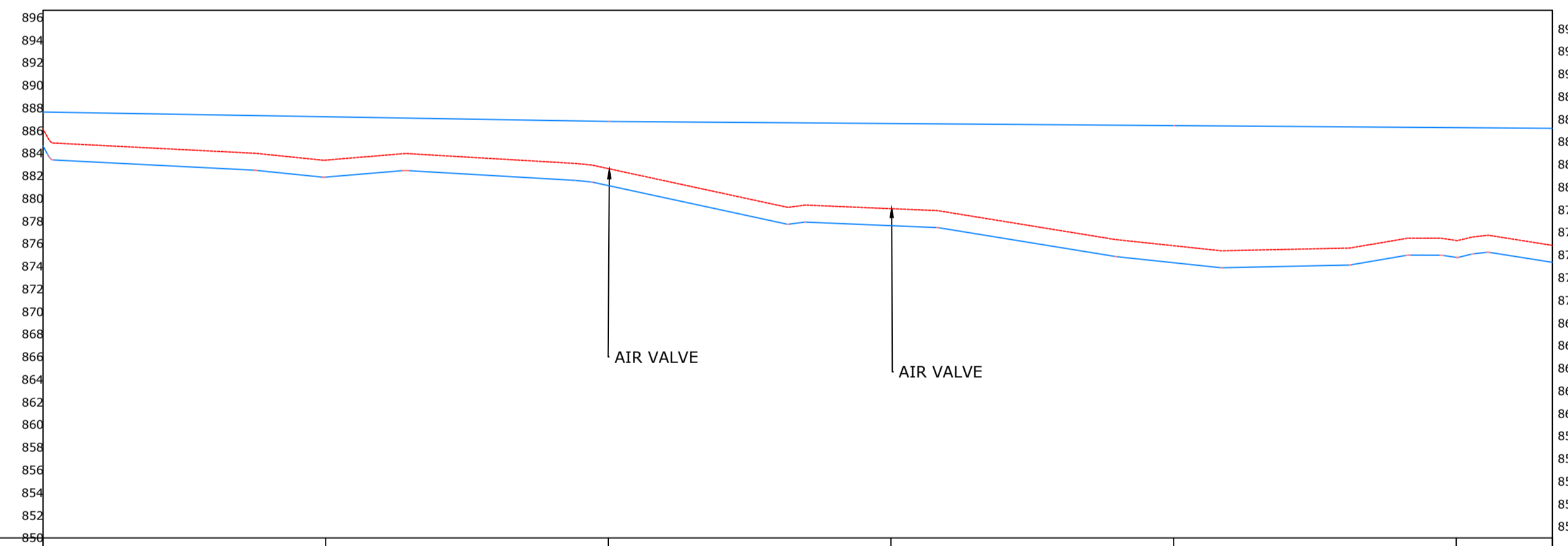


KANJUKI PROFILE



CHAINAGE	0+000	0+100	0+200	0+300	0+400	0+500	0+534
ORIGINAL GROUND LEVEL	886.14	884.63	884.31	884.00	883.39	883.91	883.66
PIPE INVERT LEVEL	884.64	883.13	882.81	882.50	881.89	882.41	883.16
HYDRAULIC GRADE LEVEL	887.64	887.54	887.43	887.33	887.23	887.12	887.02
FLOW PARAMETERS							
PIPE INFO							
SURVEY REMARKS							

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
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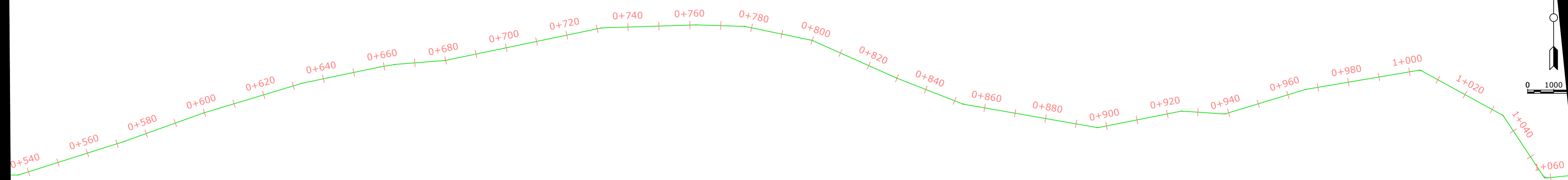
1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

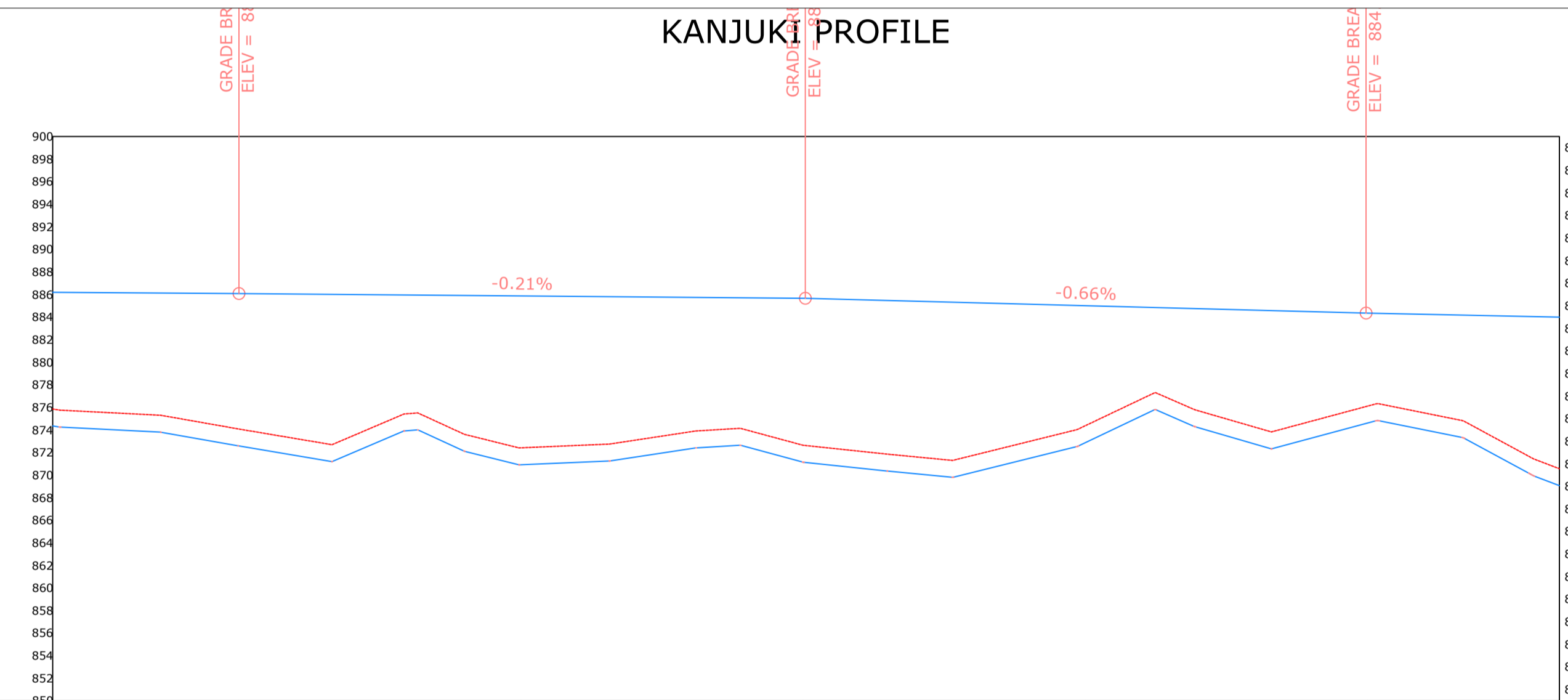
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
 +254 61-2032282  
 Email: info@tanawwda.go.ke  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
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Date	13.04.2022
Scale	1:1000



KANJUKI PROFILE



CHAINAGE	0+534	0+600	0+700	0+800	0+900	1+000	1+068
ORIGINAL GROUND LEVEL	875.86	874.08	872.42	872.64	874.38	876.11	870.57
PIPE INVERT LEVEL	874.36	872.58	870.92	871.14	872.88	874.61	869.07
HYDRAULIC GRADE LEVEL	886.20	886.08	885.88	885.67	885.01	884.35	884.00
FLOW PARAMETERS							
PIPE INFO							
SURVEY REMARKS							

ROCKY TERRAIN

HDPE 280 mm PN 10

RIVER NITHI RIDGE

General Notes

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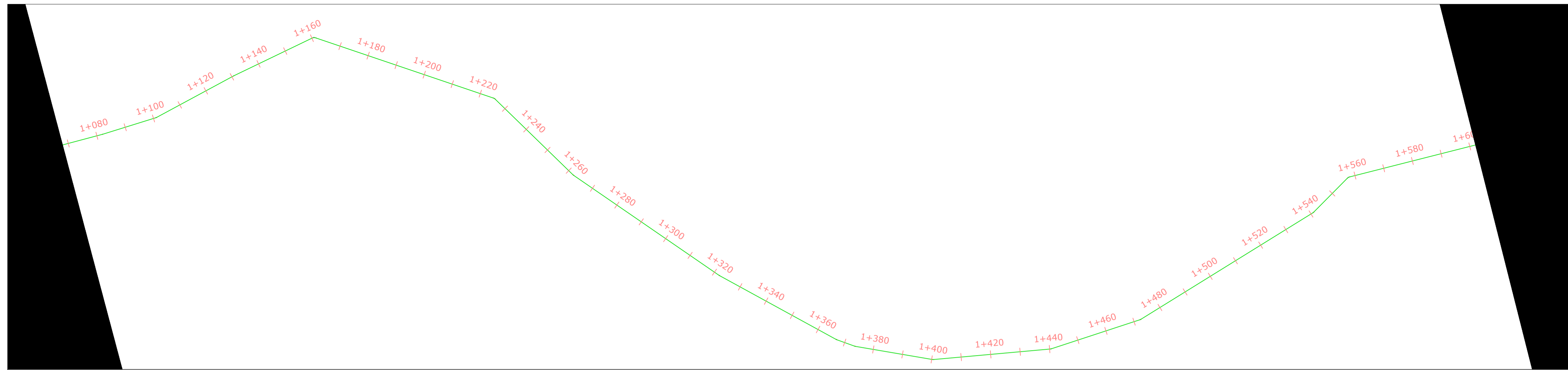
1	Surveyed by:	GISO Maina
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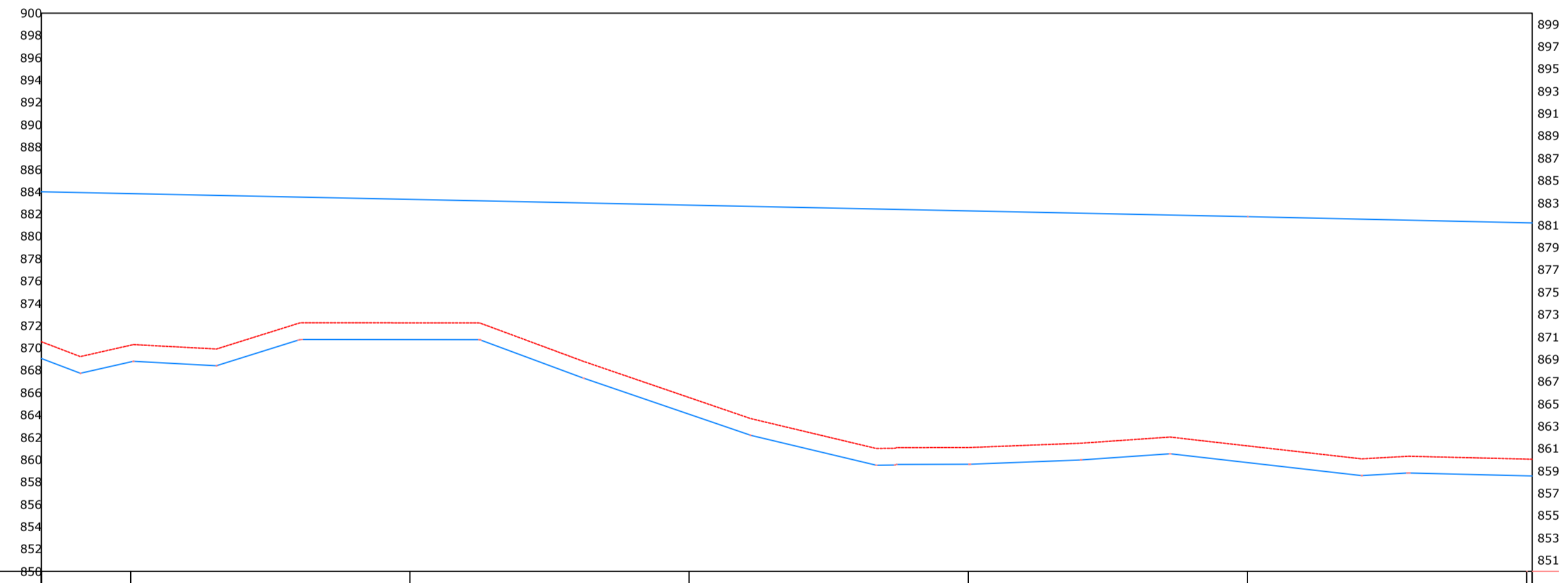
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Project Name and Address  
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 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	2
Date	13.04.2022	Scale	1:1000



KANJUKI PROFILE



CHAINAGE	1+068	1+100	1+200	1+300	1+400	1+500	1+602
ORIGINAL GROUND LEVEL	870.57 869.30	870.26	872.26	872.24	861.08	861.24	860.05
PIPE INVERT LEVEL	869.07 868.40	868.76	870.77	870.74	864.07	859.59	858.56
HYDRAULIC GRADE LEVEL	884.00 883.97	883.84	883.32	883.19	882.81	882.29	881.27
FLOW PARAMETERS							
PIPE INFO							HDPE 280 mm PN 10
SURVEY REMARKS							

General Notes

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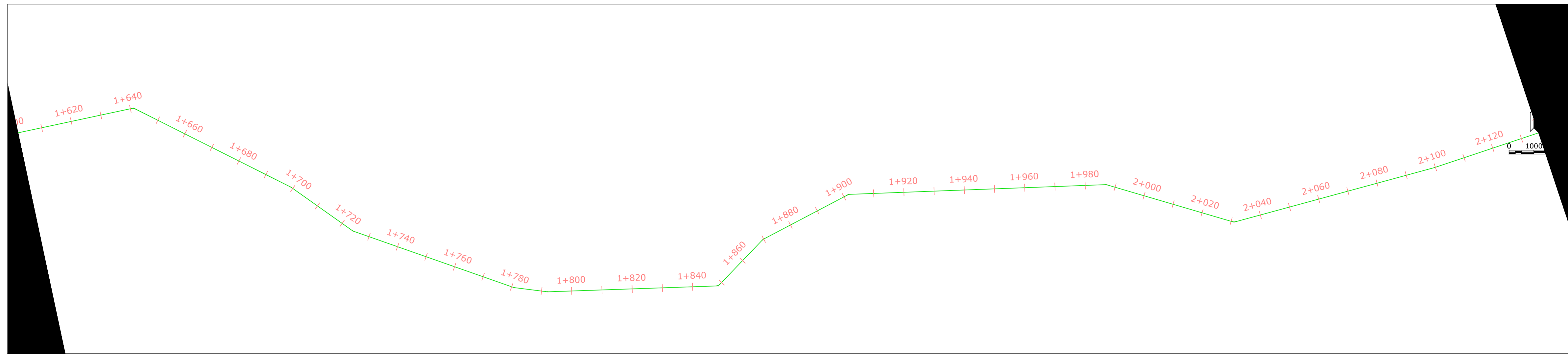
1	Surveyed by:	GISO Maina
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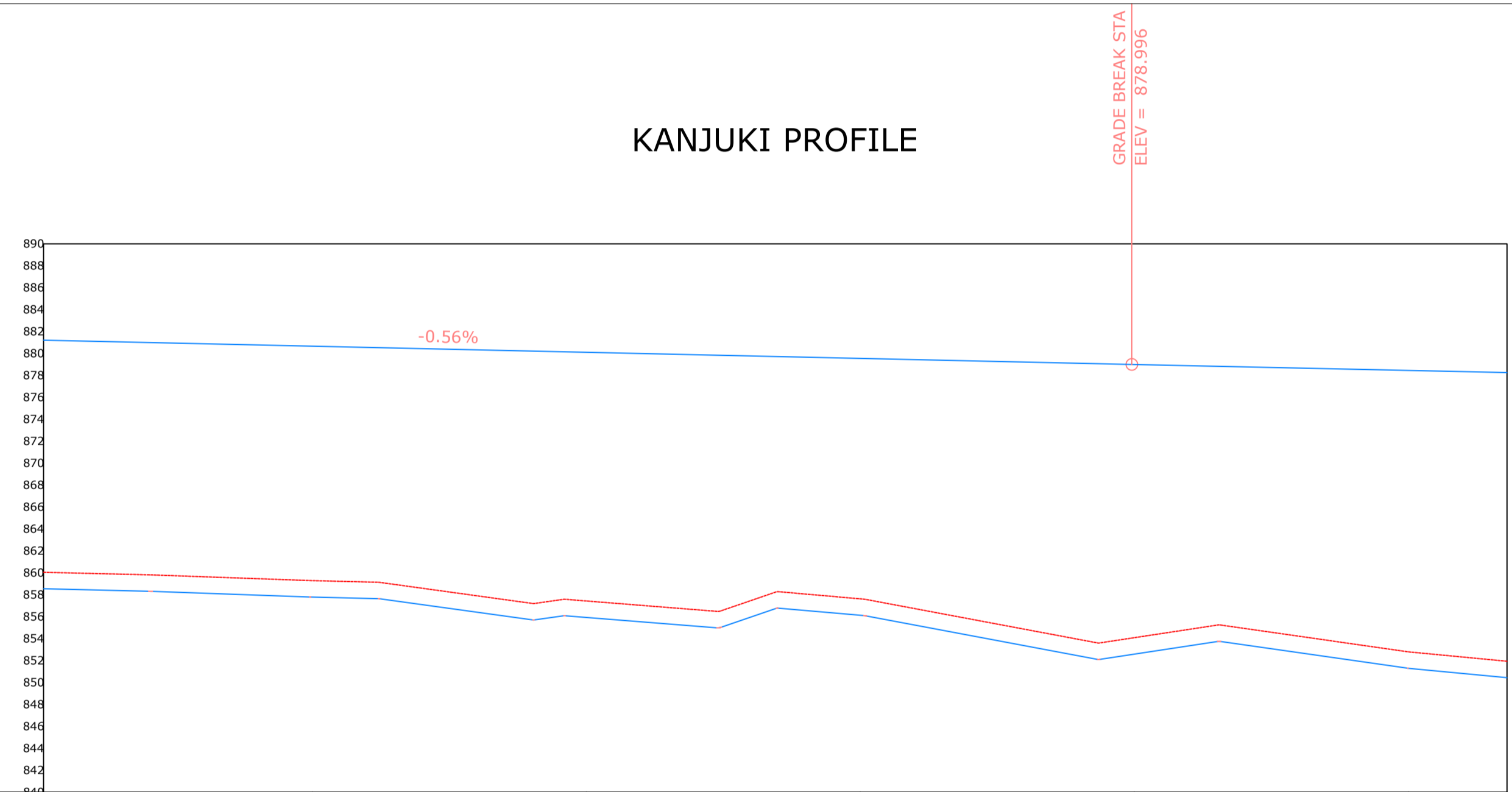
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Project Name and Address  
 KANJUKI WATER SUPPLY  
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 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	3
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Scale	1:1000		



KANJUKI PROFILE



CHAINAGE	1+602				1+700					1+800					1+900					2+000				2+100				2+136
ORIGINAL GROUND LEVEL	860.05	859.91	859.73	859.51	859.29	859.11	858.25	857.39	857.43	856.93	856.60	858.17	857.62	856.49	855.32	854.15	854.08	855.03	854.58	853.68	852.79	852.20	851.93	850.43				
PIPE INVERT LEVEL	858.55	858.41	858.23	858.01	857.79	857.61	856.75	855.89	855.93	855.43	855.10	856.67	856.12	854.99	853.82	852.65	852.58	853.53	853.08	852.18	851.29	850.70	850.43					
HYDRAULIC GRADE LEVEL	881.21	881.08	880.94	880.80	880.66	880.52	880.38	880.24	880.11	879.97	879.83	879.69	879.55	879.41	879.27	879.13	878.99	878.86	878.72	878.59	878.45	878.32	878.26					
FLOW PARAMETERS	0.031412037M <sup>3</sup> /M/S																											
PIPE INFO	ROCKY TERRAIN																											
	HDPE 280 mm PN 10																											
SURVEY REMARKS																												

