing
2023-10-27	12:00	Park	Partly Cloudy	28°C	70%	15 km/h	S	Shade under trees
2023-10-27	16:00	Field	Clear	22°C	60%	20 km/h	W	Cool breeze
2023-10-28	06:00	Forest	Foggy	18°C	85%	5 km/h	N	Mist clearing
2023-10-28	10:00	Lake	Sunny	30°C	55%	25 km/h	E	Ripples on water
2023-10-28	14:00	Mountain	Cloudy	20°C	75%	12 km/h	NW	Cooler at altitude
2023-10-28	18:00	Beach	Clear	27°C	68%	18 km/h	SE	Seagulls flying
2023-10-29	07:00	Park	Clear	24°C	62%	10 km/h	E	Morning dew
2023-10-29	11:00	Field	Partly Cloudy	29°C	60%	15 km/h	S	Warm sun
2023-10-29	15:00	Lake	Clear	26°C	58%	20 km/h	W	Calm water
2023-10-29	19:00	Forest	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-10-30	08:00	Park	Clear	25°C	60%	12 km/h	SE	Birds active
2023-10-30	12:00	Field	Partly Cloudy	28°C	65%	18 km/h	S	Shade on ground
2023-10-30	16:00	Lake	Clear	24°C	55%	22 km/h	W	Ripples on water
2023-10-30	20:00	Forest	Clear	20°C	68%	10 km/h	N	Moon visible
2023-10-31	06:00	Park	Clear	23°C	60%	10 km/h	E	Dawn light
2023-10-31	10:00	Field	Partly Cloudy	27°C	62%	15 km/h	S	Warm sun
2023-10-31	14:00	Lake	Clear	25°C	58%	20 km/h	W	Calm water
2023-10-31	18:00	Forest	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-10-31	22:00	Park	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-01	06:00	Field	Clear	22°C	60%	12 km/h	SE	Birds active
2023-11-01	10:00	Lake	Partly Cloudy	26°C	62%	15 km/h	S	Warm sun
2023-11-01	14:00	Forest	Clear	24°C	58%	20 km/h	W	Calm water
2023-11-01	18:00	Park	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-11-01	22:00	Field	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-02	06:00	Lake	Clear	23°C	60%	12 km/h	SE	Birds active
2023-11-02	10:00	Forest	Partly Cloudy	27°C	62%	15 km/h	S	Warm sun
2023-11-02	14:00	Park	Clear	25°C	58%	20 km/h	W	Calm water
2023-11-02	18:00	Field	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-11-02	22:00	Lake	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-03	06:00	Park	Clear	23°C	60%	12 km/h	SE	Birds active
2023-11-03	10:00	Field	Partly Cloudy	27°C	62%	15 km/h	S	Warm sun
2023-11-03	14:00	Lake	Clear	25°C	58%	20 km/h	W	Calm water
2023-11-03	18:00	Forest	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-11-03	22:00	Park	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-04	06:00	Field	Clear	22°C	60%	12 km/h	SE	Birds active
2023-11-04	10:00	Lake	Partly Cloudy	26°C	62%	15 km/h	S	Warm sun
2023-11-04	14:00	Forest	Clear	24°C	58%	20 km/h	W	Calm water
2023-11-04	18:00	Park	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-11-04	22:00	Field	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-05	06:00	Lake	Clear	23°C	60%	12 km/h	SE	Birds active
2023-11-05	10:00	Forest	Partly Cloudy	27°C	62%	15 km/h	S	Warm sun
2023-11-05	14:00	Park	Clear	25°C	58%	20 km/h	W	Calm water
2023-11-05	18:00	Field	Clear	21°C	65%	10 km/h	N	Starlight visible
2023-11-05	22:00	Lake	Clear	19°C	68%	10 km/h	E	Moon visible
2023-11-06	06:00	Park	Clear	23°C	60%	12 km/h	SE	Birds active
2023-11-06	10:00	Field	Partly Cloudy	27°C	62%	15 km/h	S	Warm sun

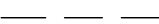
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Sheet No. :	8 of 21	
Index No. :		





Legend: -


 WASHOUT

 AIR VALVE

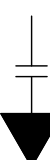
 OGL


 INVERT LEVEL

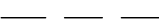
 HYDRAULIC GRADE LINE


 OFFTAKE PIPE


Legend: -


 WASHOUT

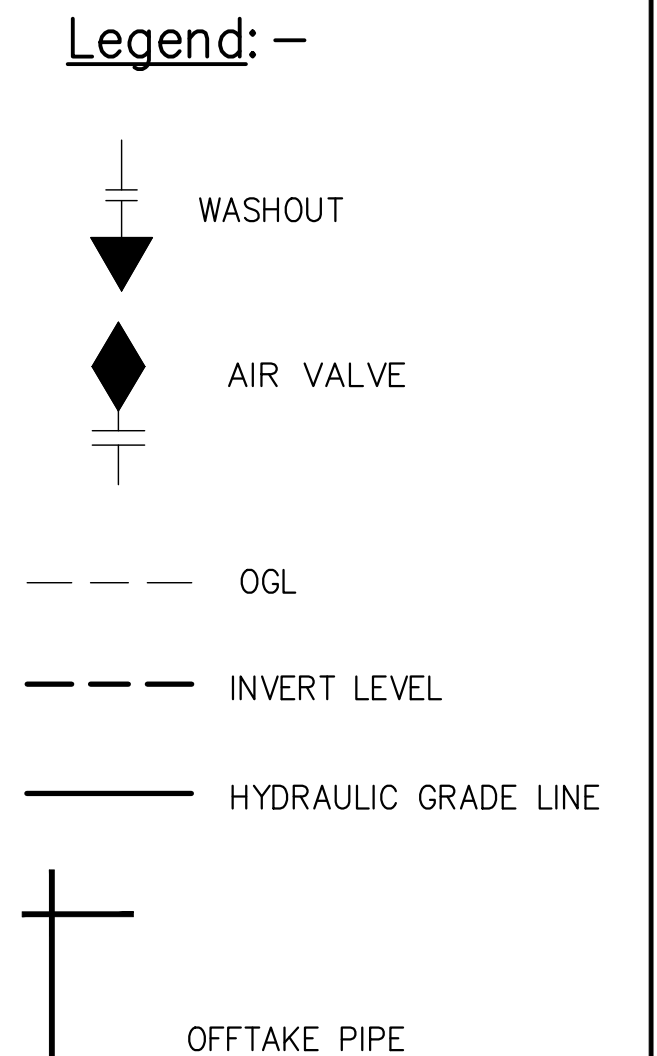
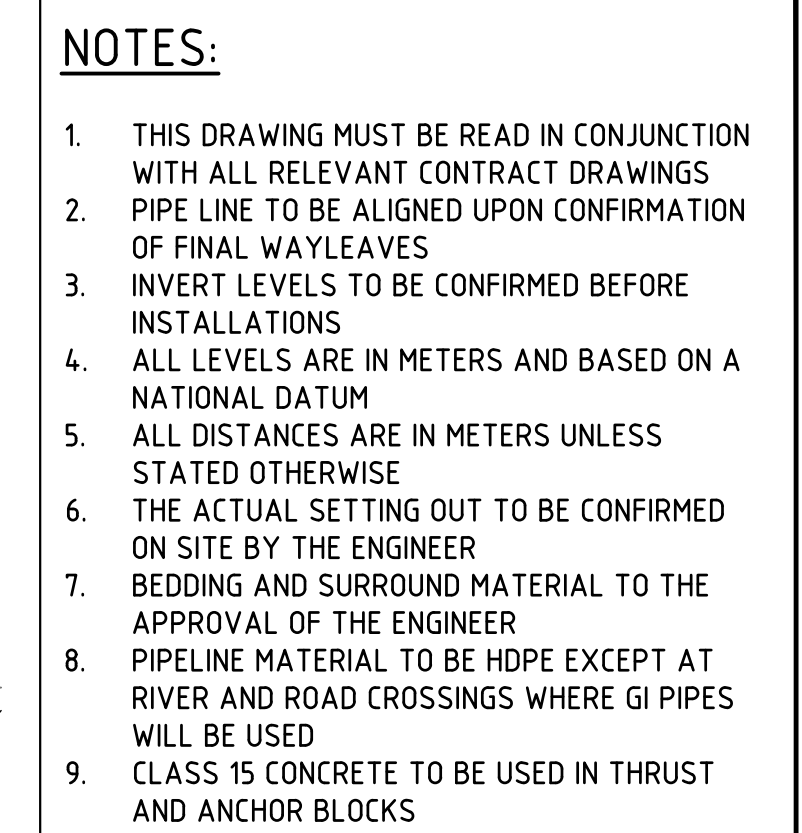
 AIR VALVE

 OGL

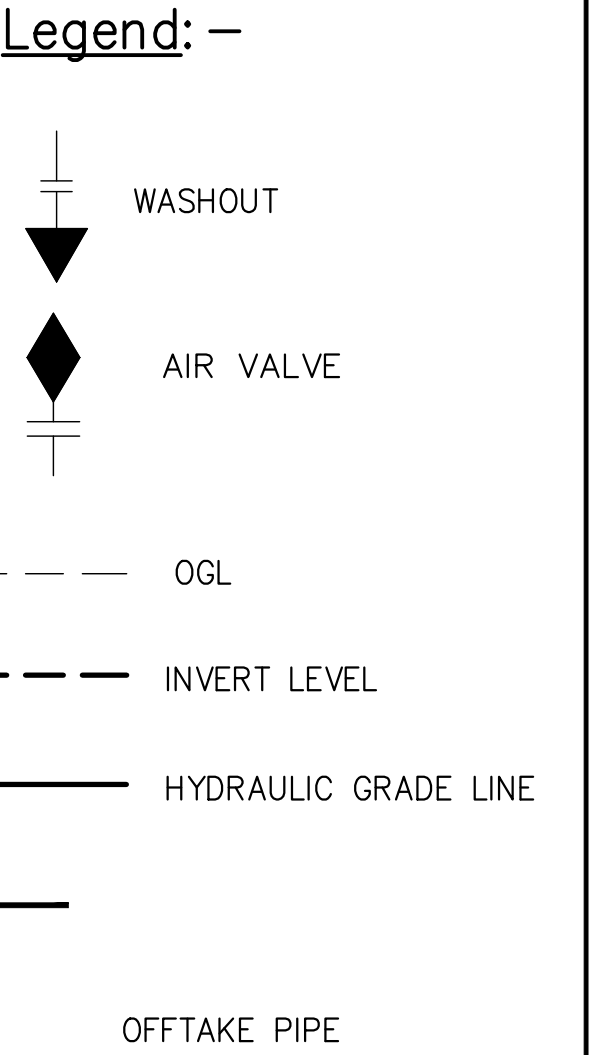
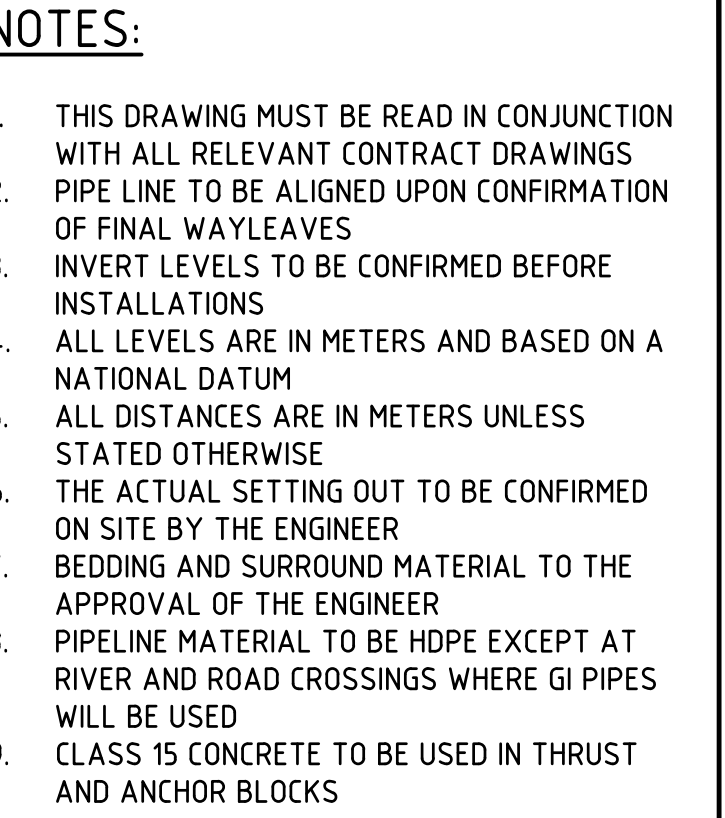
 INVERT LEVEL

 HYDRAULIC GRADE LINE

 OFFTAKE PIPE

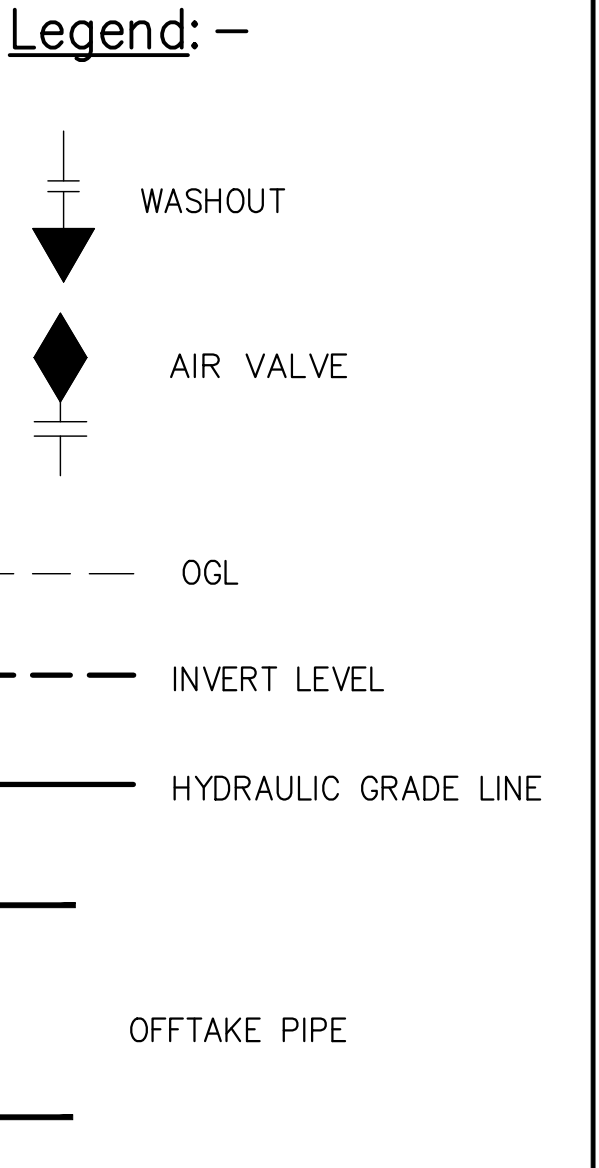
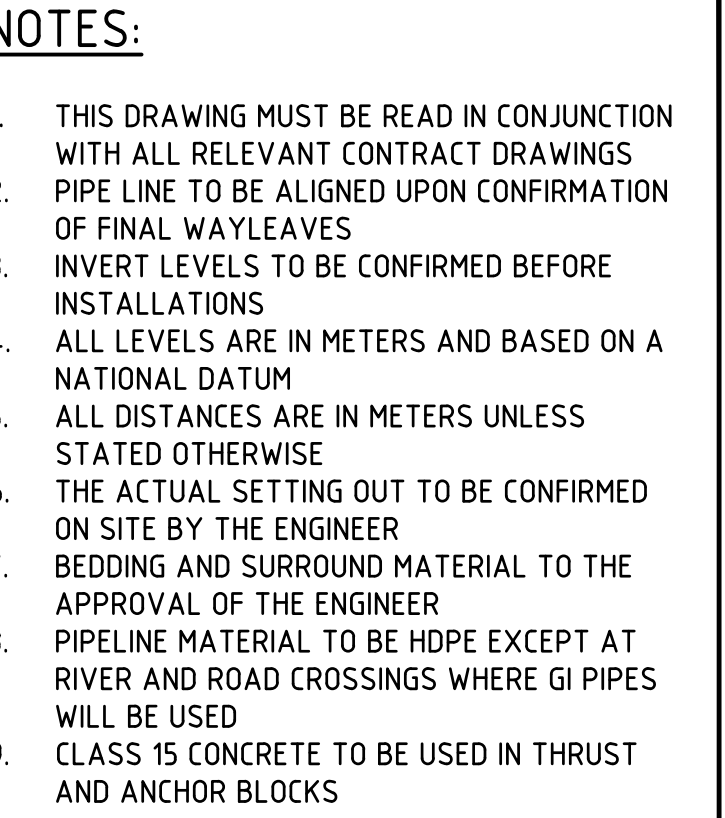
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	Index No. :	



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Index No. :		

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Index No. :		

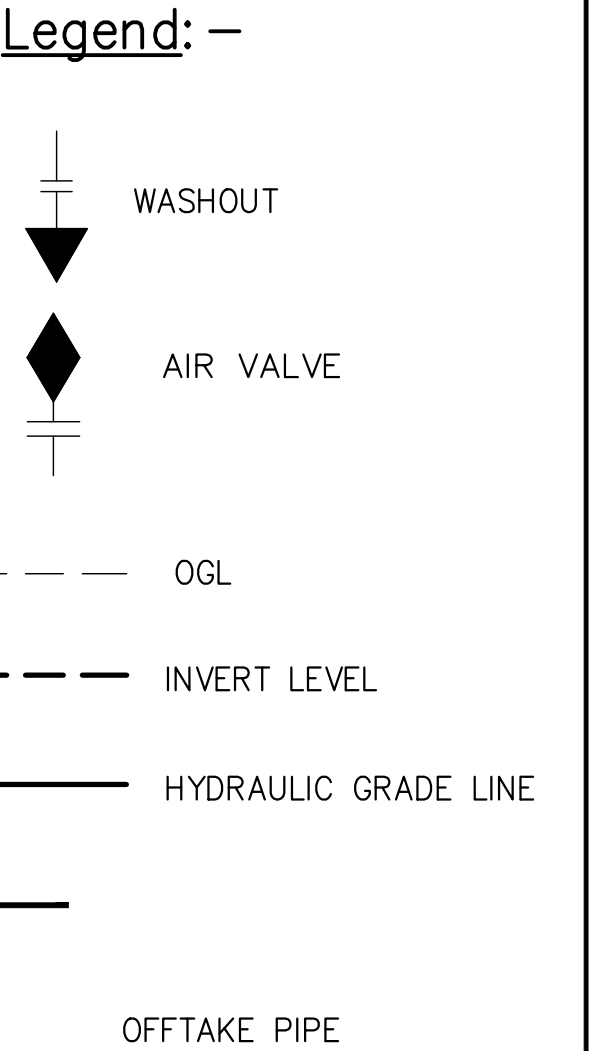
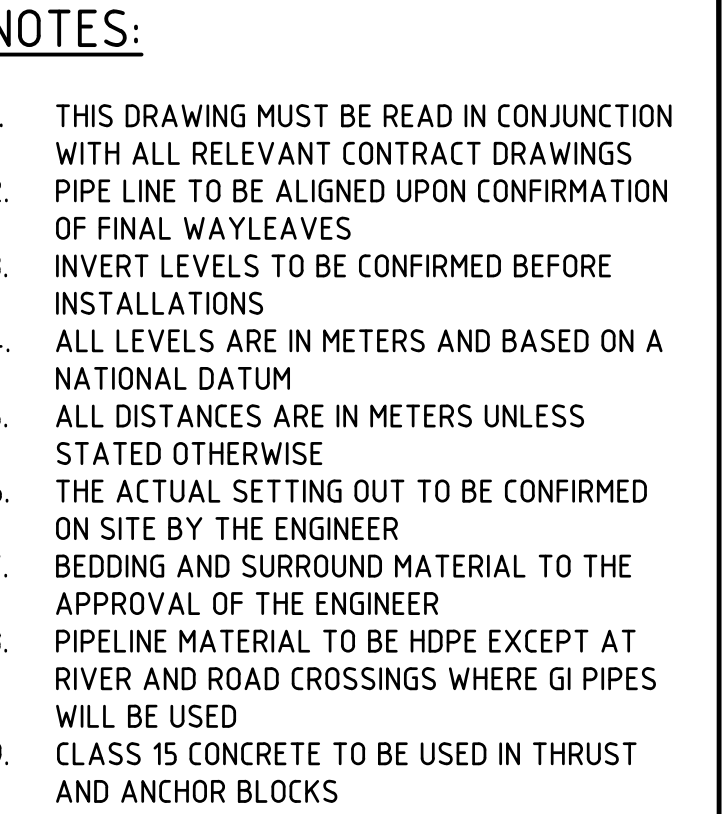


NOTES:

- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
- PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
- INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
- ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
- ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
- THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
- BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
- PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
- CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS

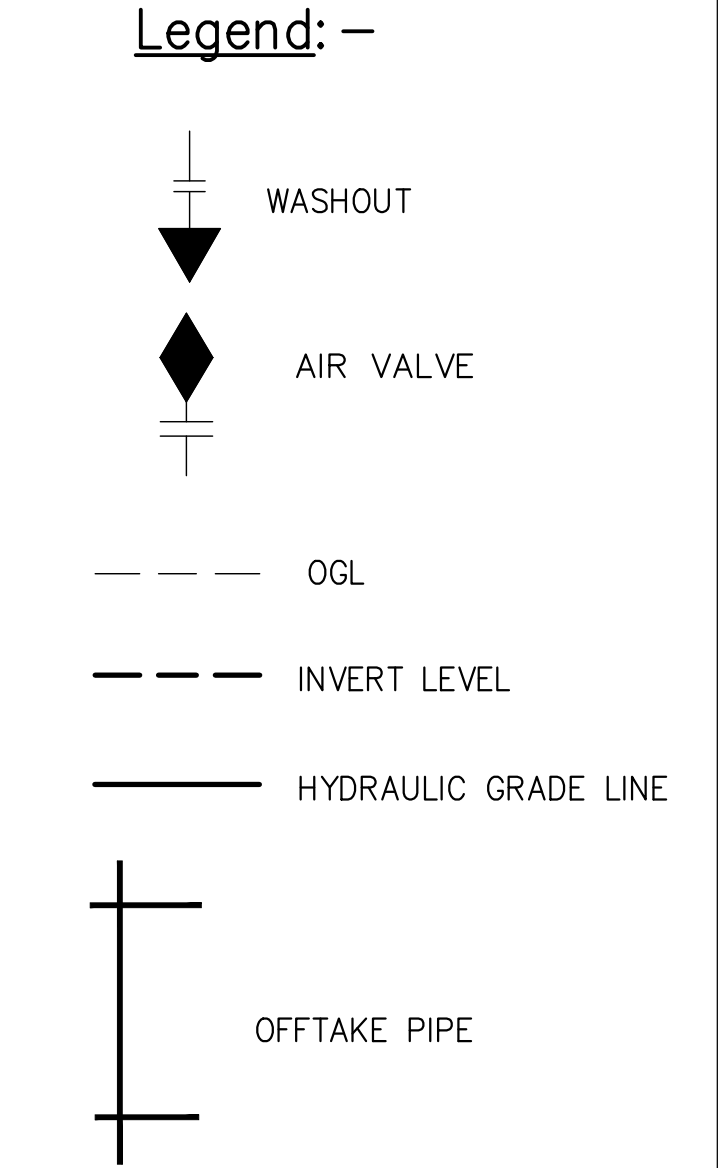
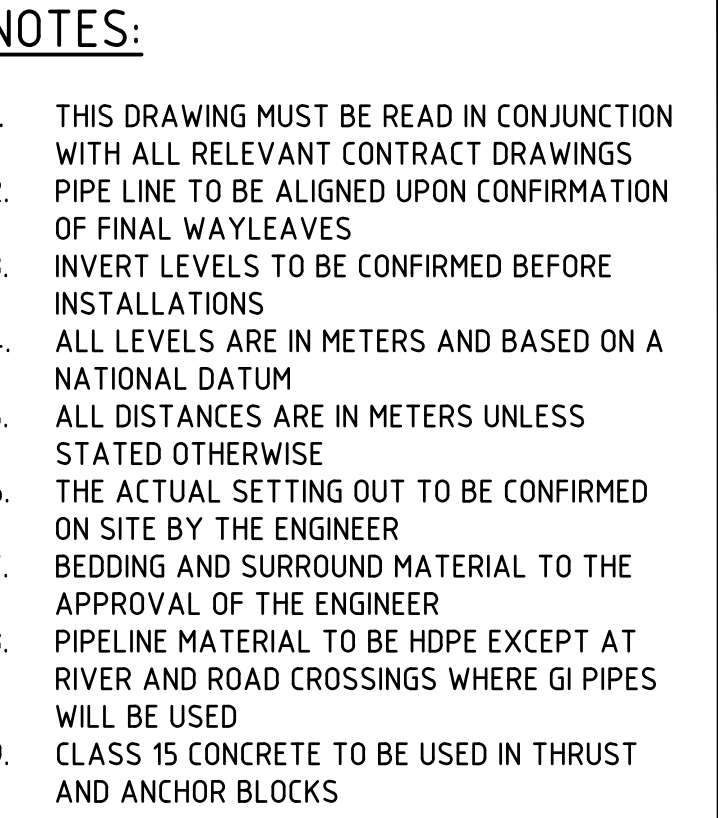
NOTES:

- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
- PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
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- PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
- CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



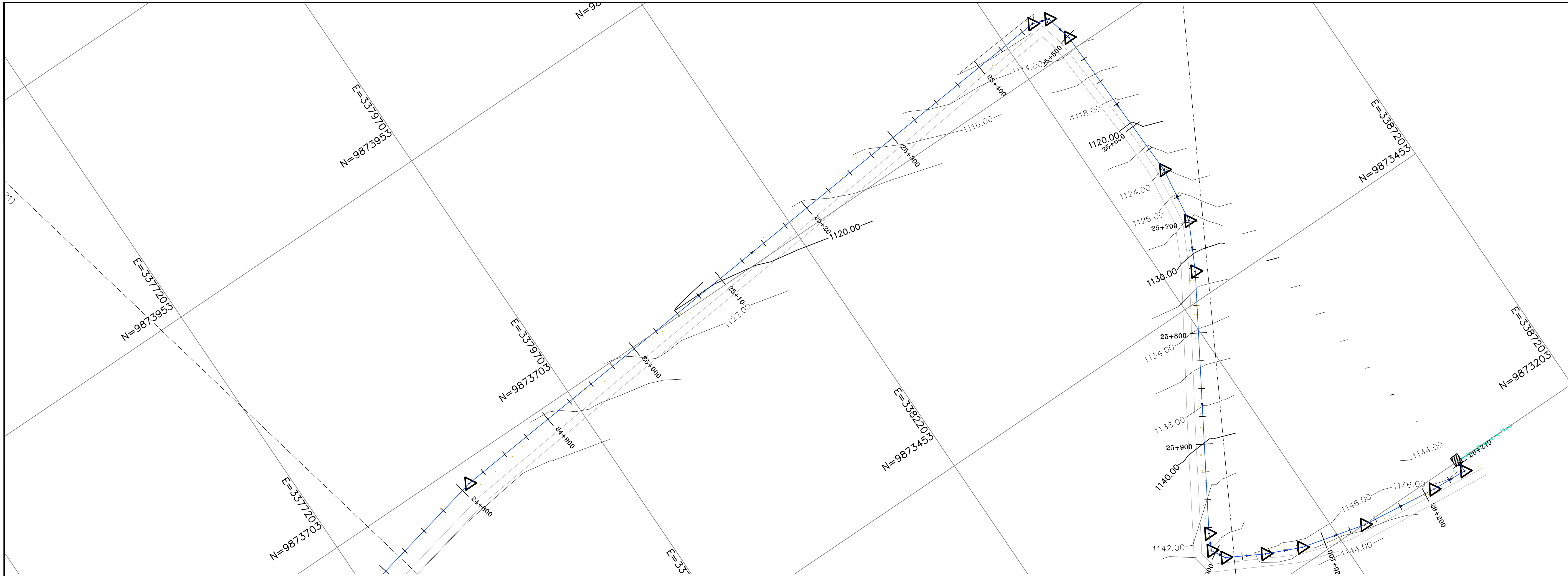
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Index No. :		

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Index No. :		

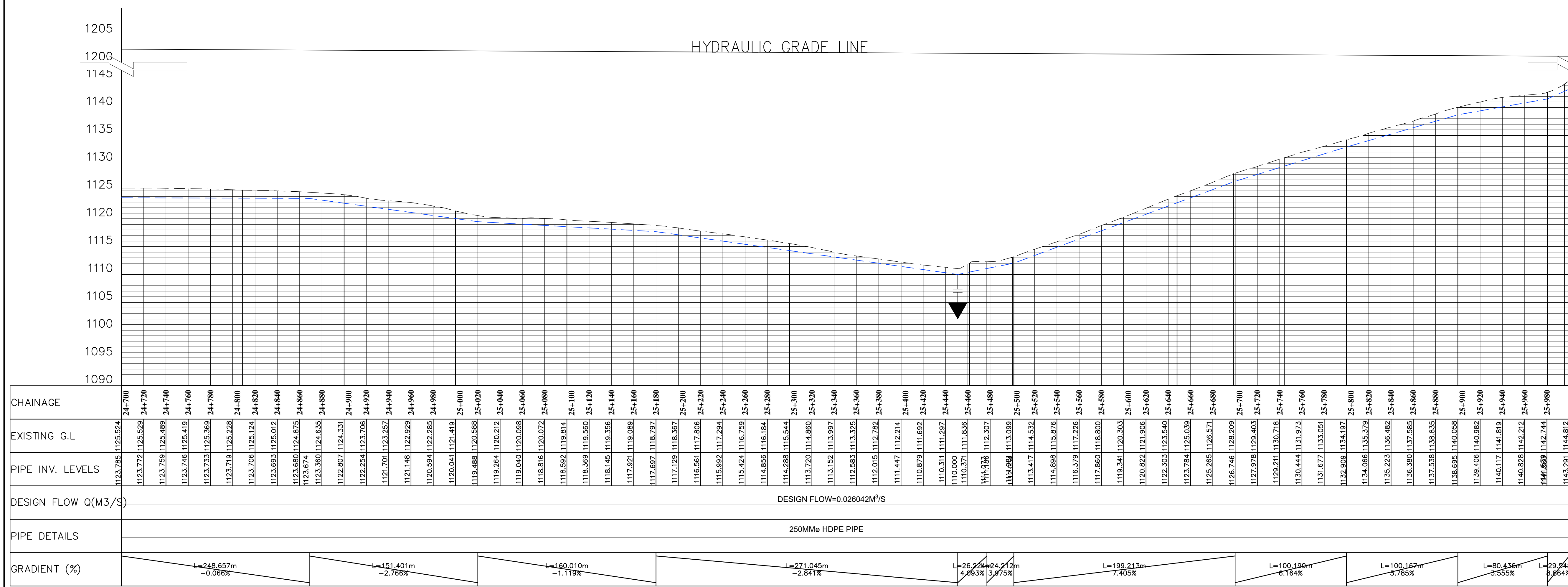


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Index No. :			

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Index No. :			



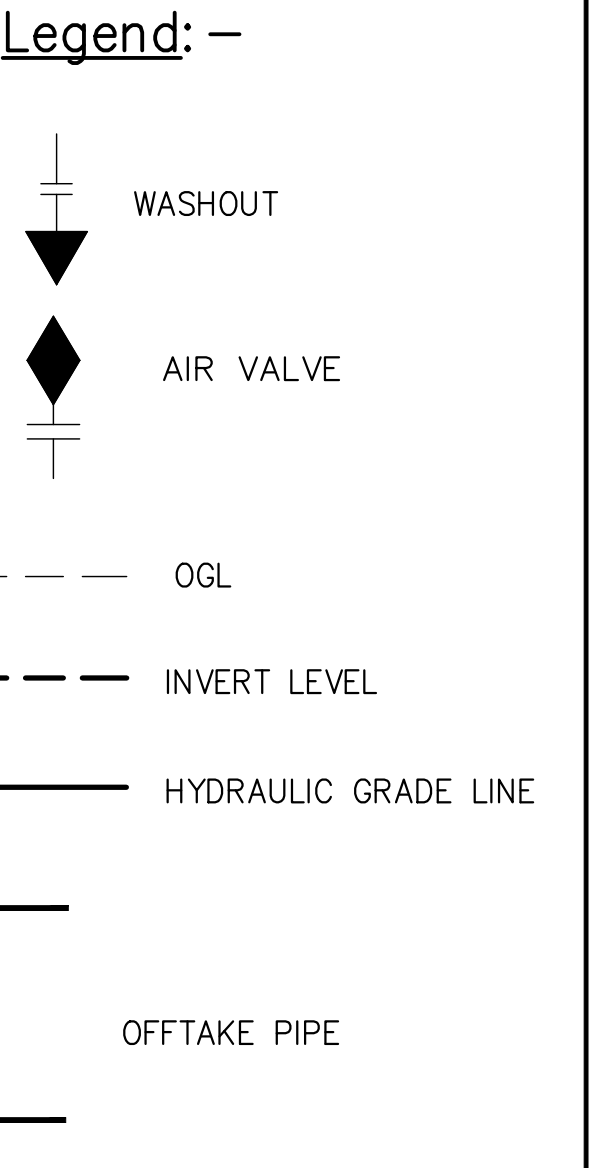
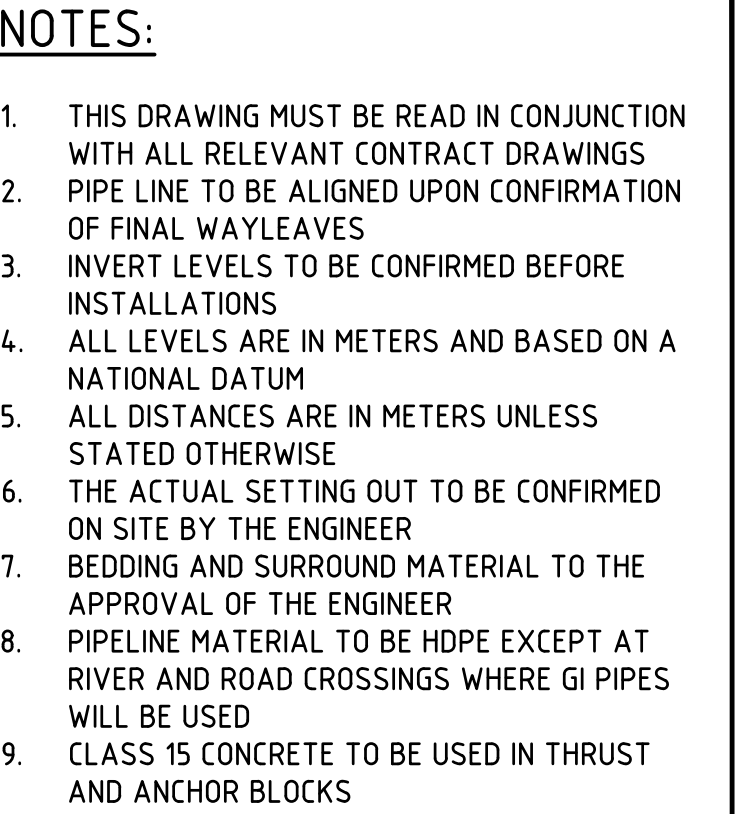
- NOTES:**
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
 2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
 3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
 4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
 5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
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 7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
 8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
 9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS



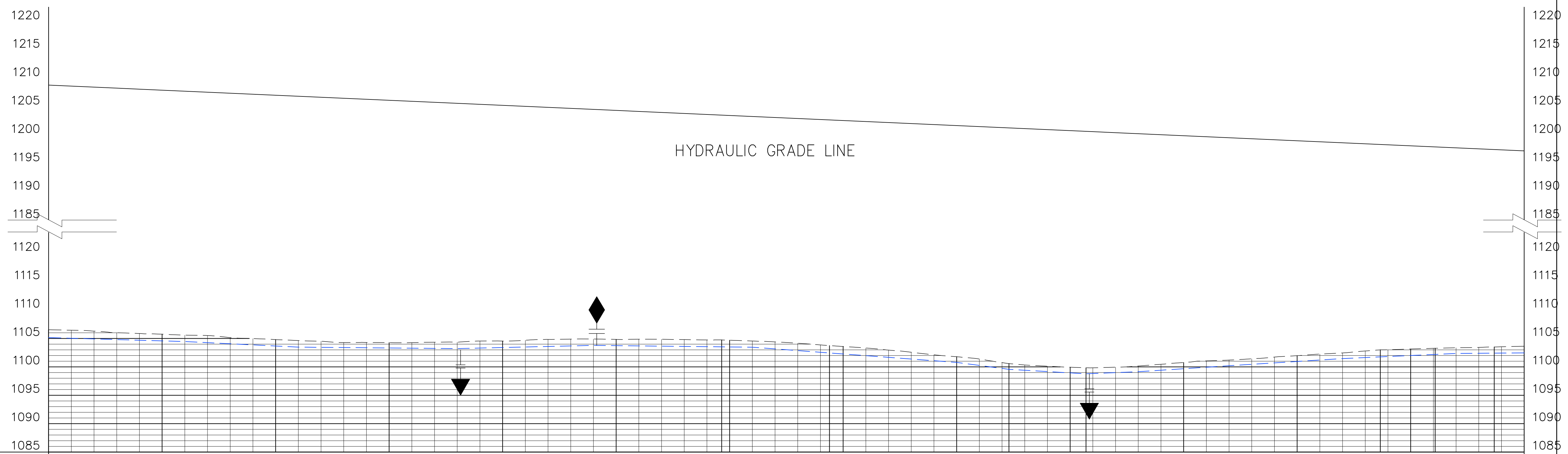
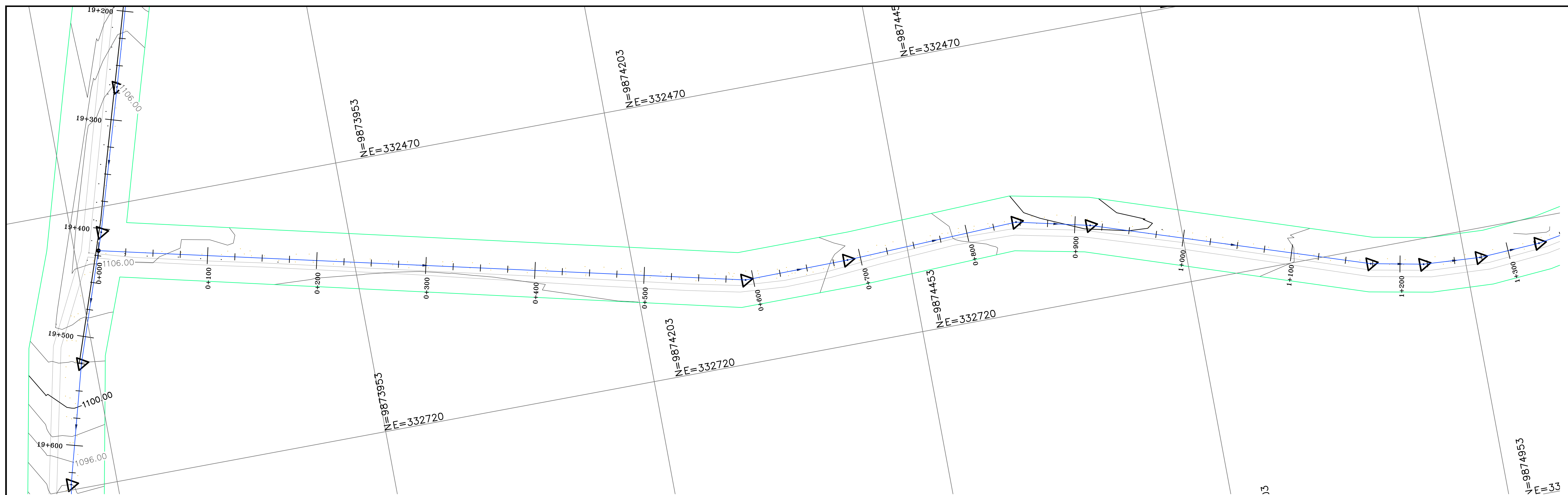
Legend: -

- WASHOUT
- AIR VALVE
- OGL
- INVERT LEVEL
- HYDRAULIC GRADE LINE
- OFFTAKE PIPE

Revisions		Consultant		Employer	Project Manager	Designed: R. Okello Drawn: B. Murila Checked: D. Liambila Approved: B. Kim	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage: FINAL DESIGN REVIEW	
Description	Date	SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com		And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke			 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Date: JULY 2020
							Drawing Title: MATUU TREATED WATER GRAVITY MAIN PLAN AND PROFILE DRAWINGS KM 24+700 - 26+000	Drawing No.: MAT-TWGM-P&P-020	
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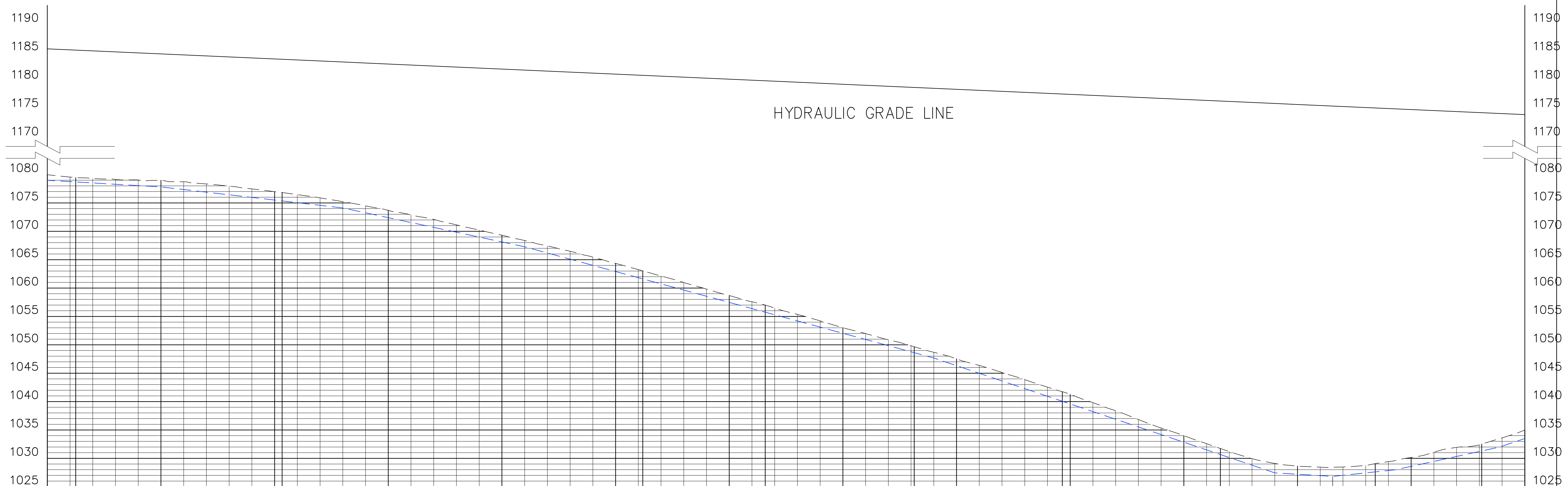
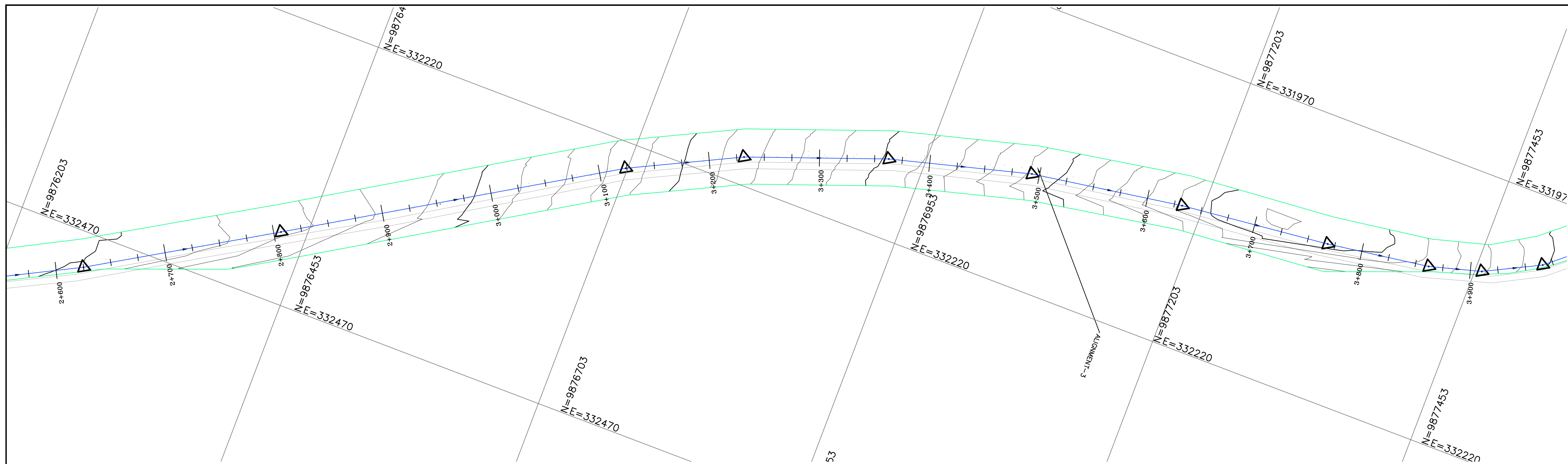


Revisions		Consultant		Employer	Project Manager	Designed: R. Okello Drawn : B.Murila Checked: D. Liambila Approved: B. Kim	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 712351104 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 20 2727438 email: info@tanathi.go.ke			Date : JULY 2020	Drawing No. : MAT-TWGM-P&P-021	
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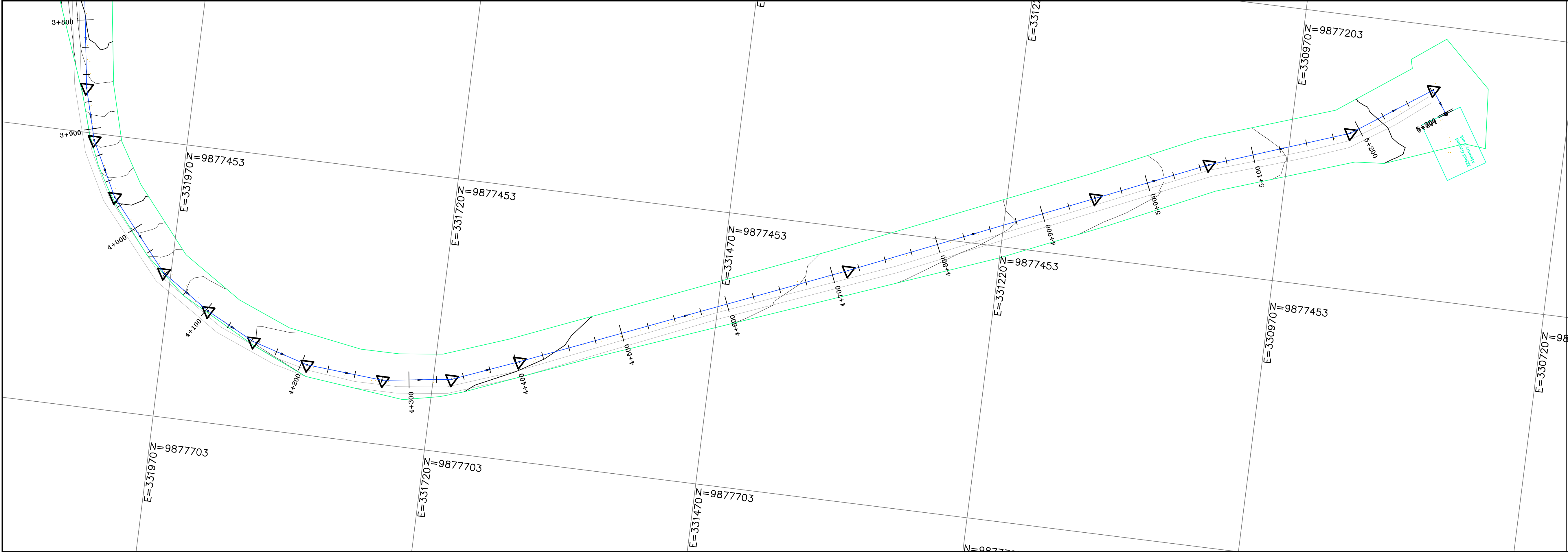
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EXISTING G.L	1106.538	1106.456	1106.294	1106.016	1105.880	1105.757	1105.598	1105.518	1105.144	1104.978	1104.800	1104.631	1104.510	1104.280	1104.302	1104.268	1104.270	1104.343	1104.351	1104.551	1104.545	1104.691	1104.840	1104.840	1104.887	1104.902	1104.840	1104.878	1104.863	1104.808	1104.742	1104.694	1104.555	1104.400	1104.164	1103.887	1103.591	1103.327	1102.956	1102.578	1102.128	1101.786	1101.385	1100.756	1100.333	1100.126	1099.941	1099.834	1099.634	1099.494	1099.458	1099.274	1099.055	1101.199	1101.422	1101.724	1101.973	1102.258	1102.460	1102.422	1102.602	1102.744	1102.800	1102.802	1103.012	1103.146	1103.265	1103.363	1103.430	1103.539	1103.635																																																											
PIPE INV. LEVELS	1105.155	1105.039	1104.924	1104.808	1104.693	1104.578	1104.462	1104.265	1104.069	1103.872	1103.675	1103.479	1103.442	1103.404	1103.367	1103.330	1103.292	1103.255	1103.218	1103.133	1103.407	1103.502	1103.597	1103.692	1103.787	1103.741	1103.694	1103.648	1103.602	1103.556	1103.510	1103.464	1103.167	1102.869	1102.571	1102.274	1101.976	1101.679	1101.381	1101.084	1100.786	1100.488	1099.729	1099.407	1099.175	1098.943	1098.781	1098.589	1098.349	1098.149	1097.974	1097.766	1097.536	1100.199	1100.451	1100.703	1100.956	1101.208	1101.460	1101.641	1101.821	1102.002	1102.182	1102.363	1102.396	1102.429	1102.462																																																															
DESIGN FLOW Q(M3/S)	DESIGN FLOW=0.006M³/S																																																																																																																																	
PIPE DETAILS	90MM ØDPE PIPE																																																																																																																																	
GRADIENT (%)	L=120.002m -0.577%										L=100.005m -0.983%										L=140.000m -0.186%										L=120.004m 0.474%										L=140.000m -0.230%										L=180.020m -1.488%										L=46.081m -2.643%										L=67.932m -1.161%										L=46.089m 0.601%										L=80.007m +1.313%										L=100.008m 1.261%										L=100.004m 0.903%										L=120.000m 0.160%									

Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-dl, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		
Designed:	R. Okello						
Drawn :	B.Muriia						
Checked:	D. Liambila						
Approved:	B. Kim	Drawing Title: SOFIA - NDALANI OFFTAKE PLAN AND PROFILE DRAWINGS KM 0+000 - 1+300					
		Stage : FINAL DESIGN REVIEW		Date : JULY 2020		Drawing No. : MAT-NDAL-P&P-001	
		Scale : VERT-1:200 HOR-1:2000		Sheet No. : 1 of 5		Sheet Size : A1	
		Index No. :					

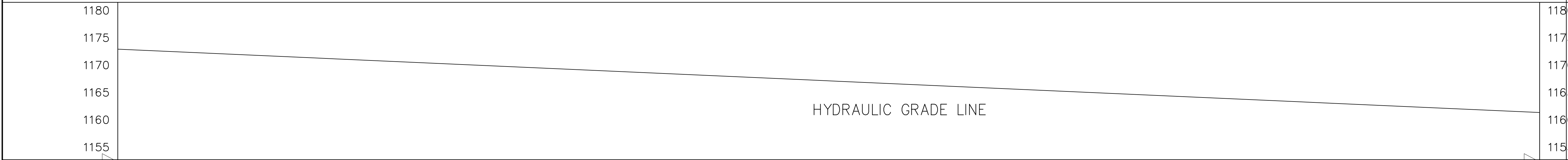


CHAINAGE	2+000 1078.984	2+020 1078.752	2+040 1078.519	2+060 1078.286	2+080 1078.053	2+100 1077.821	2+120 1077.588	2+140 1077.356	2+160 1077.123	2+180 1076.891	2+200 1076.658	2+220 1076.426	2+240 1076.193	2+260 1075.961	2+280 1075.728	2+300 1075.495	2+320 1075.263	2+340 1075.030	2+360 1074.797	2+380 1074.565	2+400 1074.332	2+420 1074.099	2+440 1073.867	2+460 1073.634	2+480 1073.401	2+500 1073.169	2+520 1072.936	2+540 1072.703	2+560 1072.470	2+580 1072.238	2+600 1072.005	2+620 1071.772	2+640 1071.540	2+660 1071.307	2+680 1071.074	2+700 1070.842	2+720 1070.609	2+740 1070.376	2+760 1070.143	2+780 1069.910	2+800 1069.678	2+820 1069.445	2+840 1069.212	2+860 1068.979	2+880 1068.746	2+900 1068.513	2+920 1068.280	2+940 1068.047	2+960 1067.814	2+980 1067.581	3+000 1067.348	3+020 1067.115	3+040 1066.882	3+060 1066.649	3+080 1066.416	3+100 1066.183	3+120 1065.950	3+140 1065.717	3+160 1065.484	3+180 1065.251	3+200 1065.018	3+220 1064.785	3+240 1064.552	3+260 1064.319	3+280 1064.086	3+300 1063.853	3+320 1063.620	3+340 1063.387	3+360 1063.154	3+380 1062.921	3+400 1062.688	3+420 1062.455	3+440 1062.222	3+460 1061.989	3+480 1061.756	3+500 1061.523	3+520 1061.290	3+540 1061.057	3+560 1060.824	3+580 1060.591	3+600 1060.358	3+620 1060.125	3+640 1059.892	3+660 1059.659	3+680 1059.426	3+700 1059.193	3+720 1058.960	3+740 1058.727	3+760 1058.494	3+780 1058.261	3+800 1058.028	3+820 1057.795	3+840 1057.562	3+860 1057.329	3+880 1057.096	3+900 1056.863	3+920 1056.630	3+940 1056.397	3+960 1056.164	3+980 1055.931	4+000 1055.698	4+020 1055.465	4+040 1055.232	4+060 1055.000	4+080 1054.767	4+100 1054.534	4+120 1054.301	4+140 1054.068	4+160 1053.835	4+180 1053.602	4+200 1053.369	4+220 1053.136	4+240 1052.903	4+260 1052.670	4+280 1052.437	4+300 1052.204	4+320 1051.971	4+340 1051.738	4+360 1051.505	4+380 1051.272	4+400 1051.039	4+420 1050.806	4+440 1050.573	4+460 1050.340	4+480 1050.107	4+500 1049.874	4+520 1049.641	4+540 1049.408	4+560 1049.175	4+580 1048.942	4+600 1048.709	4+620 1048.476	4+640 1048.243	4+660 1048.010	4+680 1047.777	4+700 1047.544	4+720 1047.311	4+740 1047.078	4+760 1046.845	4+780 1046.612	4+800 1046.379	4+820 1046.146	4+840 1045.913	4+860 1045.680	4+880 1045.447	4+900 1045.214	4+920 1044.981	4+940 1044.748	4+960 1044.515	4+980 1044.282	5+000 1044.049	5+020 1043.816	5+040 1043.583	5+060 1043.350	5+080 1043.117	5+100 1042.884	5+120 1042.651	5+140 1042.418	5+160 1042.185	5+180 1041.952	5+200 1041.719	5+220 1041.486	5+240 1041.253	5+260 1041.020	5+280 1040.787	5+300 1040.554	5+320 1040.321	5+340 1040.088	5+360 1039.855	5+380 1039.622	5+400 1039.389	5+420 1039.156	5+440 1038.923	5+460 1038.690	5+480 1038.457	5+500 1038.224	5+520 1037.991	5+540 1037.758	5+560 1037.525	5+580 1037.292	5+600 1037.059	5+620 1036.826	5+640 1036.593	5+660 1036.360	5+680 1036.127	5+700 1035.894	5+720 1035.661	5+740 1035.428	5+760 1035.195	5+780 1034.962	5+800 1034.729	5+820 1034.496	5+840 1034.263	5+860 1034.030	5+880 1033.797	5+900 1033.564	5+920 1033.331	5+940 1033.098	5+960 1032.865	5+980 1032.632	6+000 1032.399	6+020 1032.166	6+040 1031.933	6+060 1031.700
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Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW		
Description	Date	 saman 5,Byeoryangsang3(sam)-ro, Gwacheon-si, Gyeonggi-dj, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	JULY 2020		
							Drawing No. :	MAT-NDAL-P&P-003		
							Drawing Title: SOFIA - NDALANI OFFTAKE PLAN AND PROFILE DRAWINGS KM 2+600 - 3+900	Scale :	VERT-1:200 HOR-1:2000	Sheet Size :
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							Index No. :			

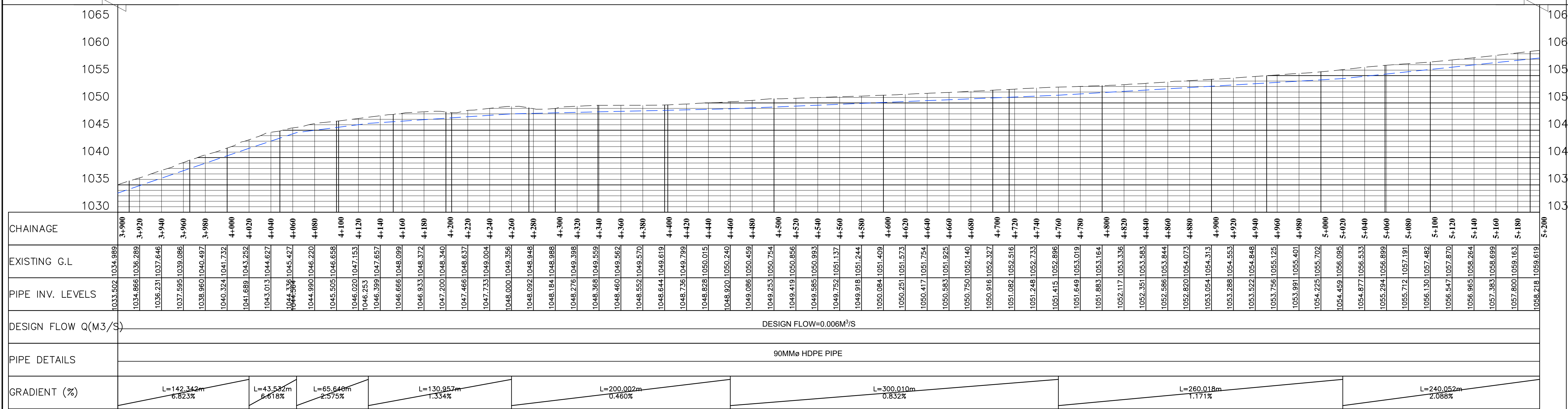


- NOTES:**
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
 2. PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
 3. INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
 4. ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
 5. ALL DISTANCES ARE IN METERS UNLESS STATED OTHERWISE
 6. THE ACTUAL SETTING OUT TO BE CONFIRMED ON SITE BY THE ENGINEER
 7. BEDDING AND SURROUND MATERIAL TO THE APPROVAL OF THE ENGINEER
 8. PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
 9. CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS

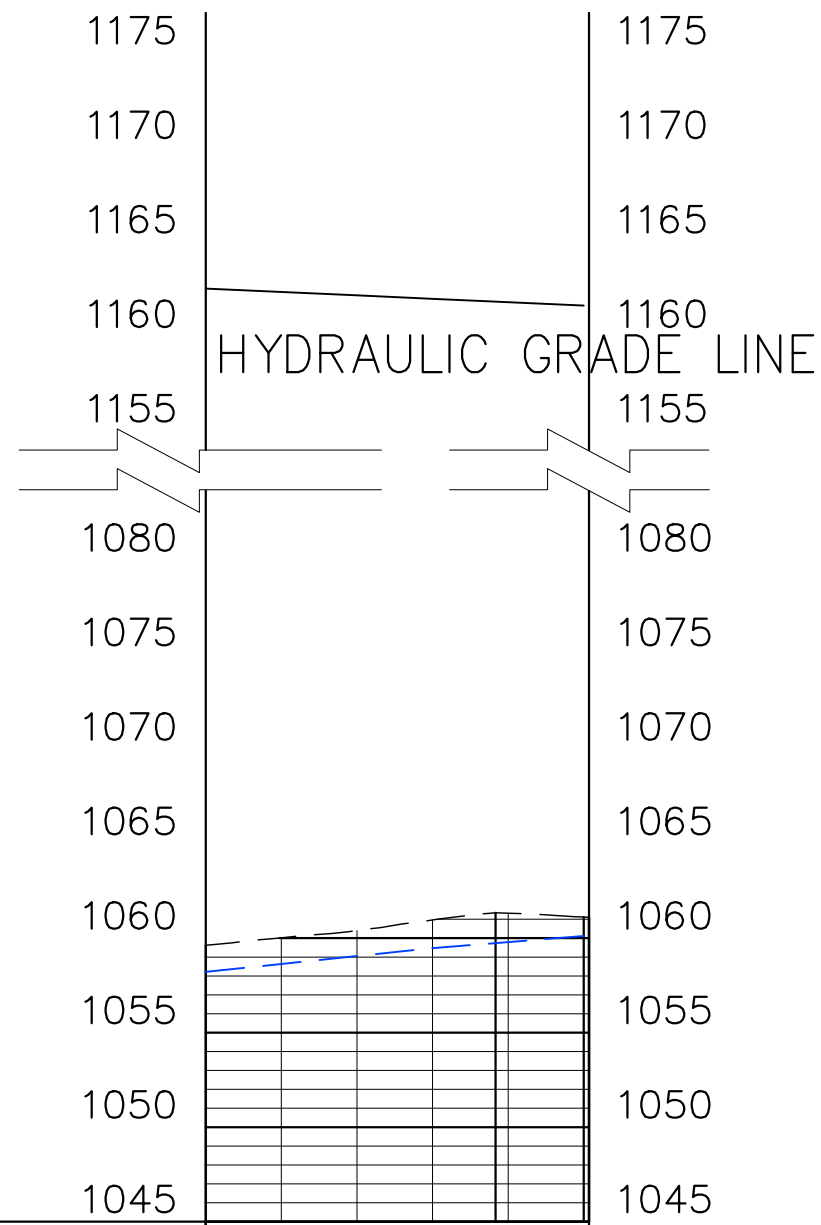
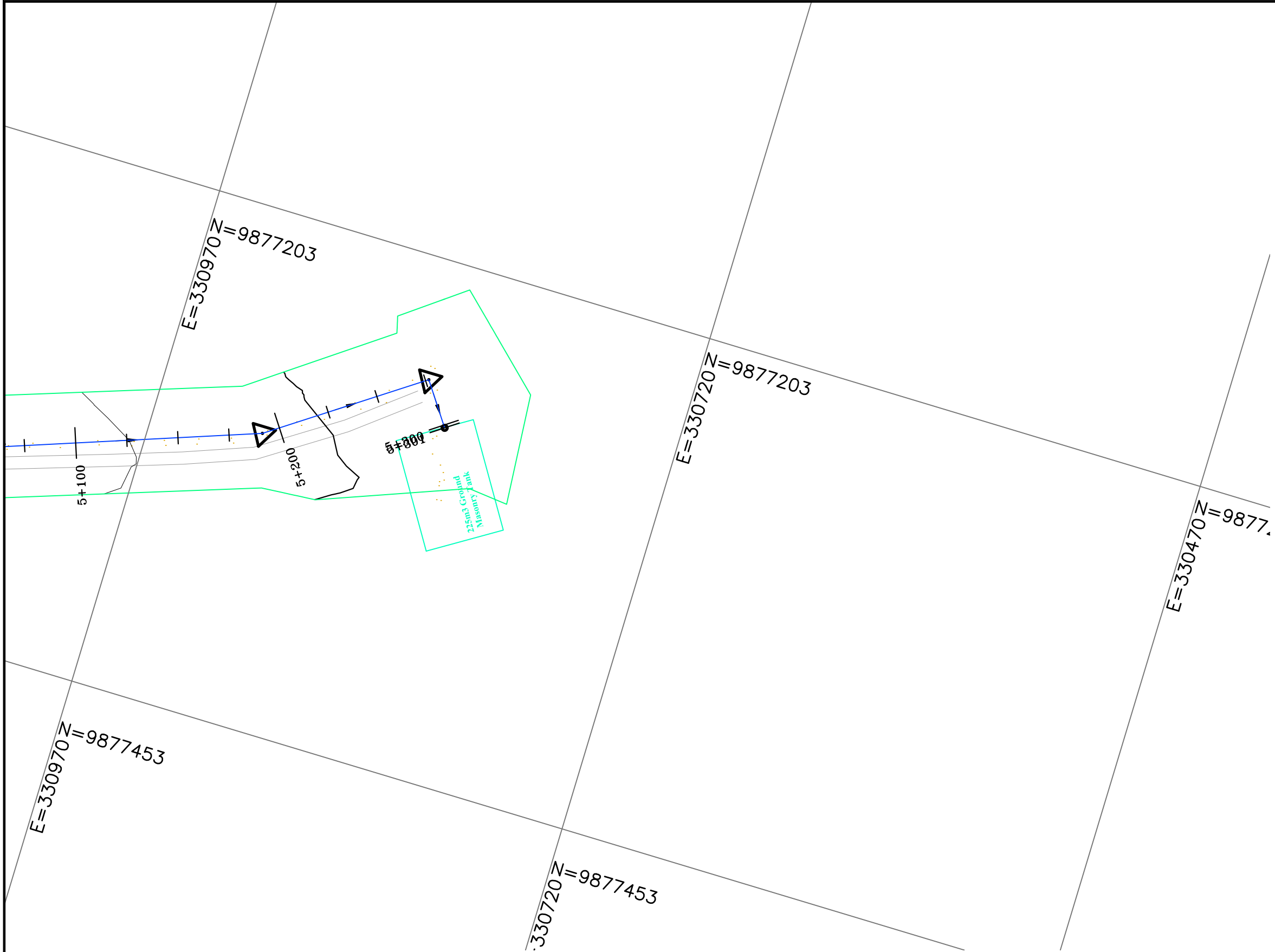


Legend: -

- WASHOUT
- AIR VALVE
- OGL
- INVERT LEVEL
- HYDRAULIC GRADE LINE
- OFFTAKE PIPE



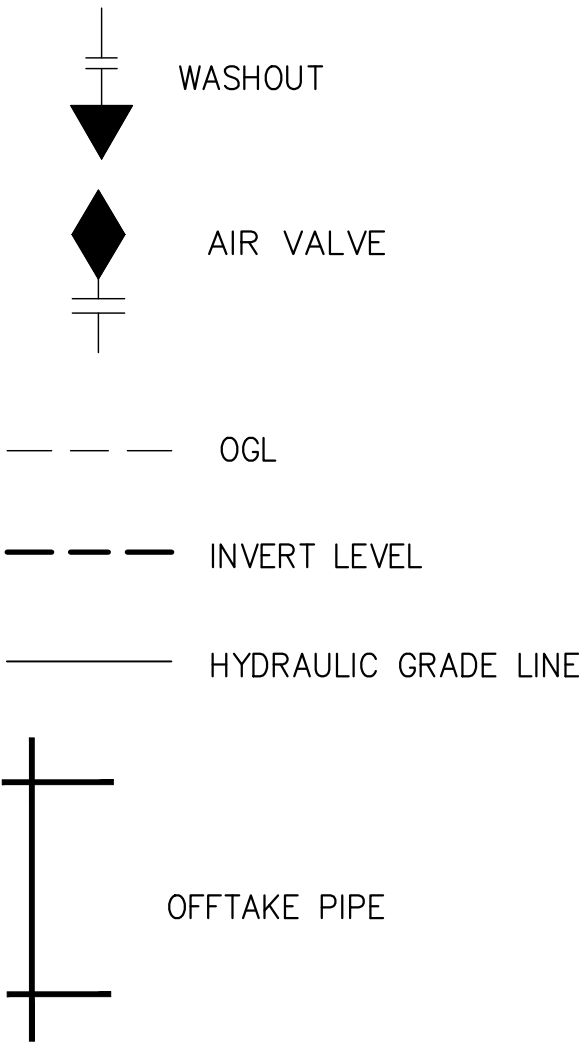
Revisions		Consultant		Employer	Project Manager	Project:		Stage :			
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: R. Okello	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		FINAL DESIGN REVIEW	
							Drawn : B.Muria			Date : JULY 2020	
							Checked: D. Liambila	Drawing Title: SOFIA - NDALANI OFFTAKE PLAN AND PROFILE DRAWINGS KM 3+900 - 5+200		Drawing No. : MAT-NDAL-P&P-004	
							Approved: B. Kim			Scale : VERT-1:200 HOR-1:2000	
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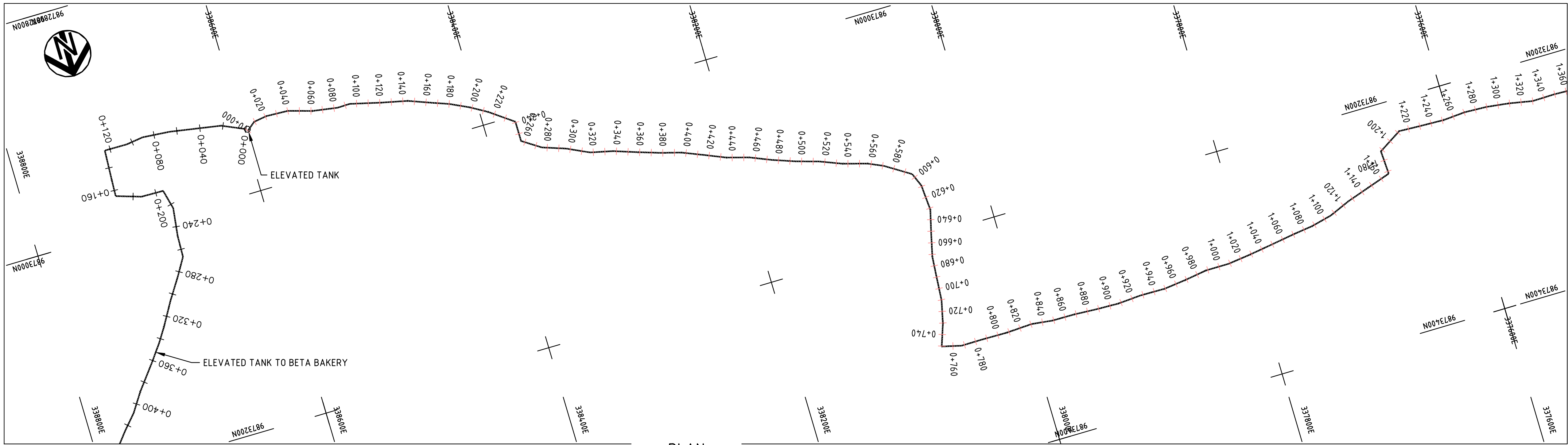
CHAINAGE	5+200	5+220	5+240	5+260	5+280	5+301
EXISTING G.L	1058.619	1060.012	1060.402	1060.962	1061.317	1061.115
PIPE INV. LEVELS	1058.218	1058.619	1059.053	1059.471	1059.793	1060.115
DESIGN FLOW Q(M3/S)	DESIGN FLOW=0.006M³/S					
PIPE DETAILS	90MMø HDPE PIPE					
GRADIENT (%)	L=240.062m 2.088%		L=40.065m 1.610%			

- NOTES:
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACT DRAWINGS
 - PIPE LINE TO BE ALIGNED UPON CONFIRMATION OF FINAL WAYLEAVES
 - INVERT LEVELS TO BE CONFIRMED BEFORE INSTALLATIONS
 - ALL LEVELS ARE IN METERS AND BASED ON A NATIONAL DATUM
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 - PIPELINE MATERIAL TO BE HDPE EXCEPT AT RIVER AND ROAD CROSSINGS WHERE GI PIPES WILL BE USED
 - CLASS 15 CONCRETE TO BE USED IN THRUST AND ANCHOR BLOCKS