General Notes

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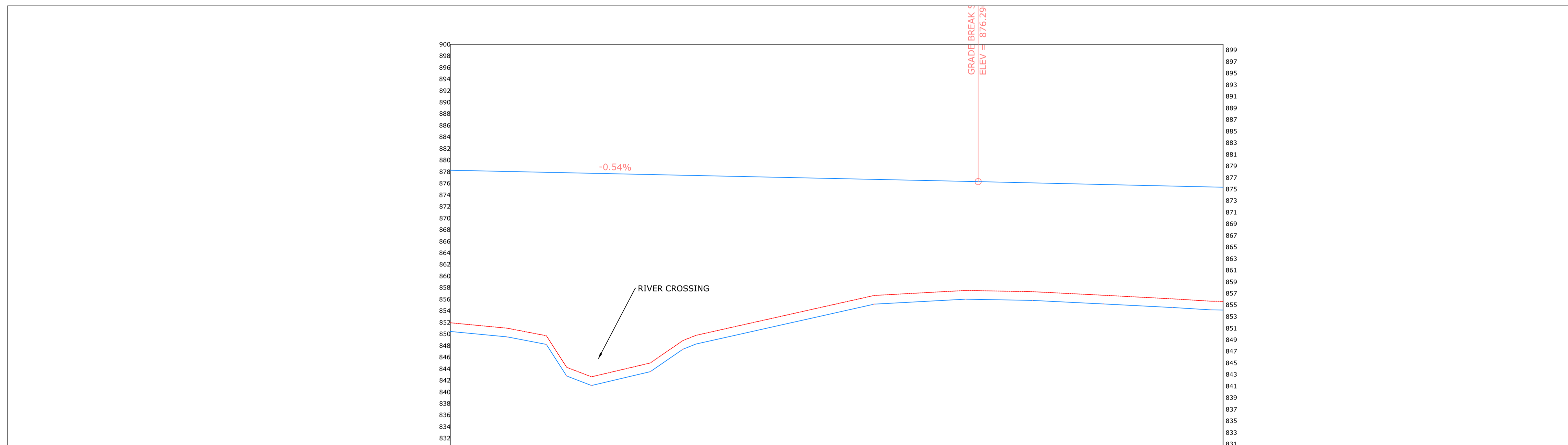
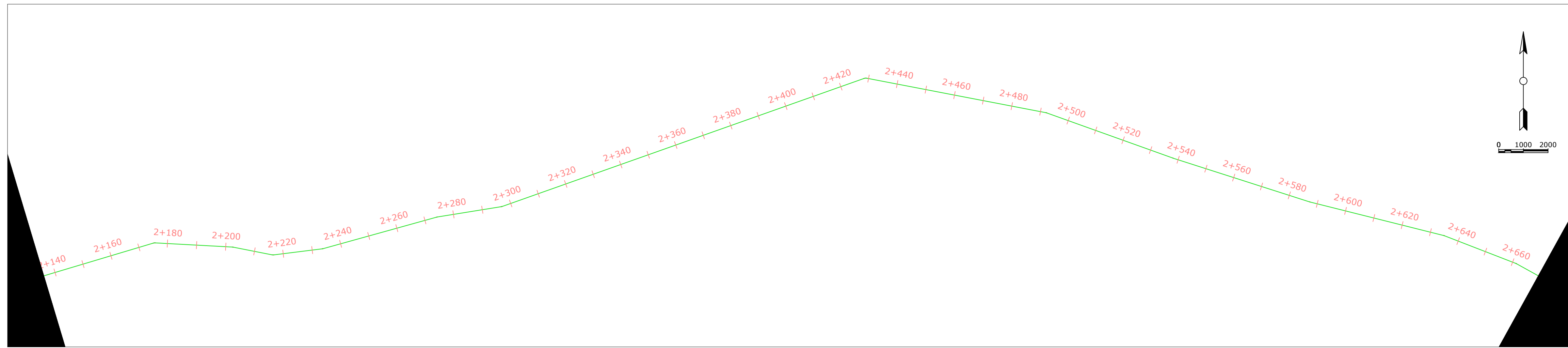
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Project Name and Address  
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 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project  
 WATER PROJECT  
 Date  
 13.04.2022  
 Scale  
 1:1000

Sheet  
**4**



CHAINAGE	2+136	2+140	2+160	2+180	2+200	2+220	2+240	2+260	2+280	2+300	2+320	2+340	2+360	2+380	2+400	2+420	2+440	2+460	2+480	2+500	2+520	2+540	2+560	2+580	2+600	2+620	2+640	2+660	
ORIGINAL GROUND LEVEL	851.93	851.60	851.00	849.81	848.31	843.57	843.43	843.62	845.12	849.18	847.68	849.34	850.84	852.23	853.63	855.03	856.43	856.93	857.27	857.47	855.97	857.15	856.84	856.52	856.19	855.83	855.63	855.13	
PIPE INVERT LEVEL	850.43	850.10	849.50	848.31	844.33	842.07	841.93	843.62	845.12	847.68	847.68	849.34	850.84	852.23	853.63	855.03	856.43	856.93	857.27	857.47	855.97	857.15	856.84	856.52	856.19	855.83	855.63	855.13	
HYDRAULIC GRADE LEVEL	878.26	878.18	878.05	877.91	877.78	877.64	877.51	877.37	877.24	877.10	876.97	876.83	876.70	876.56	876.43	876.29	876.15	876.01	875.87	875.72	875.58	875.44	875.33	875.22	875.11	875.00	874.89	874.78	
FLOW PARAMETERS																													
PIPE INFO	HDPE 280 mm PN 10																												
SURVEY REMARKS																													

General Notes

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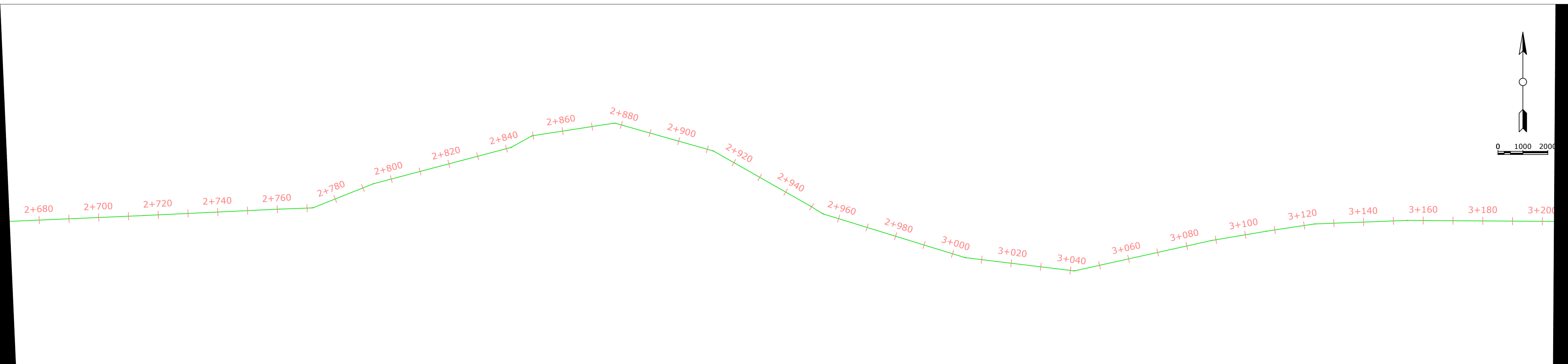
1	Surveyed by:	GISO Maina
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4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

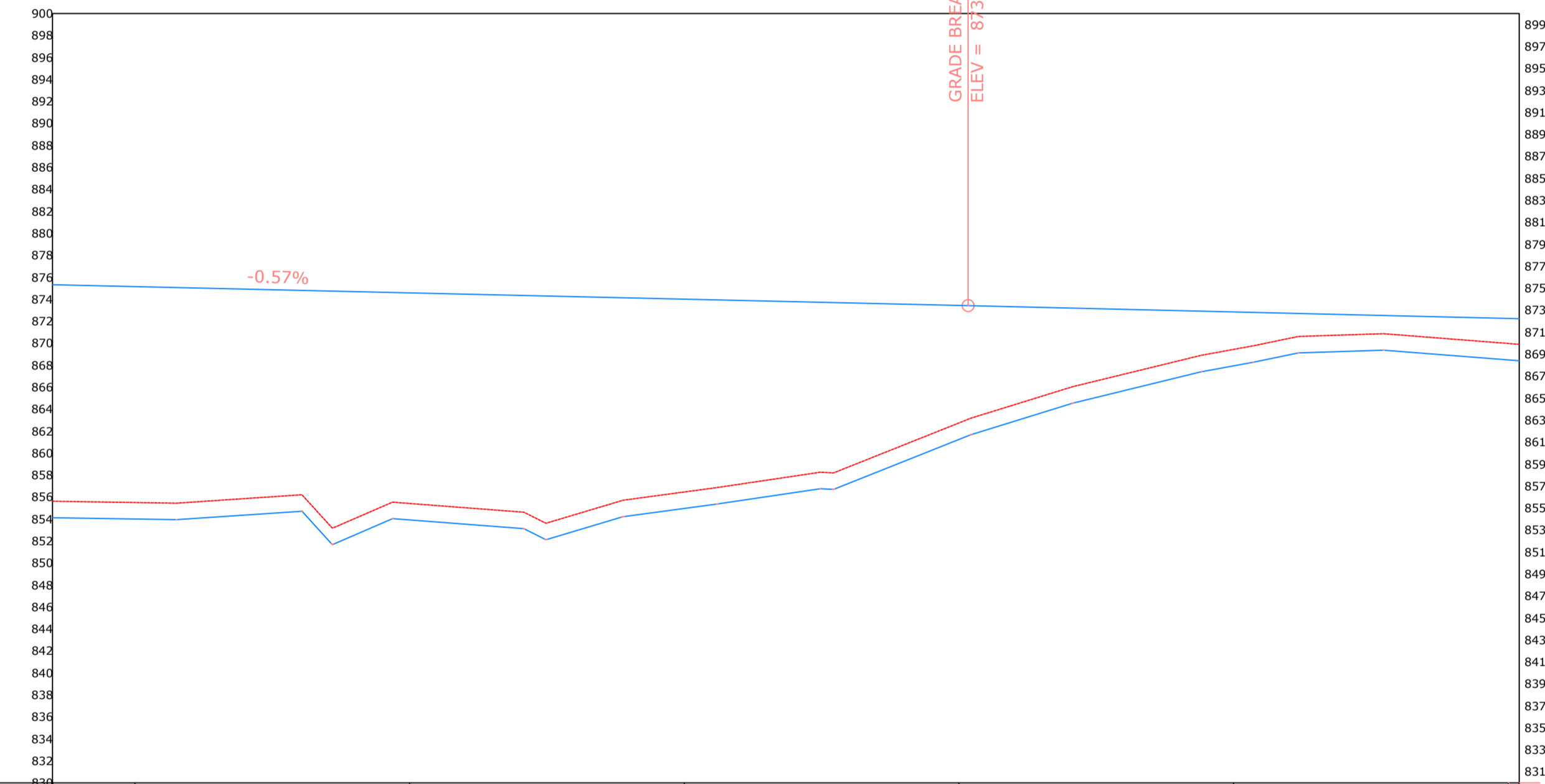
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
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Date	13.04.2022
Scale	1:1000



KANJUKI PROFILE



CHAINAGE	2+670	2+700	2+800	2+900	3+000	3+100	3+200
ORIGINAL GROUND LEVEL	855.63 855.61	855.51	855.42	856.47	862.75	869.44	869.98
PIPE INVERT LEVEL	854.13 854.11	854.01	853.92	854.97	861.25	867.94	868.48
HYDRAULIC GRADE LEVEL	875.33 875.30	875.15	874.58	874.01	873.44	872.85	872.26
FLOW PARAMETERS	0.031412037M <sup>3</sup> /S						
PIPE INFO	HDPE 280 mm PN 10						
SURVEY REMARKS	ROAD CROSSING						

General Notes

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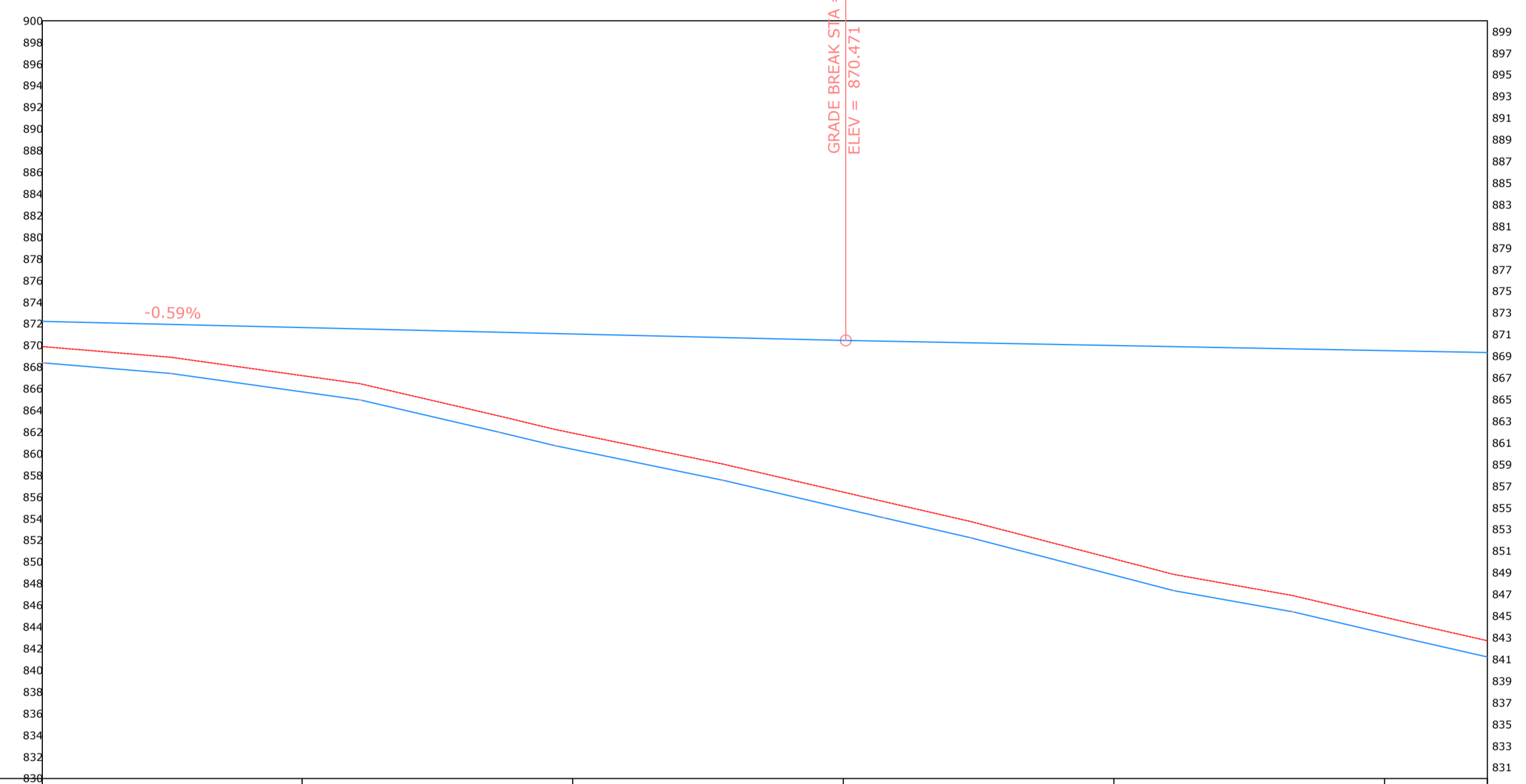
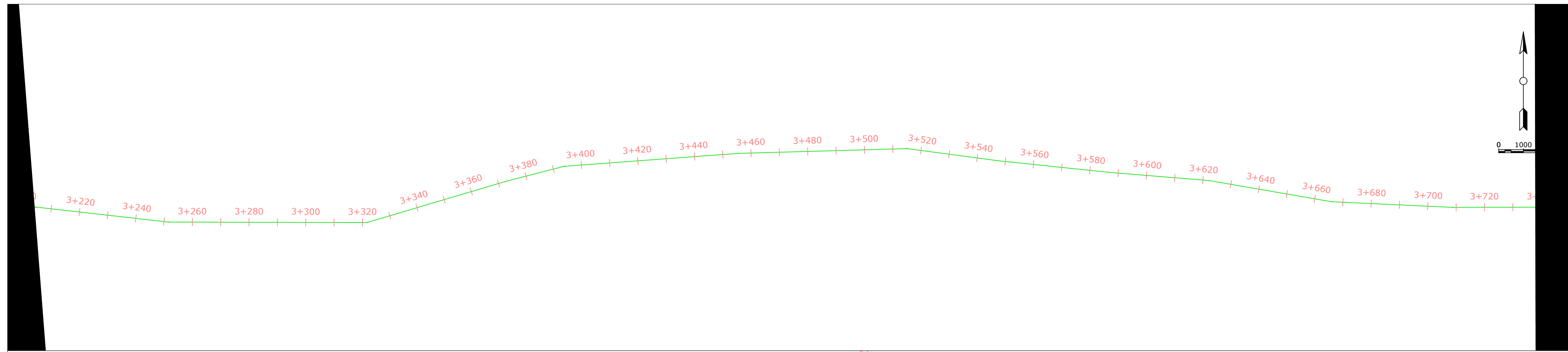
1	Surveyed by:	GISO Maina
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No.	Revision/Issue	Date

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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	6
Date	13.04.2022	Scale	
Scale	1:1000		



CHAINAGE	3+204	3+220	3+240	3+260	3+280	3+300	3+320	3+340	3+360	3+380	3+400	3+420	3+440	3+460	3+480	3+500	3+520	3+540	3+560	3+580	3+600	3+620	3+640	3+660	3+680	3+700	3+720	3+738						
ORIGINAL GROUND LEVEL	869.90	869.47	868.95	868.09	867.22	866.27	864.81	863.36	861.91	860.62	859.34	857.92	856.46	855.01	853.55	851.92	850.29	848.73	847.62	846.38	844.91	843.47	842.73	841.23	840.47	839.47	838.47	837.47	836.47	835.47	834.47	833.47	832.47	831.47
PIPE INVERT LEVEL	868.40	867.97	867.45	866.59	865.72	864.77	863.31	861.86	860.41	859.12	857.84	856.42	854.96	853.51	852.05	850.42	848.79	847.23	846.12	844.88	843.41	841.97	841.23	840.47	839.47	838.47	837.47	836.47	835.47	834.47	833.47	832.47	831.47	
HYDRAULIC GRADE LEVEL	872.23	872.11	871.96	871.81	871.66	871.52	871.37	871.22	871.07	870.92	870.77	870.62	870.48	870.36	870.24	870.12	870.00	869.89	869.77	869.65	869.53	869.42	869.35	869.23	869.12	869.01	868.90	868.79	868.68	868.57	868.46	868.35	868.24	868.13
FLOW PARAMETERS	← -0.031412037M <sup>3</sup> /M/S →																																	
PIPE INFO	← HDPE 280 mm PN 10 →																																	
SURVEY REMARKS																																		

General Notes

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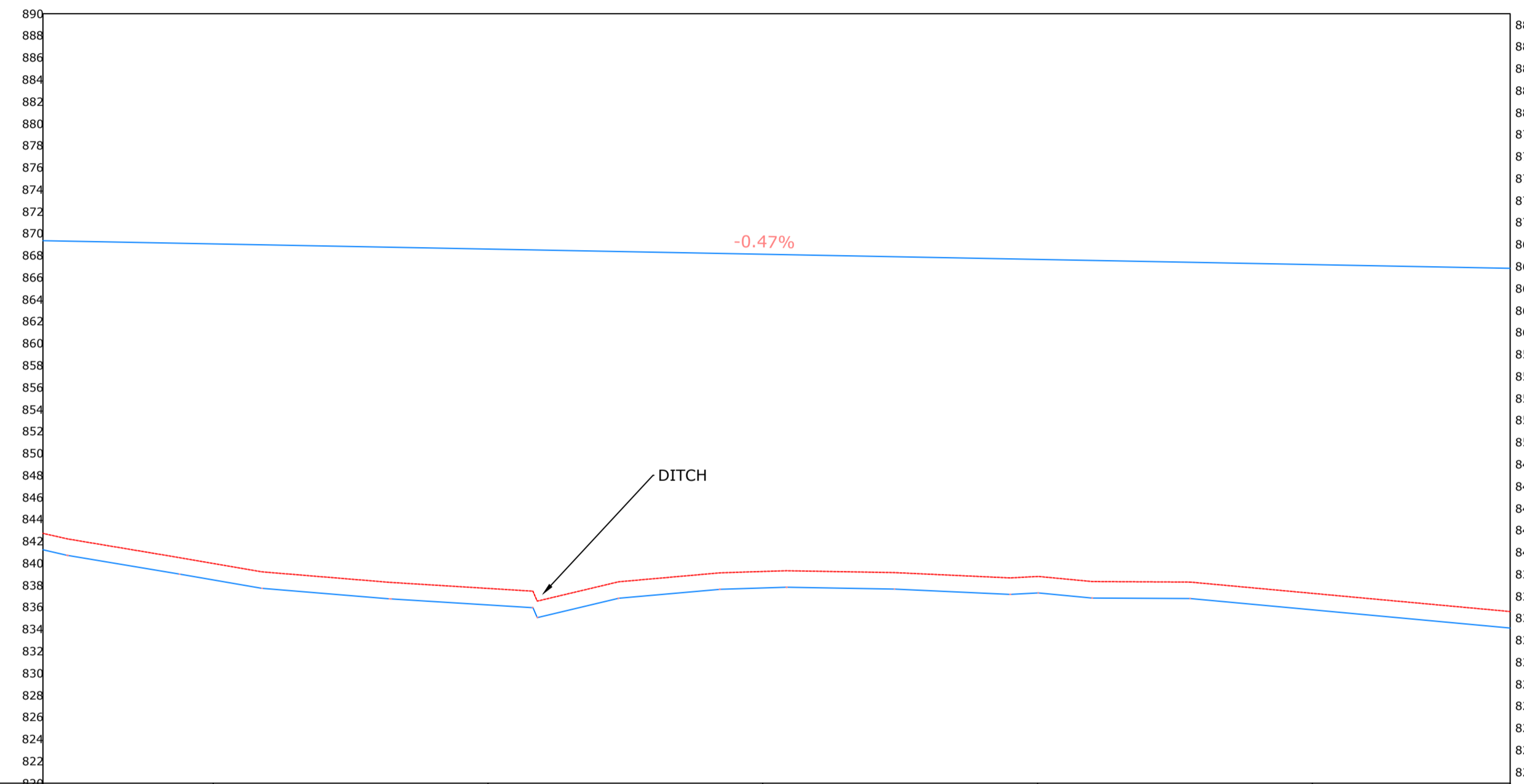
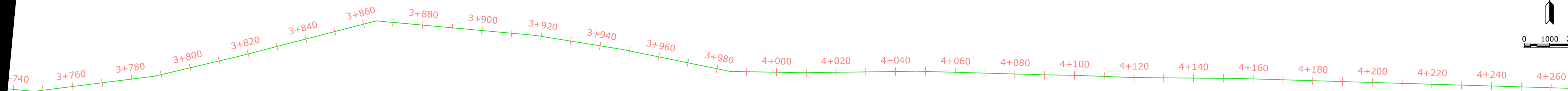
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	7
Date	13.04.2022	Scale	1:1000



CHAINAGE	3+738	3+740	3+760	3+780	3+800	3+820	3+840	3+860	3+880	3+900	3+920	3+940	3+960	3+980	4+000	4+020	4+040	4+060	4+080	4+100	4+120	4+140	4+160	4+180	4+200	4+220	4+240	4+260	4+272
ORIGINAL GROUND LEVEL	842.73	842.10	841.05	839.99	839.08	838.56	838.10	837.72	836.98	836.38	838.93	839.26	839.13	838.85	838.80	838.34	838.30	837.85	837.27	836.70	836.12	835.61	835.61	835.61	835.61	835.61	835.61	835.61	835.61
PIPE INVERT LEVEL	841.23	840.60	839.55	838.49	837.58	837.06	836.60	836.22	835.48	836.88	837.43	837.76	837.63	837.35	837.30	836.84	836.80	836.35	835.77	835.20	834.62	834.11	834.11	834.11	834.11	834.11	834.11	834.11	834.11
HYDRAULIC GRADE LEVEL	869.35	869.30	869.18	869.06	868.95	868.83	868.71	868.59	868.47	868.36	868.24	868.12	868.00	867.89	867.77	867.65	867.53	867.42	867.30	867.18	867.06	866.95	866.84	866.84	866.84	866.84	866.84	866.84	866.84
FLOW PARAMETERS	0.031412037M <sup>3</sup> /S																												
PIPE INFO	HDPE 280 mm PN 10																												
SURVEY REMARKS	ROAD CROSSING																												

General Notes

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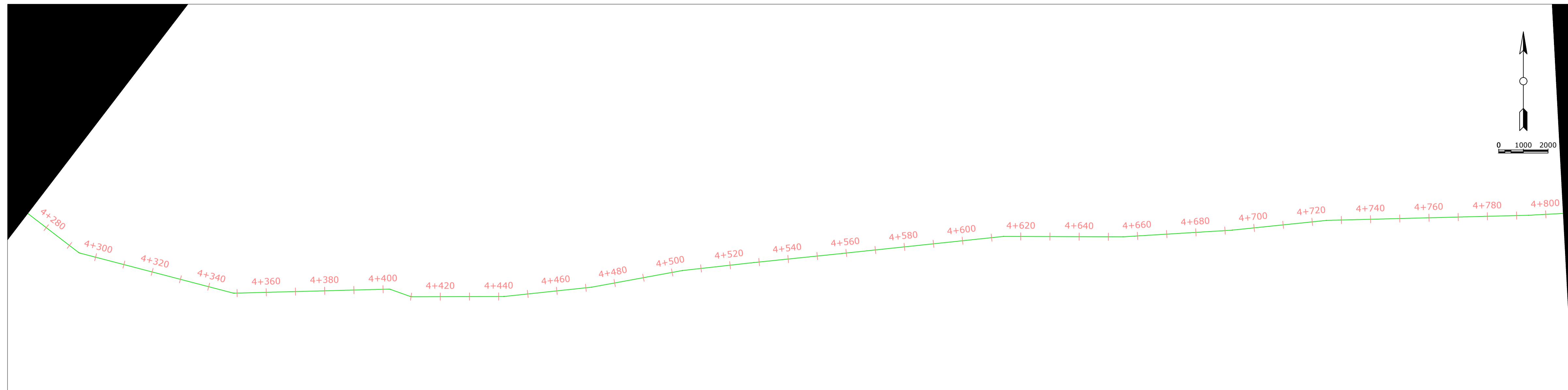
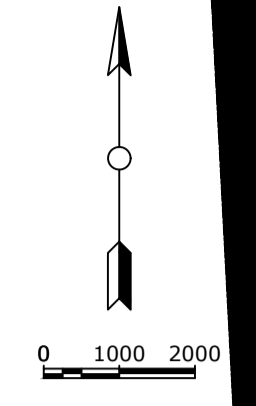
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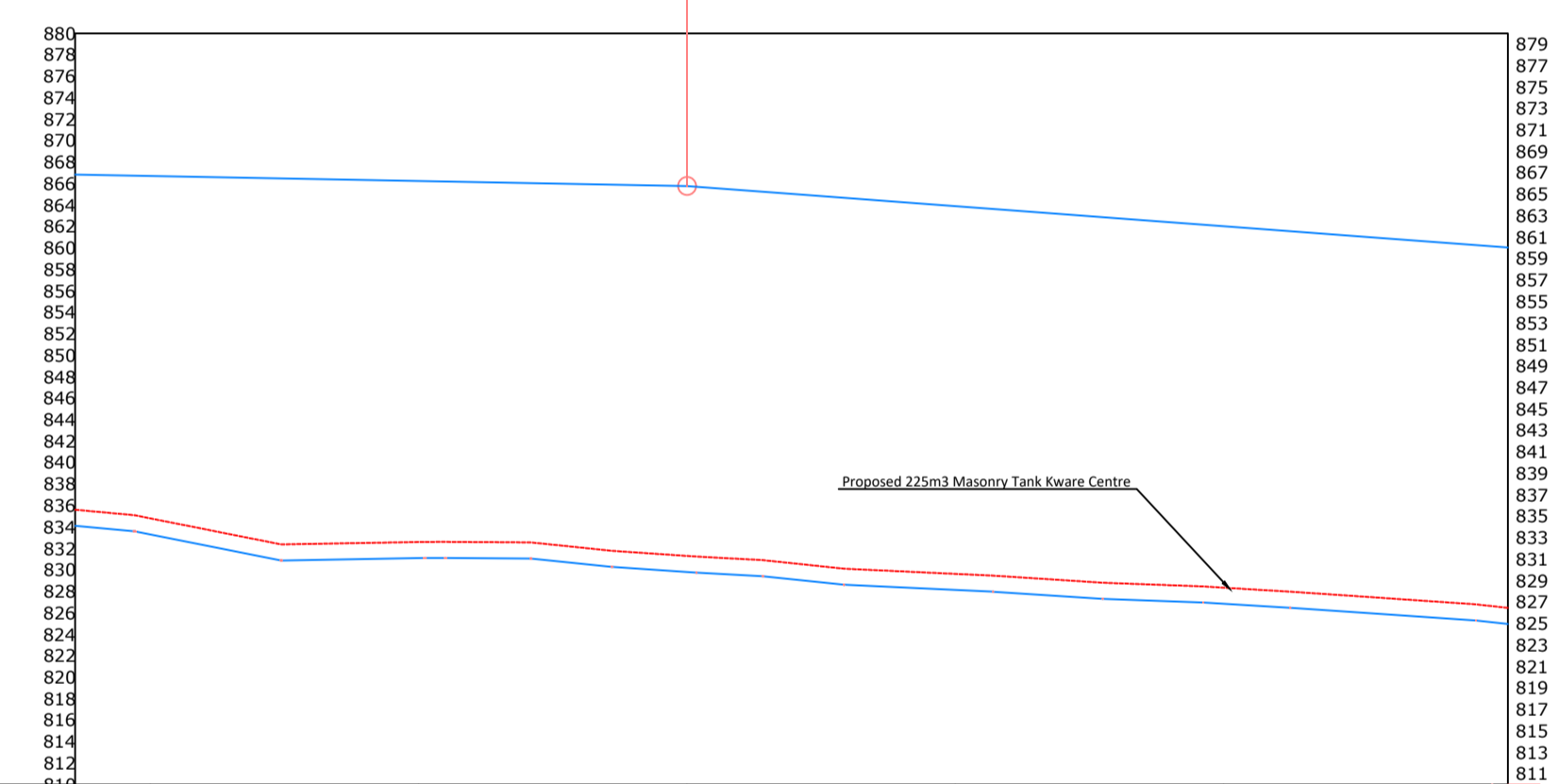
Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	8
Date	13.04.2022	Scale	
Scale	1:1000		





KANJUKI PROFILE



CHAINAGE	ORIGINAL GROUND LEVEL	PIPE INVERT LEVEL	HYDRAULIC GRADE LEVEL	FLOW PARAMETERS	PIPE INFO	SURVEY REMARKS
4+272	835.51	834.01	866.84			
4+300	834.81	833.31	866.71			
	833.57	832.07	866.59			
	832.39	830.89	866.47			
	832.50	831.00	866.36			
4+400	832.61	831.11	866.24			
	832.60	831.10	866.12			
	832.36	830.86	866.00			
	831.74	830.24	865.89			
4+500	831.31	829.81	865.77			
	830.96	829.46	865.30			
	830.35	828.85	864.84			
	829.93	828.43	864.37			
4+600	829.64	828.14	863.90			
	829.30	827.80	863.43			
	828.89	827.39	862.97			
	828.63	827.13	862.50			
4+700	828.36	826.86	862.03			
	827.98	826.48	861.57			
	827.55	826.05	861.10			
	827.13	825.63	860.63			
4+800	826.64	825.44	860.16			
4+806						

General Notes

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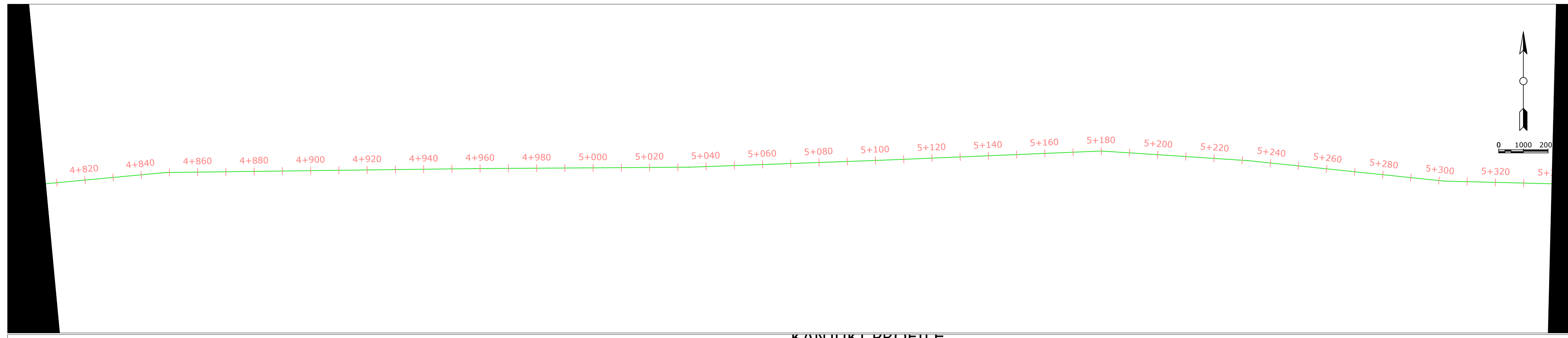
1	Surveyed by:	GISO Maina
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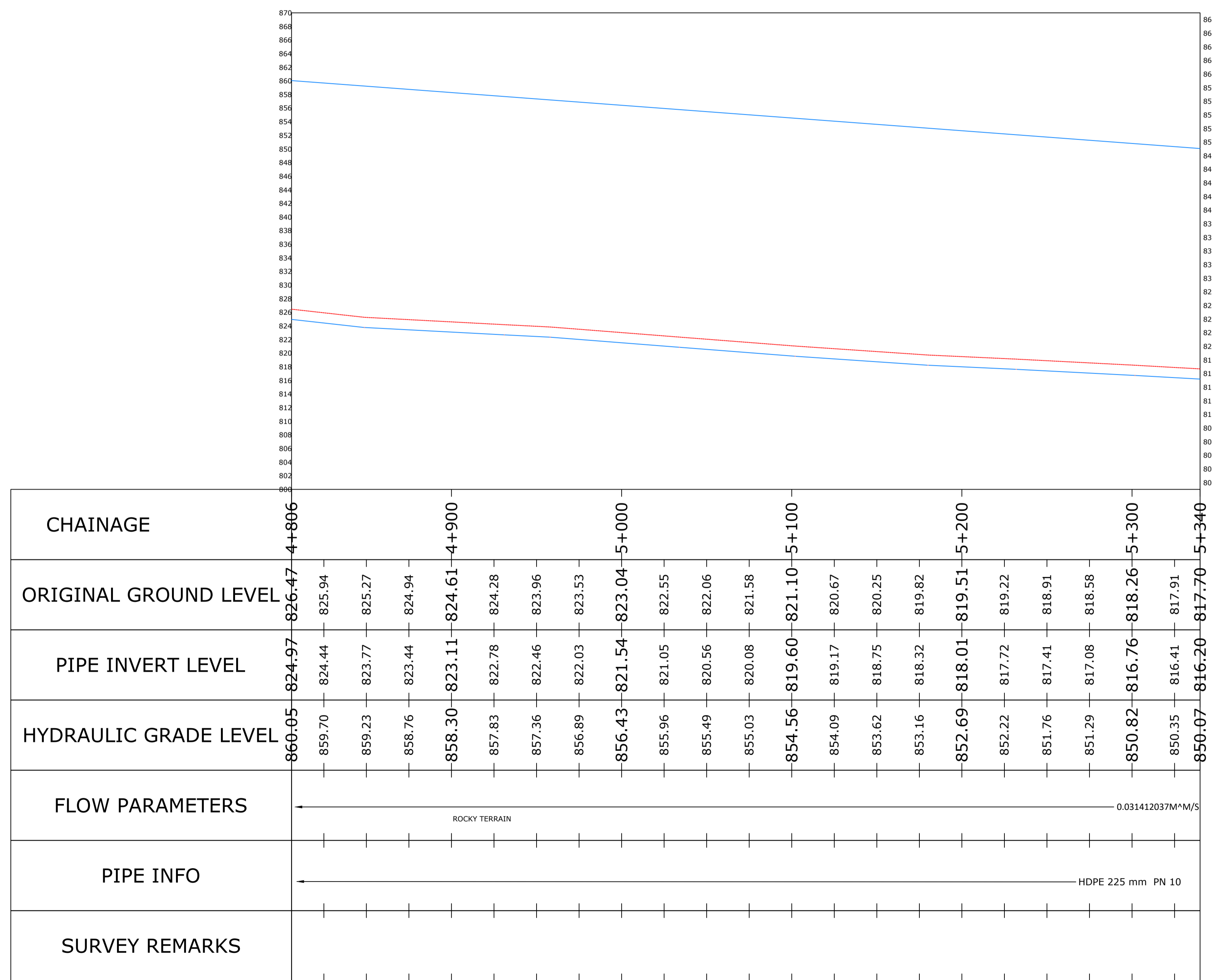
Firm Name and Address  
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Project Name and Address  
**KANJUKI WATER SUPPLY**  
**RAW WATER SUPPLY**  
**CHUKA CONSTITUENCY**  
**THARAKA NITHI COUNTY**

Project	Sheet
WATER PROJECT	9
Date	Scale
13.04.2022	1:1000



KANJUKI PROFILE



General Notes

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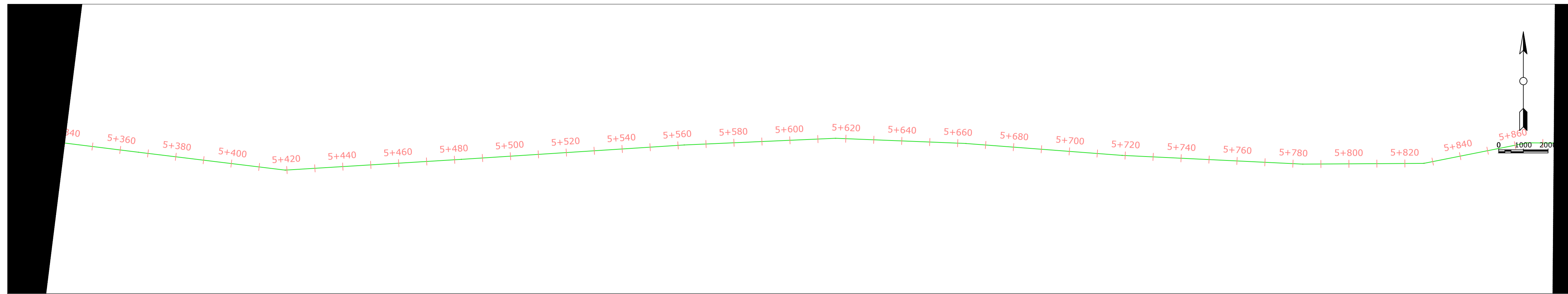
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4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

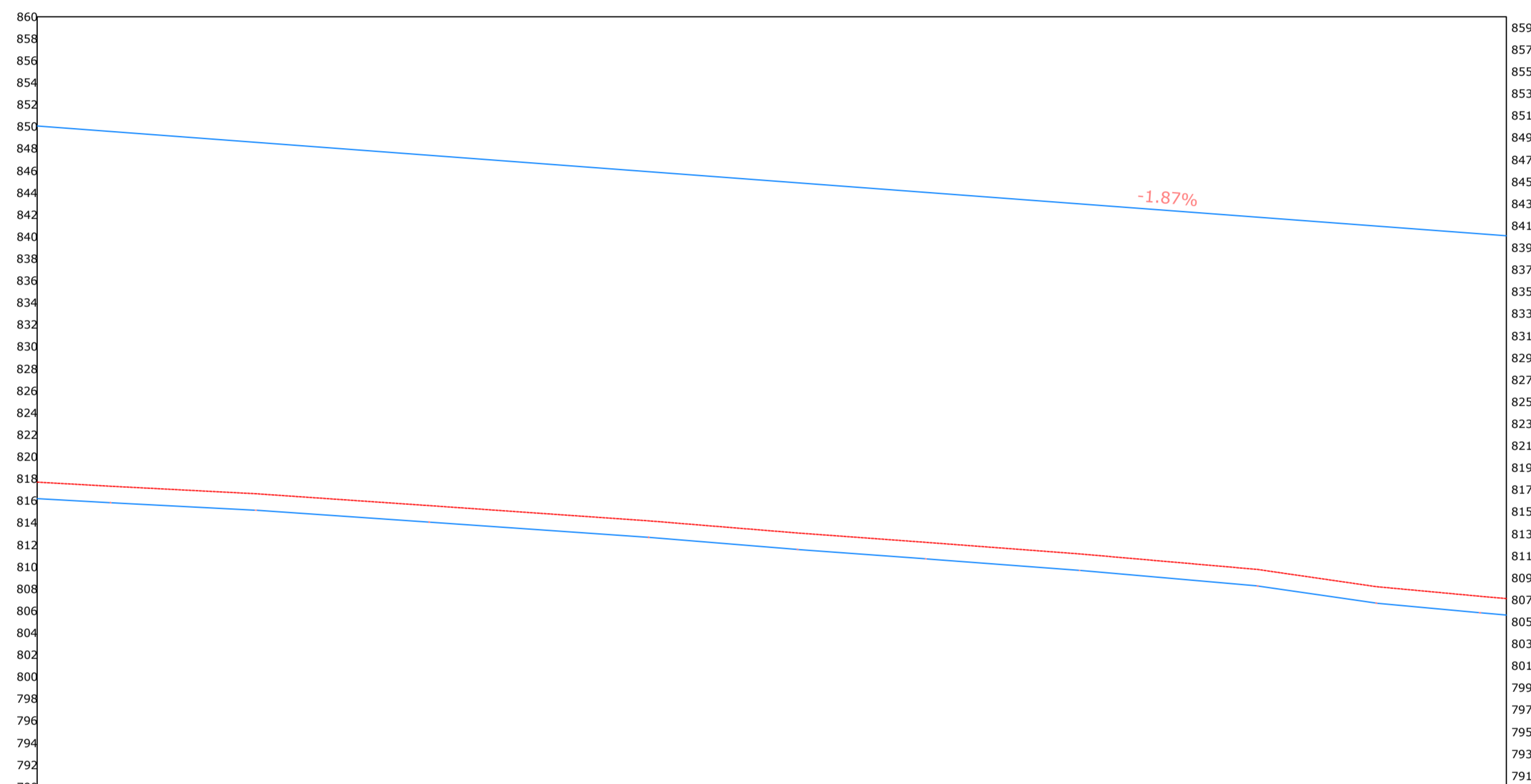
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
 +254 61-2032282  
 Email: info@tanawwda.go.ke  
 Website: www.tanawwda.go.ke

Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
WATER PROJECT	10
Date	13.04.2022
Scale	1:1000



KANJUKI PROFILE



CHAINAGE	5+340	5+360	5+380	5+400	5+420	5+440	5+460	5+480	5+500	5+520	5+540	5+560	5+580	5+600	5+620	5+640	5+660	5+680	5+700	5+720	5+740	5+760	5+780	5+800	5+820	5+840	5+860	5+874
ORIGINAL GROUND LEVEL	817.70	817.56	817.22	816.90	816.55	816.13	815.70	815.26	814.83	814.40	813.92	813.41	812.92	812.47	812.00	811.53	811.05	810.50	809.95	809.17	808.27	807.66	807.12	806.16	805.62	805.10	804.54	804.10
PIPE INVERT LEVEL	816.20	816.06	815.72	815.40	815.05	814.63	814.20	813.76	813.33	812.90	812.42	811.91	811.42	810.97	810.50	810.03	809.55	809.00	808.45	807.67	806.77	806.16	805.62	805.10	804.54	804.10	803.62	803.10
HYDRAULIC GRADE LEVEL	850.07	849.89	849.42	848.95	848.49	848.02	847.55	847.08	846.62	846.15	845.68	845.22	844.75	844.28	843.81	843.35	842.88	842.41	841.95	841.48	841.01	840.54	840.10	839.62	839.10	838.62	838.10	837.62
FLOW PARAMETERS	0.031412037M <sup>3</sup> /S																											
PIPE INFO	HDPE 225 mm PN 10																											
SURVEY REMARKS	MAMA NGINA TANK																											

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
 b) more cralification can be sort from the PEPTD

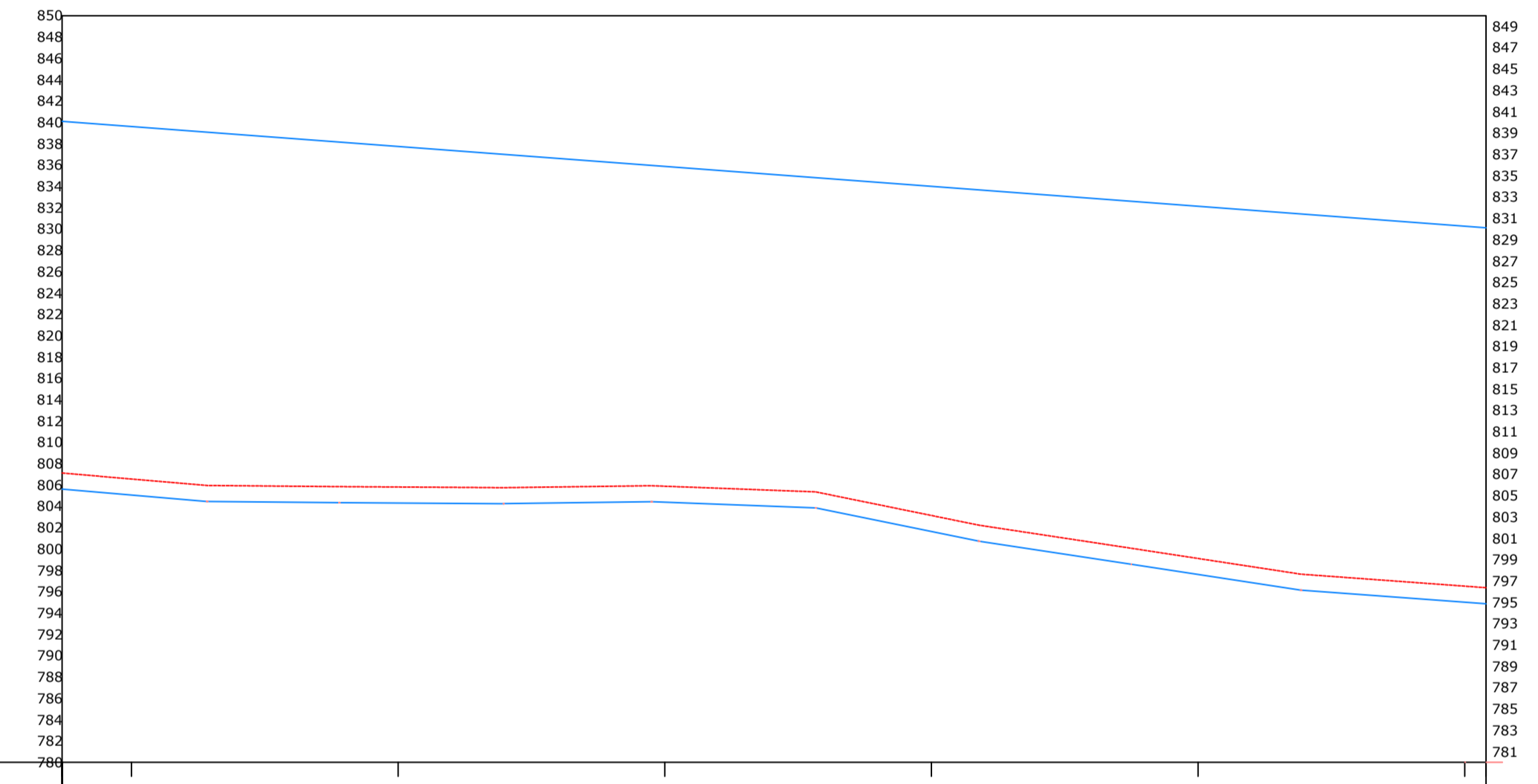
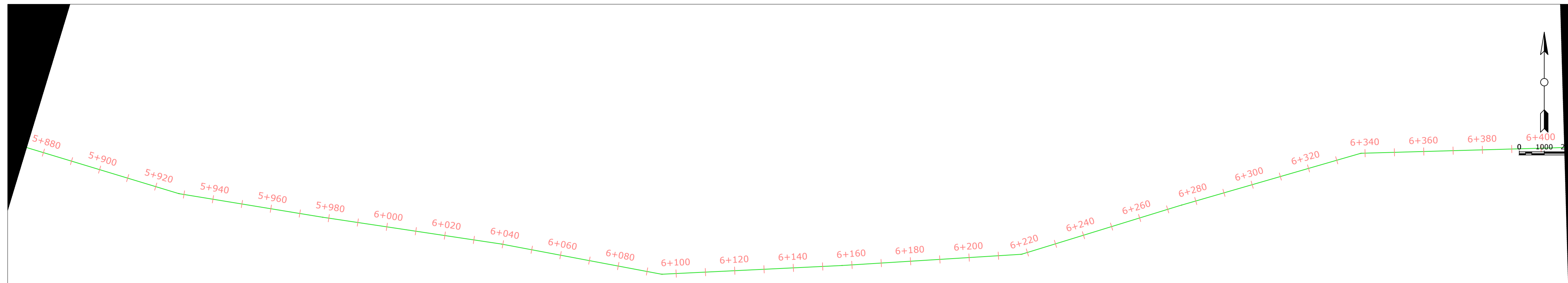
1	Surveyed by:	GISO Maina
2	Drawn By	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By	Eng Erastus Waweru

No.	Revision/Issue	Date

Firm Name and Address  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	11
Date	13.04.2022	Scale	1:1000



CHAINAGE	ORIGINAL GROUND LEVEL	PIPE INVERT LEVEL	HYDRAULIC GRADE LEVEL	FLOW PARAMETERS	PIPE INFO	SURVEY REMARKS
5+874	807.12	805.62	840.60			
5+900	806.57	805.07	839.61			
	806.03	804.53	839.14			
	805.91	804.41	838.68			
	805.86	804.36	838.21			
6+000	805.81	804.31	837.74			
	805.78	804.28	837.27			
	805.79	804.29	836.81			
	805.87	804.37	836.34			
6+100	805.89	804.39	835.87			
	805.65	804.15	835.41			
	805.42	803.92	834.94			
	804.42	802.92	834.47			
6+200	803.14	801.64	834.00			
	801.96	800.46	833.54			
	801.02	799.52	833.07			
	800.07	798.57	832.60			
6+300	799.11	797.61	832.14			
	798.16	796.66	831.67			
	797.43	795.93	831.20			
	796.98	795.48	830.73			
6+400	796.52	795.02	830.27			
6+408	796.37	794.87	830.12			

EXISTING KANJUKI TANK

General Notes

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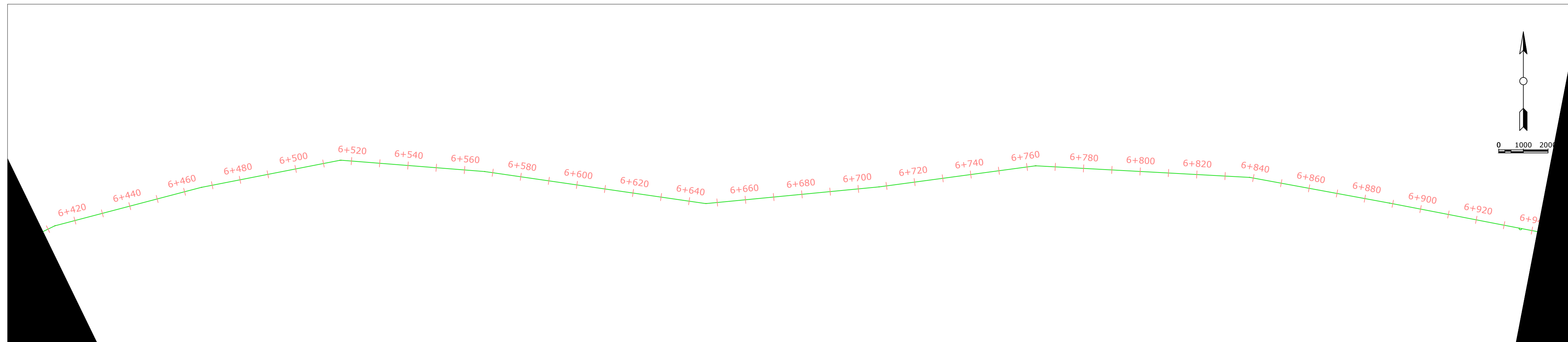
1	Surveyed by:	GISO Maina
2	Drawn By	GISO Maina
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No.	Revision/Issue	Date

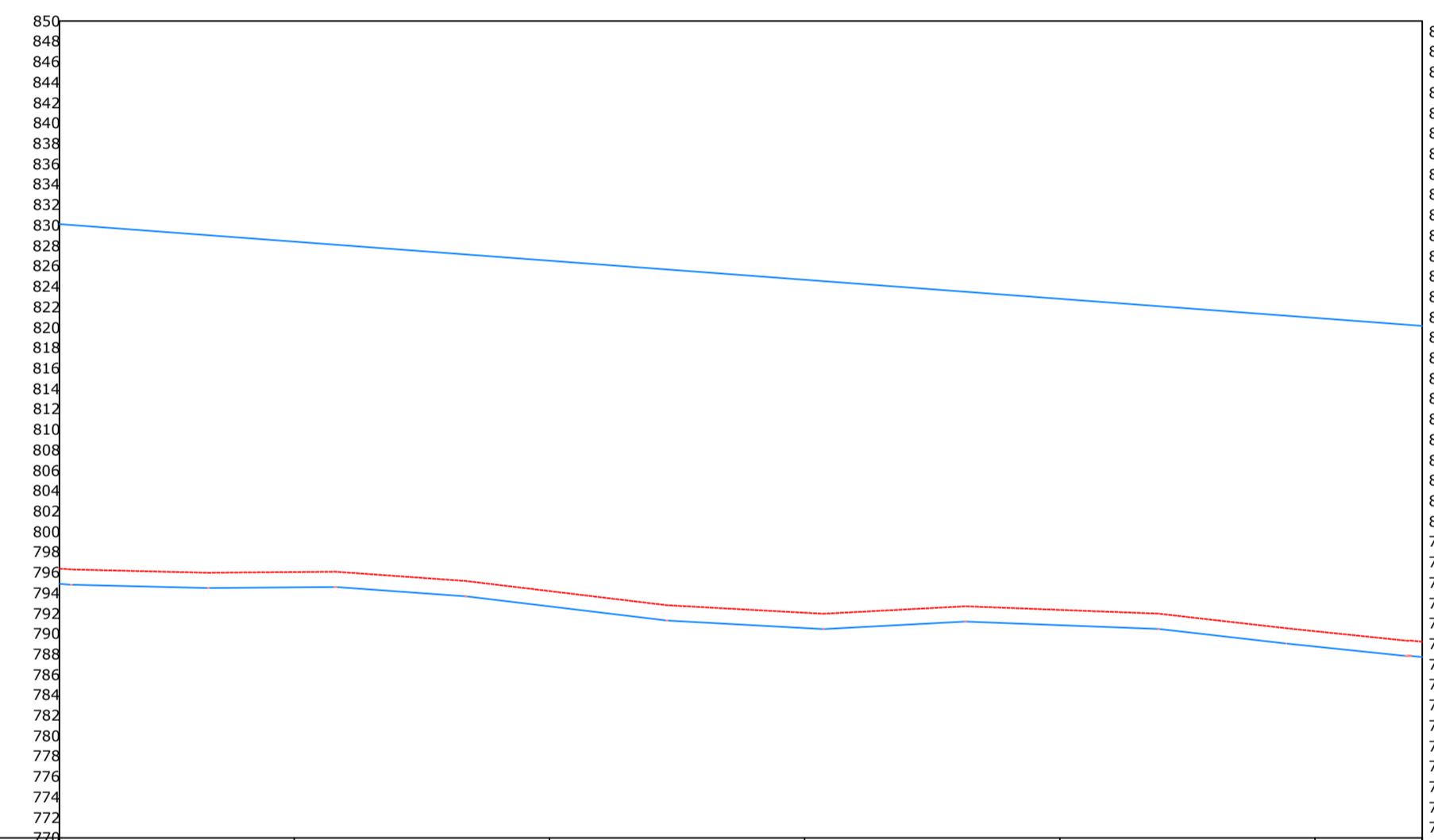
Firm Name and Address  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	12
Date	13.04.2022	Scale	
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KANJUKI PROFILE



CHAINAGE	6+408	6+420	6+440	6+460	6+480	6+500	6+520	6+540	6+560	6+580	6+600	6+620	6+640	6+660	6+680	6+700	6+720	6+740	6+760	6+780	6+800	6+820	6+840	6+860	6+880	6+900	6+920	6+942		
ORIGINAL GROUND LEVEL	796.37	796.21	796.06	795.98	796.04	795.91	795.47	794.92	794.17	793.42	792.73	792.39	792.05	792.18	792.51	792.57	792.33	792.09	791.64	790.92	790.24	789.59	789.21	789.21	789.21	789.21	789.21	789.21	789.21	
PIPE INVERT LEVEL	794.87	794.71	794.56	794.48	794.54	794.41	793.97	793.42	792.67	791.92	791.23	790.89	790.55	790.68	791.01	791.07	790.83	790.59	790.14	789.42	788.74	788.09	787.71	787.71	787.71	787.71	787.71	787.71	787.71	787.71
HYDRAULIC GRADE LEVEL	830.12	829.80	829.33	828.87	828.40	827.93	827.46	827.00	826.53	826.06	825.60	825.13	824.66	824.20	823.73	823.26	822.79	822.33	821.86	821.39	820.93	820.46	820.00	819.53	819.06	818.59	818.12	817.65	817.18	816.71
FLOW PARAMETERS	0.031412037M^3/S																													
PIPE INFO	HDPE 225 mm PN 10																													
SURVEY REMARKS																														

General Notes

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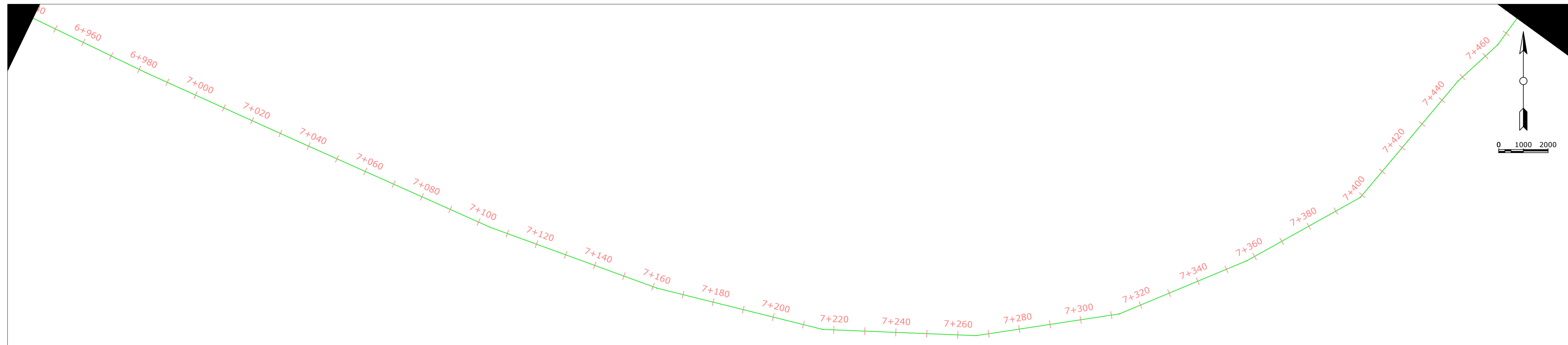
1	Surveyed by:	GISO Maina
2	Drawn By	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By	Eng Erastus Waweru

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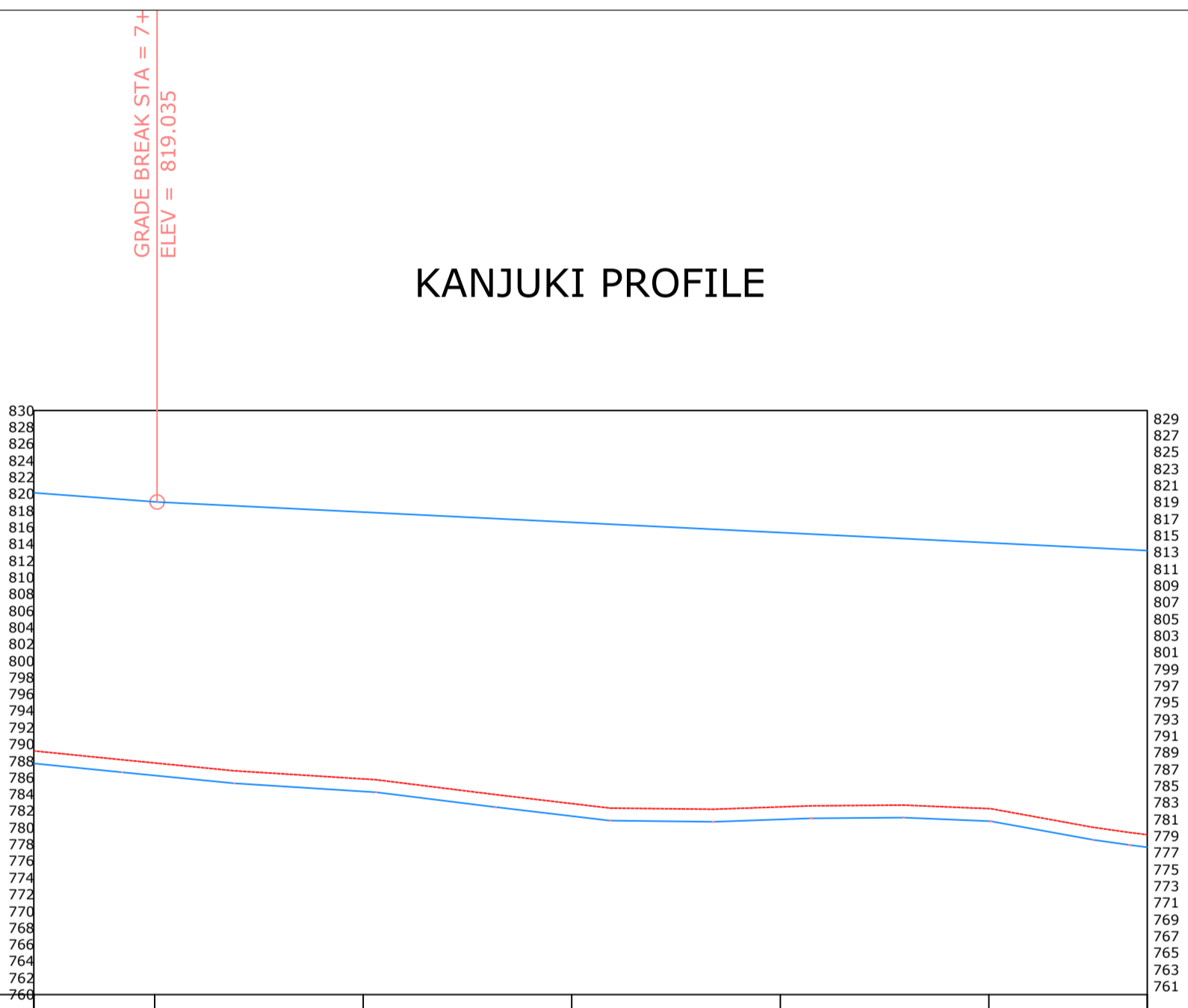
Firm Name and Address  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	13
Date	13.04.2022	Scale	
Scale	1:1000		