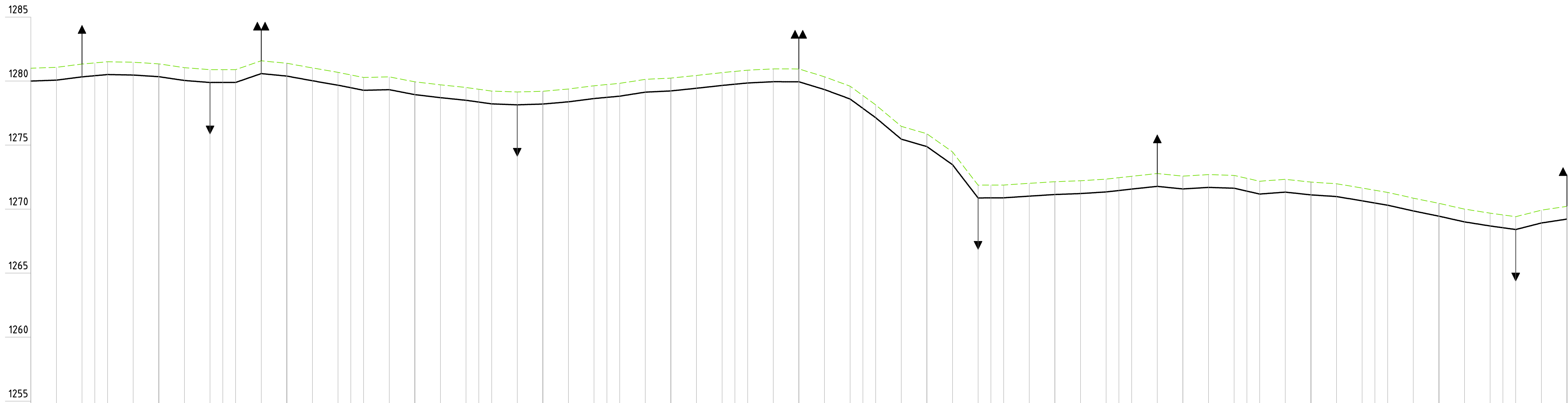
Legend: –



Revisions		Consultant		Employer	Project Manager	Designed: R. Okello	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW	
Description	Date							Drawn : B.Murila	Date : JULY 2020
.	.	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And 	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Checked: D. Liambila	Drawing Title: SOFIA - NDALANI OFFTAKE PLAN AND PROFILE DRAWINGS KM 5+200 - 5+301	Scale : VERT-1:200 HOR-1:2000	Sheet Size : A1
.	.							Sheet No. : 5 of 5	
.	.								
.	.								
.	.								
.	.					Approved: B. Kim		Index No. :	



PLAN
SCALE (A1) 1: 2000



DATUM LEVEL (m)		1285
CHAINAGE (m)		000.00
ORIGINAL GROUND LEVEL (m.a.s.l)		1280.000
PIPELINE INVERT LEVEL (m.a.s.l)		1280.000
TRENCH DEPTH (m)		1.003
PIPE LINE DATA	PIPE DIA. & MATERIAL (mm)	DN 125mm HDPE PN 12.5
	BEDDING DETAILS	GRADED GRANNULAR MATERIAL COMPACTED TO 85% MPD
	GRADE (m/km)	3.65 12.75 9.00 -1.90 1.75 4.5 -7.90 0.25 34.50 -9.75 -18.25 -17.25 -19.95 0.00 -11.75 11.00 25 -3.75 3.10 8.65 12.75 9.25 15.75 4.75 10.45 11.00 9.65 4.85 30.50 10.35 85 -78.05 -88.75 -29.00 -70.70 129.90 0.45 6.60 6.30 3.75 6.35 11.25 10.50 -10.10 -10.10 6.10 20.20 25.25 7.50 -10.75 -6.50 -16.25 22.40 100.40 -20.35 -15.90 -13.85 25.40 5.00 25.3
DESIGN DATA	VERT. ANGULAR DEVIATION	0.5° 0.2° 0.6° 0.3° 0.5° 0.4° 0.5° 2.0° 2.5° 0.5° 0.1° 0.2° 1.3° 1.2° 0.4° 0.1° 0.2° 0.6° 0.4° 0.3° 0.2° 0.2° 0.4° 0.6° 0.3° 0.0° 0.1° 0.3° 0.3° 0.3° 1.7° 0.4° 2.1° 0.6° 3.1° 2.4° 3.4° 7.4° 0.4° 0.0° 0.1° 0.1° 0.3° 0.0° 1.2° 0.9° 0.5° 1.1° 1.7° 1.0° 0.2° 0.6° 0.0° 0.3° 0.1° 0.4° 0.1° 2.2° 0.6° 3.1°
	DISCHARGE (m³/h)	

PROFILE
SCALE (A1) HORIZ:1: 2000
VERT. 1:200

NOTES:

- ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

LEGEND

PLAN

PIPELINE WITH CHAINAGE

SECTIONAL VALVE

ROAD

RIVER

PROFILE

ORIGINAL GROUND LEVEL (m)

PIPE INVERT LEVEL (m)

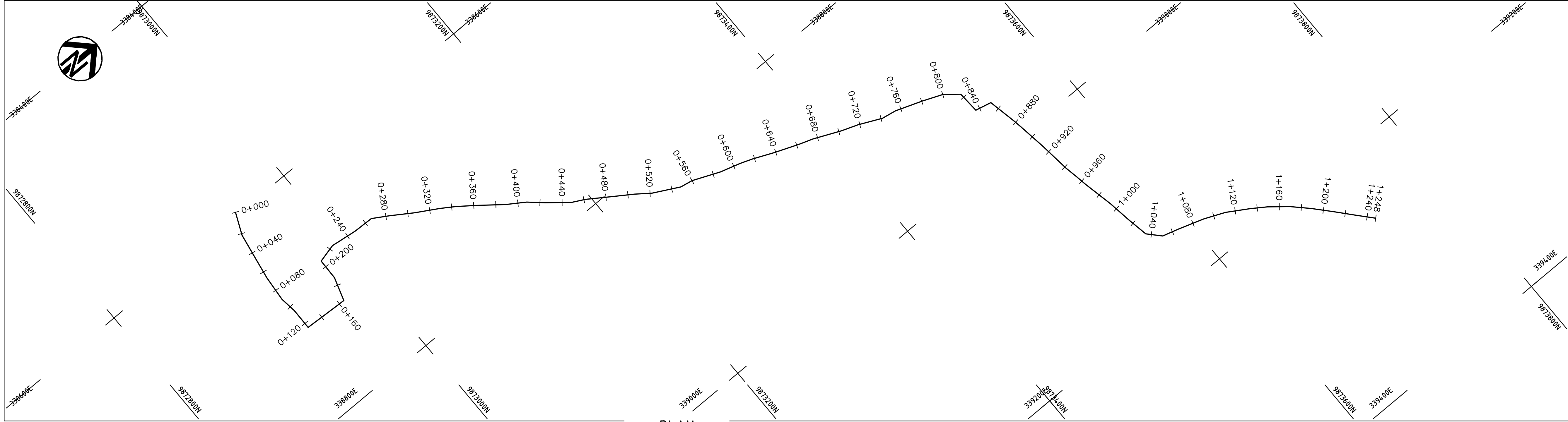
SINGLE AIR VALVE (S.A.V)

DOUBLE AIR VALVE (D.A.V)

WASH-OUT (W.O.)

HORIZ. 1:2000 20 0 20 40 60 80 100
VERT. 1:200 2 0 2 4 6 8 10

Revisions		Consultant		Employer	Project Manager	Project		Stage : FINAL DESIGN REVIEW				
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</div>	And  <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Designed: D.LIAMBILA		Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : OCTOBER 2020			
						Drawn : N.MUEMA			Drawing No. : ET-MCH-001			
						Checked: D. LIAMBILA			Drawing Title: ELEVATED TANK - MATUU COTTAGE HOSPITAL DISTRIBUTION LINE PLAN AND PROFILE CH 0+000 TO CH 1+200	Scale : AS INDICATED		Sheet Size : A1
						Approved: B.KIM				Sheet No. : 1 of 2		
										Index No. :		



PLAN
SCALE (A1) 1: 2000

NOTES:

1. ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

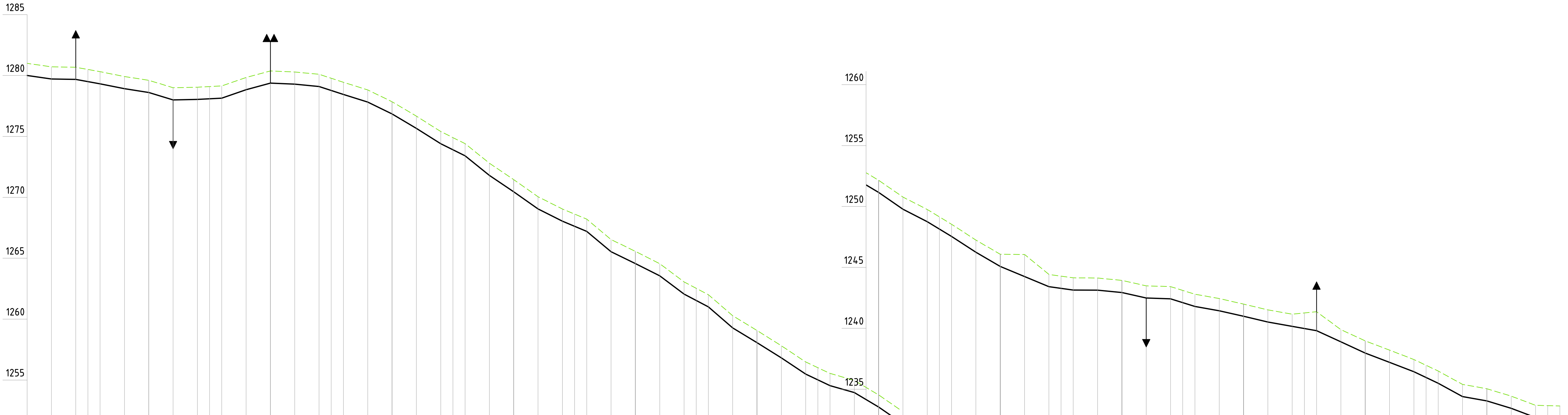
LEGEND

PLAN

- PIPELINE WITH CHAINAGE
SECTIONAL VALVE
ROAD
RIVER

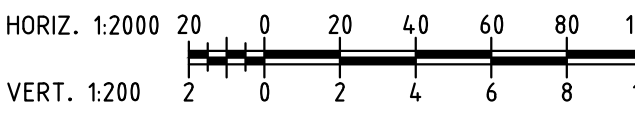
PROFILE

- ORIGINAL GROUND LEVEL (m)
PIPE INVERT LEVEL (m)
SINGLE AIR VALVE (S.A.V)
DOUBLE AIR VALVE (D.A.V)
WASH-OUT (W.O.)

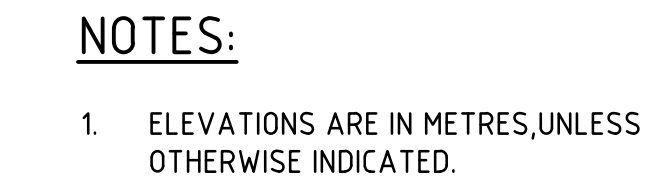


DATUM LEVEL (m)		1285	1280	1275	1270	1265	1260	1255
CHAINAGE (m)		000.00	020.00	040.00	060.00	080.00	100.00	120.00
ORIGINAL GROUND LEVEL (m.a.s.l)		1280.000	1280.710	1280.675	1280.495	1280.315	1279.915	1279.610
PIPELINE INVERT LEVEL (m.a.s.l)		1279.712	1279.712	1279.677	1279.496	1279.315	1278.915	1278.609
TRENCH DEPTH (m)		1.003	1.003	1.003	1.003	1.003	1.003	1.003
PIPE LINE DATA	PIPE DIA. & MATERIAL (mm)	DN 90mm HDPE PN 12.5						
	BEDDING DETAILS	GRADED GRANULAR MATERIAL COMPACTED TO 85% MPD						
	GRADE (m/km)	-14.40	-17.5	-10.48	30	-30.48	30	2.15
DESIGN DATA	VERT. ANGULAR DEVIATION	0.7°	0.9°	0.1°	0.3°	0.9°	1.9°	0.2°
	DISCHARGE (m³/h)							

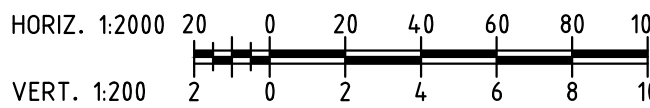
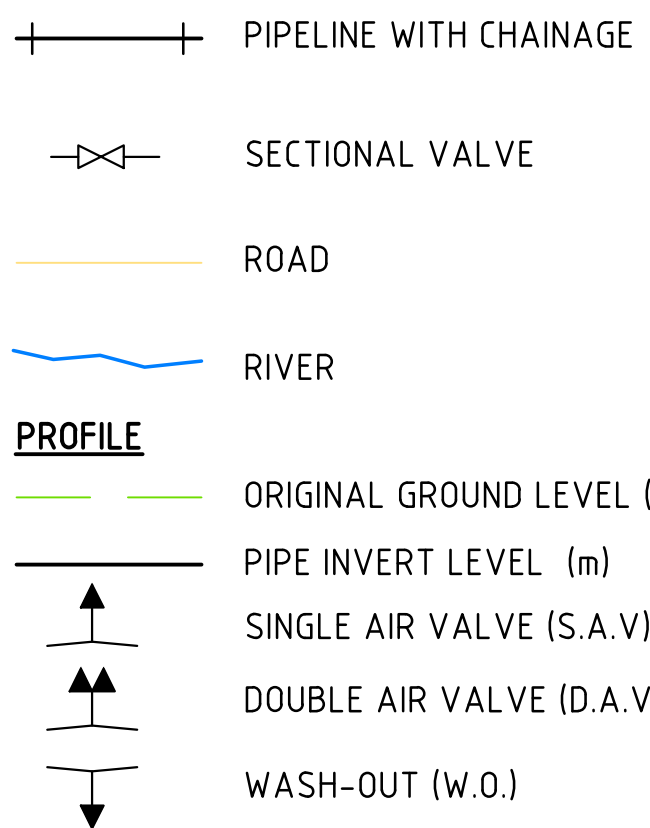
PROFILE
SCALE (A1) HORIZ.1: 2000
VERT. 1:200



Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8265 P. O. Box 46439 00100, Nairobi, Kenya +254 202169864 Email: kituimatuusaman@gmail.com	And 	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, Nairobi P. O. Box 46439 00100, Nairobi, Kenya +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Katwa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke
						Drawing Title: ELEVATED TANK - BETA BAKERS DISTRIBUTION LINE PLAN AND PROFILE CH 0+000 TO CH 1+260	
						Designed: D. LIAMBILA	
						Drawn : N.MUEMA	
						Checked: D. LIAMBILA	
						Approved: B.KIM	



PLAN



SCALE (A1) HORIZ.1: 2000
VERT. 1:200

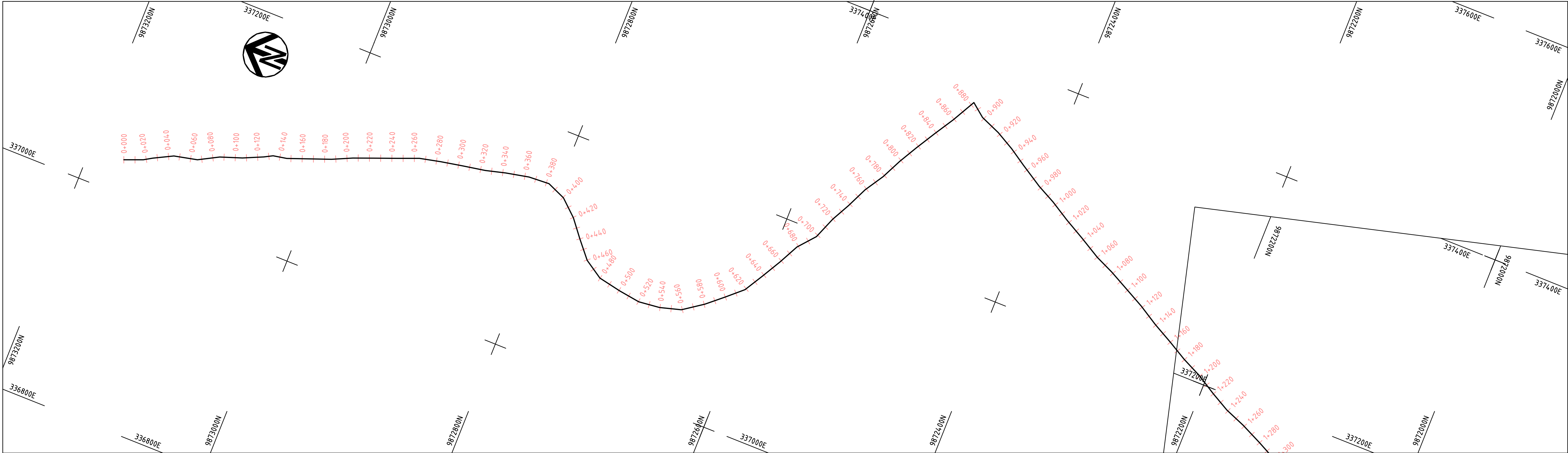
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA Drawing Title: KITHIMANI DISTRIBUTION LINE 1 PLAN AND PROFILE CH 0+000 TO CH 1+000	Stage : FINAL DESIGN REVIEW Date : NOVEMBER 2020 Drawing No. : KITH-LINE 1-001 Scale : AS INDICATED Sheet No. : 1 of 1 Index No. :	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82)2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Designed: D.LIAMBILA	Sheet Size : A1
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-	-						Checked: D. LIAMBILA	
-	-						Approved: B.KIM	



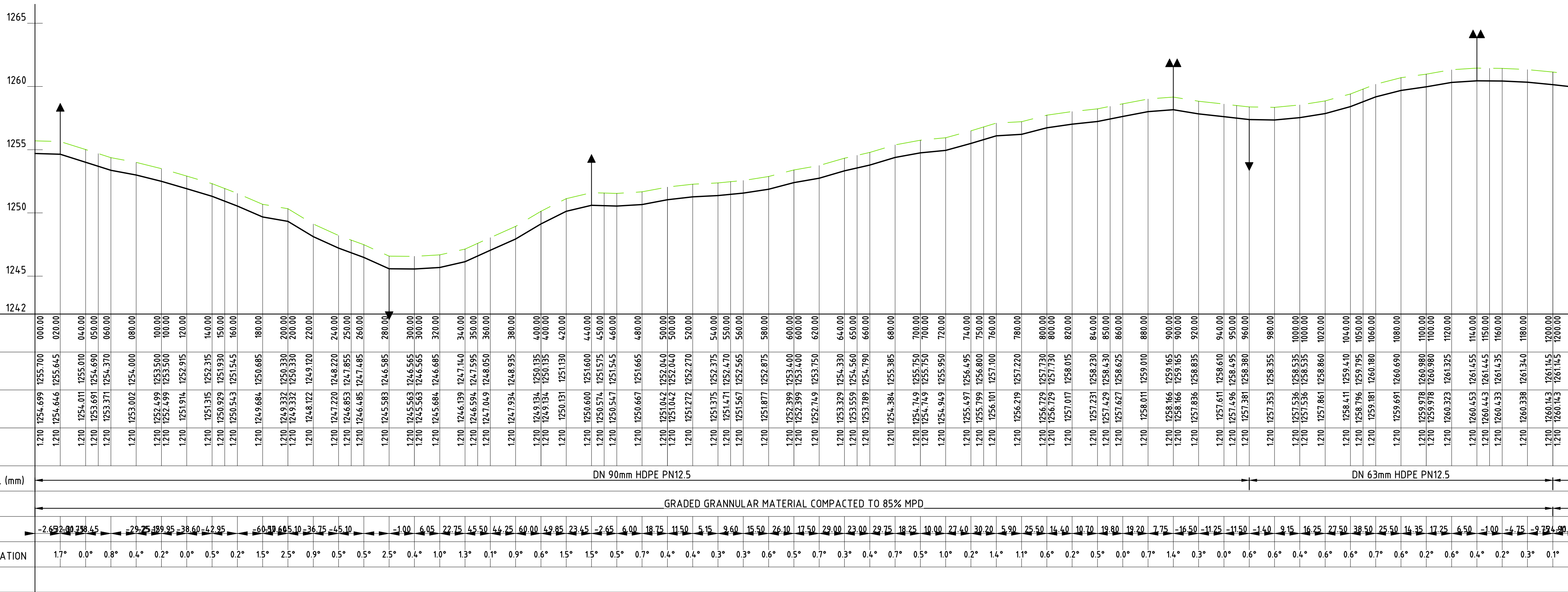
1. ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

HORIZ. 1:2000 20 0 20 40 60 80 100
VERT. 1:200 2 0 2 4 6 8 10

Revisions		Consultant			Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW	
Description	Date	 <div>SAMAN CORPORATION 5,Byeoyangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</div>	And	 <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>		Date :	NOVEMBER 2020	
-	-							Drawing No. :	KITH-LINE 2-001	
-	-							Scale :	AS INDICATED	
-	-							Sheet No. :	1 of 1	Sheet Size : A1
-	-						Index No. :			



PLAN
SCALE (A1) 1: 2000



PROFILE
SCALE (A1) HORIZ:1: 2000
VERT. 1:200

NOTES:

- ELEVATIONS ARE IN METRES,UNLESS OTHERWISE INDICATED.

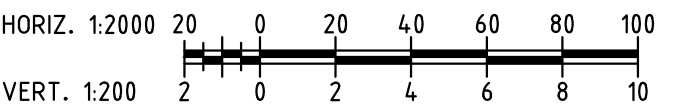
LEGEND

PLAN

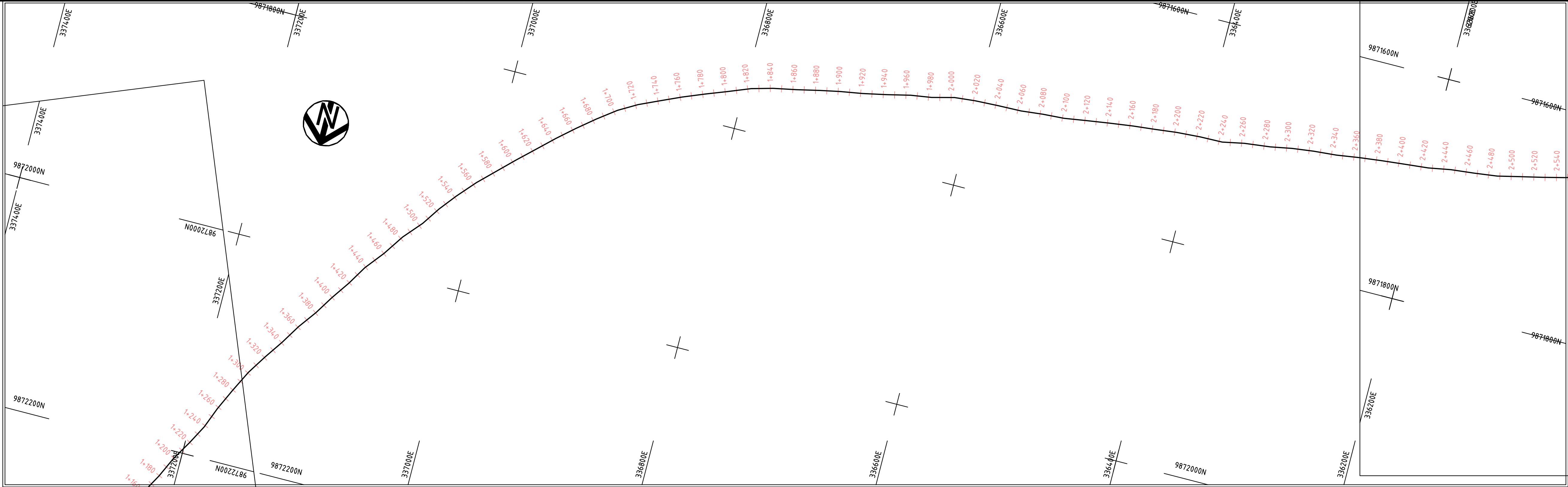
- PIPELINE WITH CHAINAGE
- SECTIONAL VALVE
- ROAD
- RIVER

PROFILE

- ORIGINAL GROUND LEVEL (m)
- PIPE INVERT LEVEL (m)
- SINGLE AIR VALVE (S.A.V)
- DOUBLE AIR VALVE (D.A.V)
- WASH-OUT (W.O.)

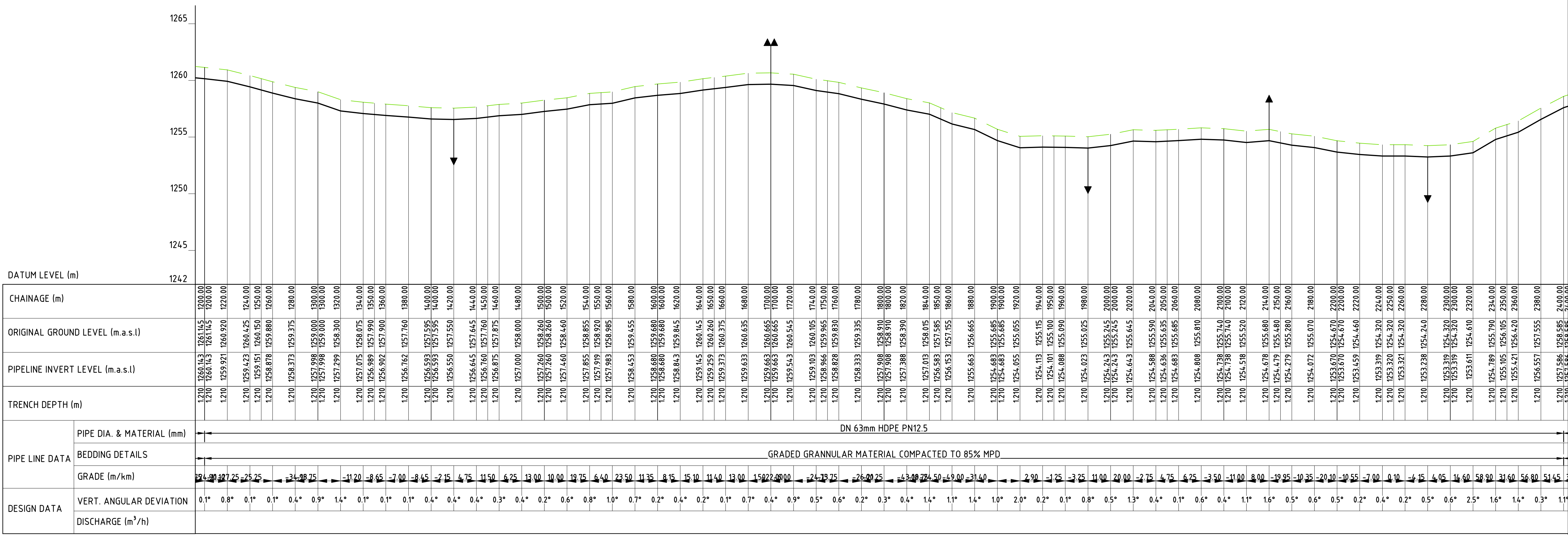


Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	NOVEMBER 2020	
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-	-						Scale :	AS INDICATED	Sheet Size :
-	-						Sheet No. :	1 of 3	A1
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PLAN

SCALE (A1) 1: 2000



PROFILE

SCALE (A1) HORIZ.1: 2000
VERT. 1:200

NOTES:

- ELEVATIONS ARE IN METRES,UNLESS OTHERWISE INDICATED.

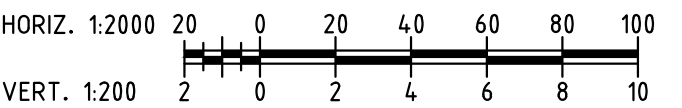
LEGEND

PLAN

- PIPELINE WITH CHAINAGE
- SECTIONAL VALVE
- ROAD
- RIVER

PROFILE

- ORIGINAL GROUND LEVEL (m)
- PIPE INVERT LEVEL (m)
- SINGLE AIR VALVE (S.A.V)
- DOUBLE AIR VALVE (D.A.V)
- WASH-OUT (W.O.)

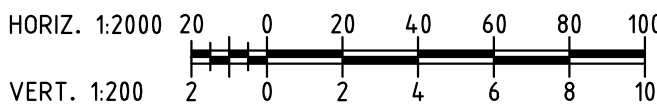


Revisions		Consultant		Employer		Project Manager		Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Stage : FINAL DESIGN REVIEW	
Description	Date									Date : NOVEMBER 2020	
-	-	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: D.LIAMBILA	Drawing Title: MALIKITI DISTRIBUTION LINE PLAN AND PROFILE CH 1+200 TO CH 2+400	Scale : AS INDICATED		Sheet Size : A1
-	-						Drawn : N.MUEMA		2 of 3		
-	-						Checked: D. LIAMBILA				
-	-						Approved: B.KIM				
-	-										

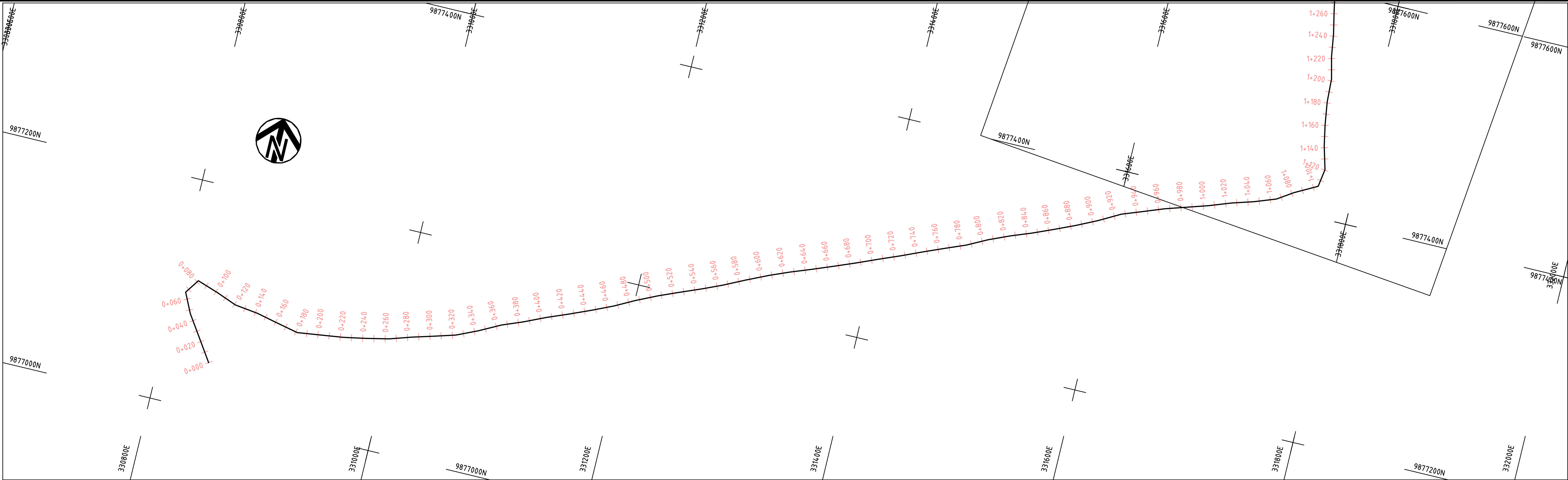


1. ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

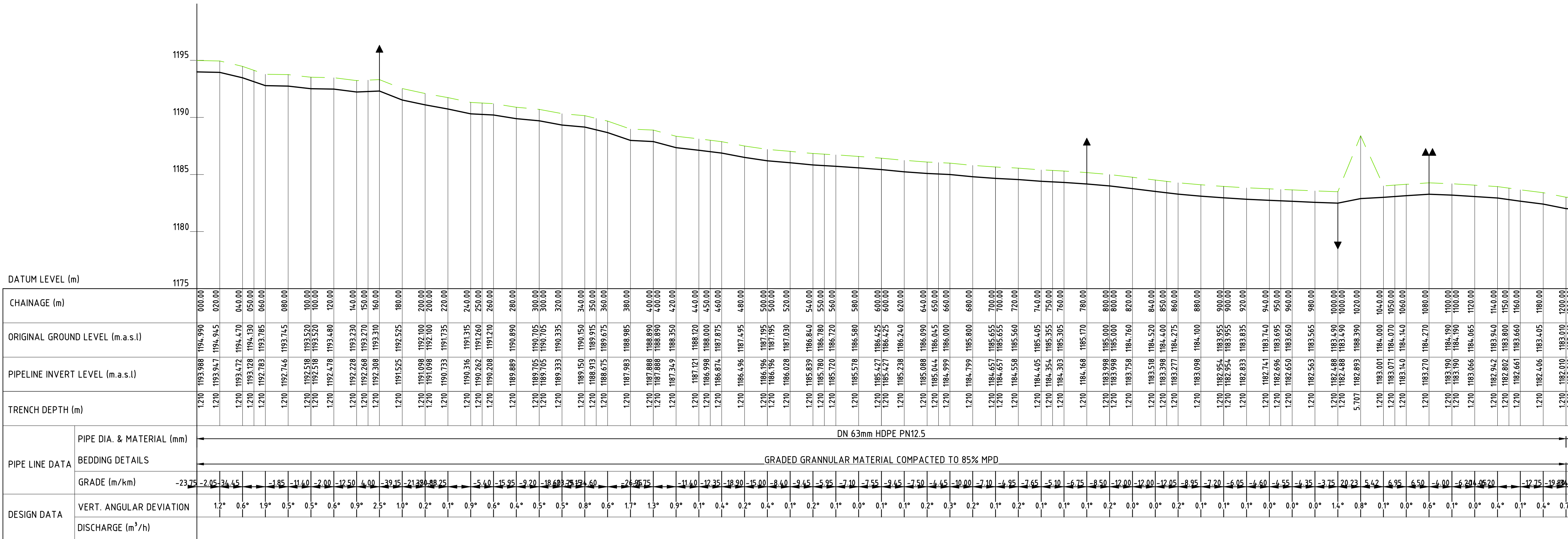
WASH-OUT (W.O.)



Revisions		Consultant			Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW		
Description	Date	 <div>SAMAN CORPORATION 5,Byeoriyangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuusaman@gmail.com</div>	And  <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Killeshwa. P. O. Box 46439 00100, Nairobi, Kenya +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	Date :		NOVEMBER 2020		
-	-					Drawing No. :		MAL- DL-003		
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-	-					Sheet No. :		3 of 3		
-	-					Index No. :				



PLAN
SCALE (A1) 1: 2000



PROFILE
SCALE (A1) HORIZ.1: 2000
VERT. 1:200

NOTES:

- ELEVATIONS ARE IN METRES,UNLESS OTHERWISE INDICATED.