KANJUKI PROFILE



CHAINAGE	6+942	7+000	7+100	7+200	7+300	7+400	7+476
ORIGINAL GROUND LEVEL	820.21	819.38	817.76	815.85	812.89	811.18	809.05
PIPE INVERT LEVEL	787.51	786.88	786.26	785.64	784.99	784.15	782.55
HYDRAULIC GRADE LEVEL	819.52	819.06	818.74	818.44	818.13	817.82	817.52
FLOW PARAMETERS							
PIPE INFO							
SURVEY REMARKS							

General Notes

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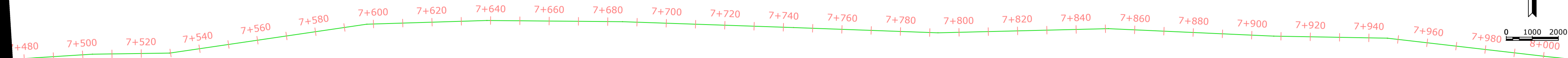
1	Surveyed by:	GISO Maina
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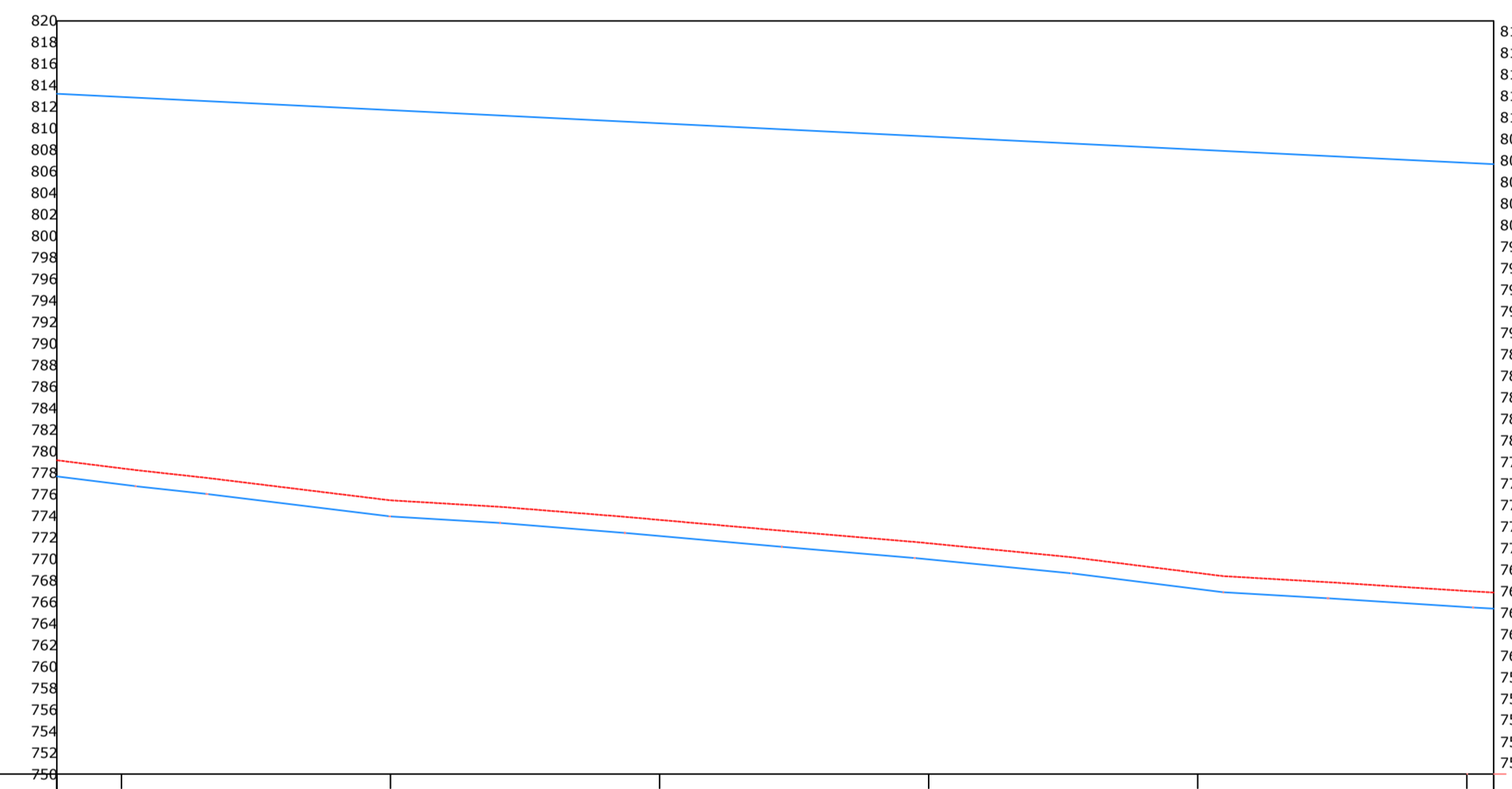
Firm Name and Address  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	14
Date	13.04.2022	Scale	1:1000



KANJUKI PROFILE



CHAINAGE	7+476	7+500	7+520	7+540	7+560	7+580	7+600	7+620	7+640	7+660	7+680	7+700	7+720	7+740	7+760	7+780	7+800	7+820	7+840	7+860	7+880	7+900	7+920	7+940	7+960	7+980	8+000	8+010	
ORIGINAL GROUND LEVEL	779.16	778.42	777.71	776.97	776.20	775.44	775.07	774.65	774.15	773.62	773.07	772.52	771.99	771.45	770.84	770.23	769.47	768.69	768.17	767.81	767.41	767.01	766.87	766.87	766.87	766.87	766.87	766.87	766.87
PIPE INVERT LEVEL	777.66	776.92	776.21	775.47	774.70	773.94	773.57	773.15	772.65	772.12	771.57	771.02	770.49	769.95	769.34	768.73	767.97	767.19	766.67	766.31	765.91	765.51	765.37	765.37	765.37	765.37	765.37	765.37	765.37
HYDRAULIC GRADE LEVEL	813.22	812.93	812.62	812.31	812.01	811.70	811.40	811.09	810.78	810.48	810.17	809.86	809.56	809.25	808.95	808.64	808.33	808.03	807.72	807.42	807.11	806.80	806.68	806.68	806.68	806.68	806.68	806.68	806.68
FLOW PARAMETERS	0.031412037M <sup>3</sup> /S																												
PIPE INFO	HDPE 225 mm PN 10																												
SURVEY REMARKS																													

General Notes

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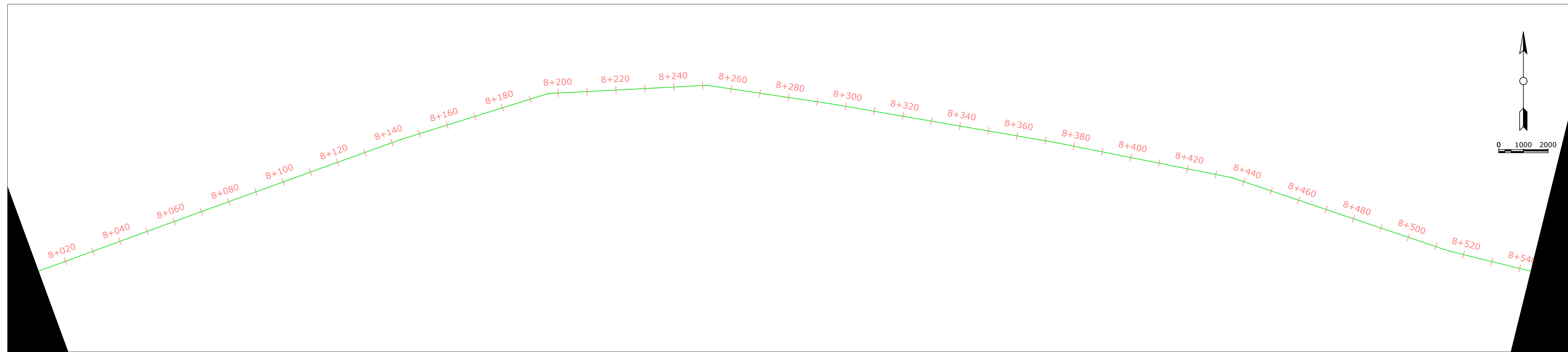
1	Surveyed by:	GISO Maina
2	Drawn By	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By	Eng Erastus Waweru

No.	Revision/Issue	Date

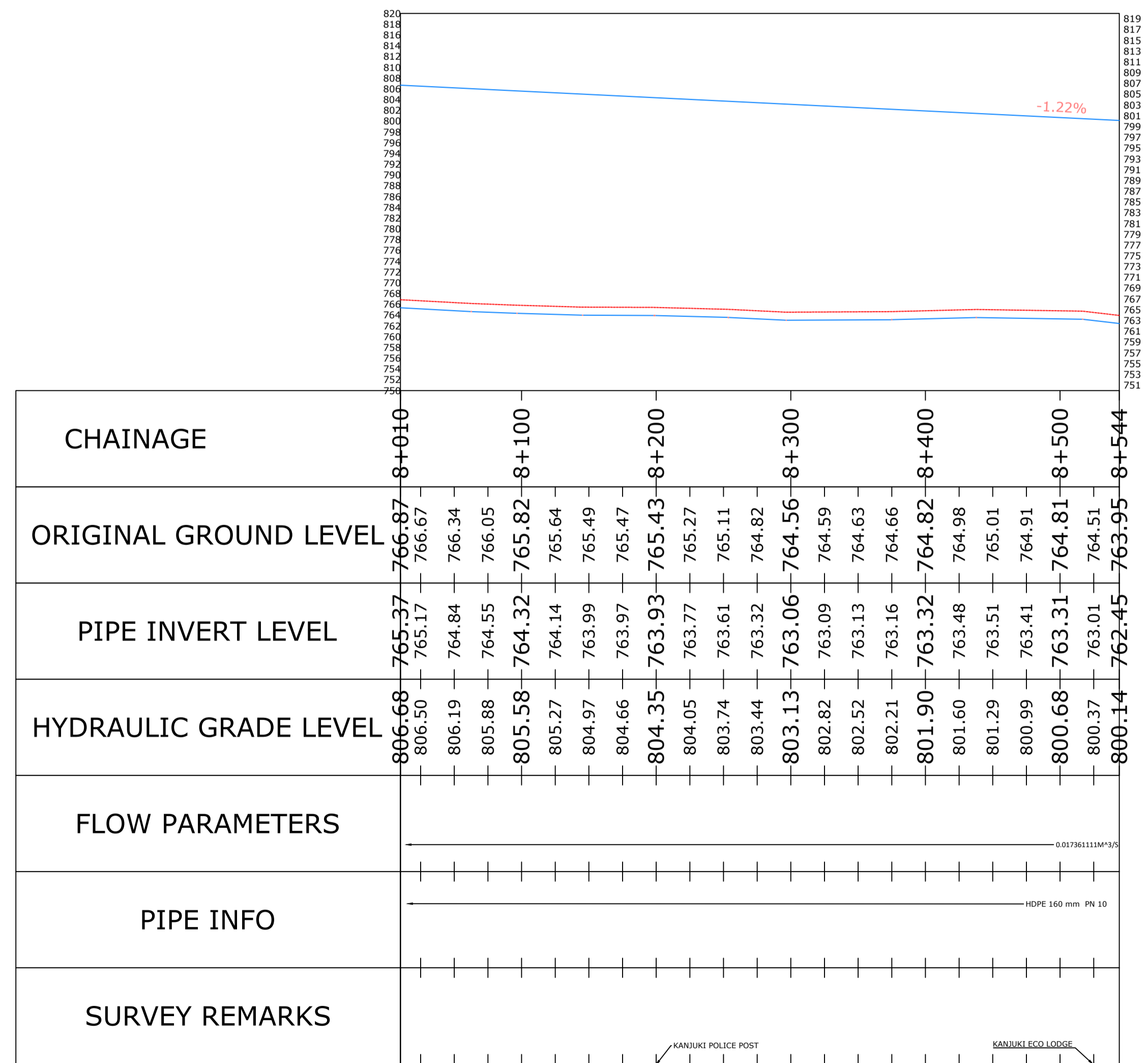
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	15
Date	13.04.2022	Scale	
Scale	1:1000		



KANJUKI PROFILE



General Notes

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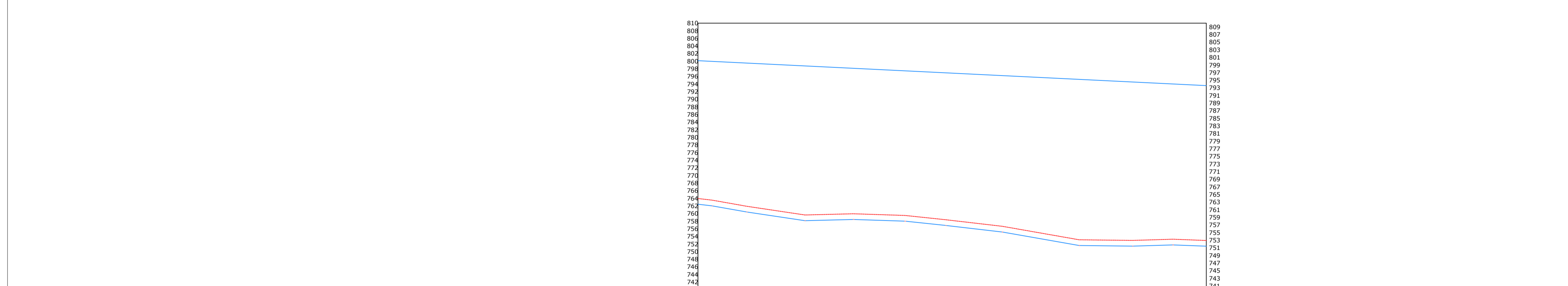
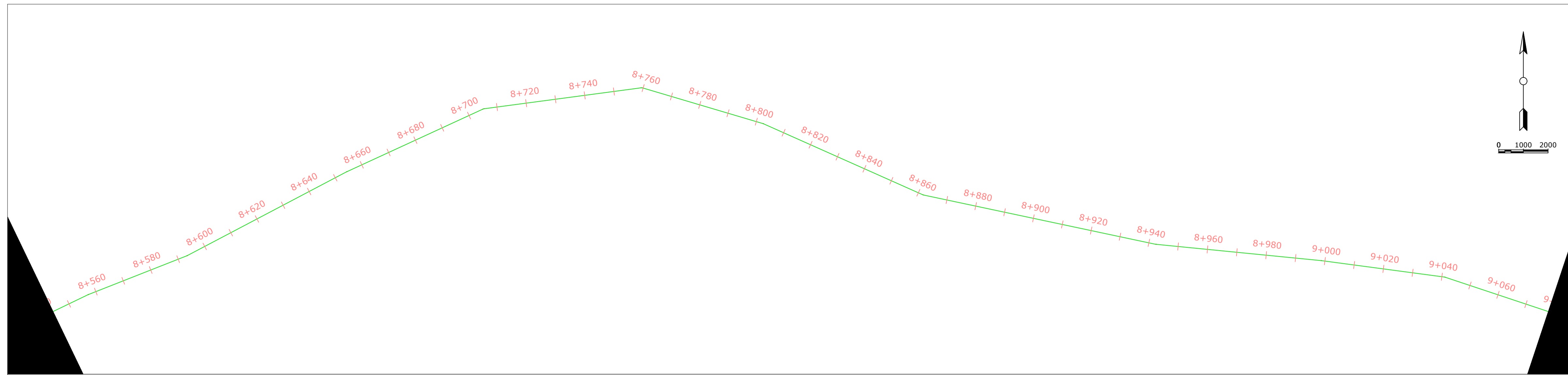
No.	Revision/Issue	Date

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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
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 THARAKA NITHI COUNTY

Project	Sheet
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13.04.2022	1:1000





CHAINAGE	8+544	8+600	8+700	8+800	8+900	9+000	9+078
ORIGINAL GROUND LEVEL	763.95	761.74	759.90	758.49	755.07	752.95	752.93
PIPE INVERT LEVEL	762.45	760.24	758.40	756.99	753.57	751.45	751.48
HYDRAULIC GRADE LEVEL	799.76	799.46	798.23	797.01	795.78	794.56	793.60
FLOW PARAMETERS	0.031412037M <sup>3</sup> /S						
PIPE INFO	HDPE 225 mm PN 10						
SURVEY REMARKS							

General Notes

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2	Drawn By	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By	Eng Erastus Waweru

No.	Revision/Issue	Date

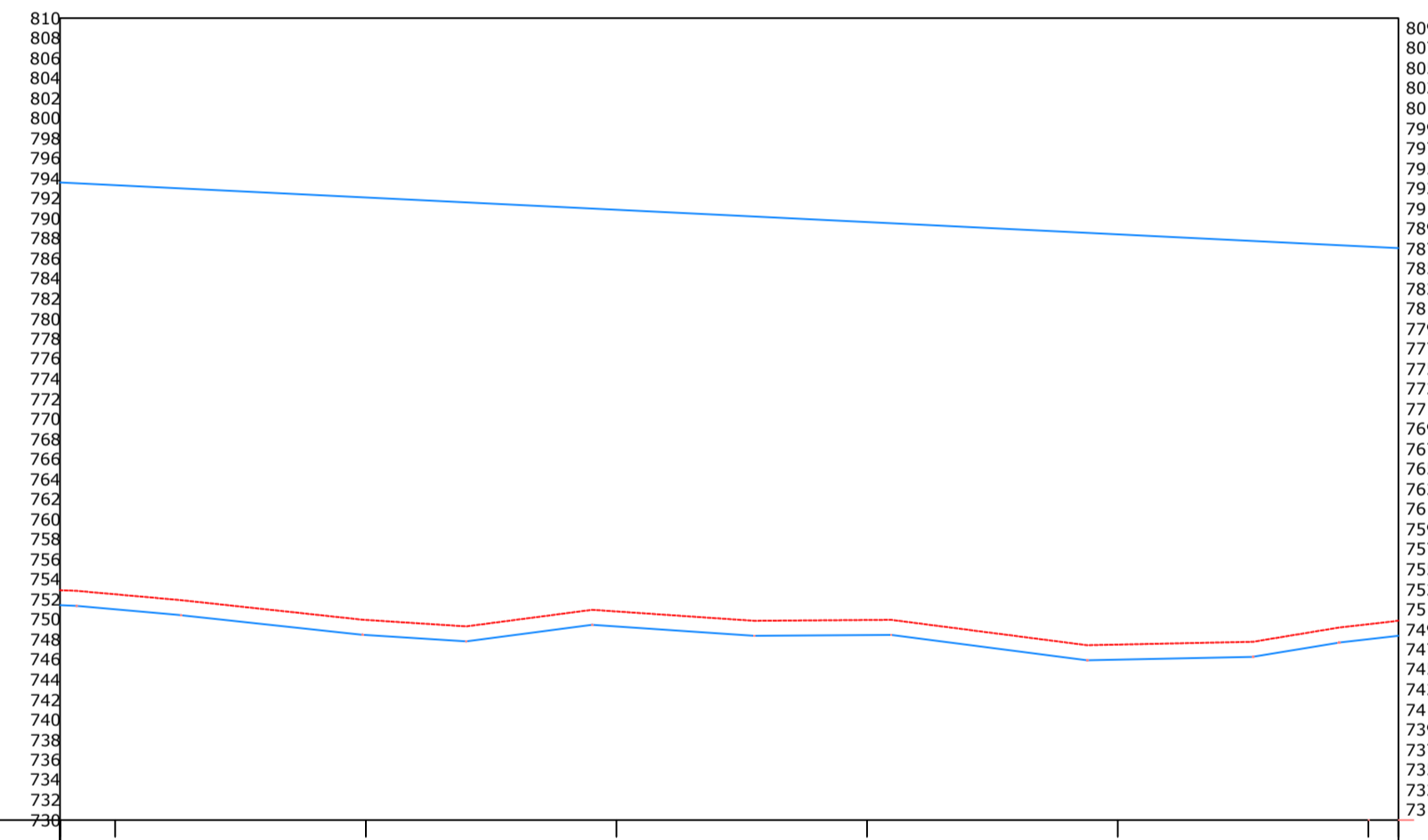
Firm Name and Address  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	17
Date	13.04.2022	Scale	
Scale	1:1000		



KANJUKI PROFILE



CHAINAGE	9+078	9+100	9+120	9+140	9+160	9+180	9+200	9+220	9+240	9+260	9+280	9+300	9+320	9+340	9+360	9+380	9+400	9+420	9+440	9+460	9+480	9+500	9+520	9+540	9+560	9+580	9+600	9+612	
ORIGINAL GROUND LEVEL	752.93	752.52	751.96	751.30	750.62	749.96	749.56	749.65	750.47	750.81	750.38	749.96	749.91	749.47	748.66	747.85	747.50	747.63	747.76	748.65	749.54	749.88	749.88	749.88	749.88	749.88	749.88	749.88	749.88
PIPE INVERT LEVEL	751.43	751.02	750.46	749.80	749.12	748.46	748.06	748.15	748.97	749.31	748.88	748.46	748.41	748.45	747.16	746.35	746.00	746.13	746.26	747.15	748.04	748.38	748.38	748.38	748.38	748.38	748.38	748.38	748.38
HYDRAULIC GRADE LEVEL	793.60	793.33	793.03	792.72	792.41	792.11	791.80	791.49	791.19	790.88	790.58	790.27	789.96	789.66	789.35	789.05	788.74	788.43	788.13	787.82	787.51	787.21	787.06	787.06	787.06	787.06	787.06	787.06	787.06
FLOW PARAMETERS																													
PIPE INFO																													
SURVEY REMARKS																													

General Notes

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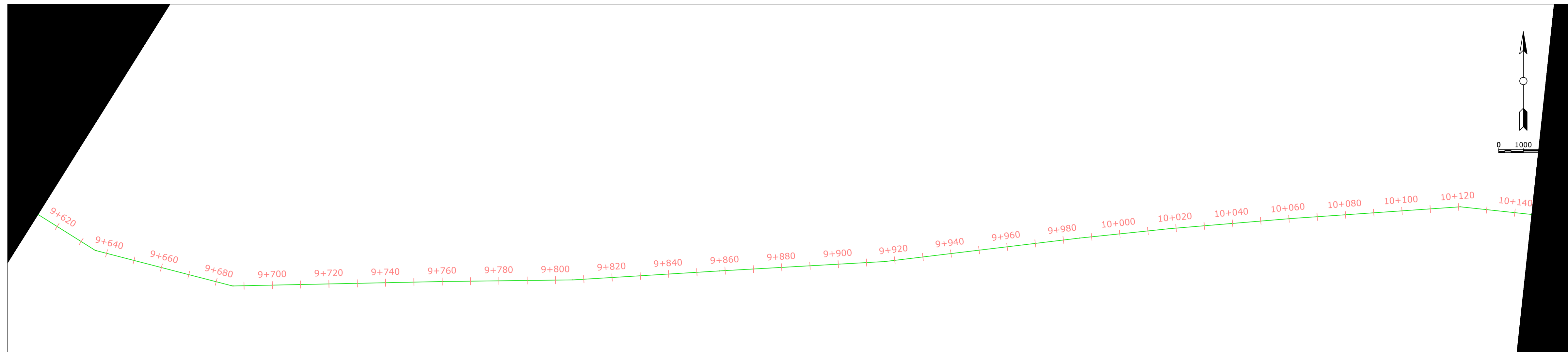
1	Surveyed by:	GISO Maina
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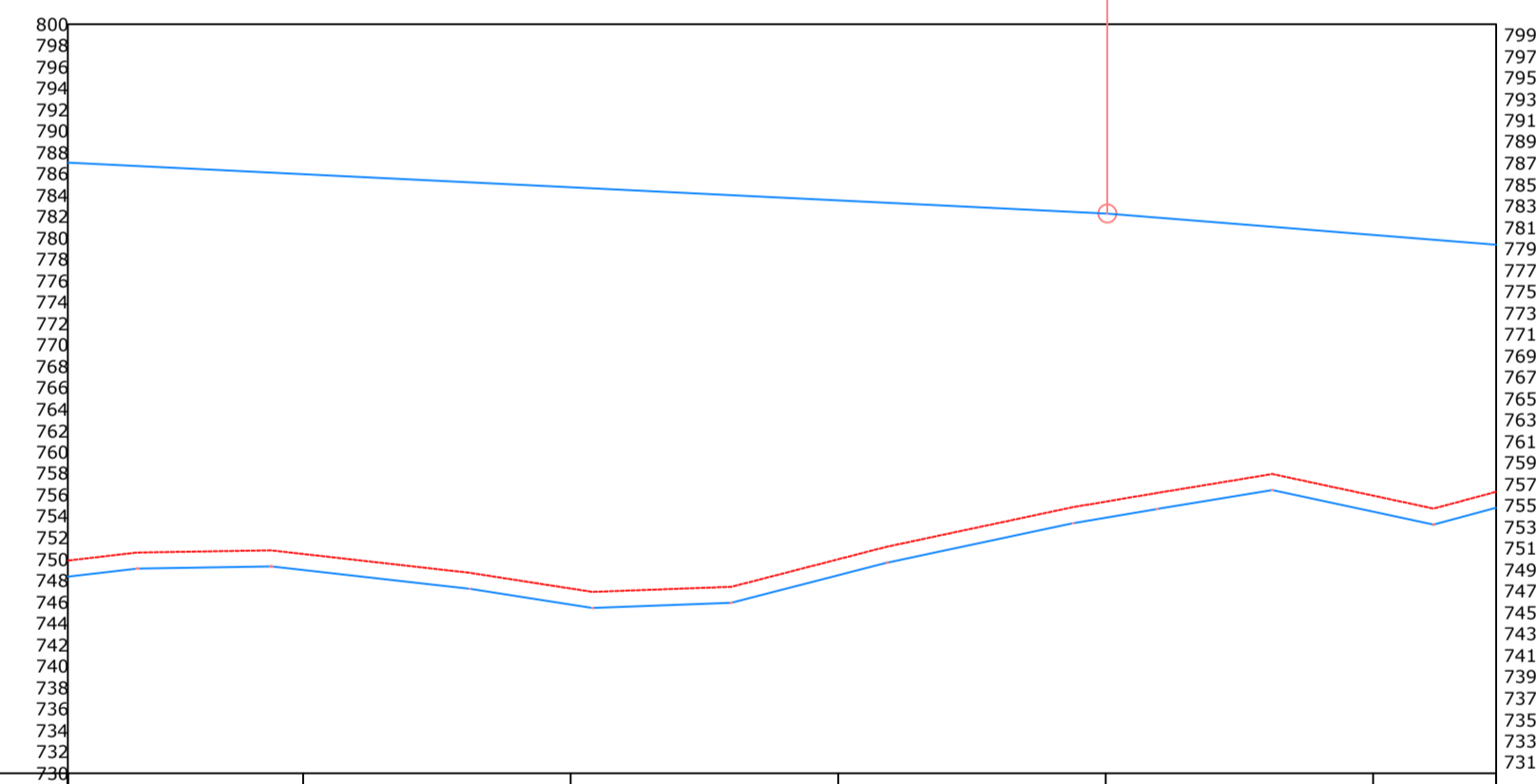
Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	18
Date	13.04.2022	Scale	1:1000



KANJUKI PROFILE

GRADE BREAK STA = 10+000.57  
ELEV = 782.303



CHAINAGE	9+612	9+700	9+800	9+900	10+000	10+100	10+146
ORIGINAL GROUND LEVEL	749.88	750.78	750.49	750.00	755.39	755.95	756.31
PIPE INVERT LEVEL	748.38	749.28	748.99	748.50	753.89	754.45	754.81
HYDRAULIC GRADE LEVEL	787.06	786.60	785.98	783.53	782.31	780.31	779.39
FLOW PARAMETERS	0.01376111M <sup>3</sup> /S						
PIPE INFO	HDPE 160 mm PN 10						
SURVEY REMARKS							

General Notes

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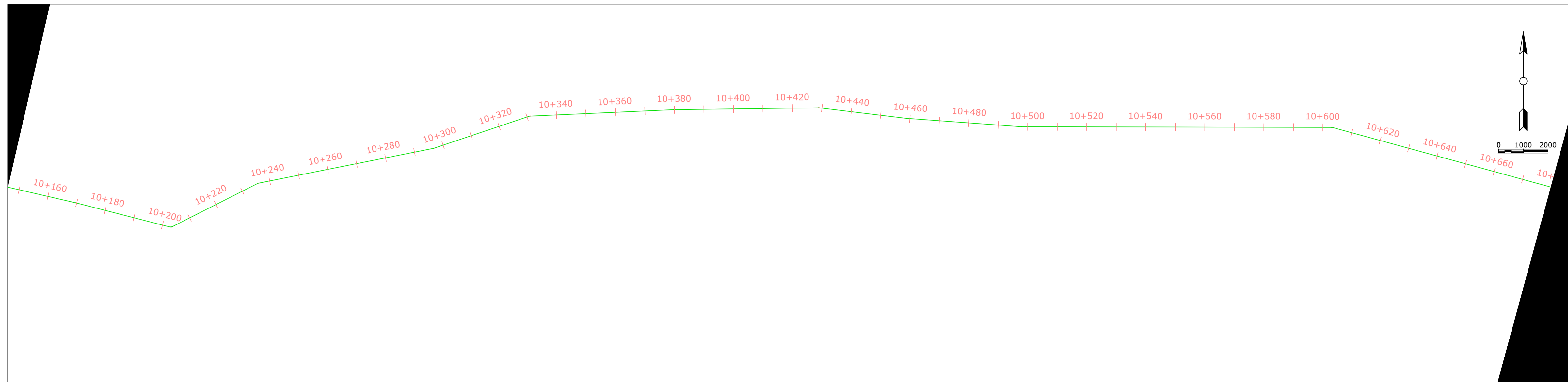
1	Surveyed by:	GISO Maina
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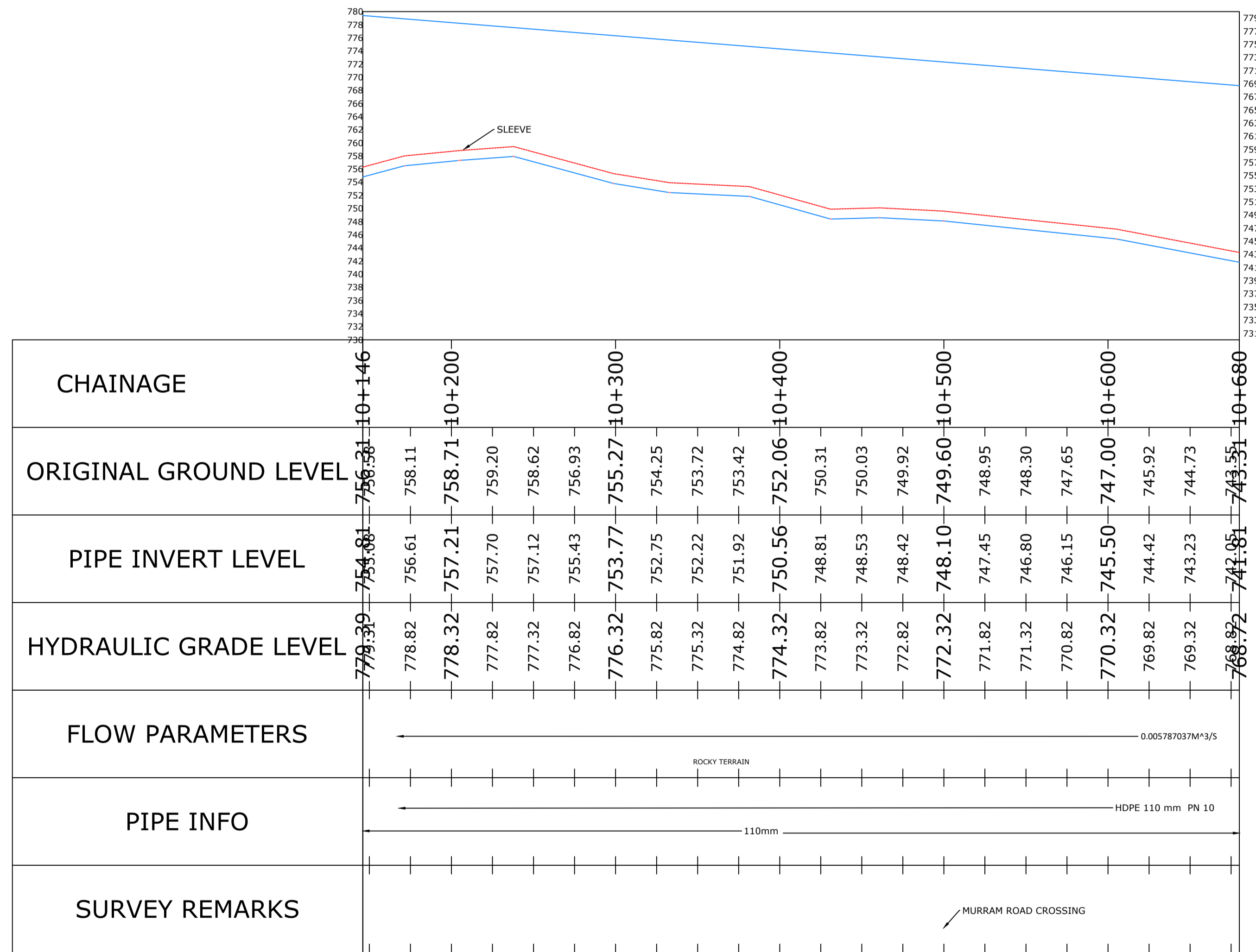
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Project Name and Address  
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 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
WATER PROJECT	19
Date	13.04.2022
Scale	1:1000



KANJUKI PROFILE



General Notes

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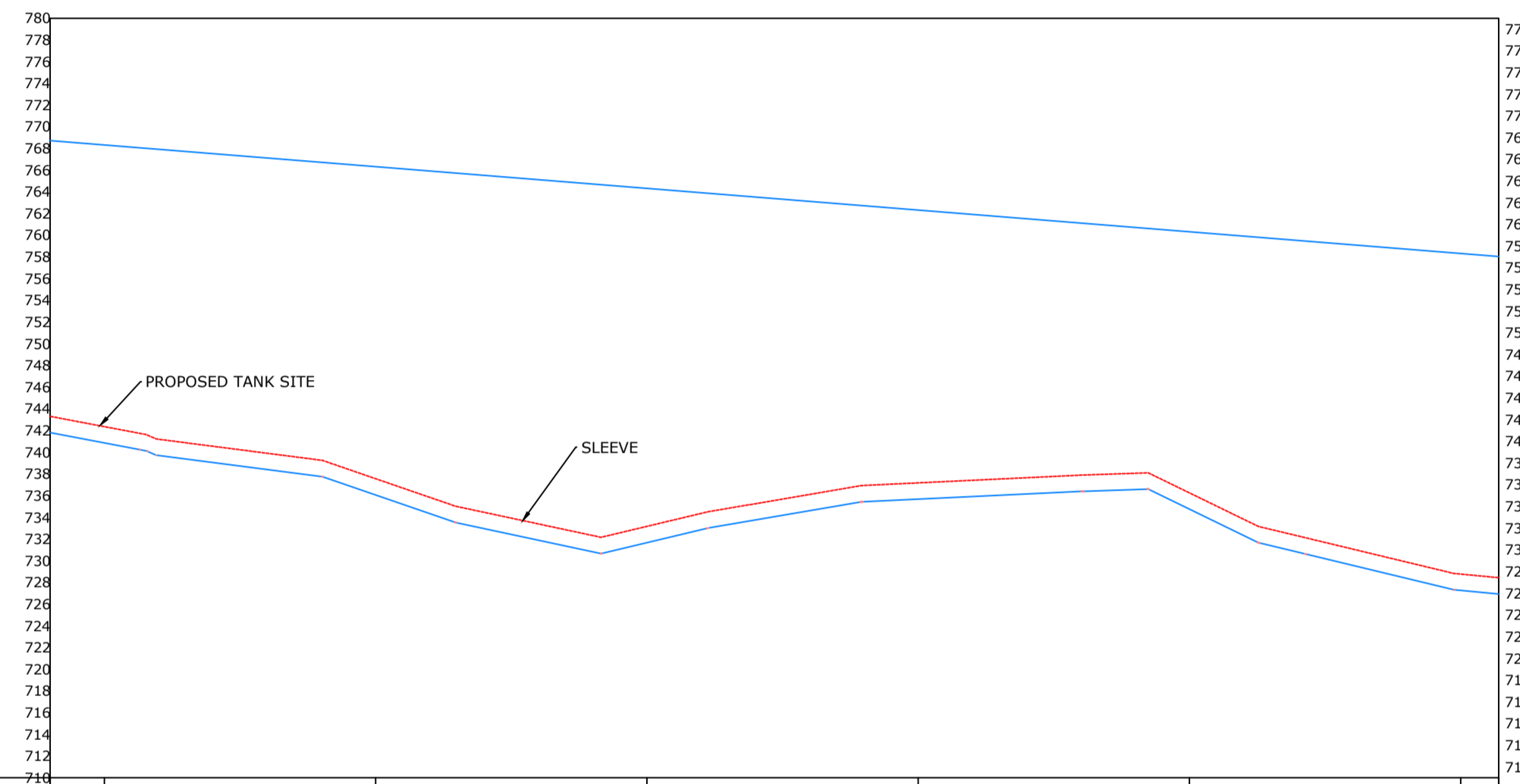
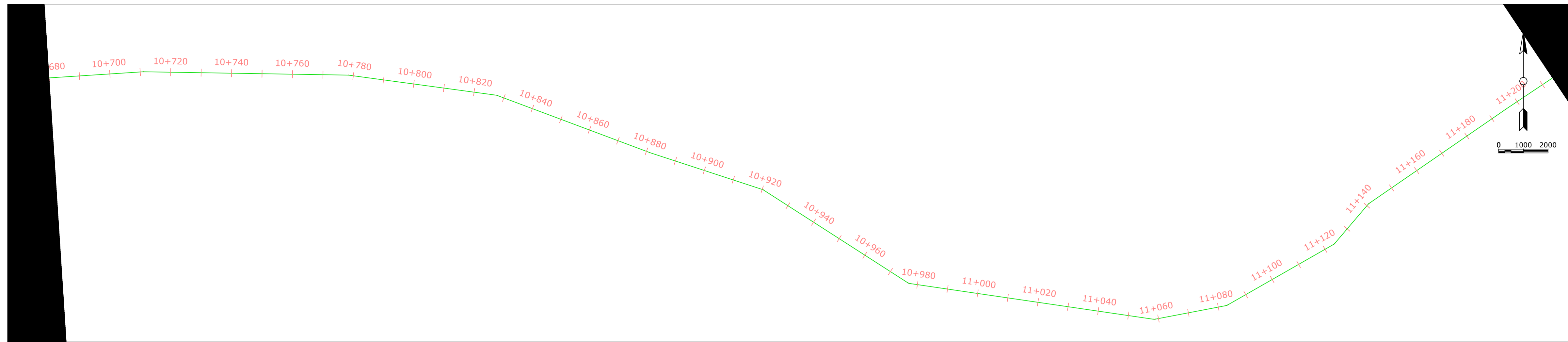
1	Surveyed by:	GISO Maina
2	Drawn By	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By	Eng Erastus Waweru

No.	Revision/Issue	Date

Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
 +254 61-2032282  
 Email: info@tanawwda.go.ke  
 Website: www.tanawwda.go.ke

Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	20
Date	13.04.2022	Scale	1:1000



CHAINAGE	10+680	10+700	10+720	10+740	10+760	10+780	10+800	10+820	10+840	10+860	10+880	10+900	10+920	10+940	10+960	10+980	11+000	11+020	11+040	11+060	11+080	11+100	11+120	11+140	11+160	11+180	11+200	
ORIGINAL GROUND LEVEL	743.31	742.36	741.03	740.23	739.42	737.56	735.41	733.93	732.59	733.17	734.62	735.68	737.18	737.47	737.77	738.02	736.26	733.21	731.69	730.18	728.77	727.27	728.44	726.94	728.44	726.94	728.44	726.94
PIPE INVERT LEVEL	741.81	740.86	739.53	738.73	737.92	736.06	733.91	732.43	731.09	731.67	733.12	734.18	735.25	735.68	736.27	736.52	734.76	731.71	730.19	728.68	727.27	727.27	726.94	726.94	726.94	726.94	726.94	726.94
HYDRAULIC GRADE LEVEL	768.72	768.32	767.82	767.32	766.82	766.32	765.82	765.32	764.82	764.32	763.82	763.32	762.82	762.32	761.82	761.32	760.82	759.82	759.32	758.82	758.32	757.82	757.32	756.82	756.32	755.82	755.32	754.82
FLOW PARAMETERS	0.005787037M <sup>3</sup> /S																											
PIPE INFO	HDPE 110 mm PN 10																											
SURVEY REMARKS	KIRIMANCARI PRIMARY SCHOOL																											

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
 b) more cralification can be sort from the PEPTD