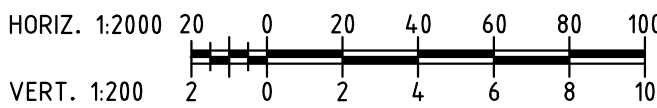
LEGEND

PLAN

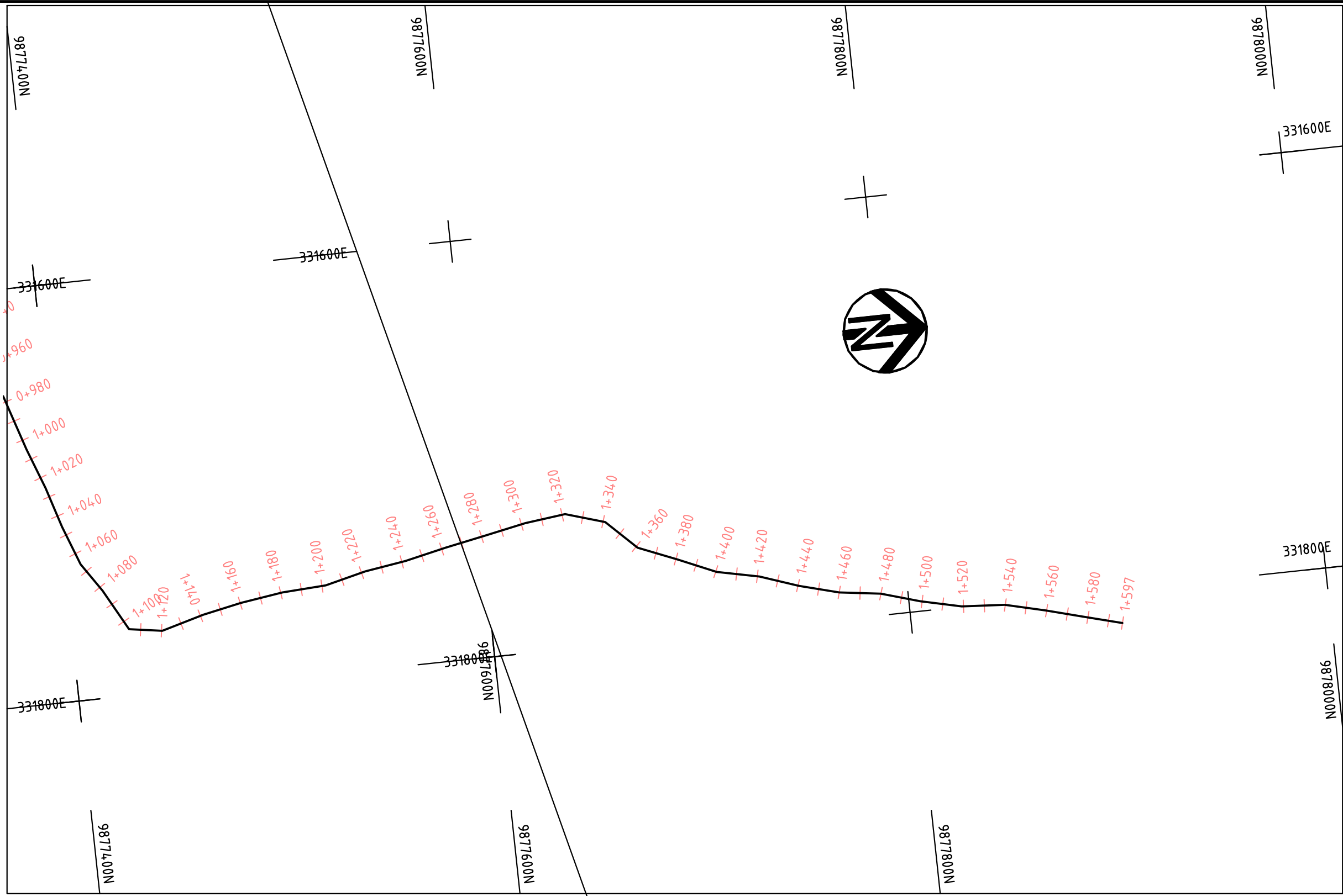
- PIPELINE WITH CHAINAGE
- SECTIONAL VALVE
- ROAD
- RIVER

PROFILE

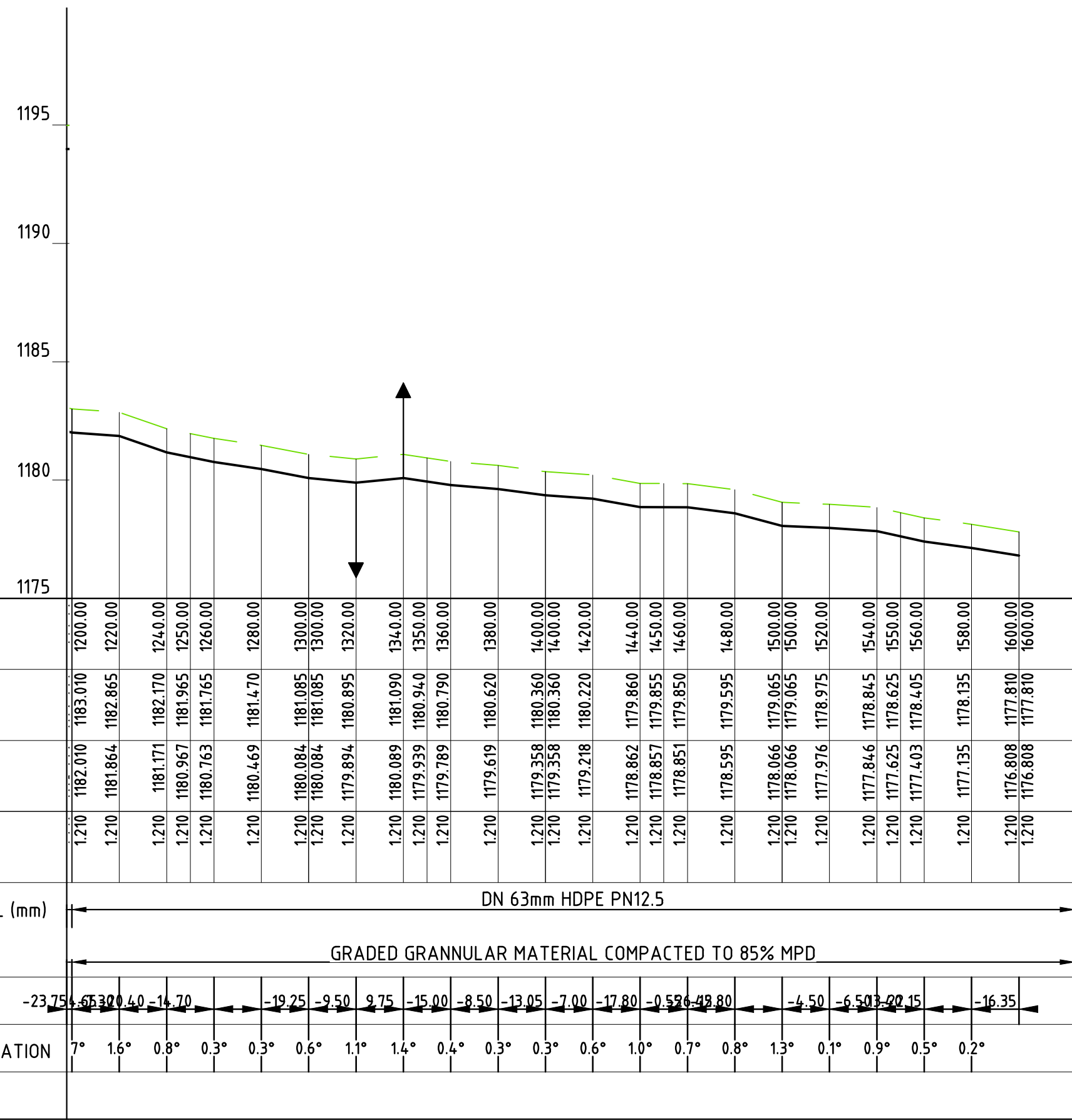
- ORIGINAL GROUND LEVEL (m)
- PIPE INVERT LEVEL (m)
- SINGLE AIR VALVE (S.A.V)
- DOUBLE AIR VALVE (D.A.V)
- WASH-OUT (W.O.)



Revisions		Consultant				Employer	Project Manager		Project:	Stage :	FINAL DESIGN REVIEW				
Description	Date			And 								Date :	NOVEMBER 2020		
										Drawing No. :	NDAL- MARK-001				
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												Index No. :			
		SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatususaman@gmail.com				TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA			
										Drawing Title:		NDALANI MARKET LINE PLAN AND PROFILE CH 0+000 TO CH 1+200			
										Designed: D.LIAMBILA					
										Drawn : N.MUEMA					
										Checked: D. LIAMBILA					
										Approved: B.KIM					



PLAN
SCALE (A1) 1: 2000



PROFILE
SCALE (A1) HORIZ. 1: 2000
VERT. 1: 200

NOTES:

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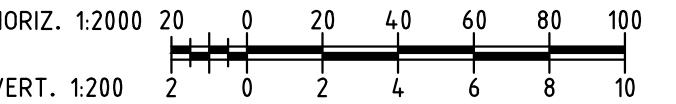
LEGEND

PLAN

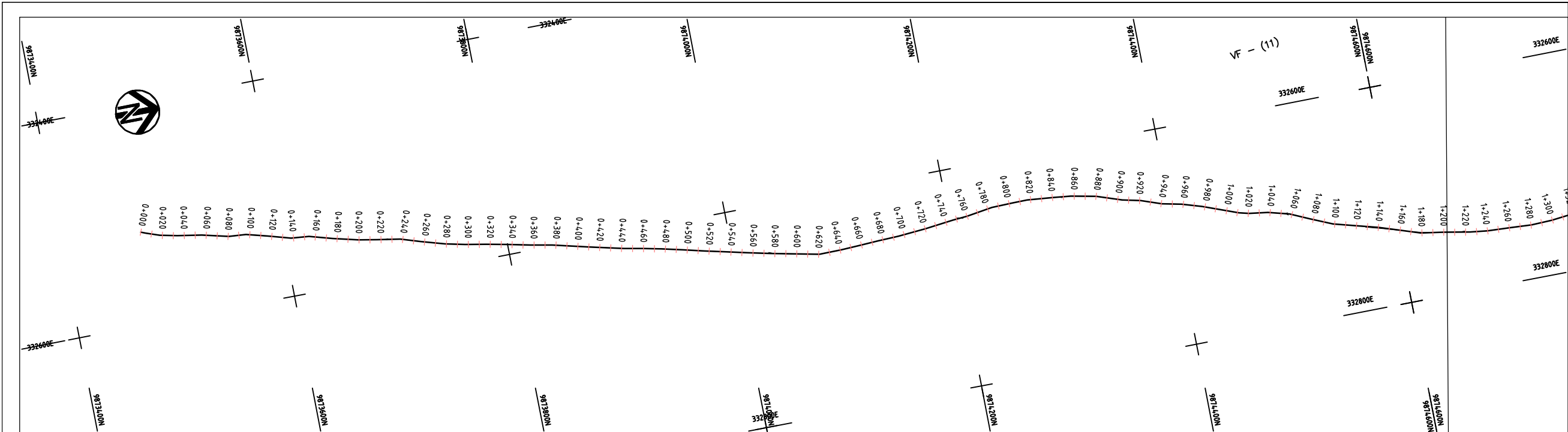
- PIPELINE WITH CHAINAGE
SECTIONAL VALVE
ROAD
RIVER

PROFILE

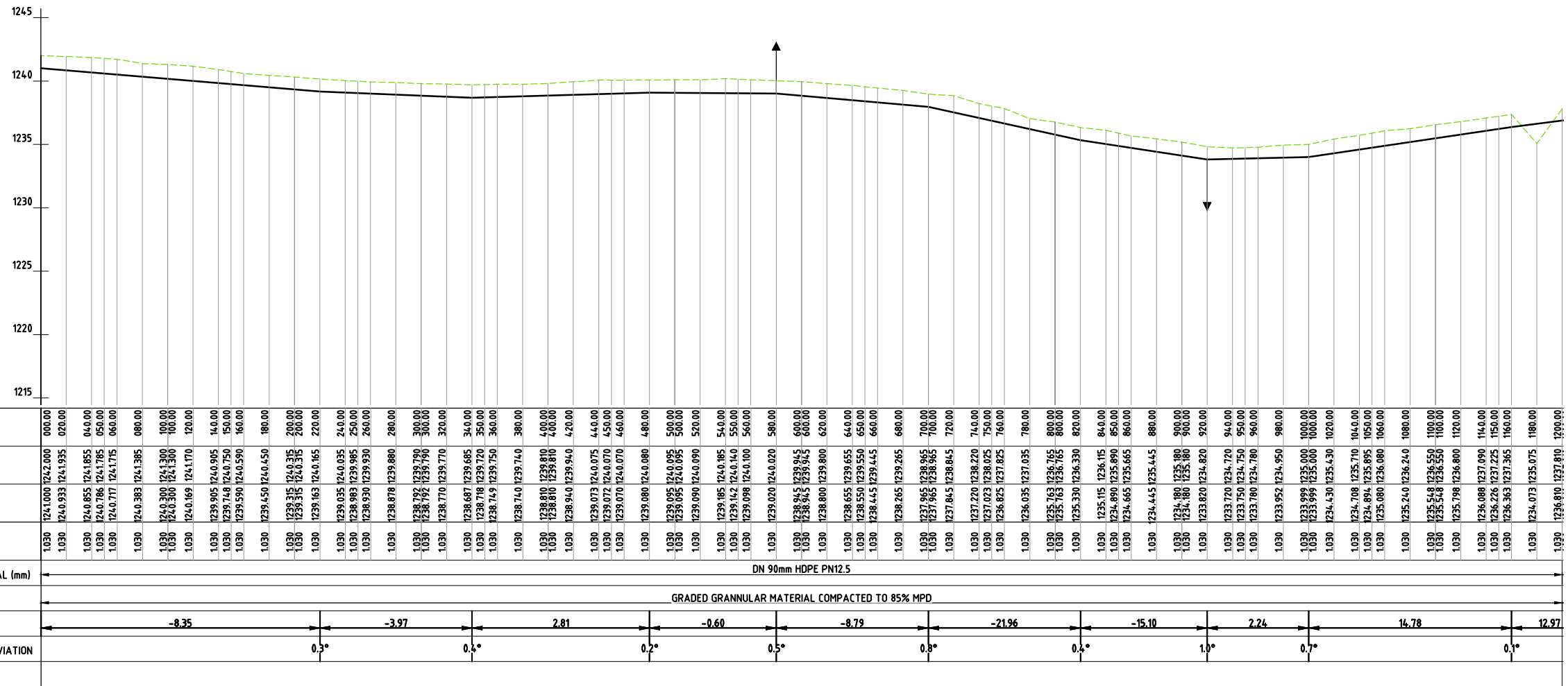
- ORIGINAL GROUND LEVEL (m)
PIPE INVERT LEVEL (m)
SINGLE AIR VALVE (S.A.V)
DOUBLE AIR VALVE (D.A.V)
WASH-OUT (W.O.)



Revisions		Consultant				Employer		Project Manager		Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatususaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed:	D.LIAMBILA	Date : NOVEMBER 2020				
-	-					Drawn :	N.MUEMA	Drawing No. : NDAL- MARK-002				
-	-					Checked:	D. LIAMBILA	Scale : AS INDICATED			Sheet Size : A1	
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Index No. :												



PLAN
SCALE (A1) 1: 2000



PROFILE
SCALE (A1) HORIZ.1: 2000
VERT. 1:200

NOTES:

- ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

LEGEND

PLAN

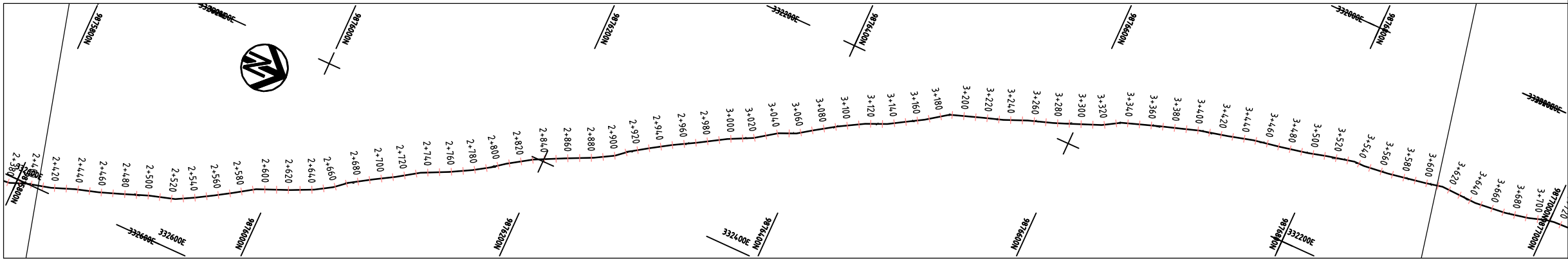
- PIPELINE WITH CHAINAGE
- SECTIONAL VALVE
- ROAD
- RIVER

PROFILE

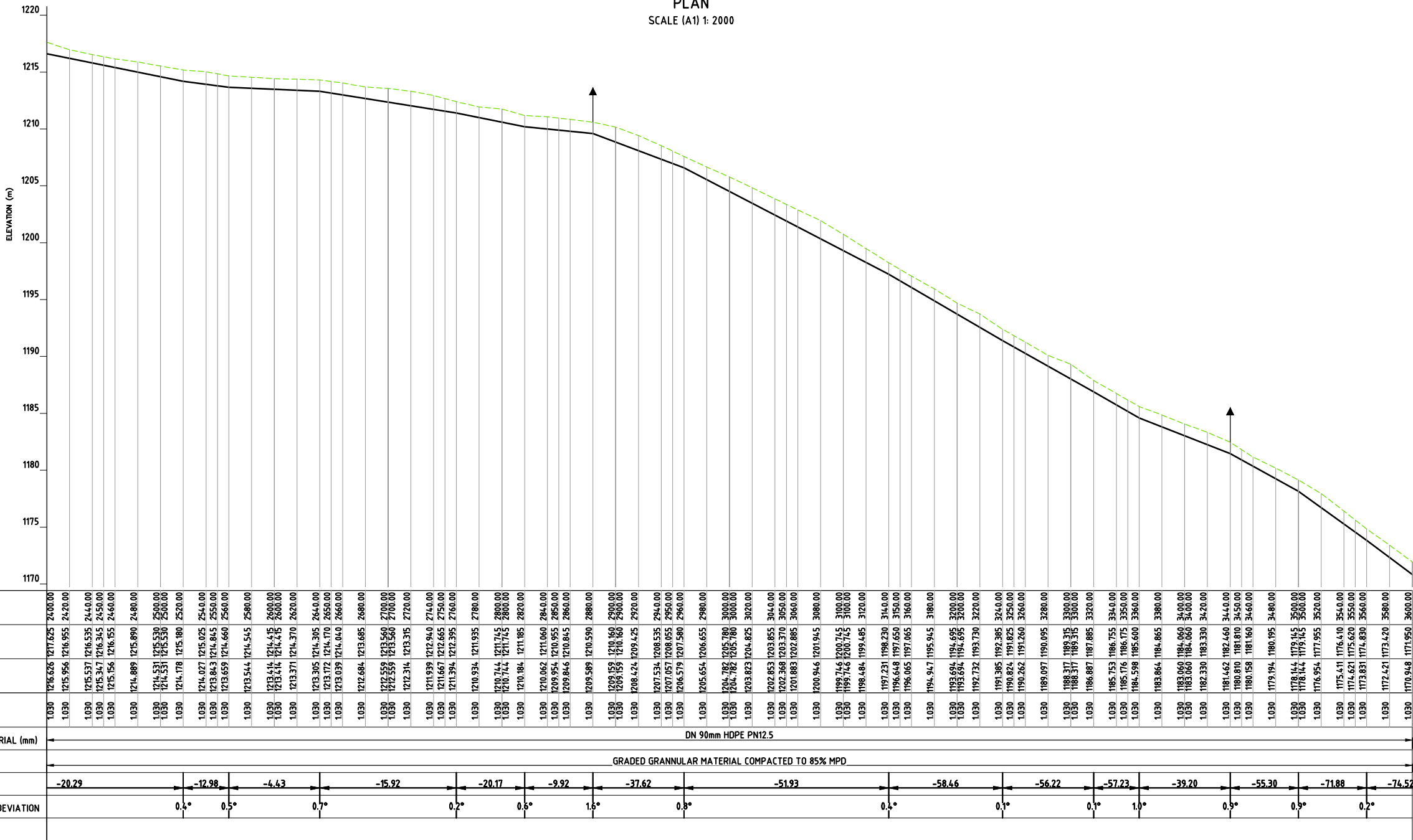
- ORIGINAL GROUND LEVEL (m)
- PIPE INVERT LEVEL (m)
- SINGLE AIR VALVE (S.A.V)
- DOUBLE AIR VALVE (D.A.V)
- WASH-OUT (W.O.)

HORIZ. 1:2000 20 0 20 40 60 80 100
VERT. 1:200 2 0 2 4 6 8 10

Revisions		Consultant		Employer		Project Manager		Project:		Stage :	
Description	Date		And				Designed: D.LIAMBILA Drawn : N.MUEMA Checked: D. LIAMBILA Approved: B.KIM	Drawing Title: SOFIA - NDALANI DISTRIBUTION LINE PLAN AND PROFILE CH 0+000 TO CH 1+200	Drawing No. : SOF-NDAL-001	Date : OCTOBER 2020	
										Index No. :	
										AS INDICATED	
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										1 of 5	



PLAN
SCALE (A1) 1: 2000



PROFILE
SCALE (A1) HORIZ. 1: 2000
VERT. 1: 200

NOTES:

1. ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

LEGEND

PLAN

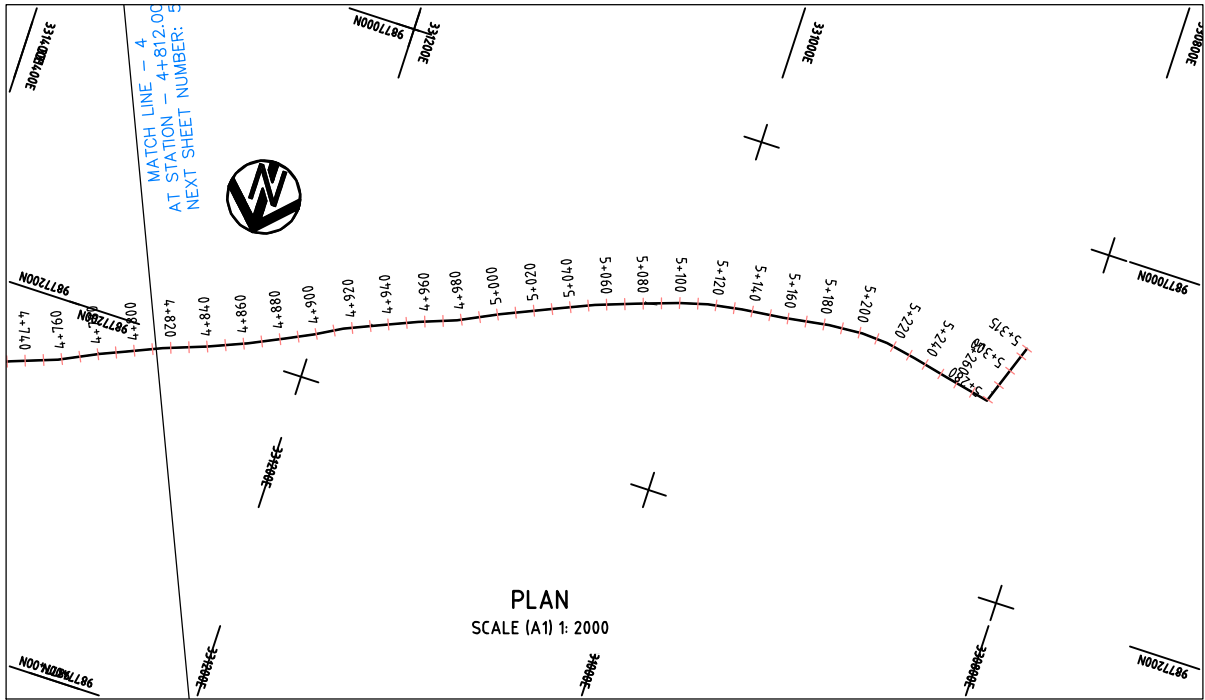
- PIPELINE WITH CHAINAGE
SECTIONAL VALVE
ROAD
RIVER

PROFILE

- ORIGINAL GROUND LEVEL (m)
PIPE INVERT LEVEL (m)
SINGLE AIR VALVE (S.A.V)
DOUBLE AIR VALVE (D.A.V)
WASH-OUT (W.O.)

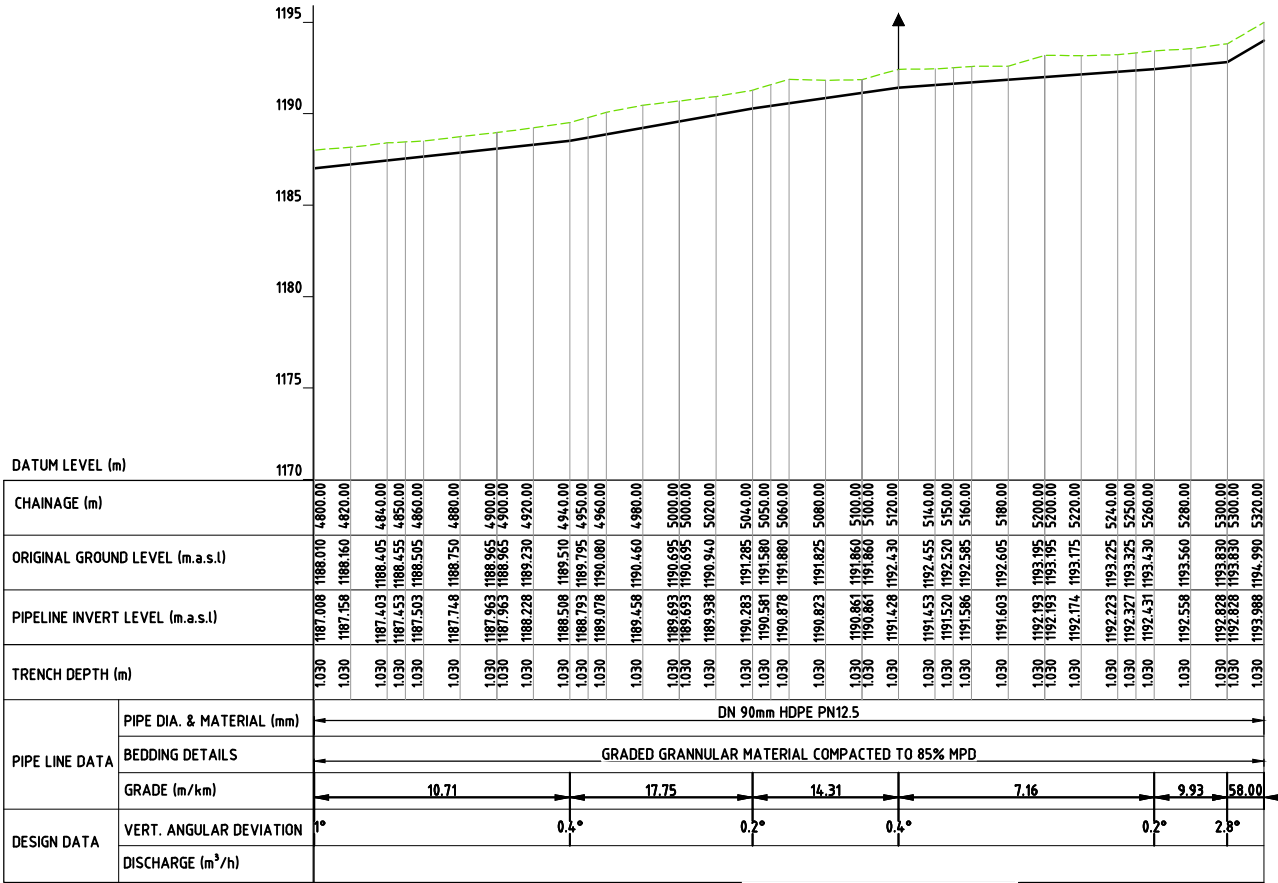
HORIZ. 1:2000 20 0 20 40 60 80 100
VERT. 1:200 2 0 2 4 6 8 10

Revisions		Consultant		Employer		Project Manager		Project		Stage	
Description	Date		And				Designed: D.LIAMBILA Drawn: N.MUEMA Checked: D. LIAMBILA Approved: B.KIM	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Drawing Title: SOFIA - NDALANI DISTRIBUTION LINE PLAN AND PROFILE CH 2+400 TO CH 3+600	FINAL DESIGN REVIEW	
										OCTOBER 2020	
										SOF-NDAL-003	
										AS INDICATED	
										3 of 5	
										Index No. :	
										Sheet Size : A1	



- NOTES:**
- ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

- LEGEND**
- PLAN**
- PIPELINE WITH CHAINAGE
 - SECTIONAL VALVE
 - ROAD
 - RIVER
- PROFILE**
- ORIGINAL GROUND LEVEL (m)
 - PIPE INVERT LEVEL (m)
 - SINGLE AIR VALVE (S.A.V)
 - DOUBLE AIR VALVE (D.A.V)
 - WASH-OUT (W.O.)



HORIZ. 1:2000
VERT. 1:200

Revisions		Consultant		Employer		Project Manager		Project:	Stage : FINAL DESIGN REVIEW			
Description	Date		And 			Designed: D.LIAMBILA	Drawn: N.MUEMA		Drawing Title: SOFIA - NDALANI DISTRIBUTION LINE PLAN AND PROFILE CH 4+800 TO CH 5+320	Date : OCTOBER 2020		
										Drawing No. : SOF-NDAL-005		
										Scale : AS INDICATED	Sheet Size : A1	
										Sheet No. : 5 of 5	Index No. :	
		SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com		TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke		ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke		TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke				

NOTES:

1. ELEVATIONS ARE IN METRES,UNLESS OTHERWISE INDICATED.

LEGEND

PLAN

PIPELINE WITH CHAINAGE

SECTIONAL VALVE

ROAD

RIVER

PROFILE

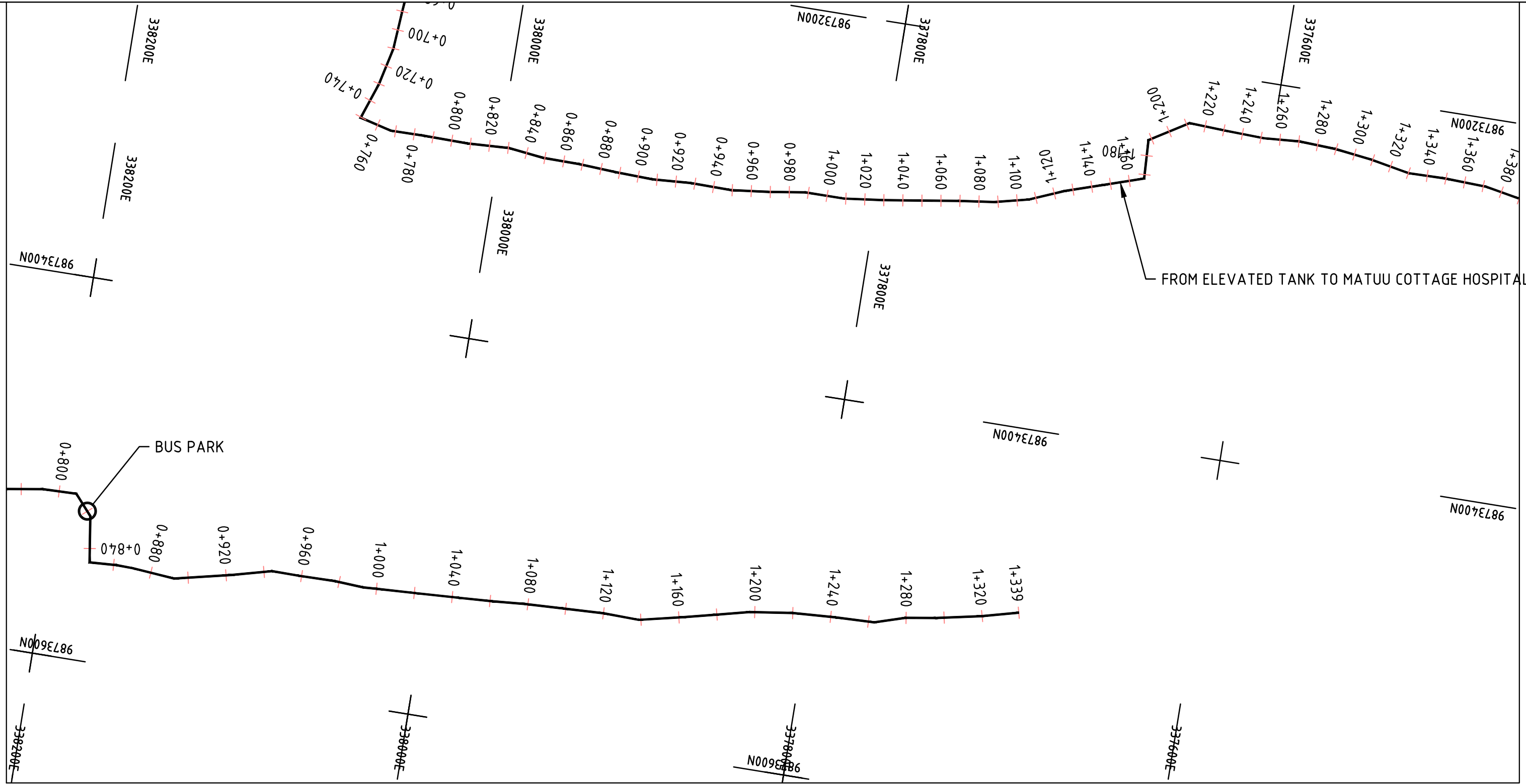
ORIGINAL GROUND LEVEL (m)

PIPE INVERT LEVEL (m)

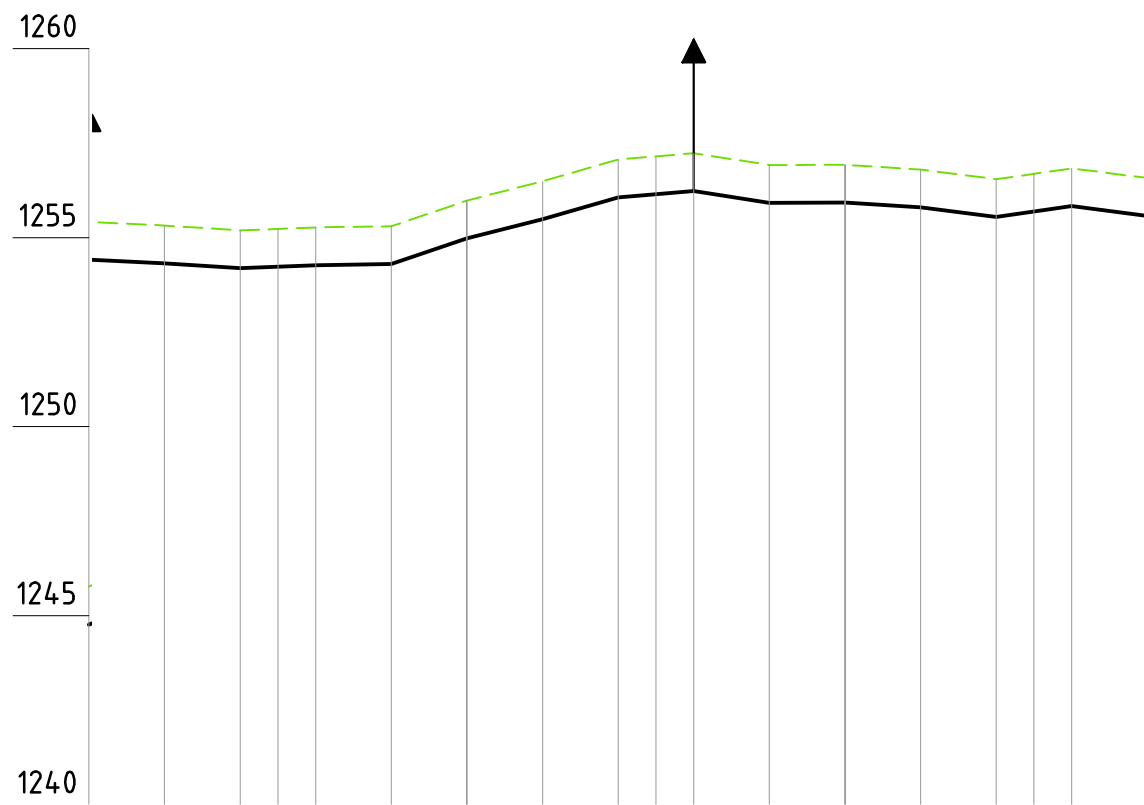
SINGLE AIR VALVE (S.A.V)

DOUBLE AIR VALVE (D.A.V)

WASH-OUT (W.O.)



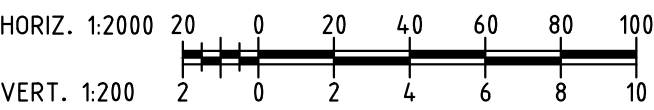
PLAN
SCALE (A1) 1: 2000



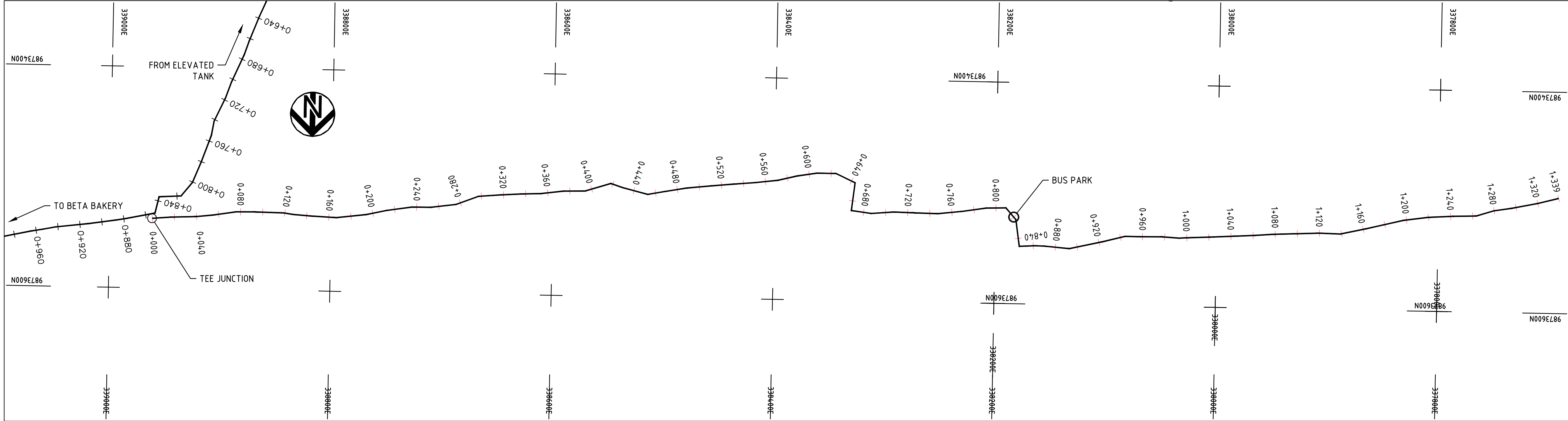
DATUM LEVEL (m)

CHAINAGE (m)	1100.00	1120.00	1140.00	1150.00	1160.00	1180.00	1200.00	1220.00	1240.00	1250.00	1260.00	1280.00	1300.00	1320.00	1340.00	1350.00	1360.00	1380.00
ORIGINAL GROUND LEVEL (m.a.s.l)	1255.420	1255.320	1255.190	1255.230	1255.270	1255.300	1255.980	1255.980	1256.490	1257.065	1257.150	1256.800	1256.925	1256.800	1256.545	1256.690	1256.690	1256.575
PIPELINE INVERT LEVEL (m.a.s.l)	1254.419	1254.321	1254.191	1254.231	1254.271	1254.301	1254.981	1254.981	1255.491	1256.066	1256.150	1255.801	1255.926	1255.801	1255.545	1255.688	1255.681	1255.576
TRENCH DEPTH (m)	1.003	1.001	1.001	1.001	1.001	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003
PIPE LINE DATA	PIPE DIA. & MATERIAL (mm)		DN 63mm HDPE PN12.5															
	BEDDING DETAILS		GRADED GRANNULAR MATERIAL COMPACTED TO 85% MPD															
	GRADE (m/km)		-6.90	-6.50	4.00	1.50	34.00	25.50	28.75	8.40	-15.65	0.75	-6.75	-12.80	16.30	-12.75		
DESIGN DATA	VERT. ANGULAR DEVIATION		2°	0.1°	0.6°	0.1°	1.9°	0.5°	0.2°	1.2°	1.4°	0.9°	0.4°	0.4°	1.6°	1.5°		
	DISCHARGE (m³/h)																	

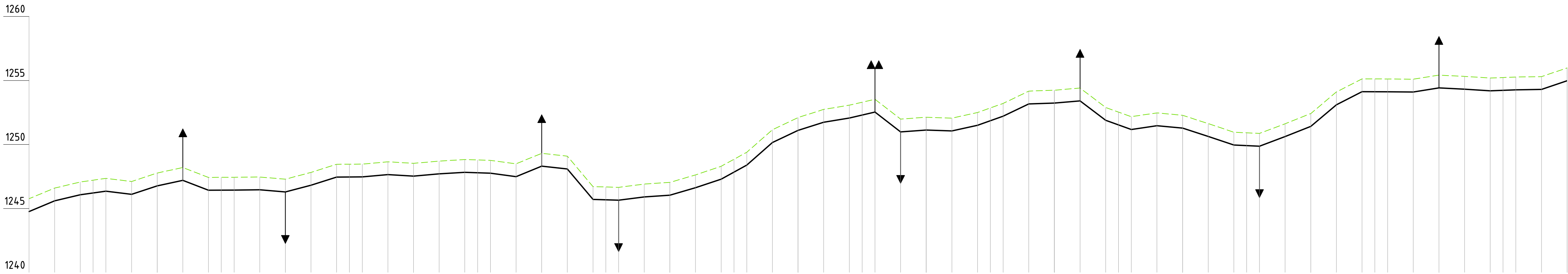
PROFILE
SCALE (A1) HORIZ.1: 2000
VERT. 1:200



Revisions		Consultant		Employer		Project Manager		Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: D.LIAMBILA	Drawing Title: TEE JUNCTION-MATUU BUS PARK - FGC DISTRIBUTION LINE PLAN AND PROFILE CH 1+200 TO CH 1+380	Drawing No. : TJUN-MBP-FGC-001	Date : OCTOBER 2020	Index No. :
						Drawn : N.MUEMA			Sheet Size : A1	
						Checked: D. LIAMBILA			Scale : AS INDICATED	
						Approved: B.KIM			Sheet No. : 2 of 2	



PLAN
SCALE (A1) 1: 2000



DATUM LEVEL (m)																													
CHAINAGE (m)																													
ORIGINAL GROUND LEVEL (m.a.s.l)																													
PIPELINE INVERT LEVEL (m.a.s.l)																													
TRENCH DEPTH (m)																													
PIPE LINE DATA	PIPE DIA. & MATERIAL (mm)	DN 125mm HDPE PN 12.5																											
	BEDDING DETAILS	GRADED GRANULAR MATERIAL COMPACTED TO 85% MPD																											
	GRADE (m/km)																												
DESIGN DATA	VERT. ANGULAR DEVIATION																												
	DISCHARGE (m³/h)																												

PROFILE
SCALE (A1) HORIZ:1: 2000
VERT: 1:200

NOTES:

- ELEVATIONS ARE IN METRES, UNLESS OTHERWISE INDICATED.

LEGEND

PLAN

PIPELINE WITH CHAINAGE

SECTIONAL VALVE

ROAD

RIVER

PROFILE

ORIGINAL GROUND LEVEL (m)

PIPE INVERT LEVEL (m)

SINGLE AIR VALVE (S.A.V)

DOUBLE AIR VALVE (D.A.V)

WASH-OUT (W.O.)

HORIZ. 1:2000
VERT. 1:200

Revisions		Consultant			Employer	Project Manager	Project:	Stage :	
Description	Date		And 			Designed: D.LIAMBILA		Date :	
	Drawn : N.MUEMA					Drawing No. :			
	Checked: D. LIAMBILA					Drawing Title: TEE JUNCTION-MATUU BUS PARK - FGC DISTRIBUTION LINE PLAN AND PROFILE CH 0+000 TO CH 1+200			
	Approved: B.KIM								
		SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com		TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa, P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.co.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	FINAL DESIGN REVIEW	
							OCTOBER 2020		
								AS INDICATED	Sheet Size : A1
								1 of 2	

Technical drawing of a rectangular tank with a double bottom. The drawing includes a plan view (top) and a side elevation view (left). The plan view shows the internal structure, including the double bottom, and the piping system. The side elevation view shows the vertical dimensions and the internal structure. The drawing is labeled with dimensions and a section line B-B.

Dimensions (mm):

- Overall length: 1400
- Overall width: 1000
- Internal width: 800
- Internal length: 1200
- Double bottom height: 150
- Internal height: 1000
- Section line B-B: 1/3

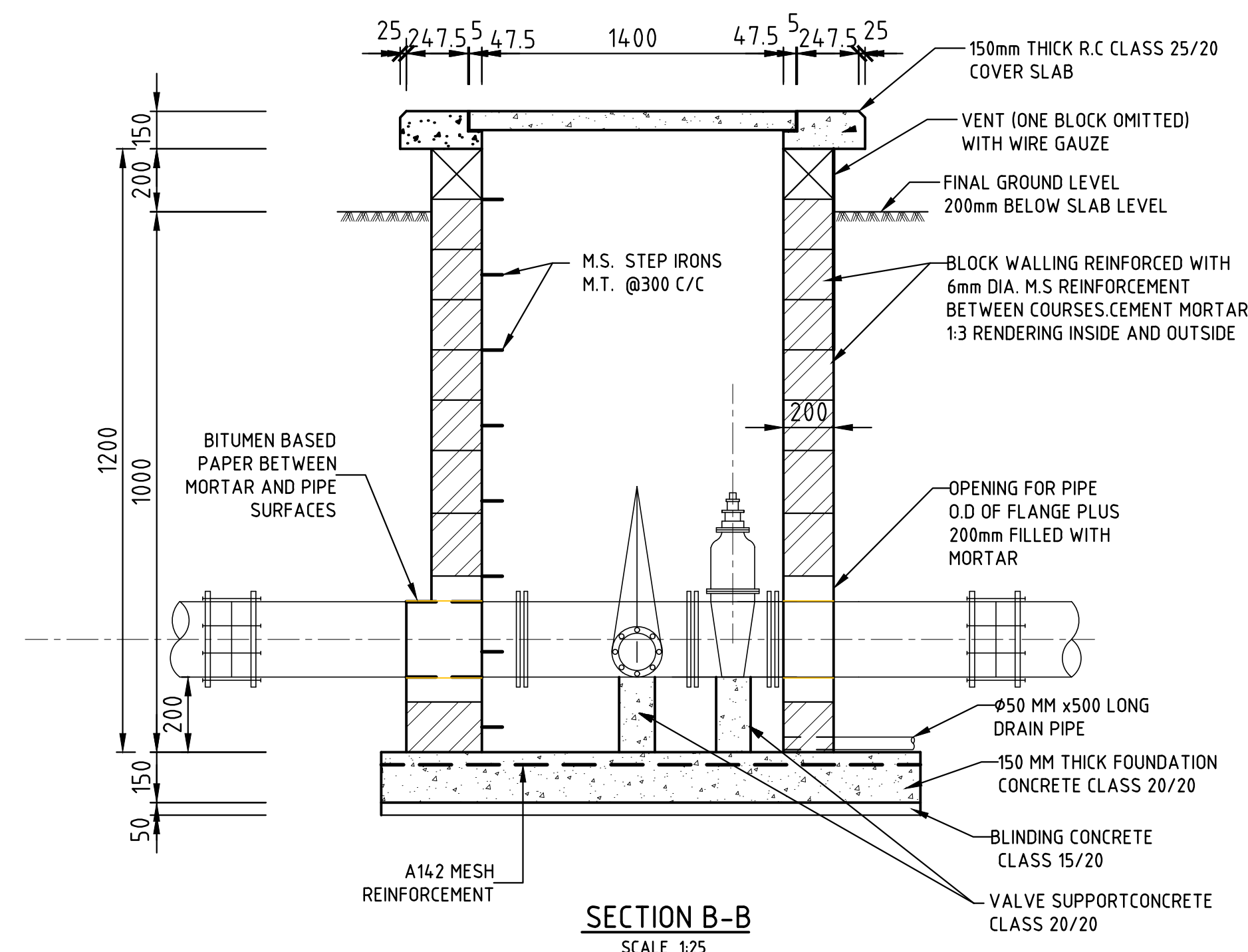
Labels:

- DRAIN PIPE
- B-B

PLAN OF CHAMBER
SCALE 1:25

NOTE:

1. WALL WIDTH INCREASES WITH INVERT DEPTH AS PE DETAIL ON SCHEDULE



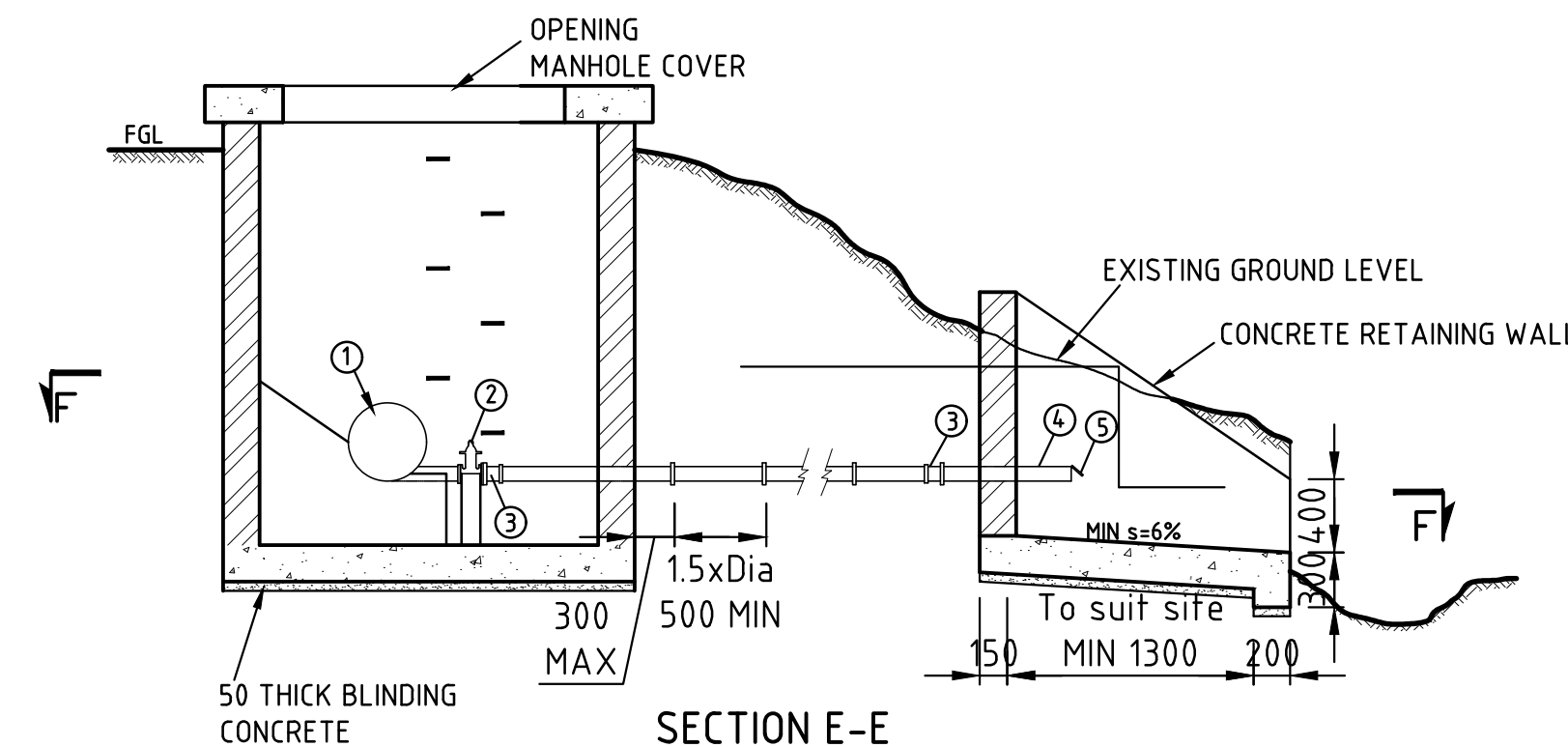
SECTION B-B
SCALE 1:25

TYPICAL WASHOUT

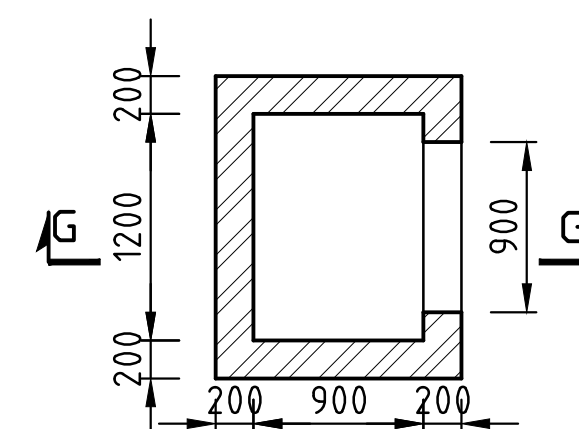
300 MAX
1500 MIN
15xDia
500 MIN
200
1800
200
200
300 MAX
1500 MIN
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500 MIN
300 MAX
200
300
200
1800
UPVC PIPE AND LENGTH TO SUIT SITE
TO SUIT SITE MIN 1500
TO SUIT SITE MIN 1840
200
2000
700
DITCH
200

STEP RAILS
200x200x50 SUMP
1
2
3
4
5

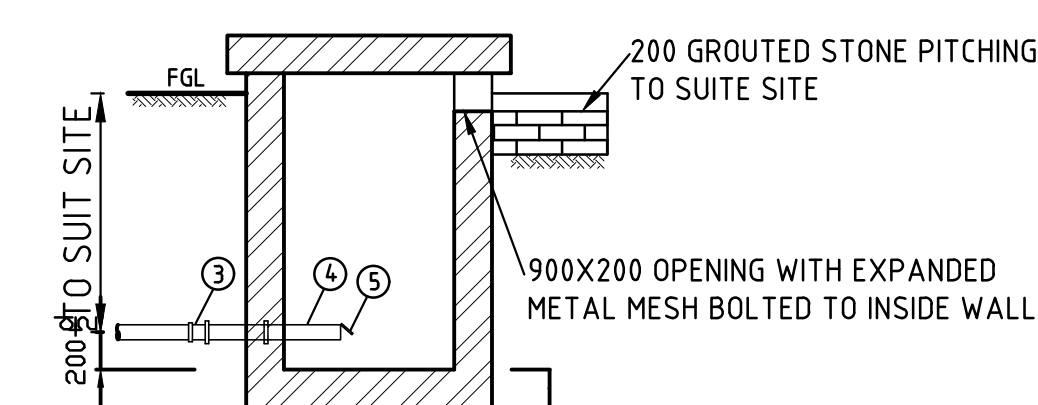
SECTION F-F
SCALE 1:40



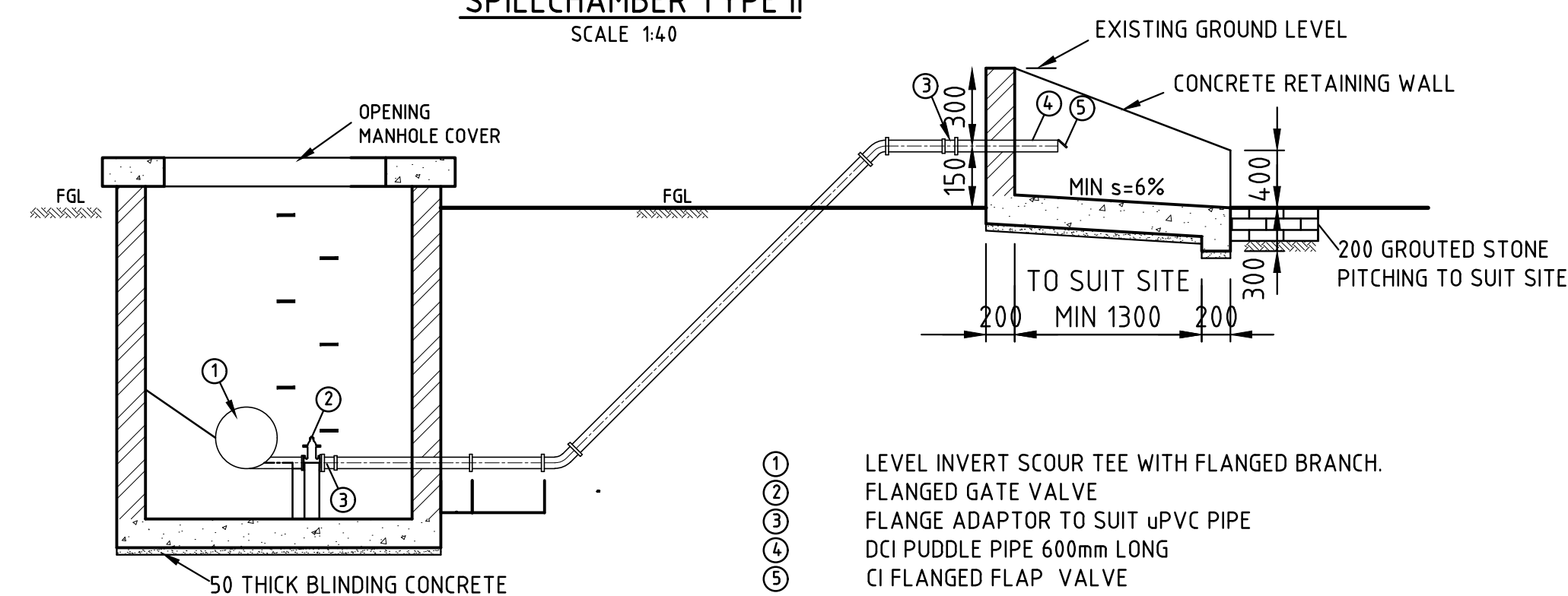
SECTION E-E
SPILLCHAMBER TYPE I
SCALE 1:40



PLAN OF SPILLWAY TYPE I



SECTION G-G



SECTION E-E

SPILLCHAMBER TYPE III
SCALE 1:40

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. BLINDING CONCRETE CLASS 15/20
3. FOUNDATION CONCRETE CLASS 20/20

F.G.L - FINISHED GROUND LEVEL
F.C - FLEXIBLE COUPLING
O.D - OUTSIDE DIAMETER
DN - NOMINAL DIAMETER

Revisions		Consultant		Employer	Project Manager	Project:		Stage : FINAL DESIGN REVIEW					
Description	Date	 <div>SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</div>	And  <div>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Mwineshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</div>	 <div>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283 00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</div>	 <div>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</div>	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Date :	JULY 2020				
						Drawing Title:		WASHOUT DETAILS DETAILS	Drawing No. :	MAT-STD-001	Scale :	AS INDICATED	
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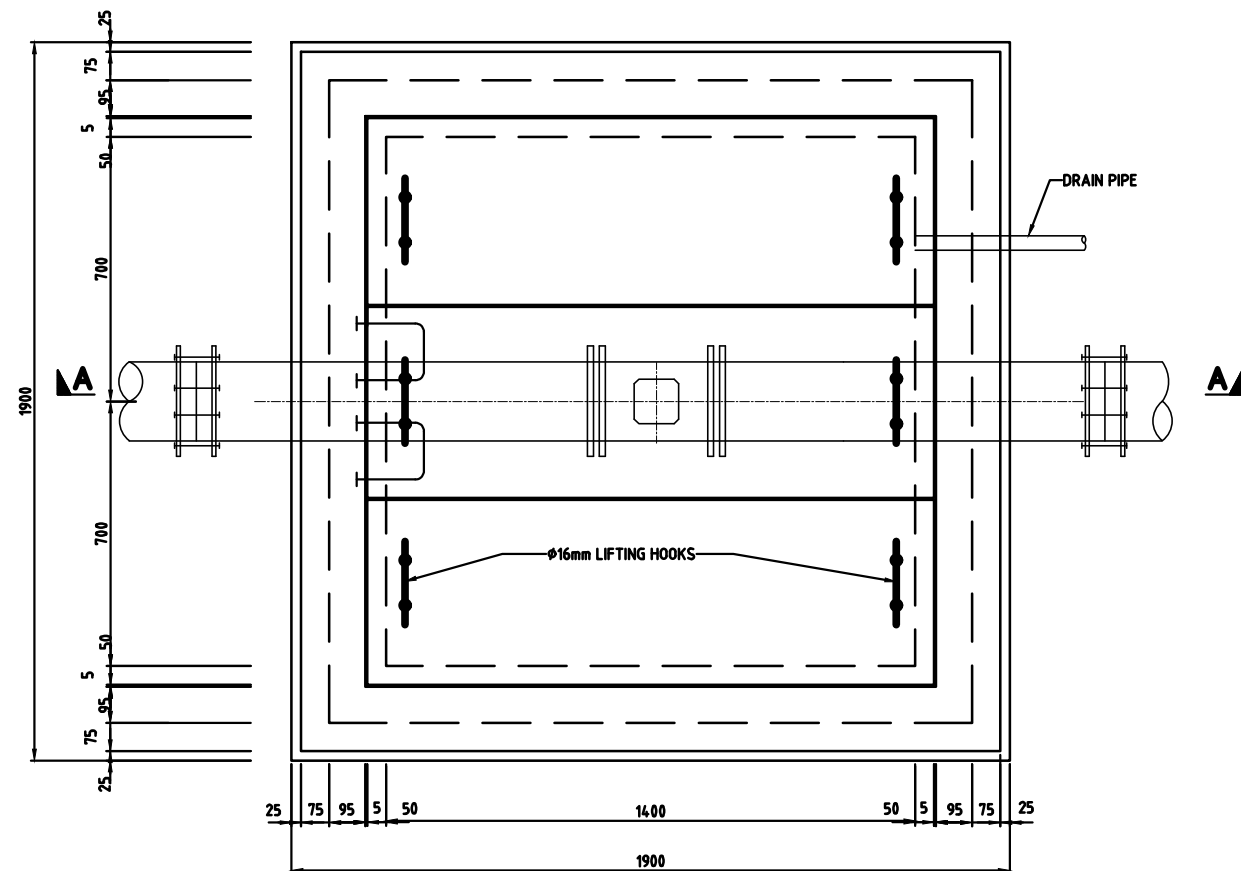
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. BLINDING CONCRETE CLASS 15/20
3. FOUNDATION CONCRETE CLASS 20/20

LEGEND:

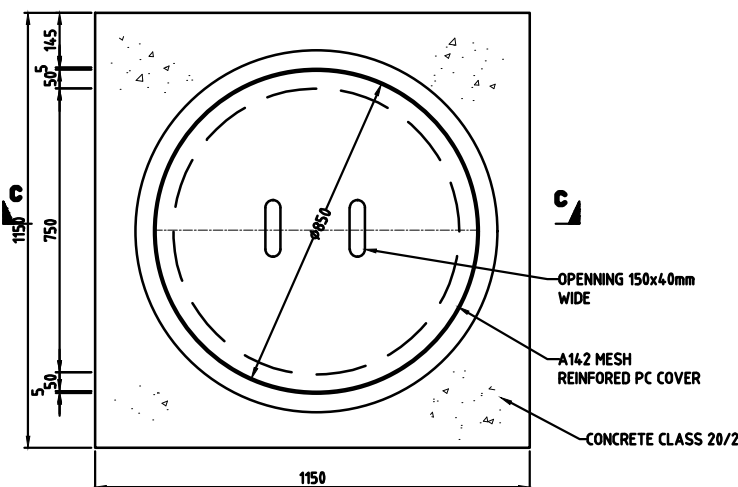
- O.G.L - ORIGINAL GROUND LEVEL
F.C - FLEXIBLE COUPLING
O.D - OUTSIDE DIAMETER
DN - NOMINAL DIAMETER

AIR VALVE CHAMBER

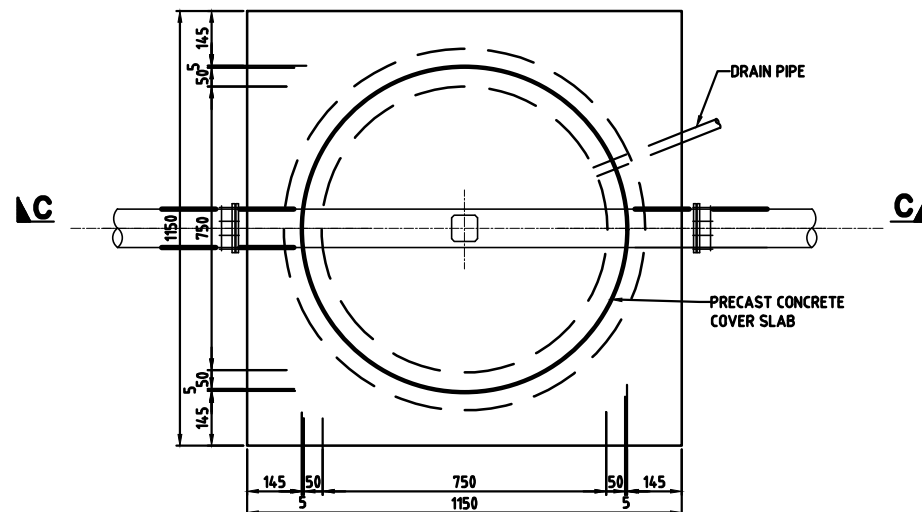


PLAN OF CHAMBER
SCALE 1:20

VALVE CHAMBER DETAIL FOR FIRE HYDRANT

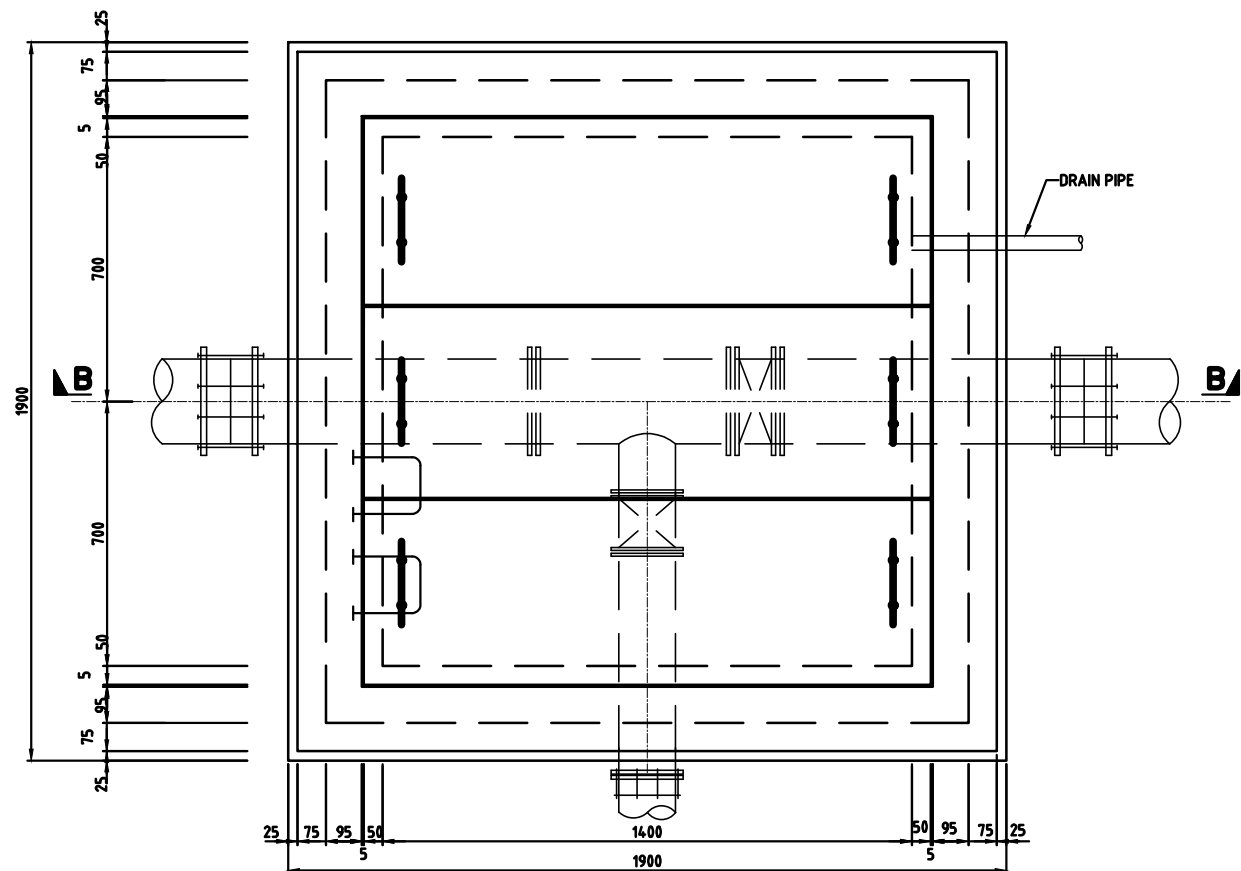


PLAN OF COVER
SCALE 1:20

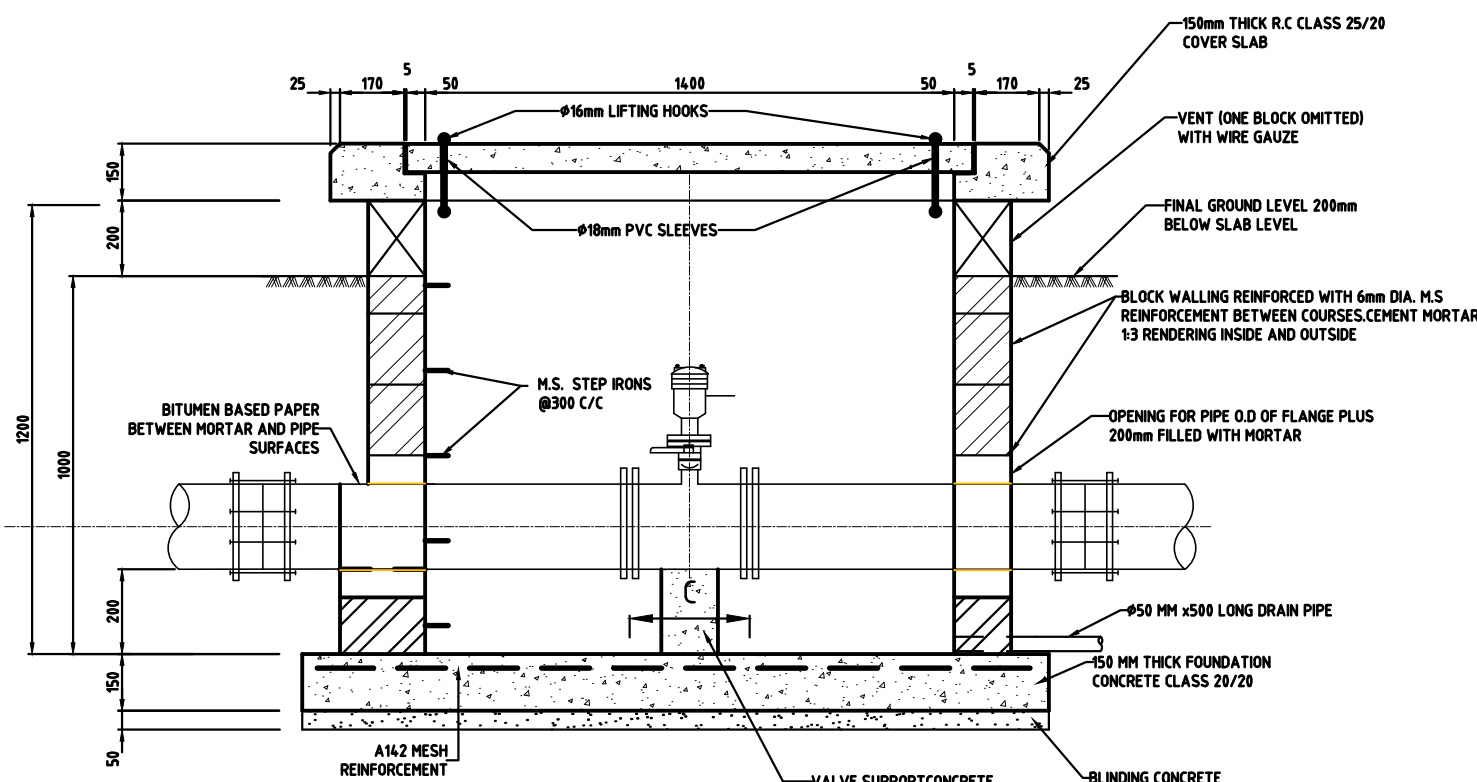


PLAN OF CHAMBER
SCALE 1:20

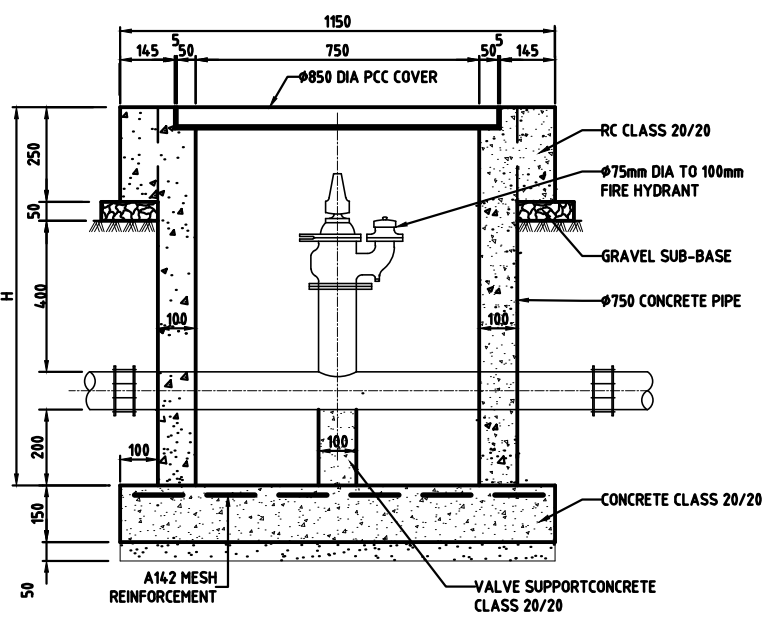
AIR VALVE CHAMBER



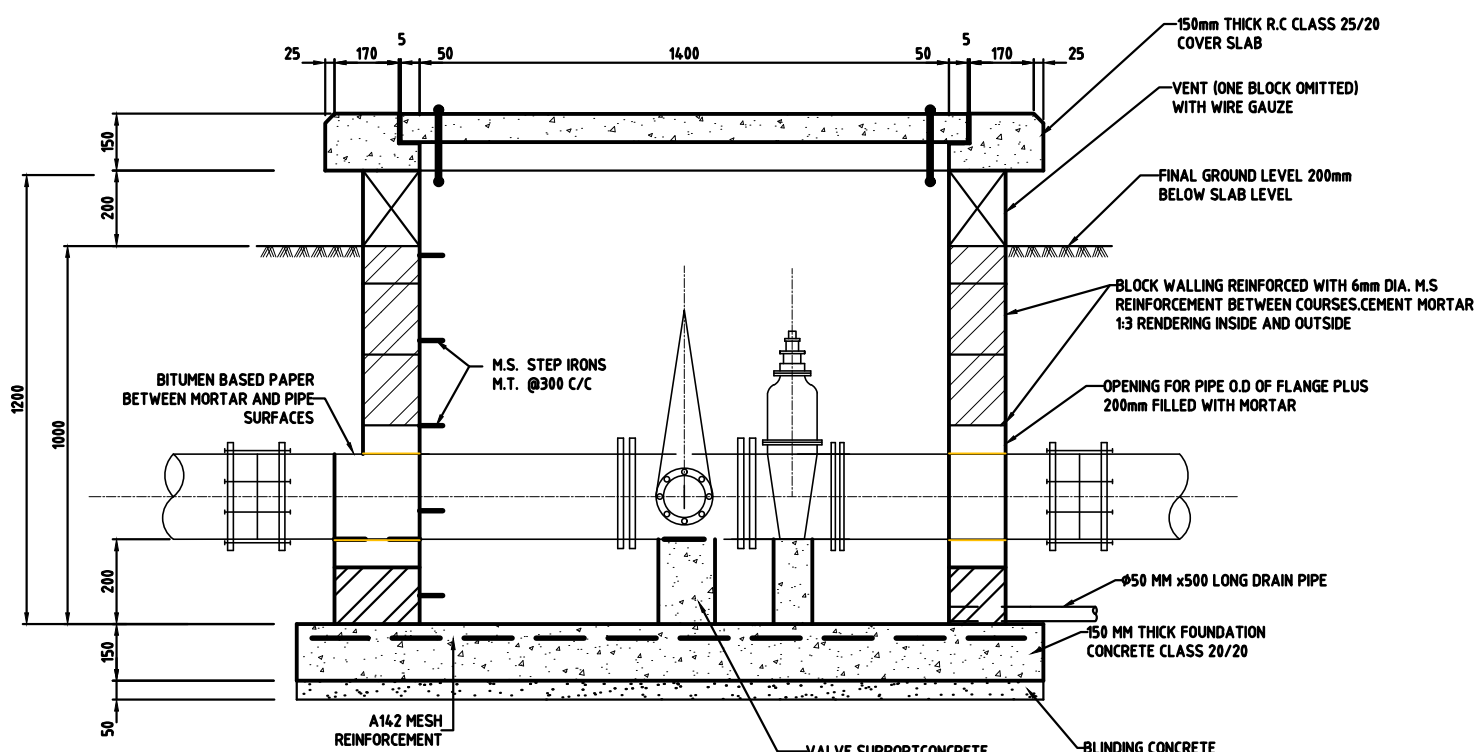
PLAN OF CHAMBER
SCALE 1:20



SECTION A-A
SCALE 1:20

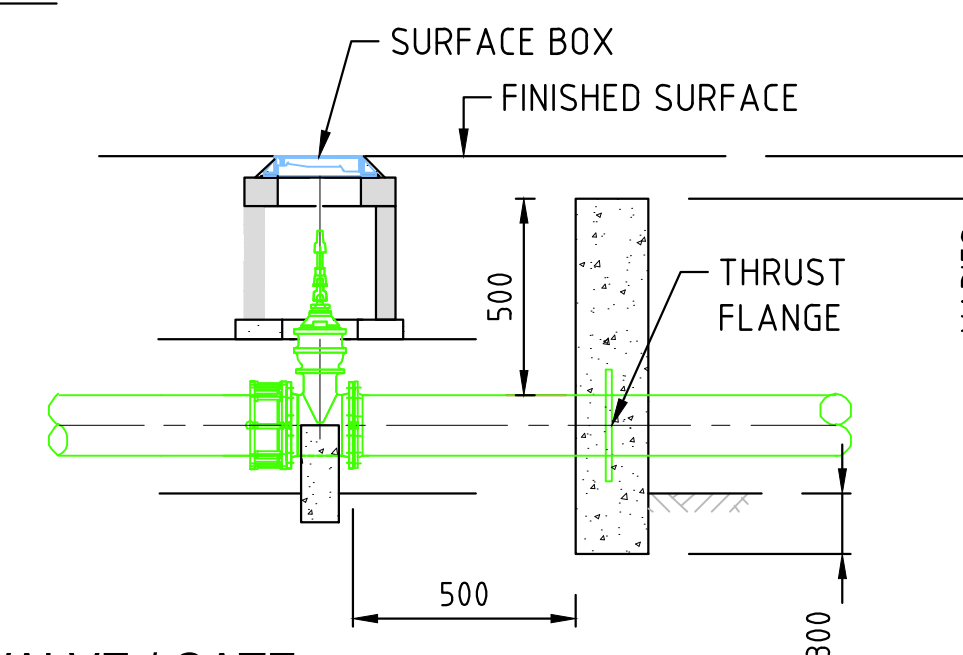
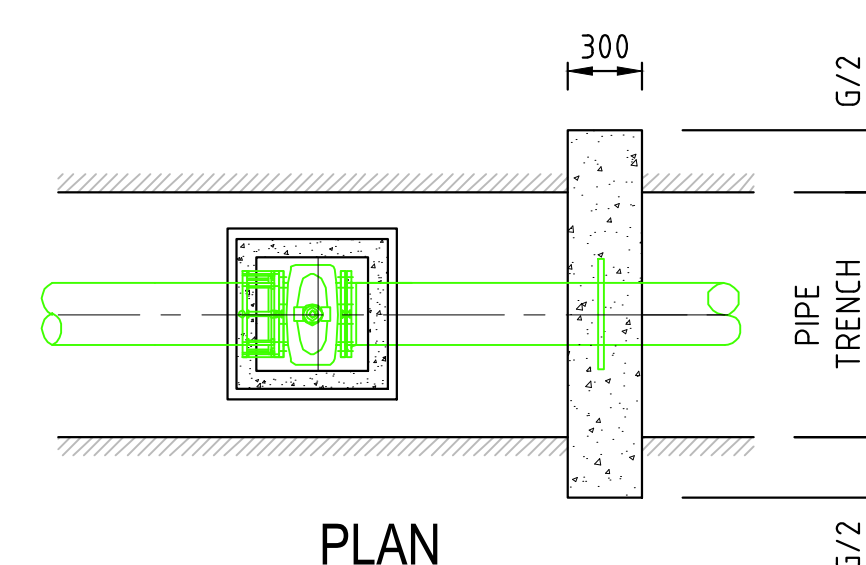
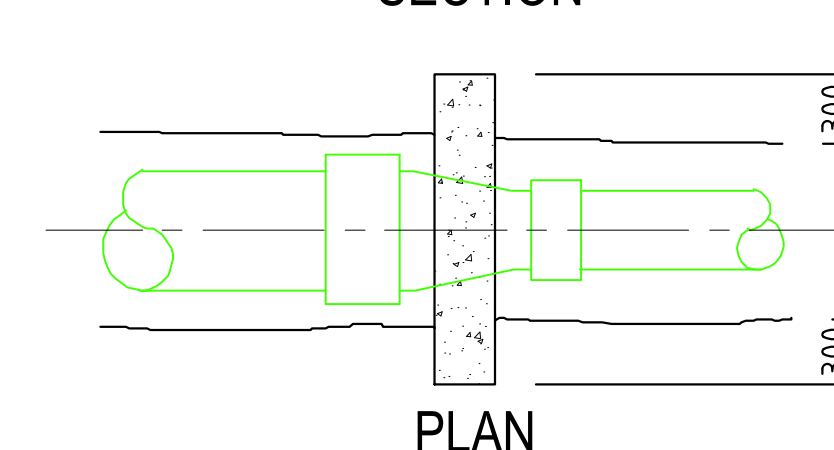
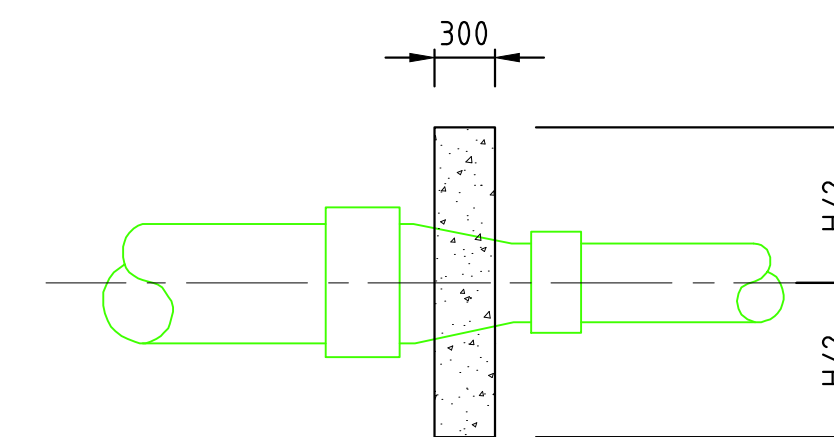
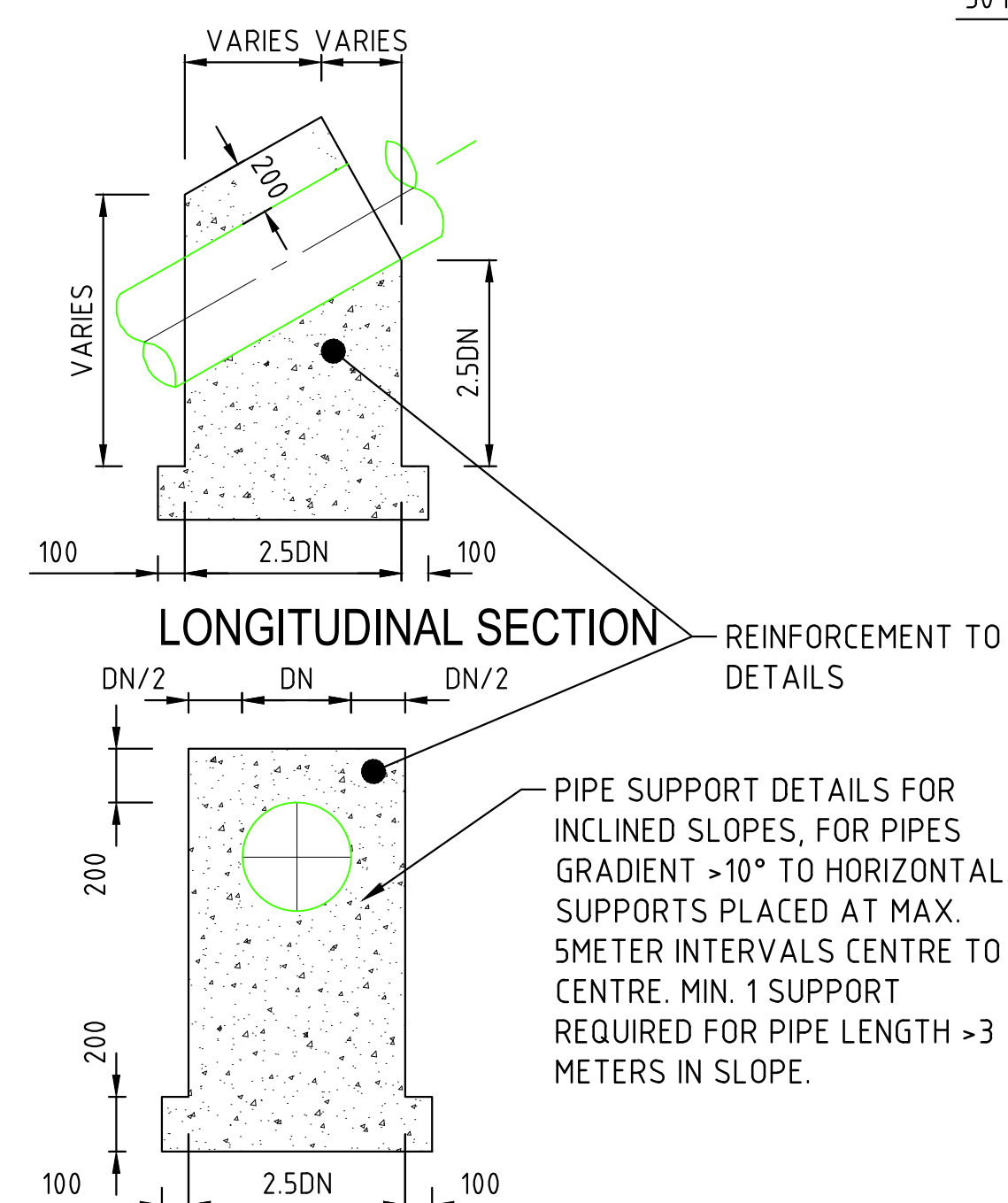
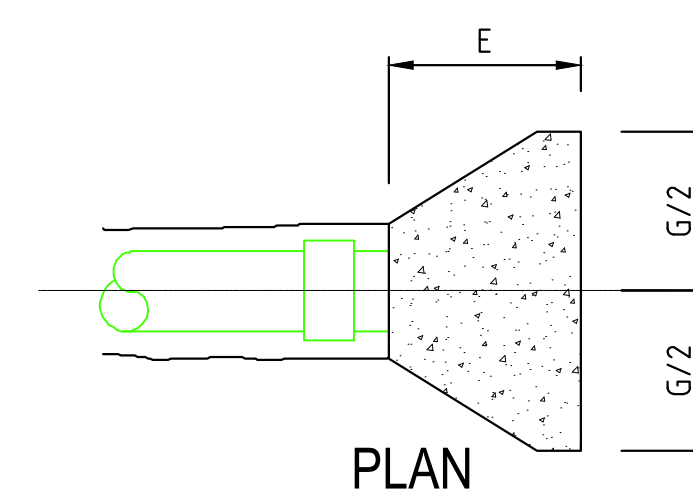
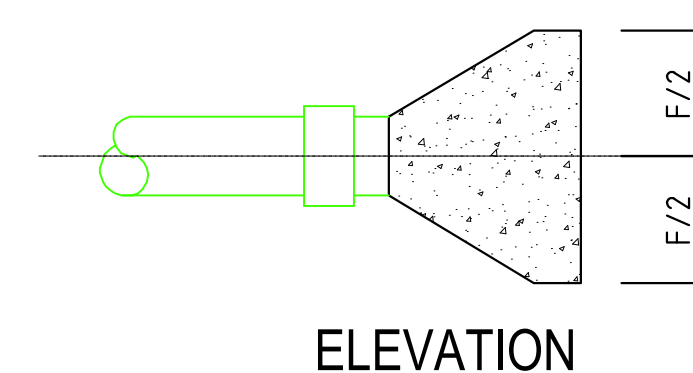
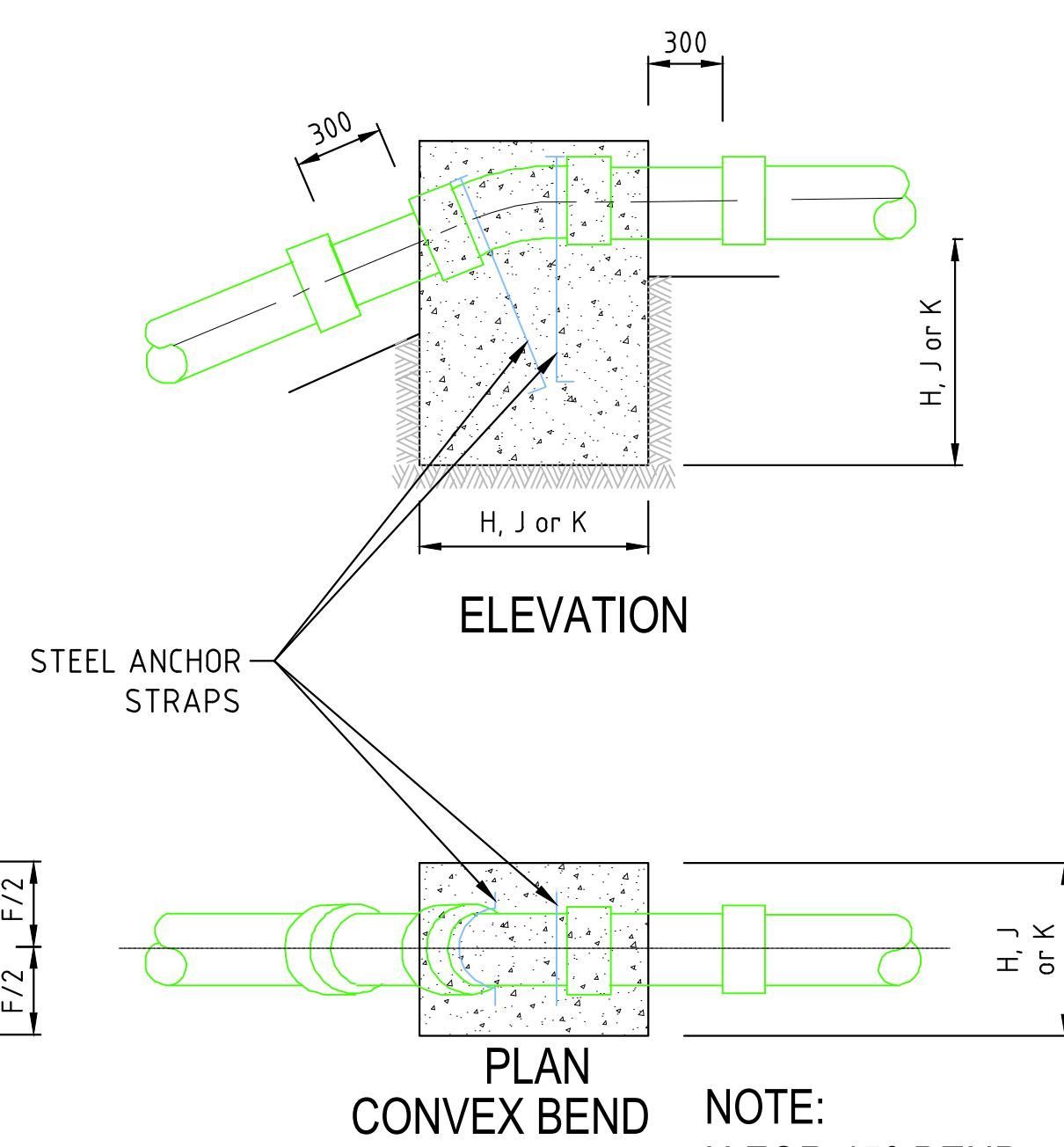
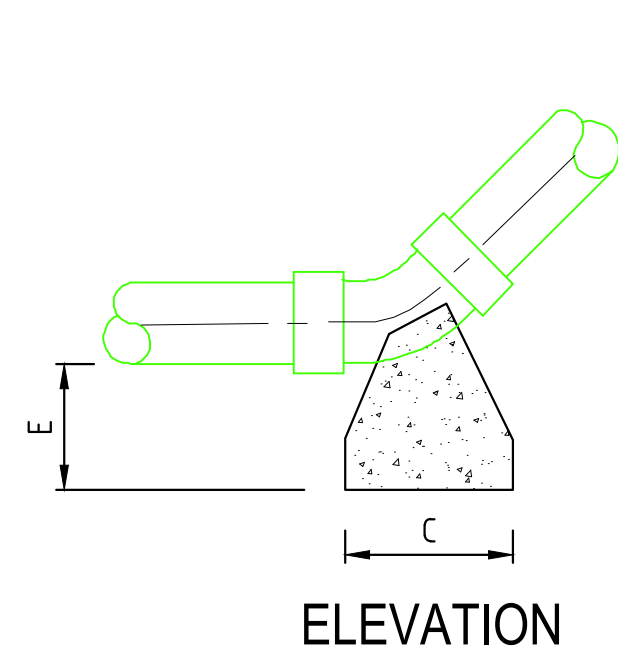
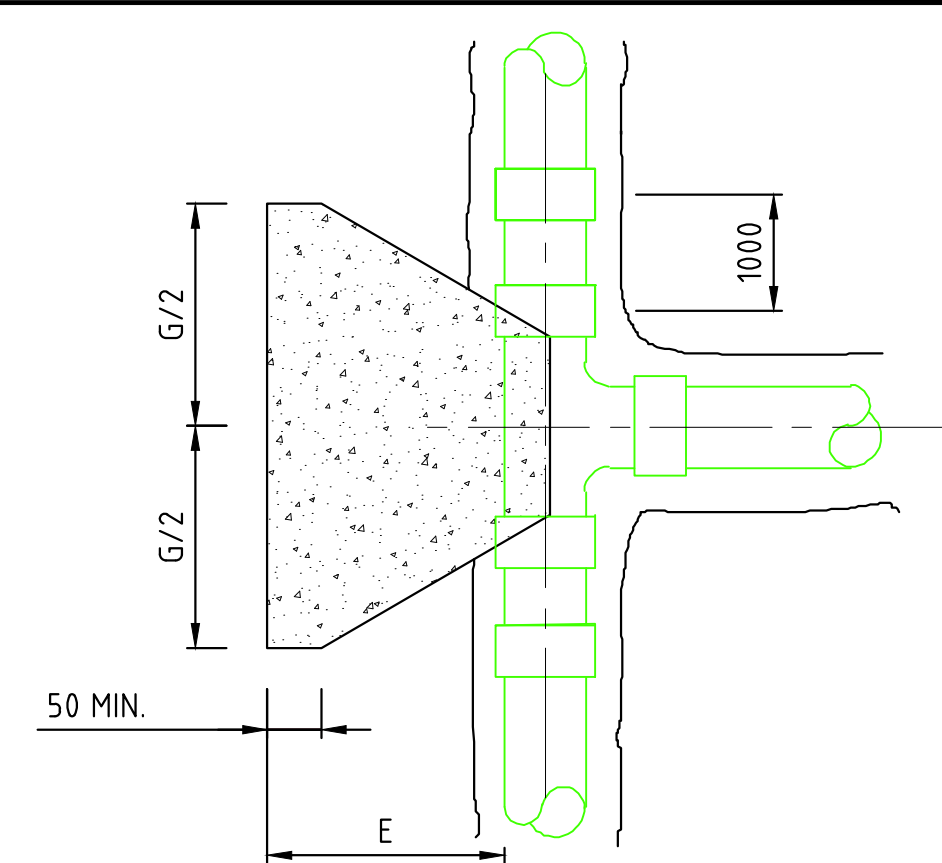
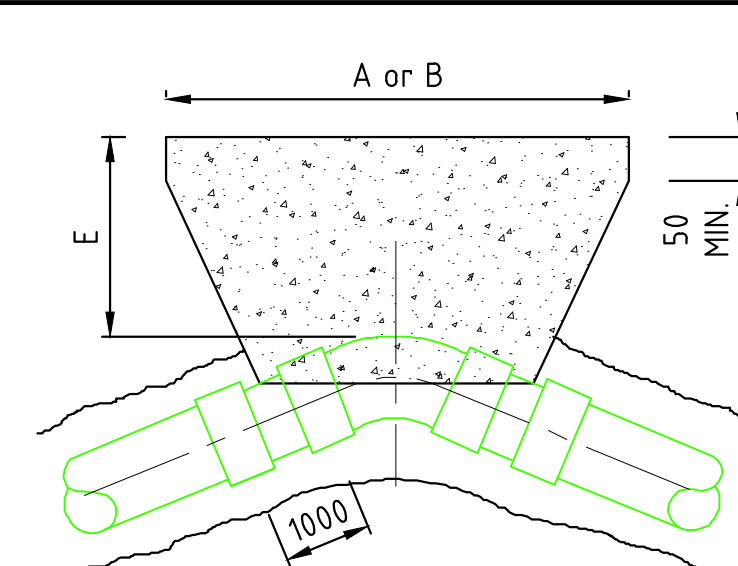
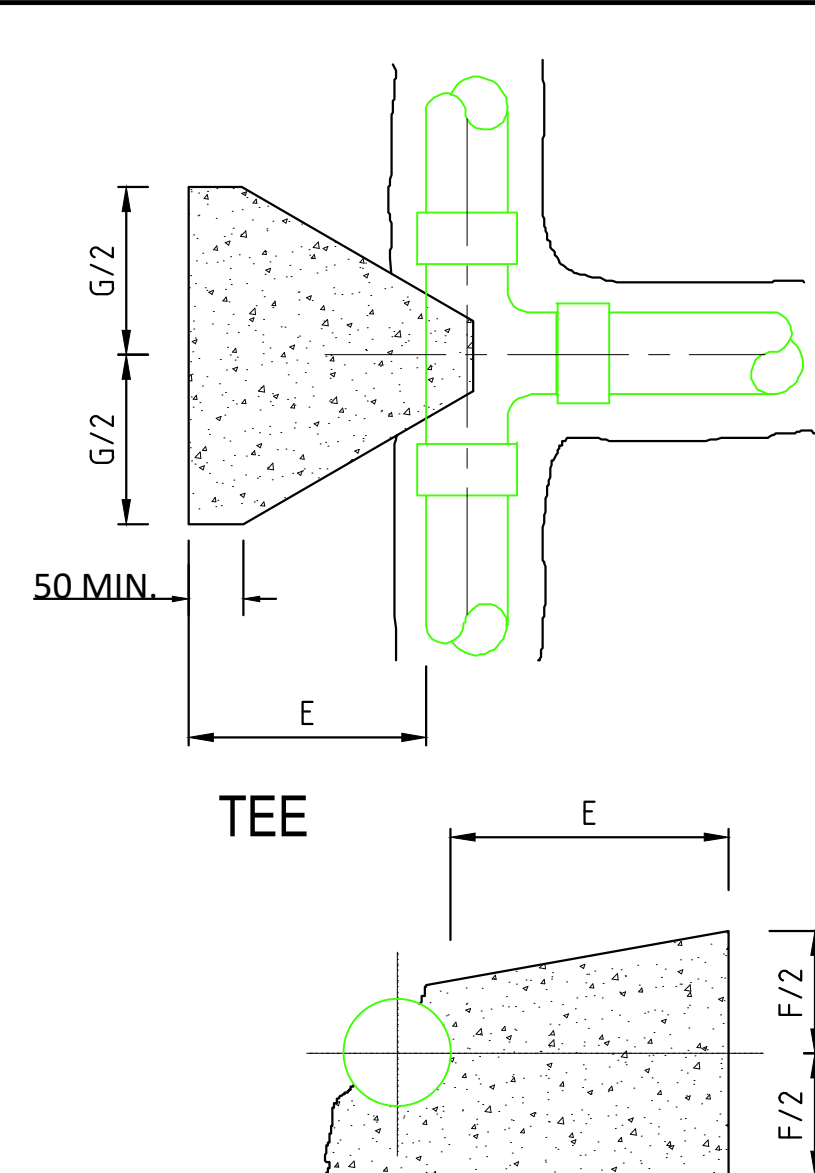
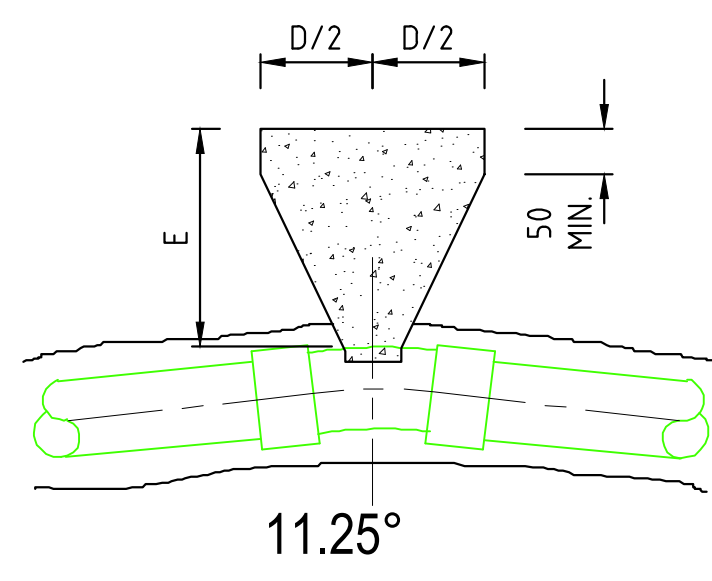
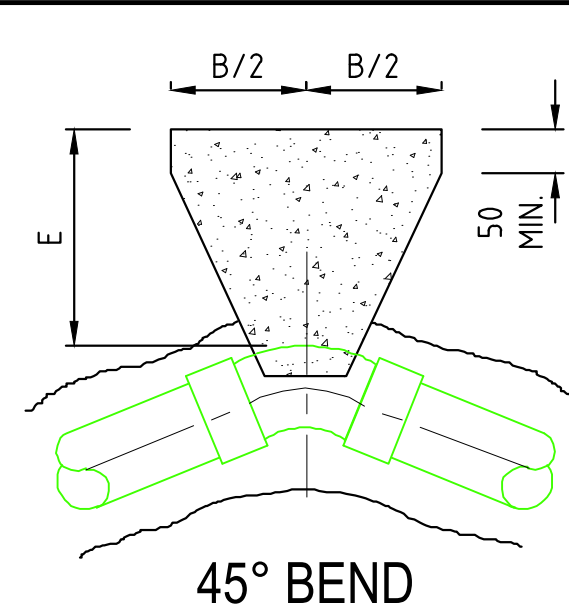


SECTION C-C
SCALE 1:20



SECTION B-B
SCALE 1:20

Revisions		Consultant		Employer	Project Manager	Project		Stage : FINAL DESIGN REVIEW			
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B.MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA		Date : JULY 2020		
						Drawn : B.MURILA			Drawing No. : MAT-STD-002		
						Checked: D.LIAMBILA			Drawing Title: MATUU WATER STANDARD DRAWINGS AIR VALVE,FIRE HYDRANT& CONTROL VALVE CHAMBERS	Scale : AS INDICATED	Sheet Size : A1
						Approved: B.KIM				Sheet No. : 1 of 1	
											Index No. :



1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE THRUST BLOCKS SHALL COMPLY WITH THE PIPE MANUFACTURER'S REQUIREMENTS.
3. CONCRETE THRUST BLOCKS (ANCHORAGE) SHALL BE POSITIONED SYMMETRICALLY WITH RESPECT TO THE CONNECTING PIPE & BENDS.
4. TRENCH DIMENSIONS: REFER TO DRAWING No. MAT-STD-006
5. THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL. IF FOR ANY REASON THEY CANNOT THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER WITH A PROPOSED SOLUTION.
6. THRUST BLOCK DIMENSIONS MAY BE ALTERED ON INSTRUCTION OF THE ENGINEER BASED ON GROUND GROUND CONDITIONS.
7. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
8. CONCRETE SHALL BE GRADE C20/20 ALL IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.

NOM. DIA. (mm)	DIMENSIONS (mm)									
	A	B	C	D	E	F	G	H	I	J
100	700	400	205	100	220	400	530	800	650	400
150	1250	700	350	180	250	500	890	1000	850	650
200	1650	890	450	230	320	700	1190	1250	1000	800
250	1960	1060	540	270	350	900	1370	1450	1150	900
300	2300	1200	640	320	500	1100	1630	1650	1300	1050

GRADIENT	SPACING
1 IN 2 & STEEPER	5.5m
BELOW 1 IN 2 TO 1 IN 4	11.0m
1 IN 4 TO 1 IN 5	16.6m
1 IN 5 TO 1 IN 6	22.0m

Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	JULY 2020		
							Drawing No. :	MAT-STD-003		
							Checked: D.LIAMBILA	Drawing Title: MATUU WATER STANDARD DRAWINGS WATER MAIN THRUST AND SUPPORT BLOCKS	Scale :	NOT TO SCALE
						Approved: B.KIM	Sheet No. :		1 of 1	
						Index No. :				

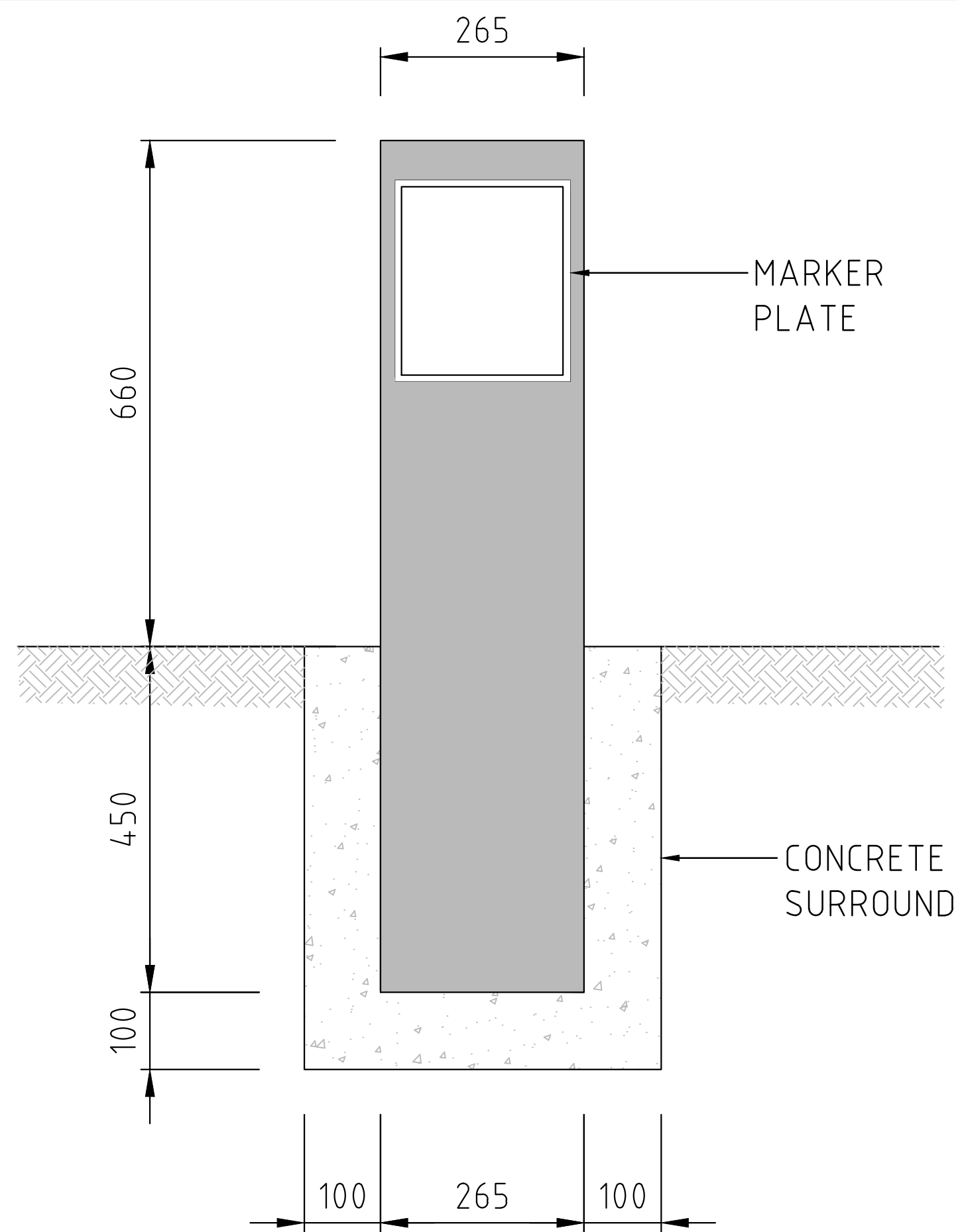


1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RAILWAY CROSSINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF KENYA RAILWAYS.
3. RIVER OVERCROSSING DETAILS ARE APPLICABLE TO PIPES OF DN 300 AND ABOVE. DETAILS FOR SMALLER PIPES ARE SIMILAR AND WILL BE FINALISED BY THE ENGINEER'S REPRESENTATIVE.
4. DIMENSIONS OF CONCRETE PIERS TO BE FINALISED BY THE ENGINEER'S REPRESENTATIVE AFTER A DETAILED SURVEY.
5. SLIP ANCHORS TO BE PROVIDED WHERE:-
 - (A) THE LONGITUDINAL SLOPE EXCEEDS 1:6.
 - (B) THE CROSSFALL EXCEEDS 1:3.ONE SLIP ANCHOR TO BE PROVIDED PER LENGTH OF PIPE.
6. PIPE WRAP SHALL BE REMOVED UNDER THE CONCRETE WHERE SLIP ANCHORS ARE PROVIDED.
7. CLASS 10' CONCRETE PIPE SURROUND SHALL BE PROVIDED FOR UNDERCROSSING OF LARGE OPEN DRAINS IN ACCORDANCE WITH THE DETAILS FOR RIVER UNDERCROSSINGS.
8. MAXIMUM FLOOD LEVEL IS TO BE DETERMINED BY THE ENGINEER'S REPRESENTATIVE.
9. FOR RIVER OVERCROSSINGS, A 10mm GAP SHALL BE LEFT BETWEEN PIPES AT FLEXIBLE COUPLING TO PERMIT EXPANSION.

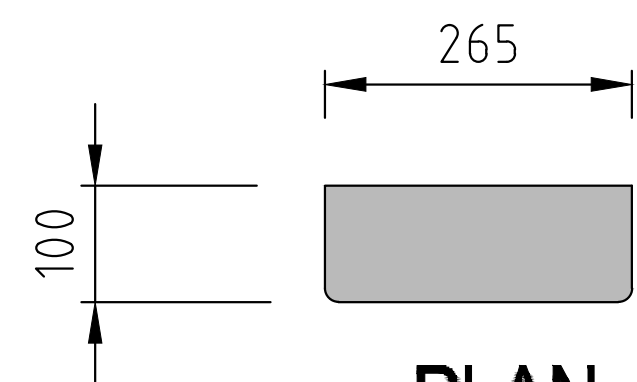
LEGEND:

O.G.L - ORIGINAL GROUND LEVEL
F.C - FLEXIBLE COUPLING
O.D - OUTSIDE DIAMETER
DN - NOMINAL DIAMETER

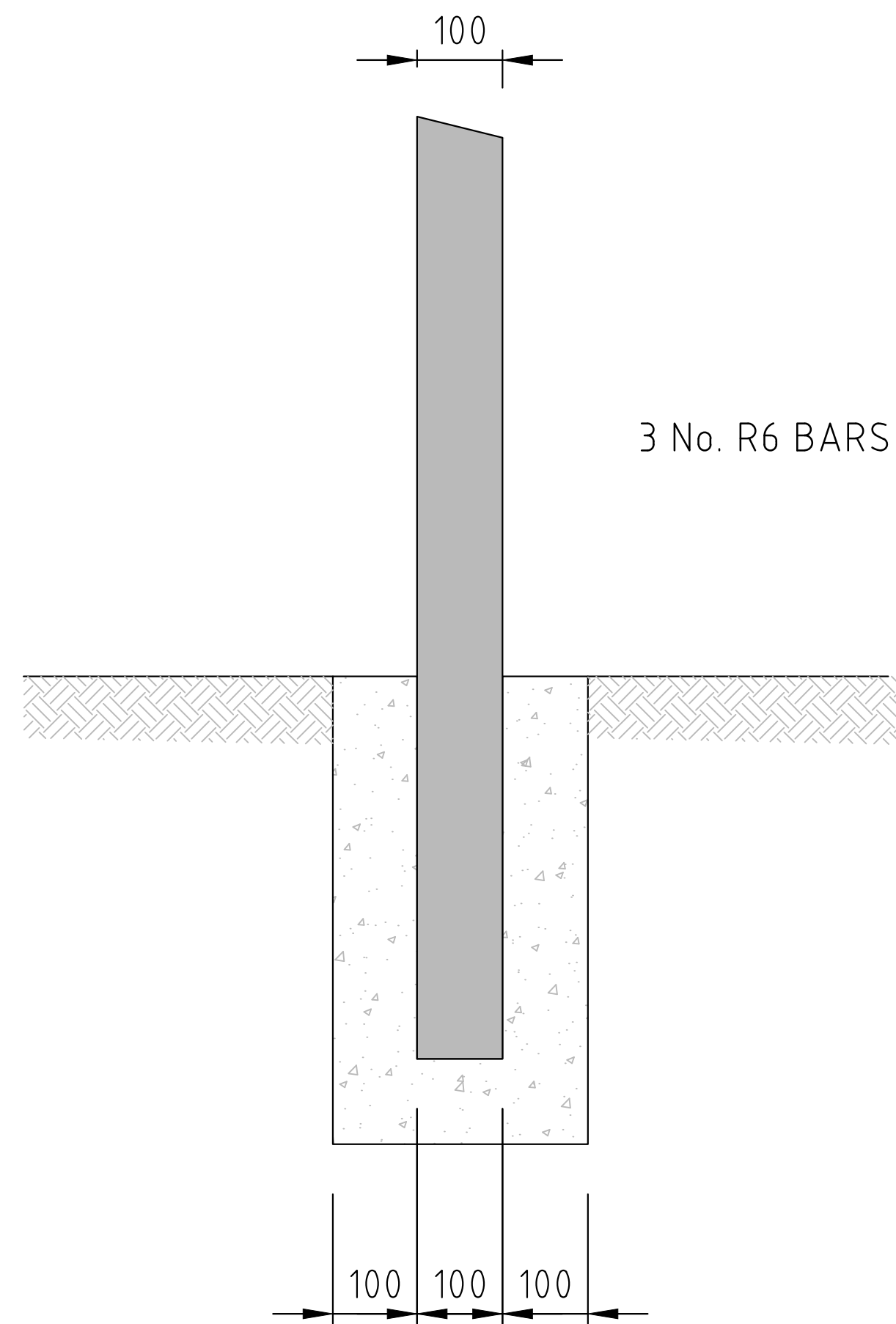
Revisions		Consultant		Employer	Project Manager	Project		Stage :	FINAL DESIGN REVIEW			
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B.MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date :	JULY 2020			
						Drawing No. :		MAT-STD-004				
						Drawing Title: RIVER AND ROAD CROSSING DETAILS		Checked: D.LIAMBILA	Scale :	AS INDICATED	Sheet Size : A1	
								Approved: B.KIM	Sheet No. :	1 of 1		
									Index No. :			



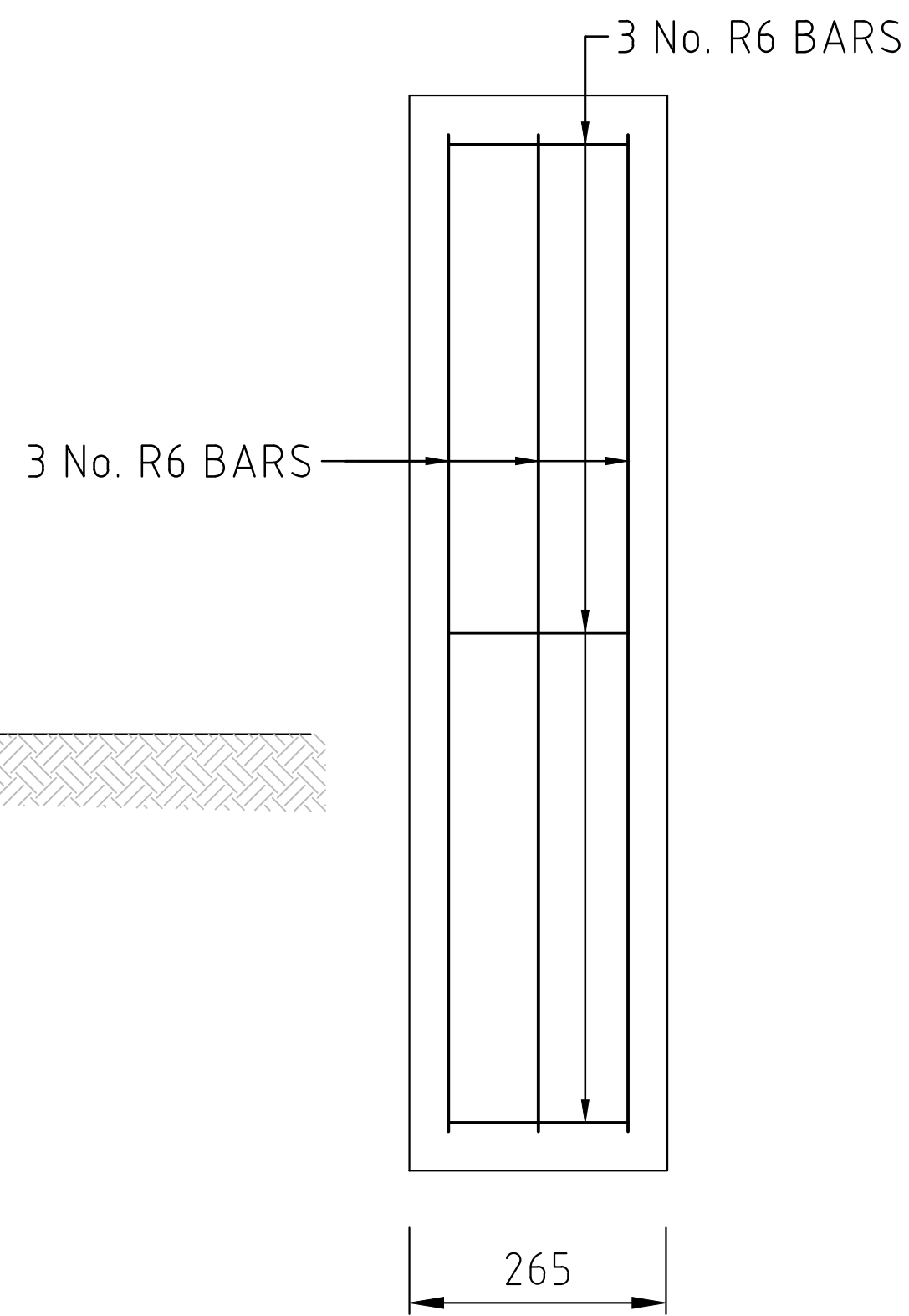
ELEVATION



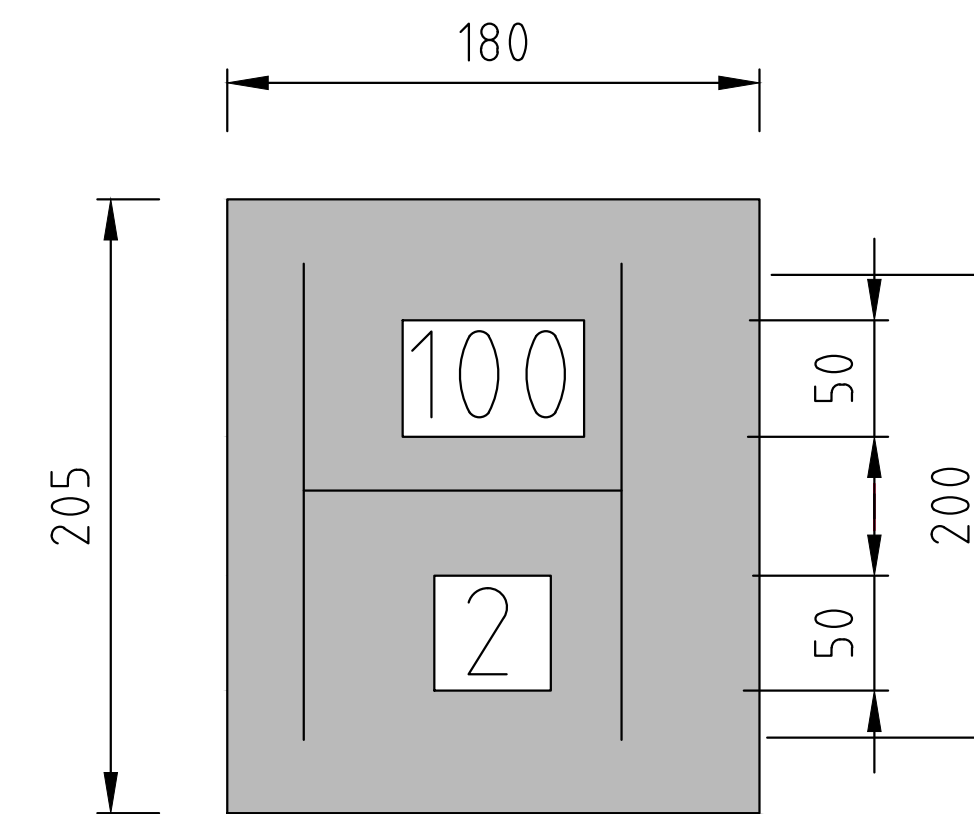
PLAN



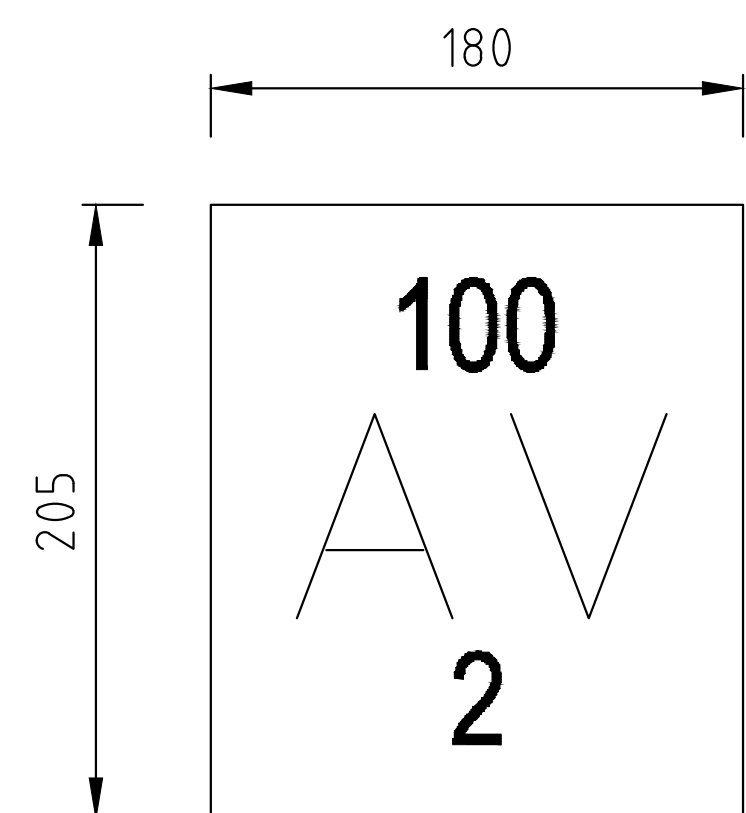
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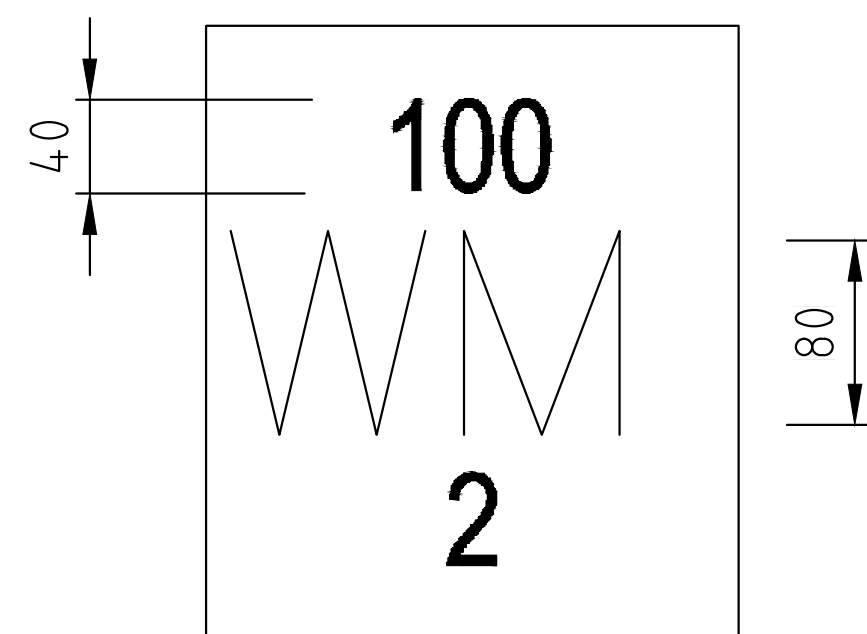
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DETAILS



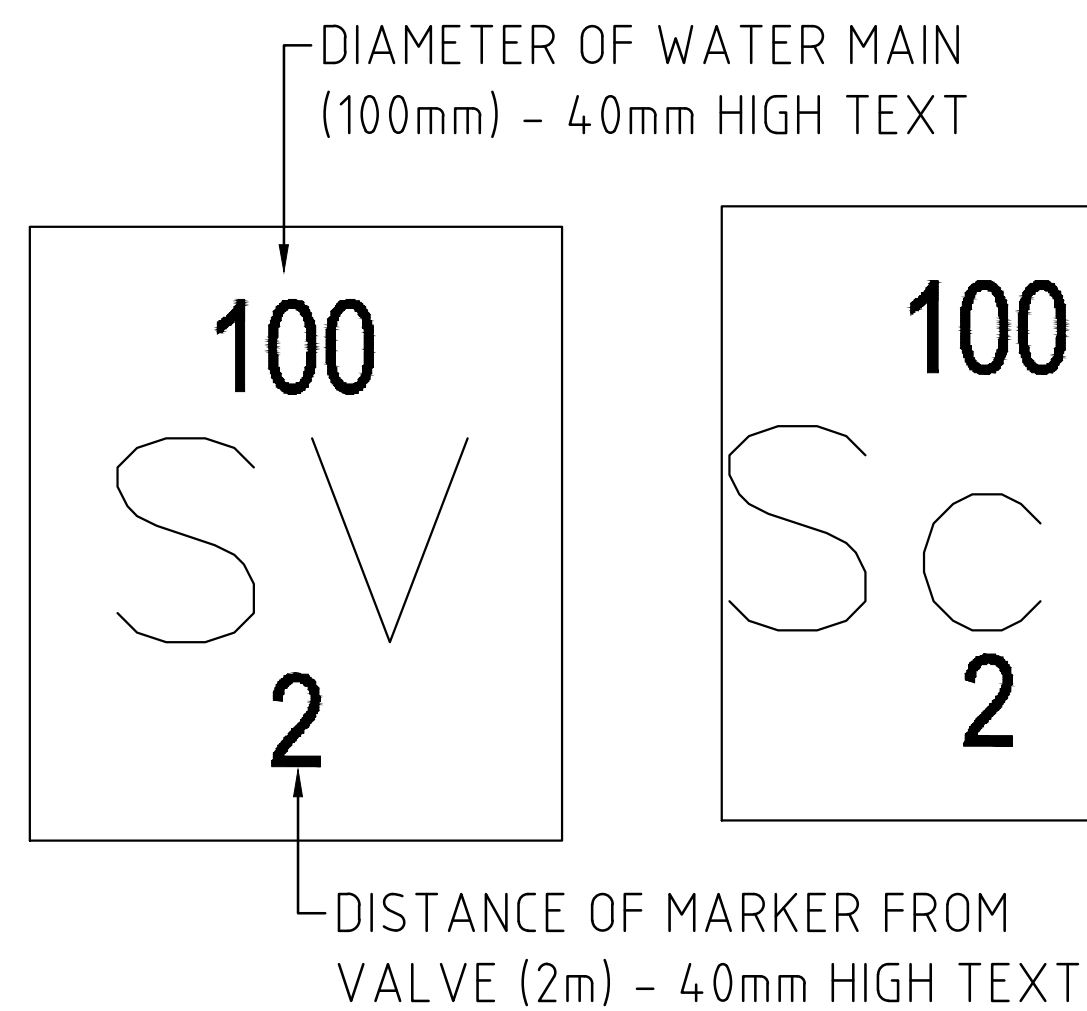
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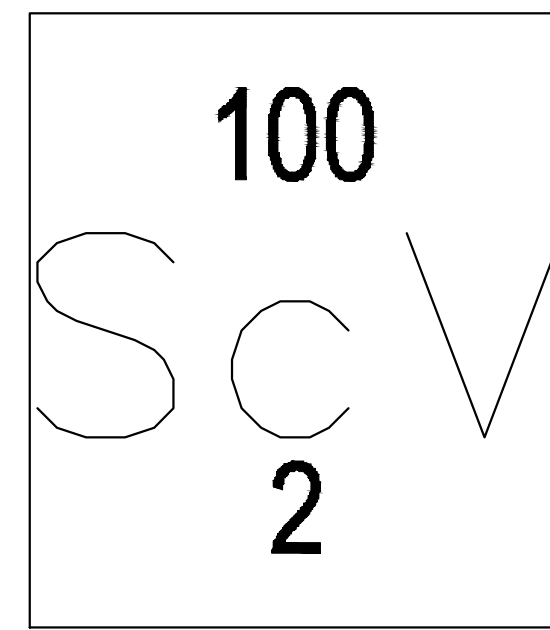
AIR VALVE



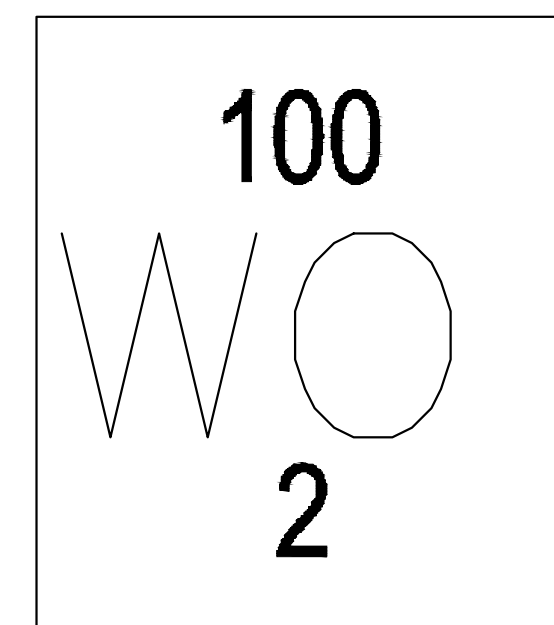
WATER MAIN



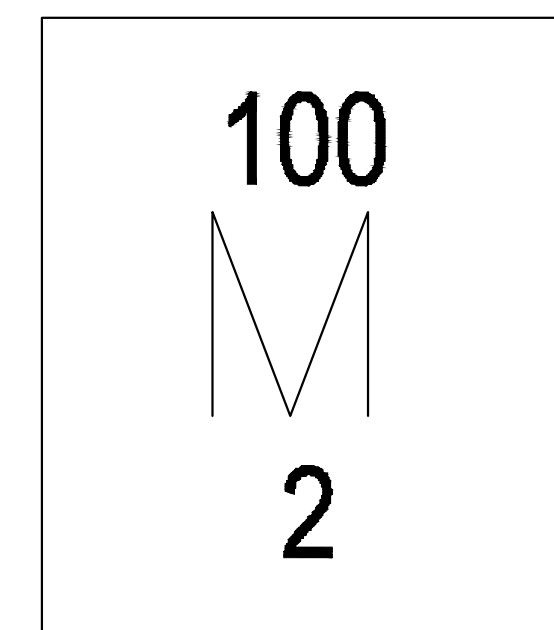
SLUICE
VALVE



SCOUR
VALVE



WASHOUT
HYDRANT

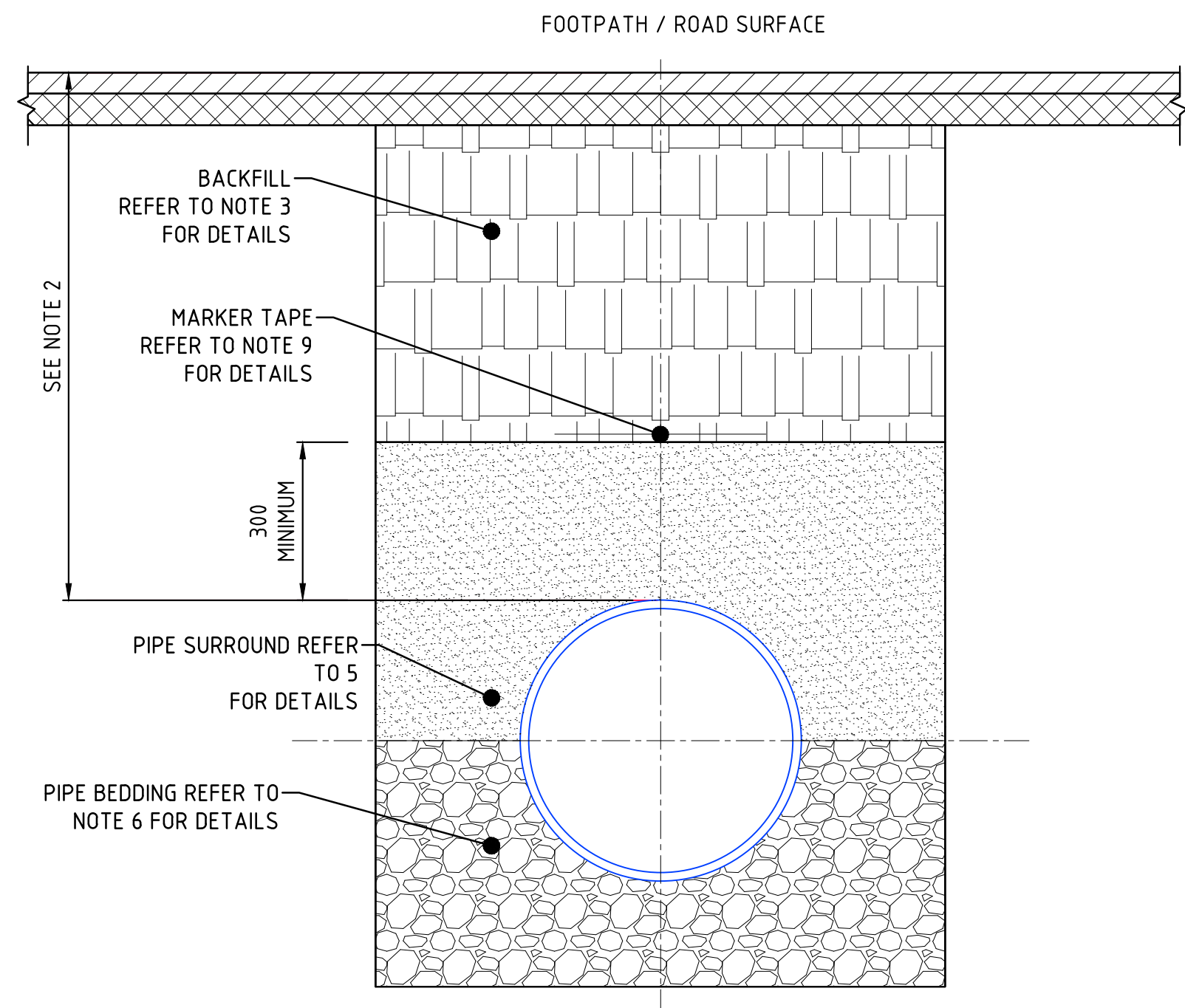


METER

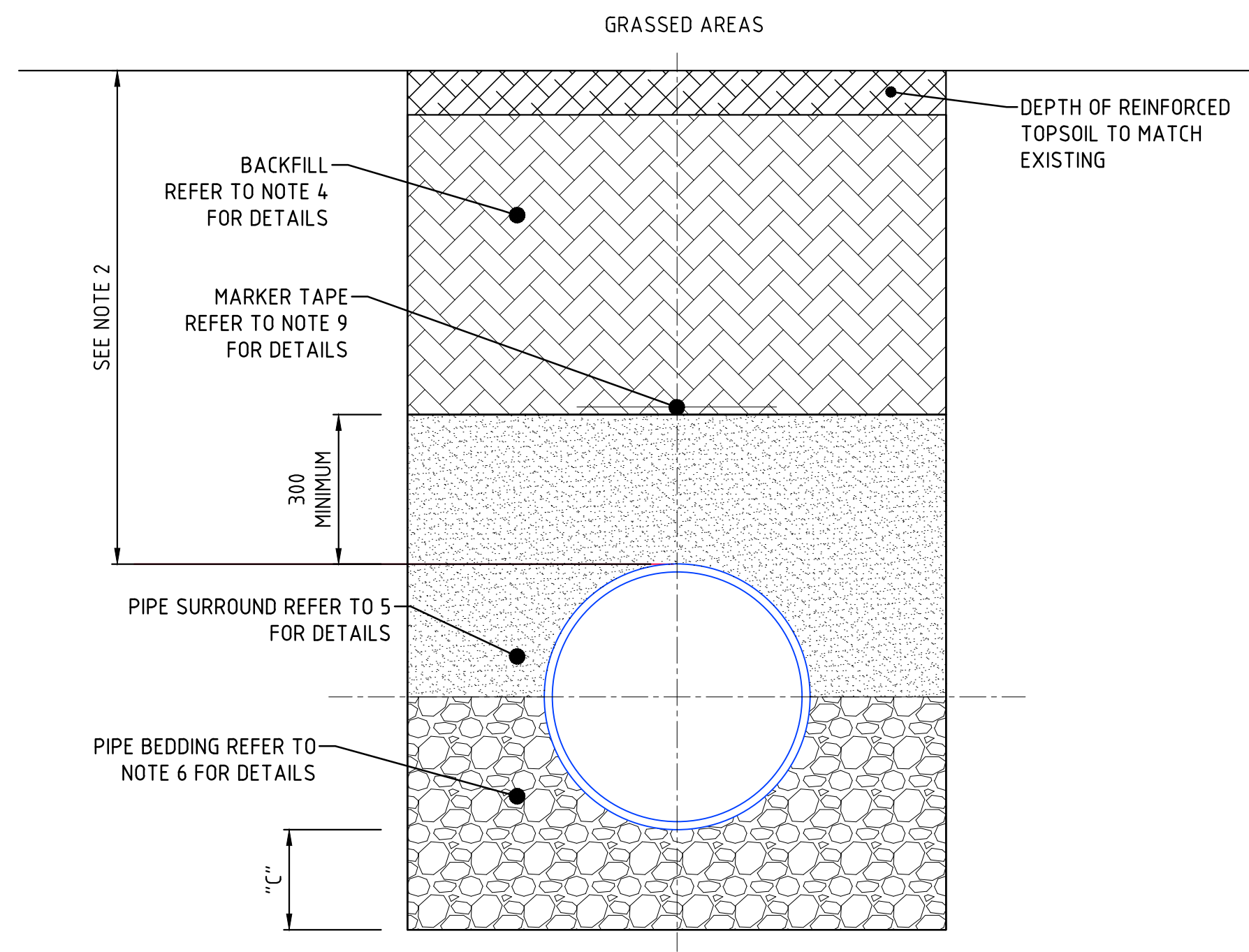
NOTES:

1. MARKER PLATES TO BE FIXED IN POSITION USING WALL PLUGS AND STAINLESS STEEL SCREWS.
2. MARKER PLATES TO BE MANUFACTURED IN ACCORDANCE WITH BS 3251.
3. FOR HYDRANT PLATE ALL CHARACTERS SHOULD BE BLACK AND THE REMAINDER OF THE FRONT FACE SHOULD CONFORM TO COLOUR REFERENCE No. 309 (CANARY YELLOW) OF BS 381C.
4. PIPE DIAMETER ON HYDRANT PLATE TO REFER TO WATERMAIN NOT BRANCH.
5. SLUICE VALVE, AIR VALVE, WASHOUT HYDRANT AND METER PLATES SHOULD BE CAST IRON. ALL CHARACTERS SHOULD BE BLACK ON WHITE PAINT BACKGROUND.
6. CONCRETE SURROUND TO MARKER POST TO BE GRADE C20/ 20 AND IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.

Revisions		Consultant		Employer		Project Manager		Project		Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B.MURILA	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : JULY 2020			
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						Checked: D.LIAMBILA		Drawing Title: MATUU WATER STANDARD DRAWINGS MARKER POSTS AND PLATES	Scale : NOT TO SCALE	Sheet Size : A1	
						Approved: B.KIM			Sheet No. : 1 of 1		
									Index No. :		



TRENCH SECTION IN ROADWAYS
NOT TO SCALE



TRENCH SECTION IN GRASSED VERGE
NOT TO SCALE

PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
≤ 200	600
250	750
300	750
350	750
400	900
450	900

PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
< 200	150
> 250	200

- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
 - THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND/ROAD LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 750mm FOR SERVICE CONNECTIONS AND 900mm FOR WATER MAINS. THE MAXIMUM COVER SHOULD NOT EXCEED 1,200mm.
 - THE BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR ROAD WORKS WHERE THE WATER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1m OF THE PAVED EDGE OF THE ROADWAY.
 - SELECTED EXCAVATED MATERIAL MAY BE USED IN GRASS VERGE ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE APPROVAL OF THE ENGINEER.
 - PIPE SURROUND MATERIAL SHALL COMPLY WITH CLAUSE 2514 OF THE TECHNICAL SPECIFICATIONS.
 - PIPE BEDDING MATERIAL SHALL COMPLY WITH CLAUSE 2513 OF THE TECHNICAL SPECIFICATIONS.
 - PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH APPROVED BACKFILL MATERIAL IN ACCORDANCE WITH CLAUSE 2516 OF THE TECHNICAL SPECIFICATIONS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
 - SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C15/20 SHALL BE USED AS BACKFILL MATERIAL.
 - MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163. MARKER TAPE TO BE LAID AT TOP OF PIPE BEDDING LAYER.

Revisions		Consultant		Employer	Project Manager	Designed: B.MURILA Drawn : B.MURILA Checked: D.LIAMBILA Approved: B.KIM	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke			Date : JULY 2020	Drawing No. : MAT-STD-006	
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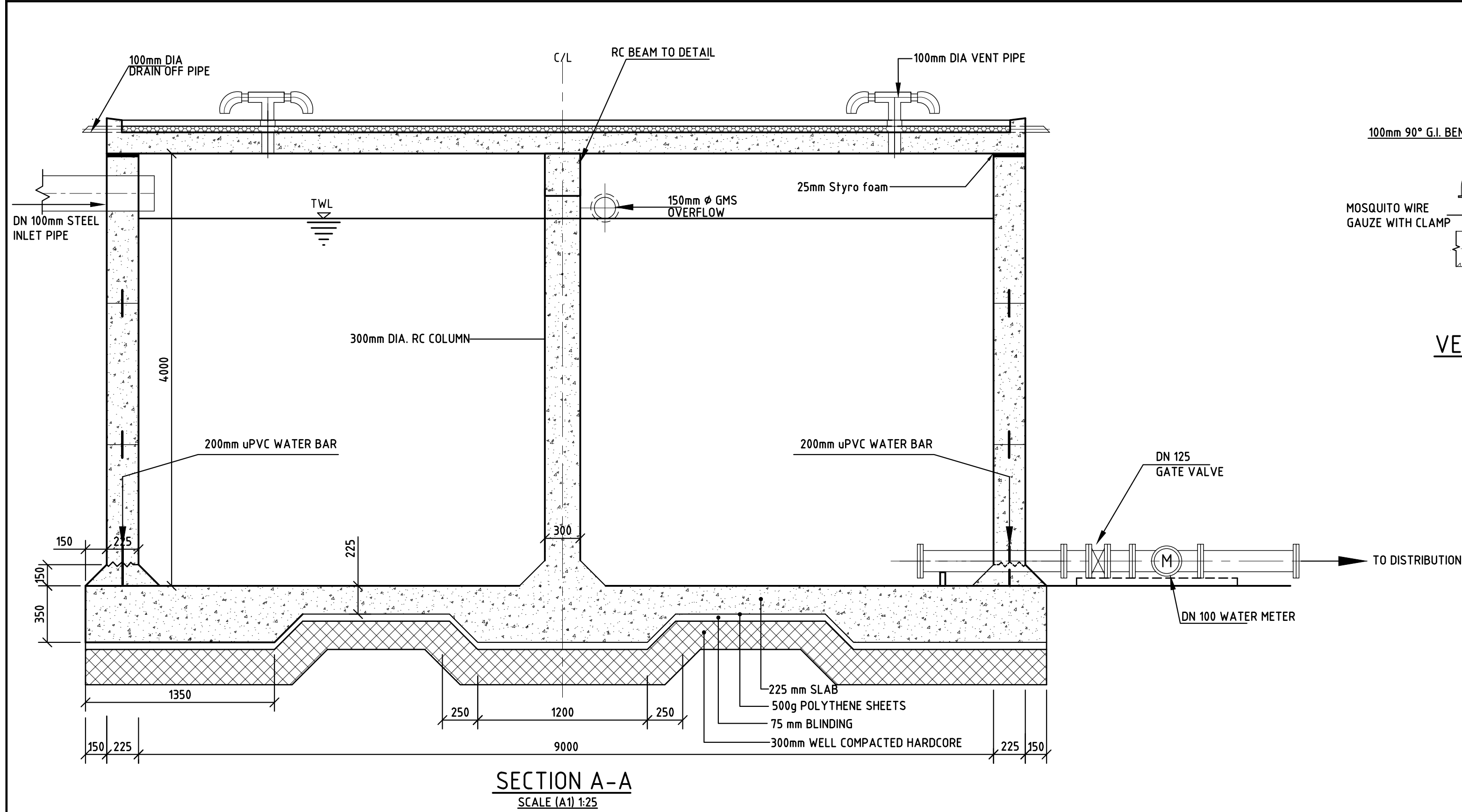


Revisions		Consultant		Employer	Project Manager	Project:		Stage : FINAL DESIGN REVIEW		
Description	Date	 <p>SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com</p>	And  <p>TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke</p>	 <p>ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke</p>	 <p>TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke</p>	Designed: B. MURILA	CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Date : JULY 2020	Sheet Size : A1	
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						Checked: D. LIAMBILA		Drawing Title: MATUU WATER SUPPLY FENCING DETAILS		Scale : NTS
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										Index No. :

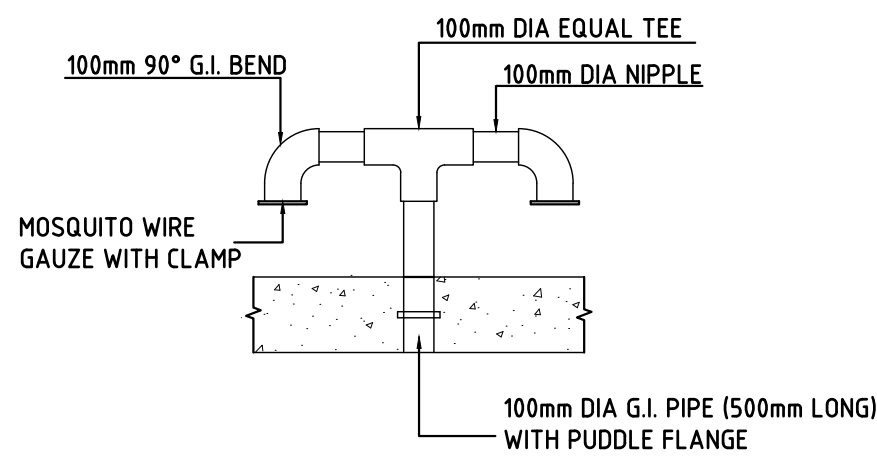


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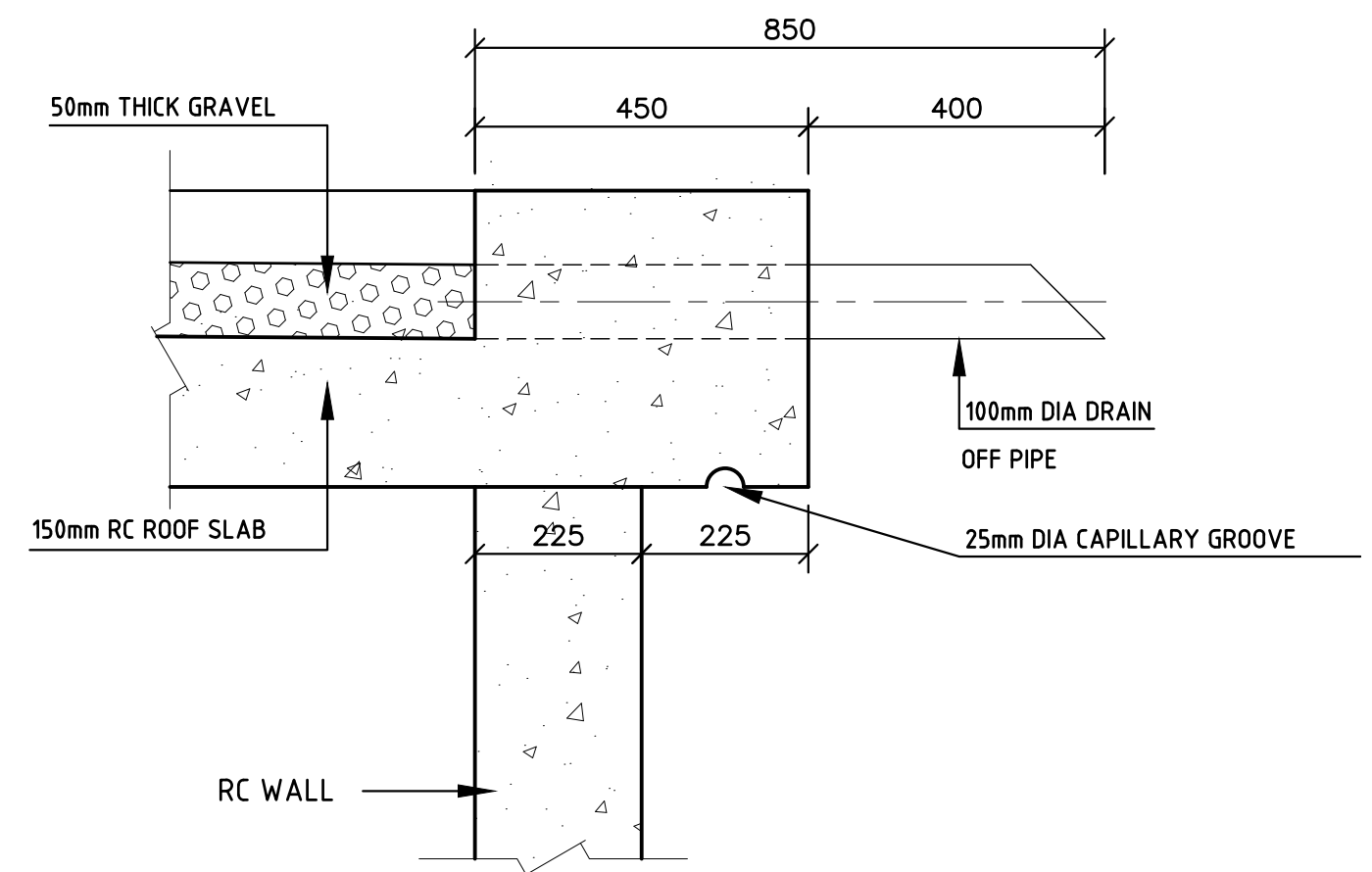
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsanga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kitumatusaman@gmail.com	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Designed: B.MURILA	Date : JULY 2020	
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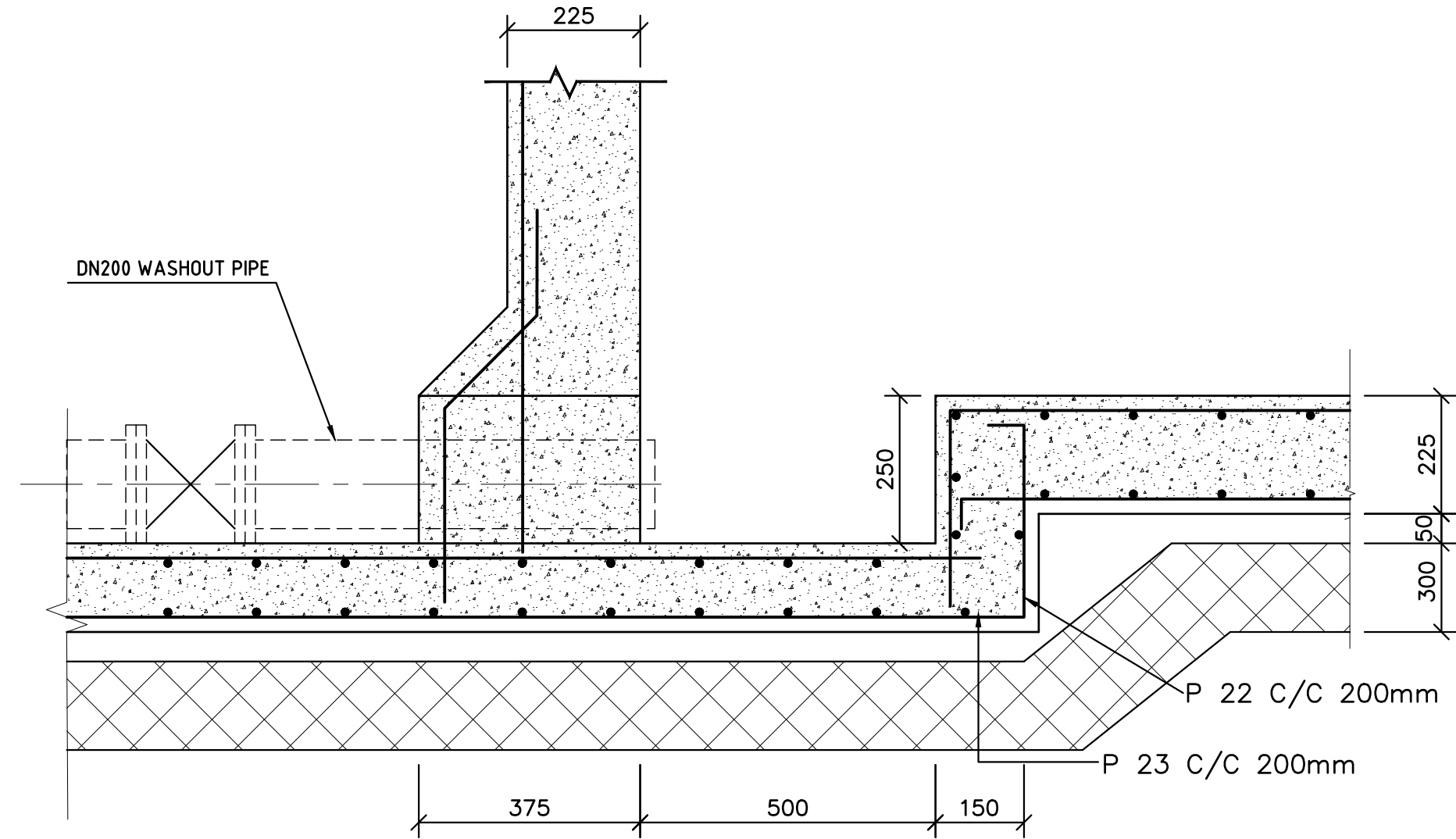
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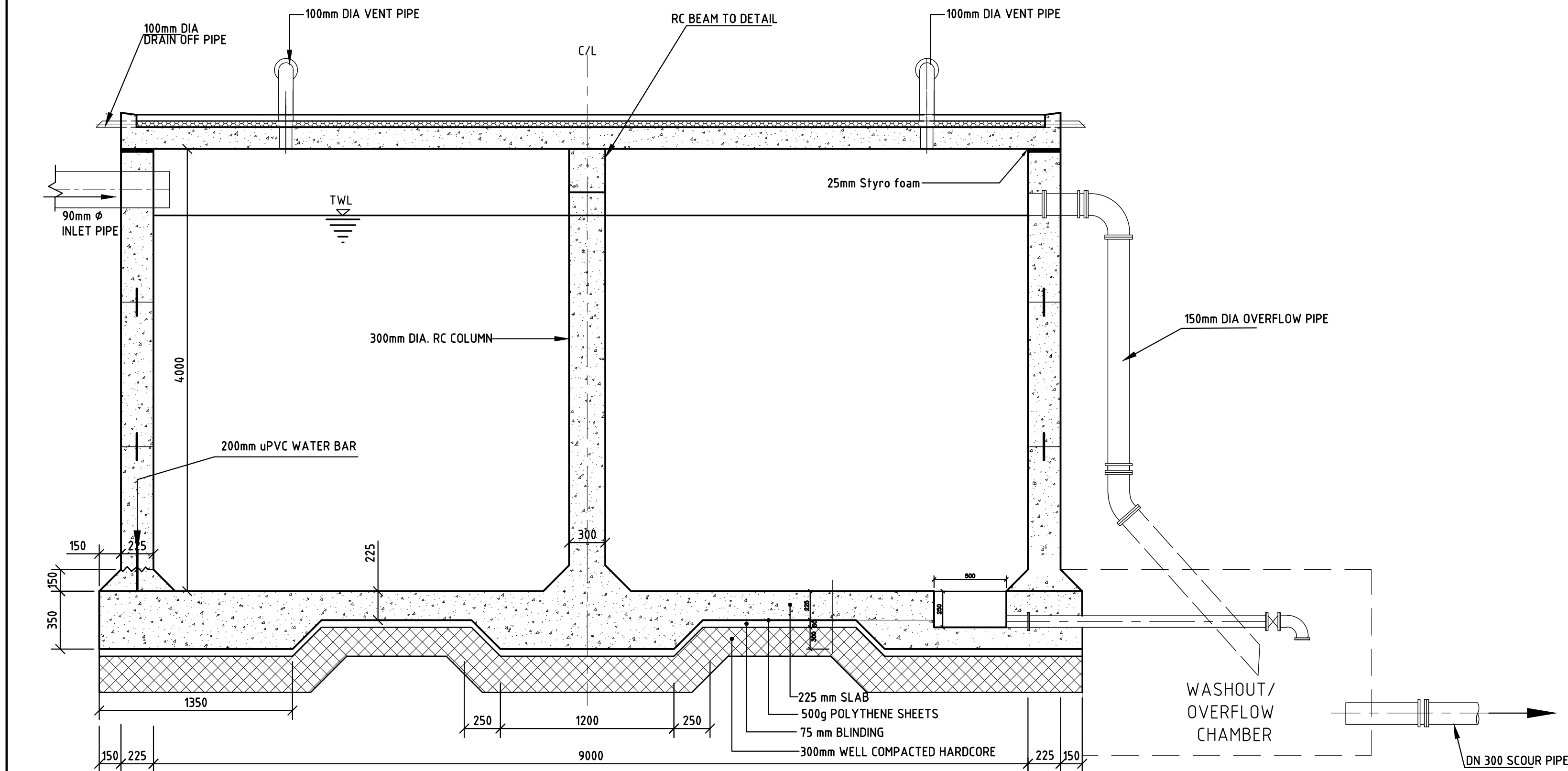
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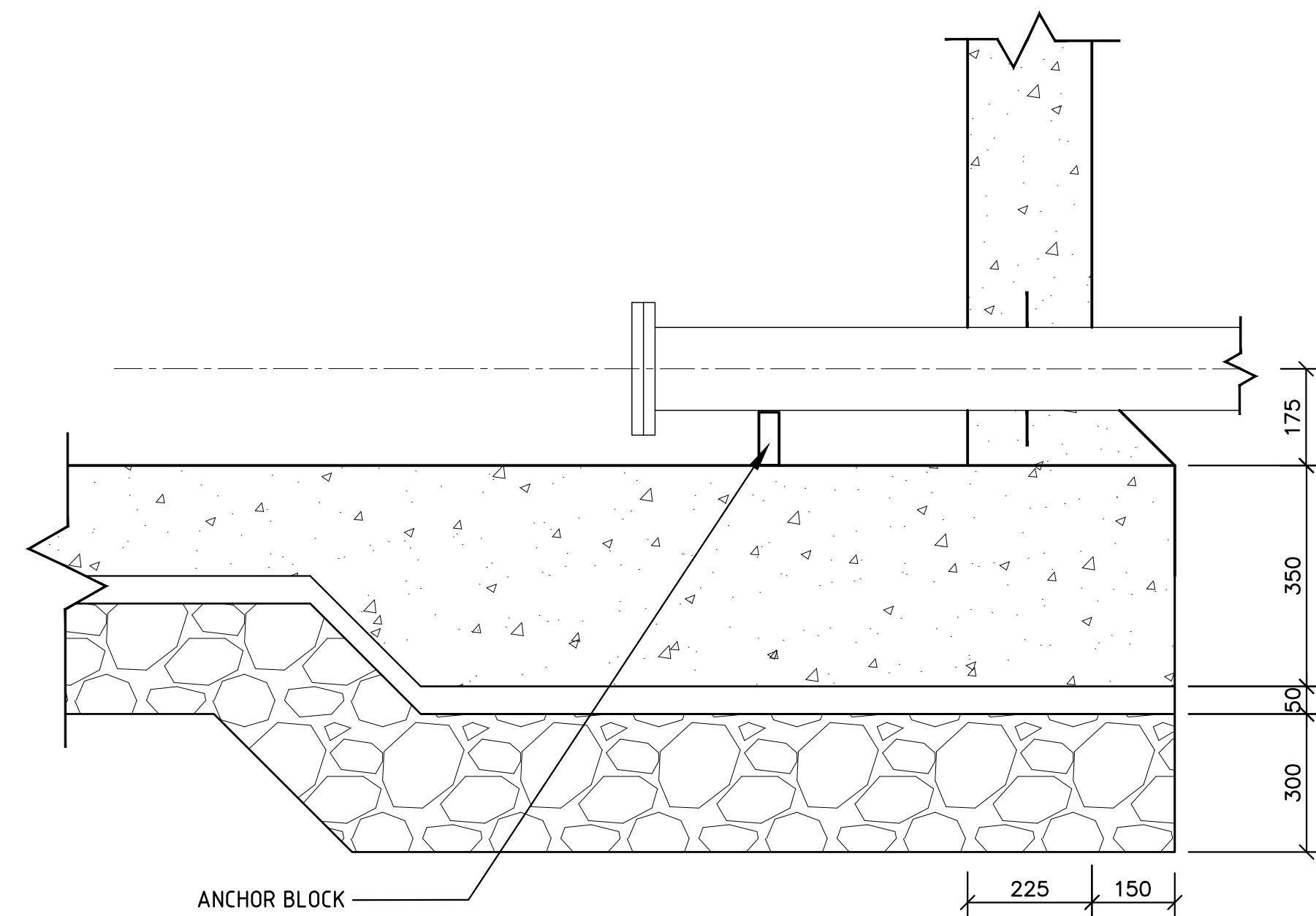
ROOF DRAIN DETAIL
SCALE (A1) 1:10



SUMP DETAIL
SCALE 1:10



SECTION B-B
SCALE (A1) 1:25



OFFTAKE DETAIL A
SCALE (A1) 1:10

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.
2. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
3. BLINDING CONCRETE CLASS 15/20
4. REINFORCEMENT COVER MIN 25mm, 40mm FOR SURFACES IN CONTACT WITH WATER

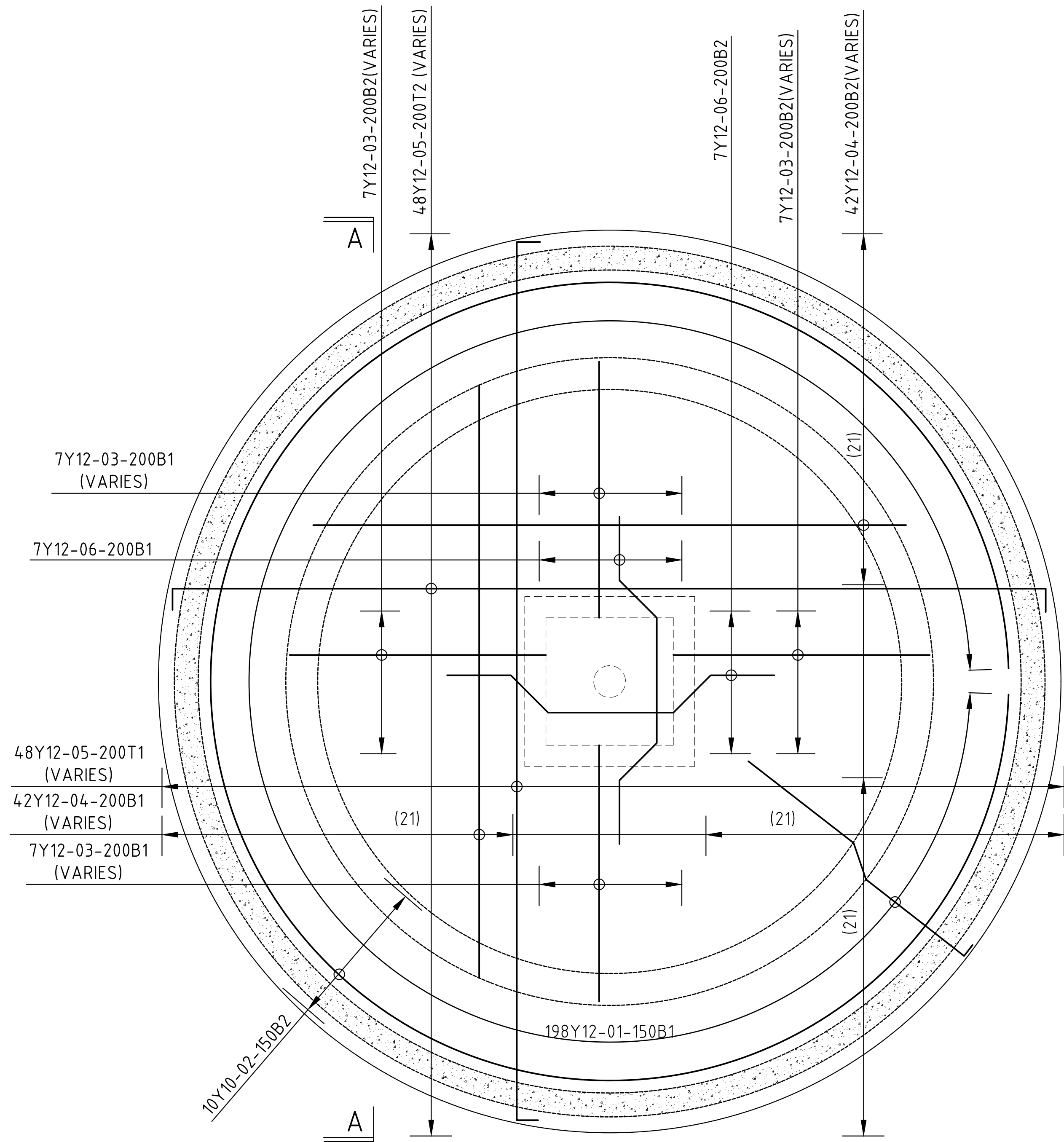
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SCALE 1:10 100 0 100 200 300 400 500mm

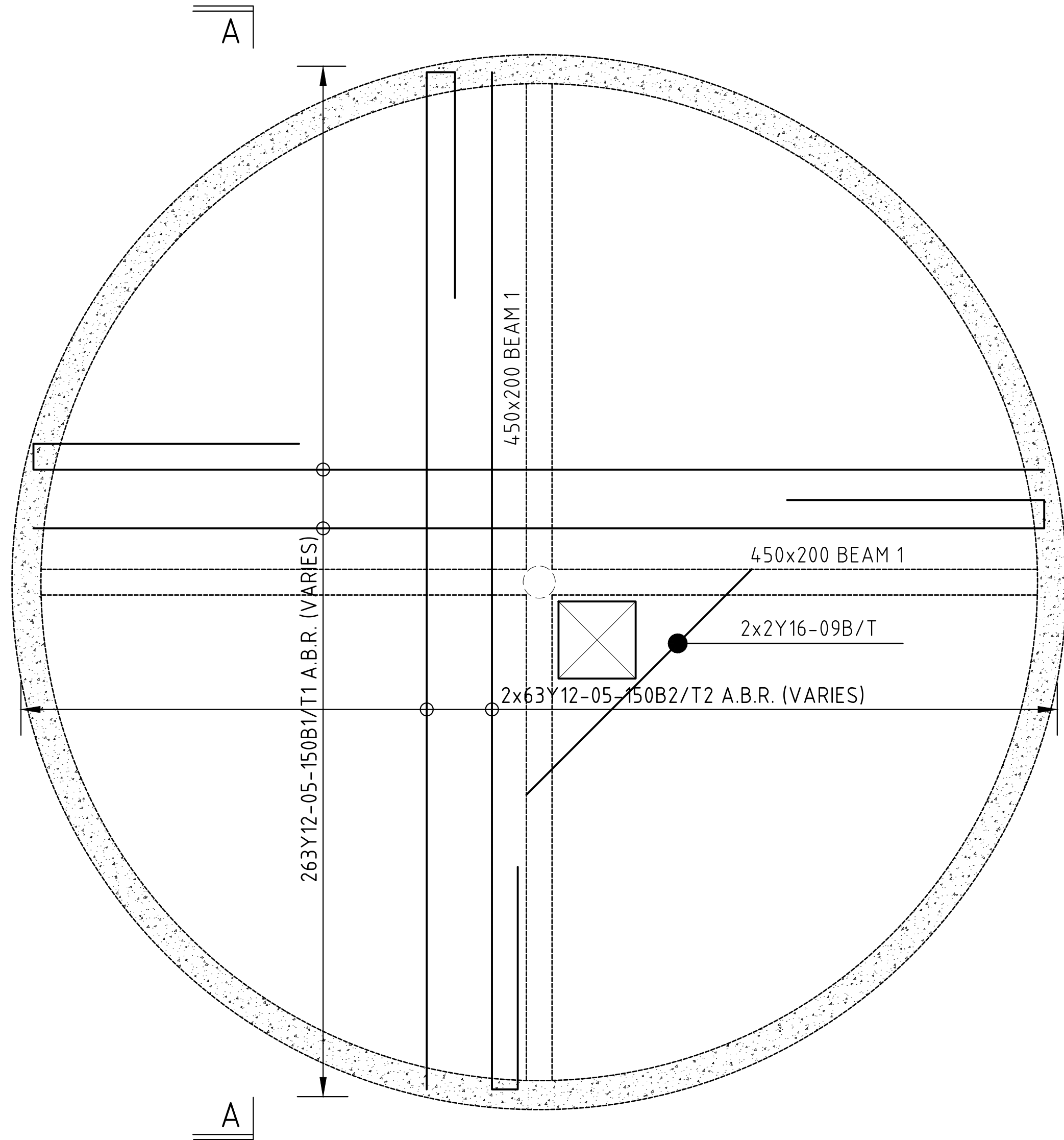
Revisions		Consultant		Employer	Project Manager	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage :	FINAL DESIGN REVIEW		
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke		Date :	JULY 2020		
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						Index No. :				

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES,UNLESS OTHERWISE STATED.
2. CONCRETE FOR REINFORCED TANKS IS CLASS 25/20
3. BLINDING CONCRETE CLASS 15/20
4. REINFORCEMENT COVER MIN.25mm, 40mm FOR SURFACES IN CONTACT WITH WATER



REINFORCEMENT TO BE CUT & ADJUSTED TO SUMP.
225MM THICK BOTTOM SLAB
SCALE (A1) 1:25

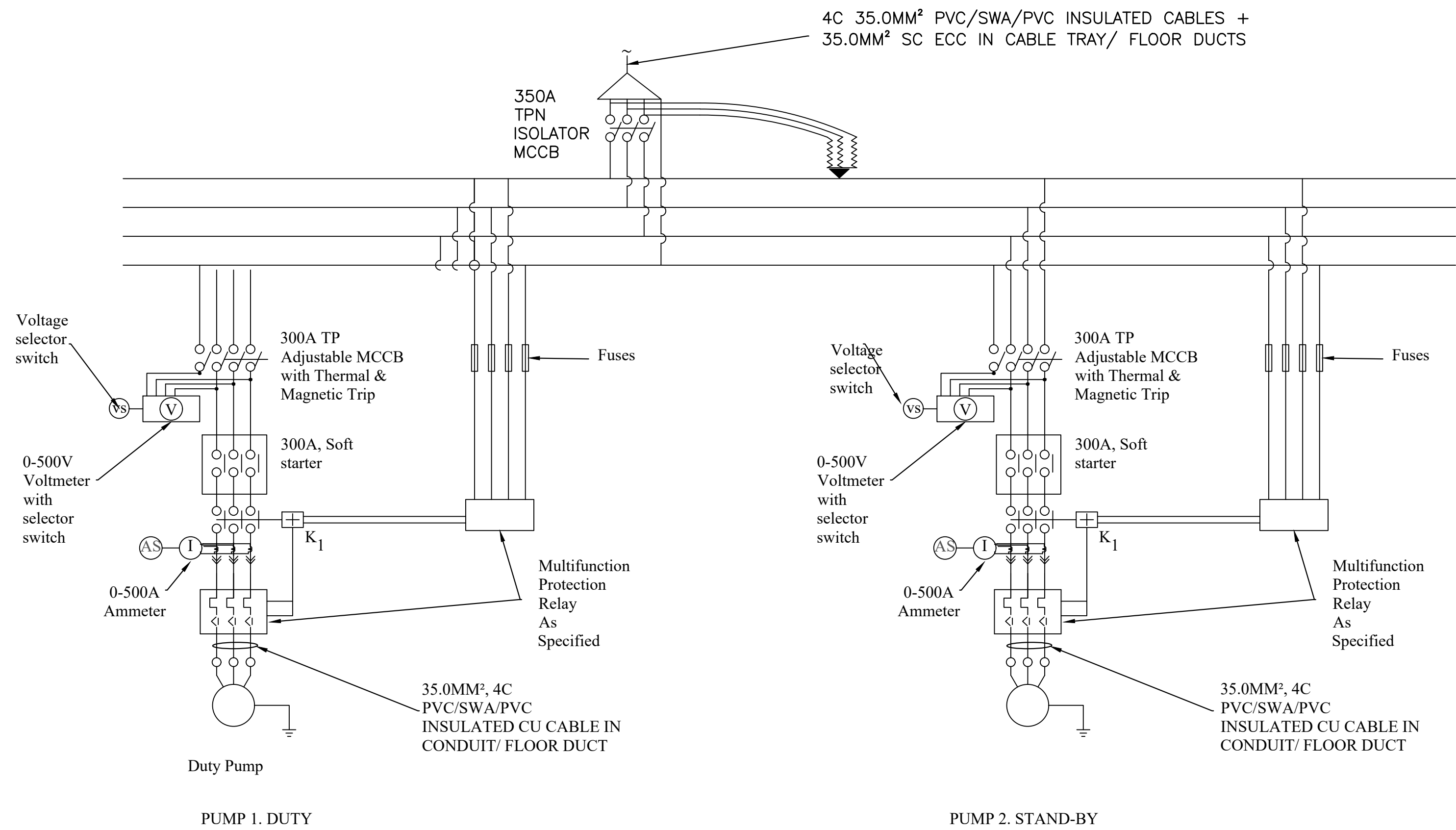


REINFORCEMENT TO BE CUT & ADJUSTED TO MANHOLE.
150MM THICK ROOF SLAB
SCALE (A1) 1:25

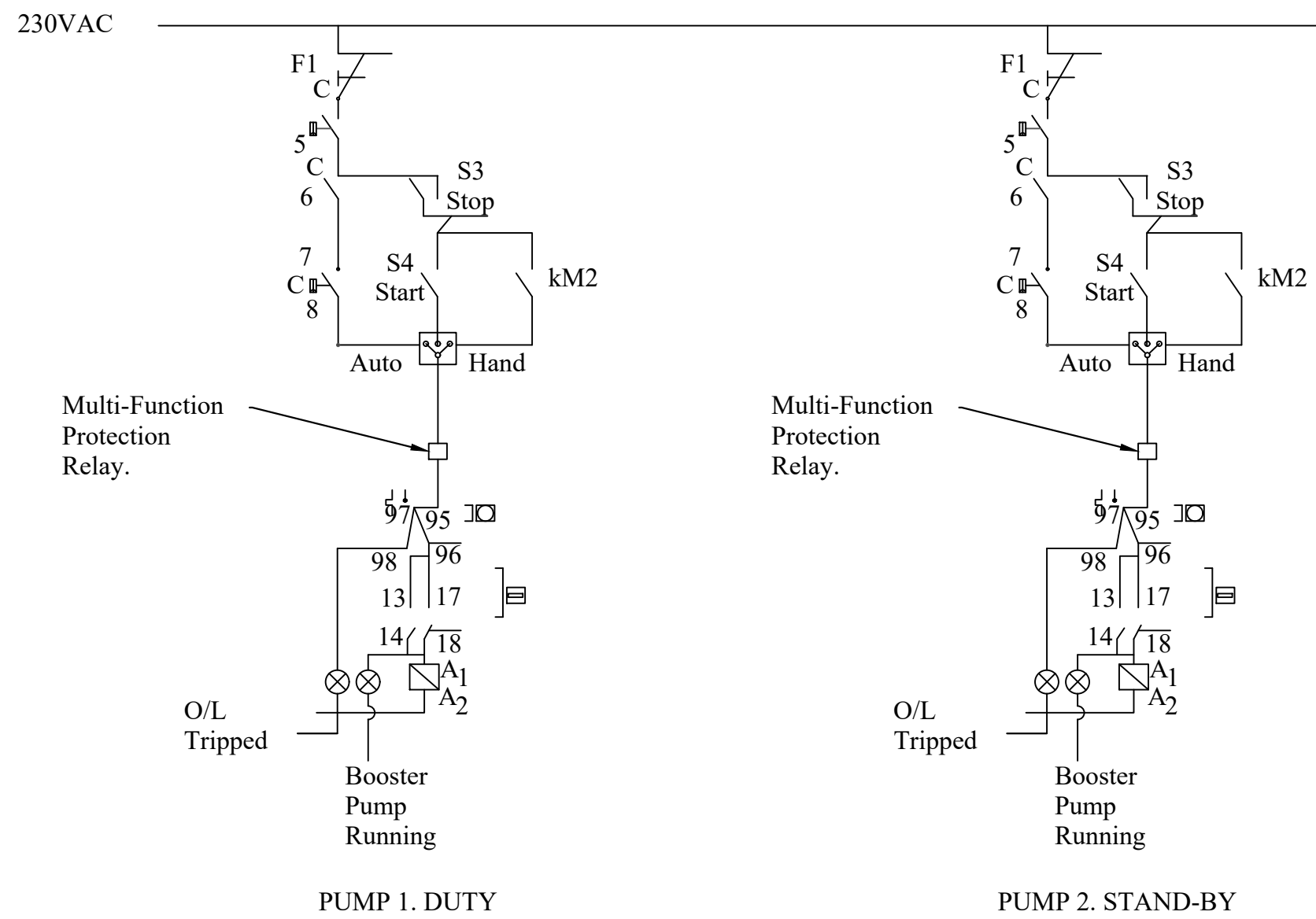
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Revisions		Consultant		Employer		Project Manager		Project		Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-do, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatuousaman@gmail.com	And  TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 ATHI WATER WORKS DEVELOPMENT AGENCY P.O Box 45283-00100, Africa Re Center, Hospital Road Nairobi-Kenya Tel: +254 20 2727438 email: info@awsboard.go.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Designed: B.MURILA Drawn : B.MURILA Checked: D.LIAMBILA Approved: B.KIM	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA Drawing Title: MATUU 225m3 RC TANK BOTTOM SLAB AND TOP SLAB RC DETAILS	Date : JULY 2020		Drawing No. : MAT-WST-003	
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.	.							Index No. :			
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NOTES:



MATUU TREATED WATER PUMP STATION PUMPS CONTROL PANEL-WTP 'CP1' CIRCUIT DIAGRAM SCHEMATICS



MATUU TREATED WATER PUMPING STATION PUMPS CONTROL PANEL-WTP 'CP1'-CONTROLS LINE DIAGRAM

WATER PUMPS CONTROL PANEL WILL INCLUDE THE FOLLOWING

- Weather Proof & Burgler Proof Box having locking arrangement with padlock. 1No.
- 350A T.P. MCCB,10kA SCR,Thermal & Magnetic Trip & Externally Operated handle lockable in OFF position and door interlocked in ON position. 1No.
- 300A T.P&N. MCCB ,10kA SCR 2No.
- Multifunction Protection Relay to protect against Phase Fault, Phase Failure, Thermal Overload, Over current, Earth leakage and Dry Run) 2No.
- Soft Starter ,300A 2No.
- ON/OFF Push Button Switches set 2No.
- Indicating Lamps for the following:-
 - i)Booster Pump running (Green) 2No.
 - ii)Booster Pump tripped/Stopped (Red) 2No.
 - iii)Booster pump available for pumping (Amber) 2No.
- Auto/Manual switch. 2No.
- Voltmeter with Selector switch 0-500V with fuses. 2No.
- A meter with selector switch 0-500A 2No.
- Run Hour Meter 2No.
- Emergency Stop Switch 2No.

The Panel is to serve 2 pumps on the basis of 1 duty and 1 Stand-by designed to for automatic operation but with an override to allow manual selection of pump.

Stage : FINAL DESIGN REVIEW

Date : JULY 2020

Drawing No. : MAT-WTP-EM-01

Scale : NTS

Sheet No. : 1 of 2

Index No. :

Sheet Size : A1

Revisions		Consultant		Employer	Project Manager	Designed: D.O.N	Project: CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF KITUI MATUU LAST MILE CONNECTIVITY OF WATER AND SANITATION WORKS IN TANATHI WATER WORKS DEVELOPMENT AGENCY AREA	Stage : FINAL DESIGN REVIEW	
Description	Date	 SAMAN CORPORATION 5,Byeoryangsangga3(sam)-ro, Gwacheon-si, Gyeonggi-di, Korea Tel: (+82) 2 6488 8255 Fax: (+82)2 6488 8080 E-mail: kituimatusaman@gmail.com	And 	 TERTIARY CONSULTING ENGINEERS LTD Mwingi Court, No. 34, Mwingi Rd, Kileleshwa. P. O. Box 46439 00100, Nairobi, Kenya. +254 202169864 Email: tce@tertiary.co.ke	 TANATHI WATER WORKS DEVELOPMENT AGENCY Private Bag-90200, K.I.D.P Building, Along Kalawa Road, Kitui-Kenya Tel: +254 712351104 email: info@tanathi.go.ke	Drawn : D.O.N	Drawing Title: ELECTROMECHANICAL DRAWINGS PUMP HOUSE ELECTRICAL SCHEMATIC DRAWINGS	Date : JULY 2020	
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