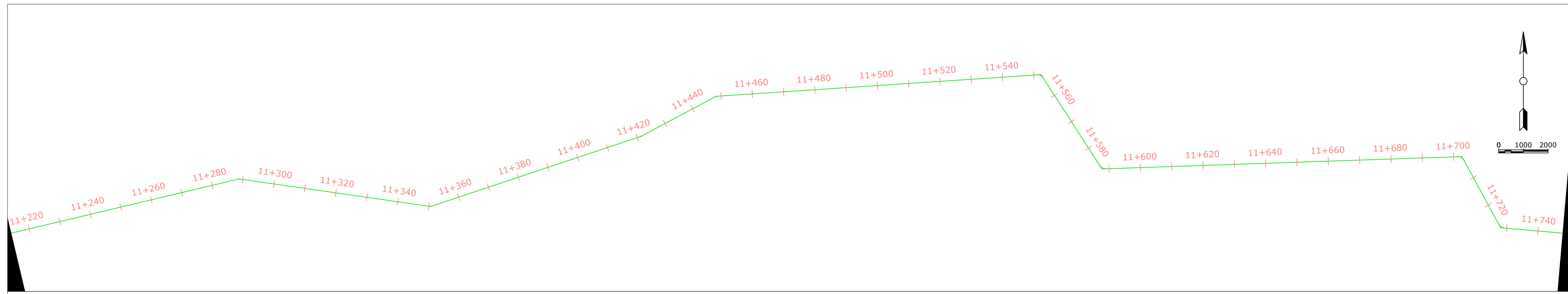
1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

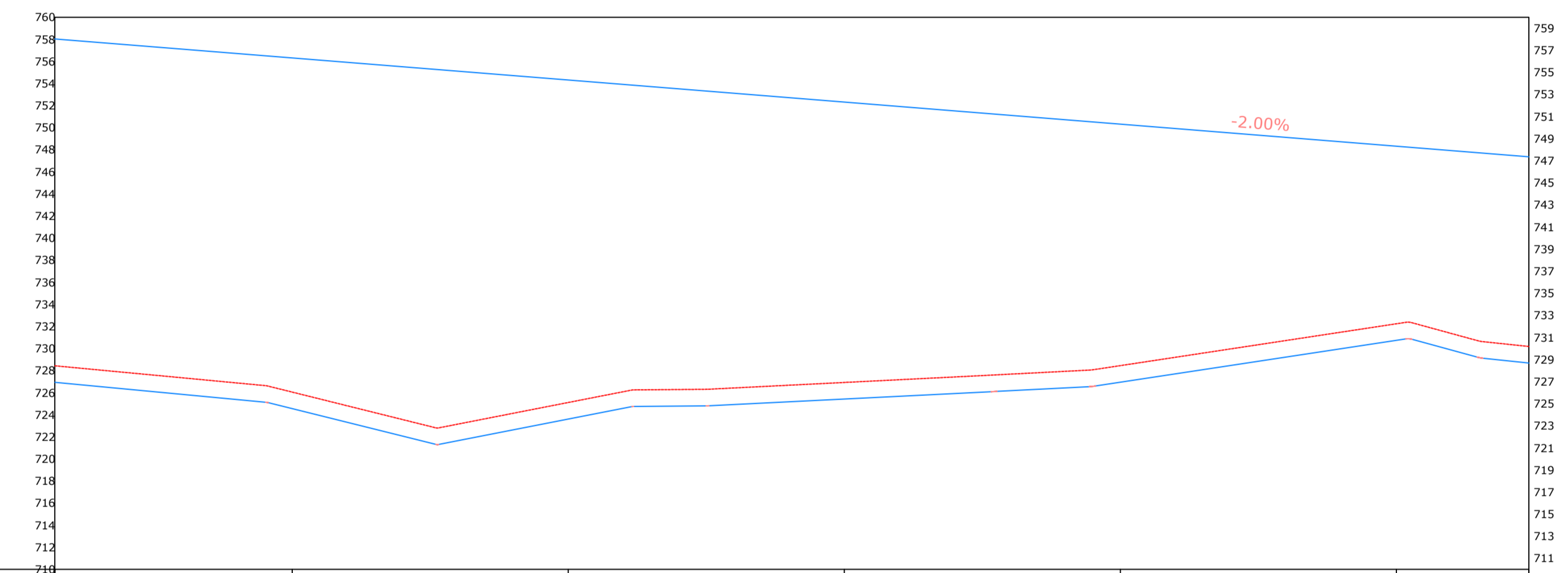
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	21
Date	13.04.2022	Scale	
Scale	1:1000		



KANJUKI PROFILE



CHAINAGE	11+214	11+220	11+240	11+260	11+280	11+300	11+320	11+340	11+360	11+380	11+400	11+420	11+440	11+460	11+480	11+500	11+520	11+540	11+560	11+580	11+600	11+620	11+640	11+660	11+680	11+700	11+720	11+740	
ORIGINAL GROUND LEVEL	728.44	728.18	727.59	727.00	726.06	724.50	722.95	723.89	725.11	726.26	726.31	726.62	726.93	727.24	727.55	727.87	728.45	729.40	730.35	731.30	732.24	731.01	730.19	728.69	730.19	730.19	730.19	730.19	730.19
PIPE INVERT LEVEL	726.94	726.68	726.09	725.50	724.56	723.00	721.45	722.39	723.61	724.76	724.81	725.12	725.43	725.74	726.05	726.37	726.95	727.90	728.85	729.80	730.74	729.51	728.69	728.69	728.69	728.69	728.69	728.69	728.69
HYDRAULIC GRADE LEVEL	758.04	757.82	757.32	756.82	756.32	755.82	755.32	754.82	754.32	753.82	753.32	752.82	752.32	751.82	751.32	750.82	750.32	749.82	749.32	748.82	748.32	747.82	747.32	746.82	746.32	745.82	745.32	744.82	744.32
FLOW PARAMETERS																													
PIPE INFO																													
SURVEY REMARKS																													

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
 b) more cralification can be sort from the PEPTD

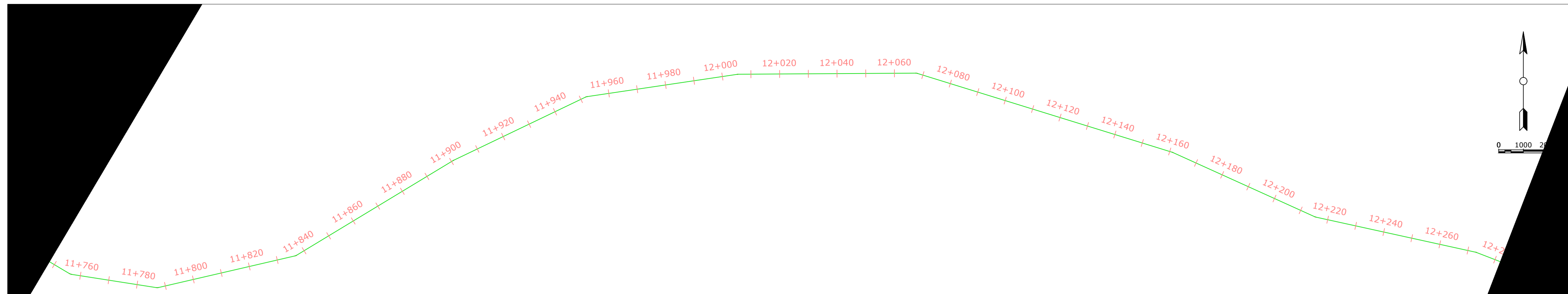
1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

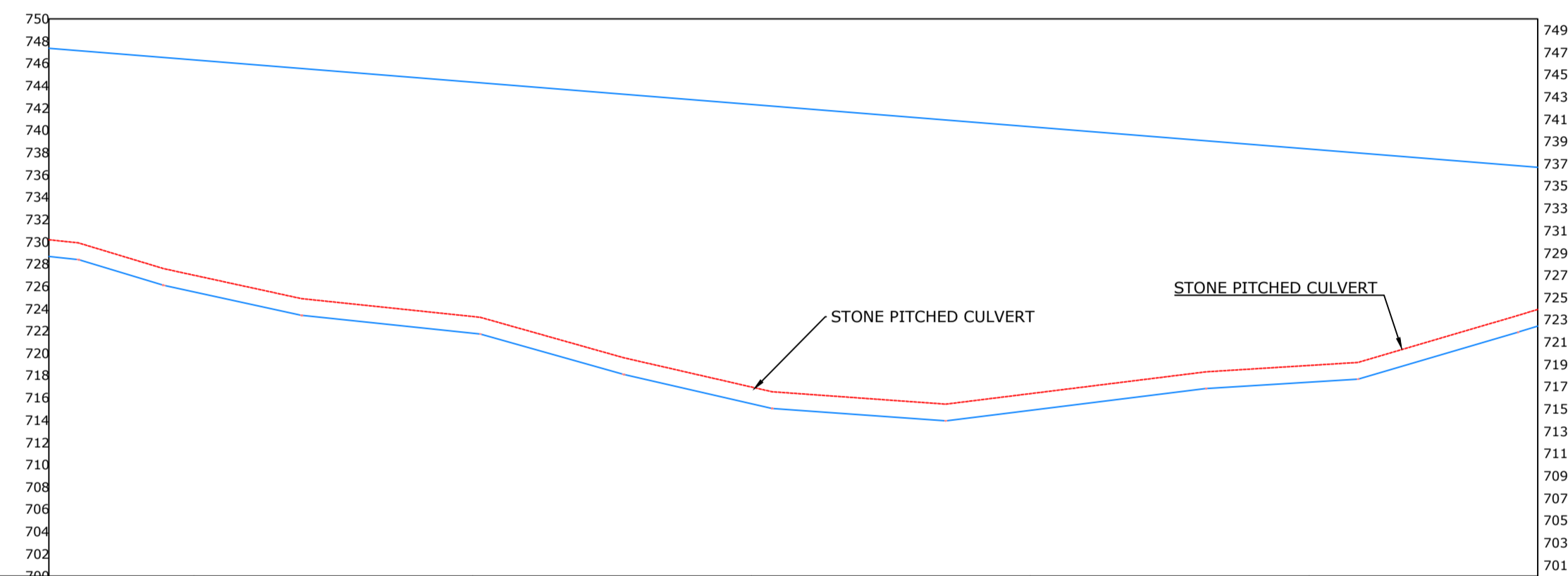
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
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 Website: www.tanawwda.go.ke

Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
WATER PROJECT	22
Date	13.04.2022
Scale	1:1000



KANJUKI PROFILE



CHAINAGE	ORIGINAL GROUND LEVEL	PIPE INVERT LEVEL	HYDRAULIC GRADE LEVEL	FLOW PARAMETERS	PIPE INFO	SURVEY REMARKS
11+748	730.19	728.69	747.36			
	728.67	727.17	746.82			
11+800	727.01	725.51	746.32			
	725.65	724.15	745.82			
	724.61	723.11	745.32			
	723.95	722.45	744.82			
11+900	723.30	721.80	744.32			
	721.66	720.16	743.82			
	719.90	718.40	743.32			
	718.41	716.91	742.82			
12+000	716.97	715.47	742.32			
	716.24	714.74	741.82			
	715.79	714.29	741.32			
	715.60	714.10	740.82			
12+100	716.38	714.88	740.32			
	717.16	715.66	739.82			
	717.93	716.43	739.32			
	718.52	717.02	738.82			
12+200	718.91	717.41	738.32	0.002893519M <sup>3</sup> /S		
	719.73	718.23	737.82			
	721.56	720.06	737.32			
12+282	723.40	721.90	736.82			
	723.94	722.44	736.68			
					HDPE 90 mm PN 10	

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
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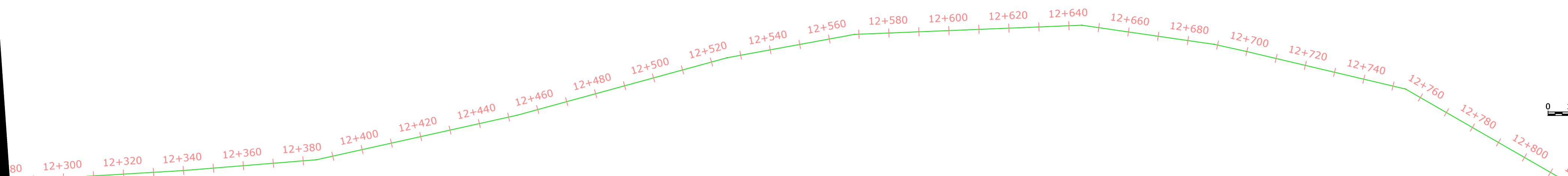
1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

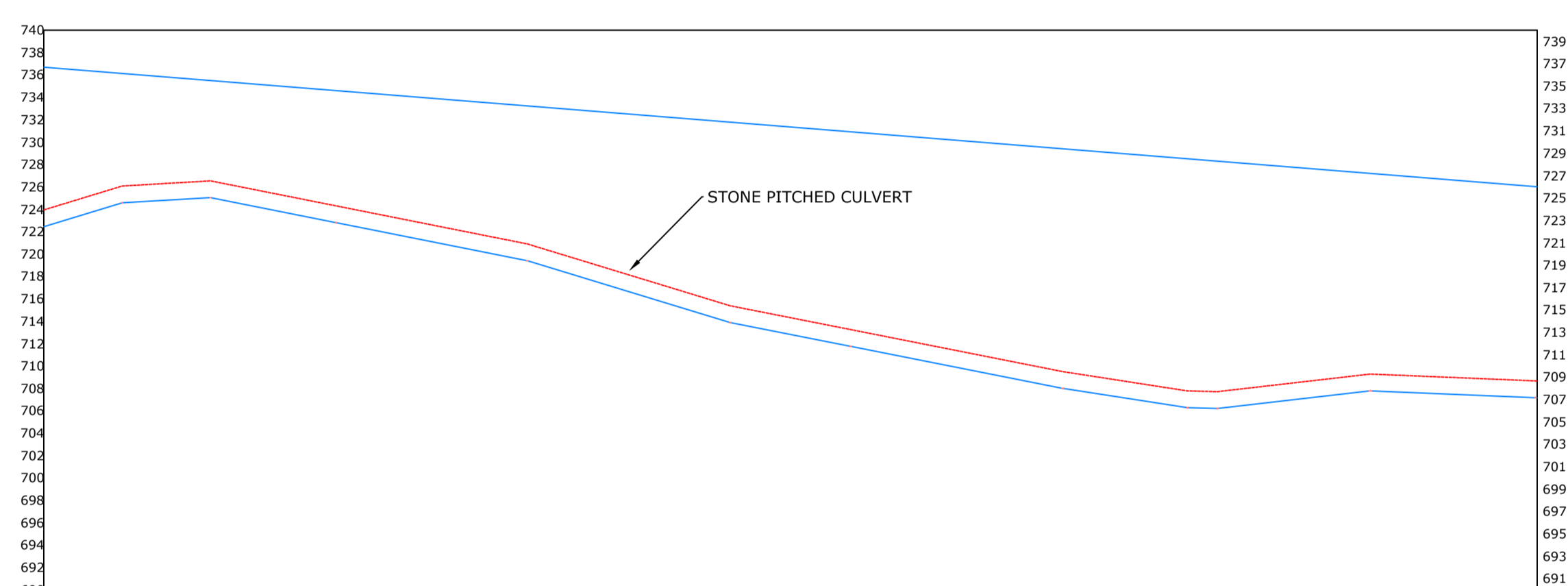
Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
WATER PROJECT	23
Date	Scale
13.04.2022	1:1000



KANJUKI PROFILE



CHAINAGE	12+282	12+300	12+320	12+340	12+360	12+380	12+400	12+420	12+440	12+460	12+480	12+500	12+520	12+540	12+560	12+580	12+600	12+620	12+640	12+660	12+680	12+700	12+720	12+740	12+760	12+780	12+800	12+816
ORIGINAL GROUND LEVEL	723.94	725.31	726.29	726.12	724.87	723.63	722.39	721.14	719.37	717.47	715.56	714.26	713.03	711.79	710.55	709.36	708.39	707.72	706.88	706.88	707.59	709.09	709.08	708.83	708.83	708.65	708.65	
PIPE INVERT LEVEL	722.44	723.81	724.79	724.62	723.37	722.13	720.89	719.64	717.87	715.97	714.06	712.76	711.53	710.29	709.05	707.86	706.89	706.22	706.22	706.88	707.59	709.09	709.08	708.83	708.83	708.65	708.65	
HYDRAULIC GRADE LEVEL	736.68	736.32	735.82	735.32	734.82	734.32	733.82	733.32	732.82	732.32	731.82	731.32	730.82	730.32	729.82	729.32	728.82	728.32	727.82	727.32	726.83	726.33	726.01	726.01	726.01	726.01	726.01	
FLOW PARAMETERS	0.002893519M <sup>3</sup> /S																											
PIPE INFO	HDPE 90 mm PN 10																											
SURVEY REMARKS																												

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
 b) more cralification can be sort from the PEPTD

1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

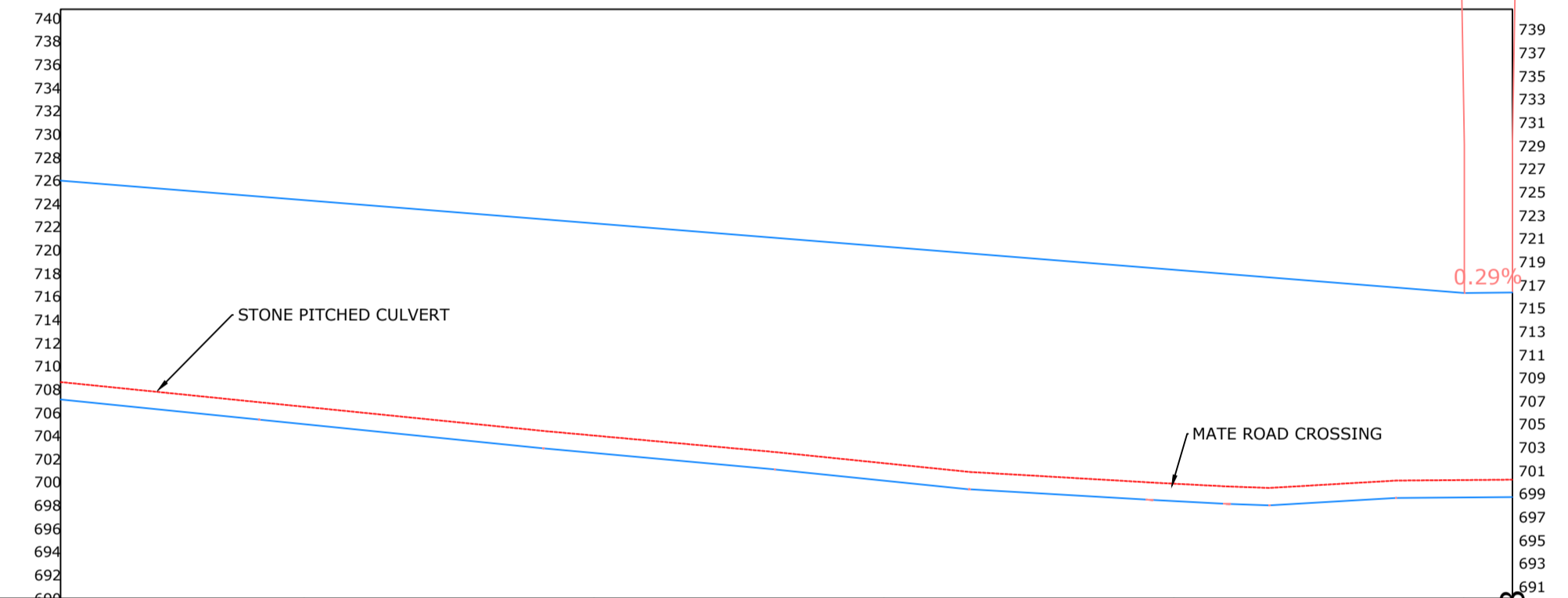
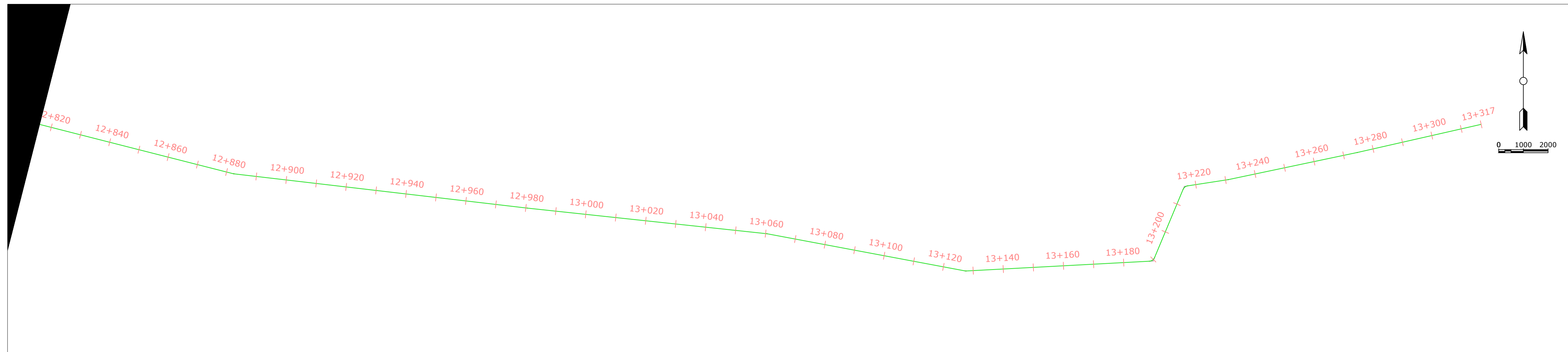
No.	Revision/Issue	Date

Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
 Nyeri, Kenya  
 +254 724 259 891, +254 61 2034118  
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 Email: info@tanawwda.go.ke  
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Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	WATER PROJECT	Sheet	24
Date	13.04.2022	Scale	
Scale	1:1000		





CHAINAGE	ORIGINAL GROUND LEVEL	PIPE INVERT LEVEL	HYDRAULIC GRADE LEVEL	FLOW PARAMETERS	PIPE INFO	SURVEY REMARKS
12+816	708.65	707.15	726.01			
	708.42	706.92	725.83			
	707.79	706.29	725.33			
	707.15	705.65	724.83			
12+900	706.52	705.02	724.33			
	705.89	704.39	723.83			
	705.26	703.76	723.33			
	704.63	703.13	722.83			
13+000	704.04	702.54	722.33			
	703.47	701.97	721.83			
	702.90	701.40	721.33			
	702.30	700.80	720.83			
13+100	701.66	700.16	720.33			
	701.02	699.52	719.83			
	700.61	699.11	719.33			
	700.24	698.74	718.83			
13+200	699.89	698.39	718.33			
	699.60	698.10	717.83	0.002893519M <sup>3</sup> /S	HDPE 90 mm PN 10	
	699.77	698.27	717.33			
	700.14	698.64	716.83			
13+300	700.20	698.70	716.33			
13+316.78	700.24	698.74	716.37			KARENI SHOPPING CENTRE

General Notes

- PLAN AND PROFILE  
 a) all measurements should be read not measured  
 b) more cralification can be sort from the PEPTD

1	Surveyed by:	GISO Maina
2	Drawn By:	GISO Maina
3	checked By:	BONFACE WAWERU
4	Approved By:	Eng Erastus Waweru

No.	Revision/Issue	Date

Firm Name and Address  
 MAJI HOUSE, ALONG BADEN POWELL ROAD  
 P.O. BOX, 1292 - 10100.  
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 +254 724 259 891, +254 61 2034118  
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 Email: info@tanawwda.go.ke  
 Website: www.tanawwda.go.ke

Project Name and Address  
 KANJUKI WATER SUPPLY  
 RAW WATER SUPPLY  
 CHUKA CONSTITUENCY  
 THARAKA NITHI COUNTY

Project	Sheet
WATER PROJECT	25
Date	13.04.2022
Scale	1:1000

General Notes

- NOTES:**
1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
  2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
  3. GEOLOGICAL CONDITIONS INDICATED ON DRAWING ARE FOR GENERAL GUIDANCE ONLY
  4. FOR FITTING DETAILS SEE DRG. NO. BRT/GM005

**LEGEND:**

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- K&NHA / K&RRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- ⊗ TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- LAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- ↗ DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REVISIONS		SIGN	DATE	APPROVED
D	INVERTS AT ROAD CROSSING	BY VJK	15/01	
		CHECKED BY		
		CHECKED BY		
		CHECKED BY		
		CHECKED BY		
		CHECKED BY		

CLIENT: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS  
DEVELOPMENT AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

ENGINEERS: **MANAGING DIRECTOR  
NYERI WATER AND SANITATION COMPANY**  
P.O BOX 1520 - 10100,  
NYERI, KENYA

**THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

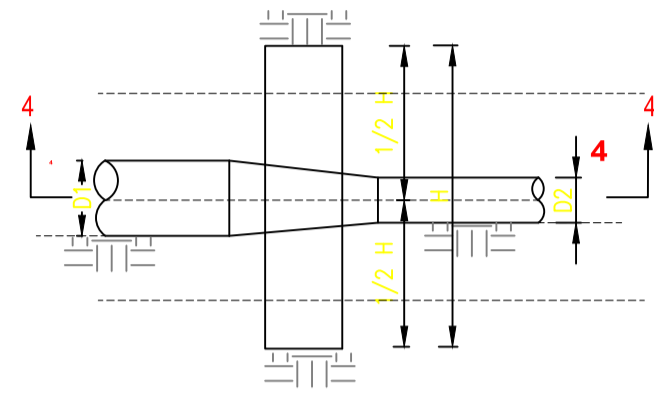
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No.	Revision/Issue	Date
	CONTRACT No.	

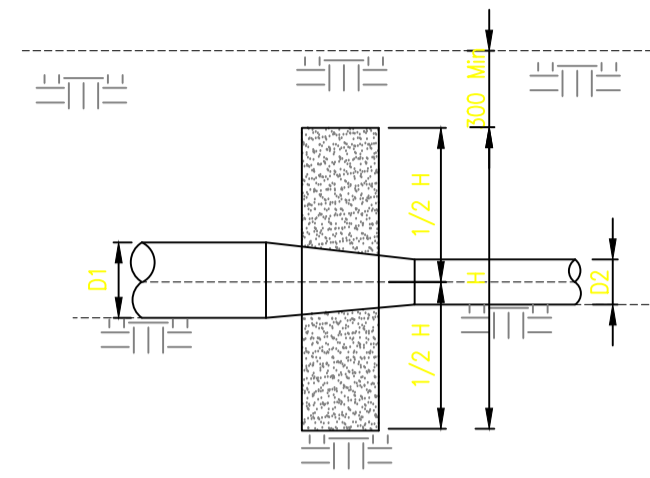
Firm Name and Address  
**MAJI HOUSE, ALONG BADEN POWELL  
ROAD**  
P.O. BOX, 1292 – 10100,  
Nyeri, Kenya  
+254 724 259 891, +254 61 2034118  
+254 61-2032282  
Email: info@tanawwda.go.ke  
Website: www.tanawwda.go.ke

Project Name and Address  
**DETAILS  
OF  
ANCHOR AND THRUST  
BLOCKS**

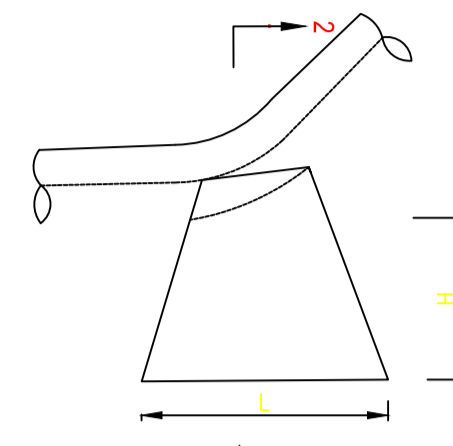
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Date **14.04.2022**  
Scale **1:1000**



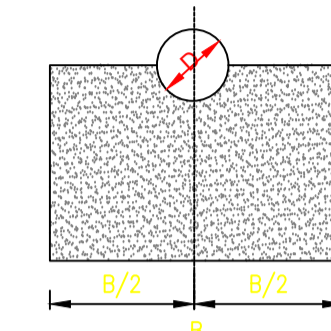
PLAN  
REDUCER – TYPE RD



SECTION 4 – 4



ELEVATION



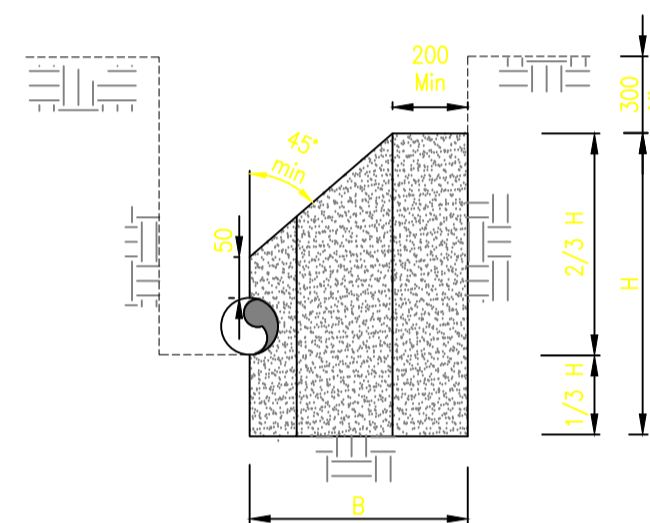
SECTION 5 – 5

VERTICAL ANCHOR BLOCKS AT DEPRESSION (TYPE DV)

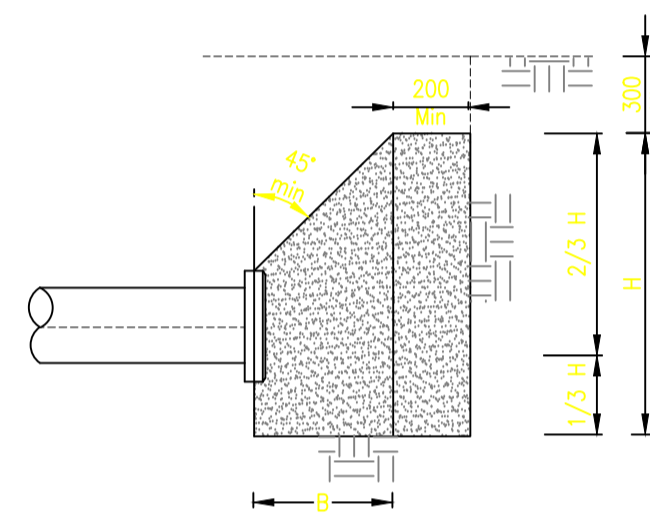
4 1 No. 140mm DIA. HDPE PIPE (LENGTH TO SUIT ON SITE)

Pipe Diameter (mm)	Pipe Pressure (kg)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
80.00	10.00																				
100.00	15.00																				
150.00	22.50																				
200.00	30.00																				
250.00	37.50																				
300.00	45.00																				

Pipe Diameter (mm)	Pipe Pressure (kg)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
80.00	10.00																				
100.00	15.00																				
150.00	22.50																				
200.00	30.00																				
250.00	37.50																				
300.00	45.00																				



SECTION 1 - 1



SECTION 3 – 3

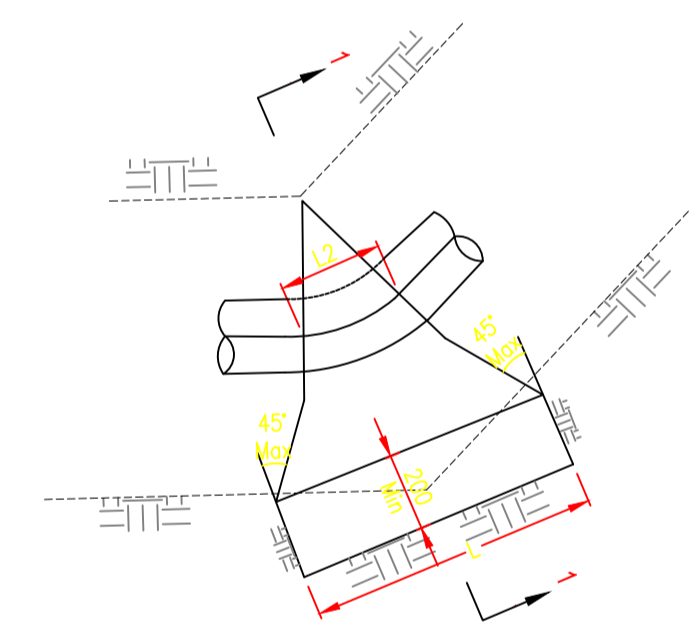
Pipe Diameter (mm)	Pipe Pressure (kg)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
80.00	10.00																				
100.00	15.00																				
150.00	22.50																				
200.00	30.00																				
250.00	37.50																				
300.00	45.00																				

Pipe Diameter (mm)	Pipe Pressure (kg)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
80.00	10.00																				
100.00	15.00																				
150.00	22.50																				
200.00	30.00																				
250.00	37.50																				
300.00	45.00																				

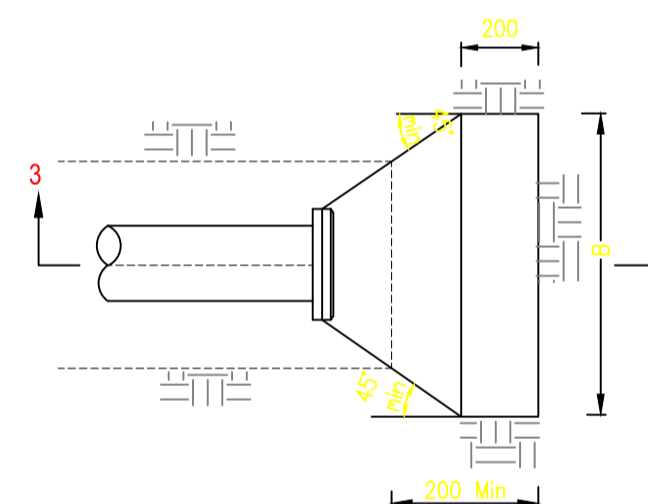
Pipe Diameter (mm)	Pipe Pressure (kg)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
80.00	10.00																				
100.00	15.00																				
150.00	22.50																				
200.00	30.00																				
250.00	37.50																				
300.00	45.00																				

**NOTES**

1. ANCHOR BLOCKS CONSTRUCTED FROM UNREINFORCED CONCRETE CLASS 15
2. CONCRETE CAST AGAINST UNDISTURBED GROUND. WHERE DISTURBED, THE SOIL AROUND ANCHOR BLOCK TO BE REMOVED AND FILLED WITH CONCRETE BEFORE THE PIPE IS PRESSURE TESTED OR COMPACTED TO NOT LESS THAN 95% MAX.
3. BENDS LESS THAN 5° TAKEN UP BY THE FLEXIBLE PIPE JOINTS WHERE PRACTICABLE.
4. 11.25° BENDS TO BE USED FOR BENDS GREATER THAN OR EQUAL TO 6° AND LESS THAN OR EQUAL TO 16°.
5. ALL ANCHOR BLOCKS CAST LEAVING ALL PIPE JOINTS FREE.
6. DIAMETERS GIVEN ON THE TABLES ARE PIPE NOMINAL BORE SIZES.
7. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
8. ALL BENDS/TAPERS TEES WRAPPED WITH POLYTHENE SHEET GAUGE 500.



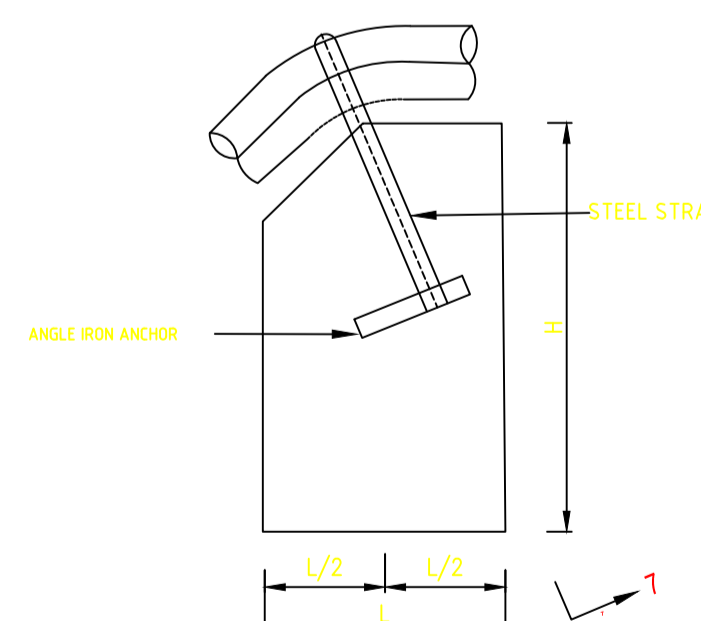
PLAN PLAN  
HORIZONTAL BEND –TYPE HB  
HORIZONTAL BEND –TYPE HB



PLAN  
END CAPS

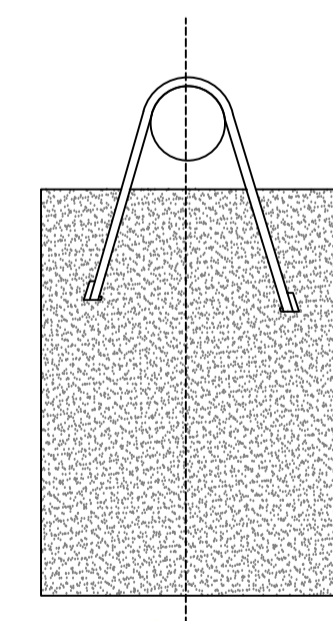
SECTION 2 – 2

TEES – TYPE TV

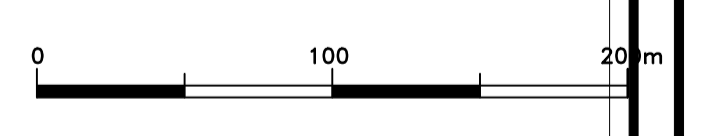
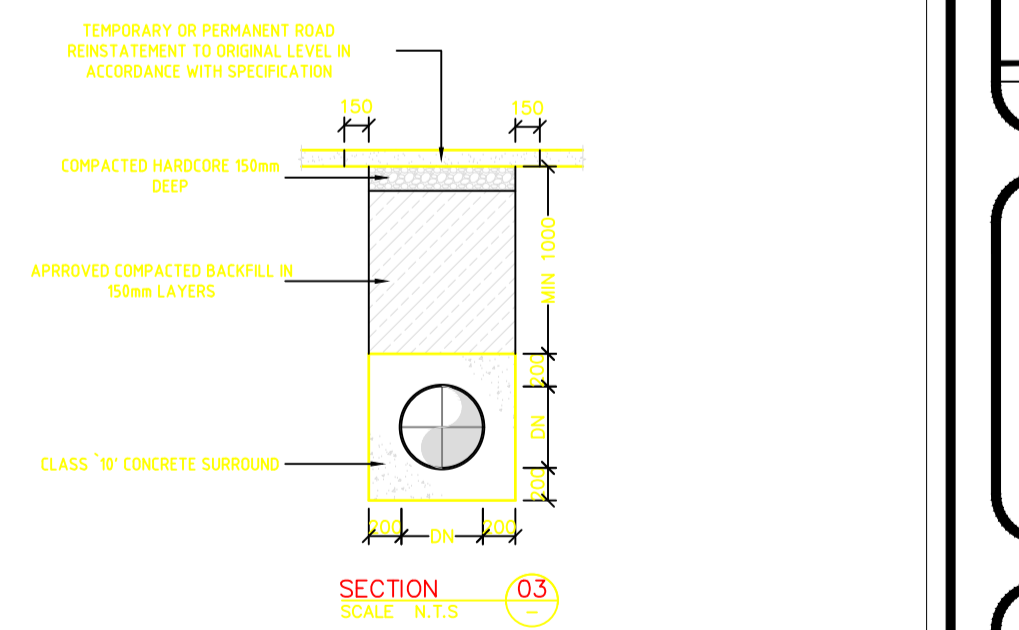
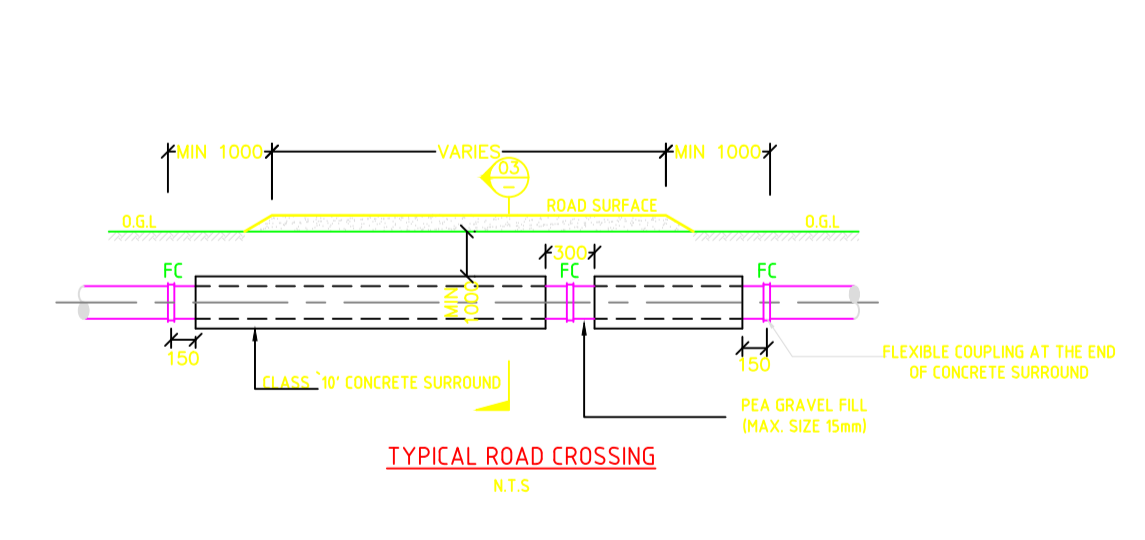
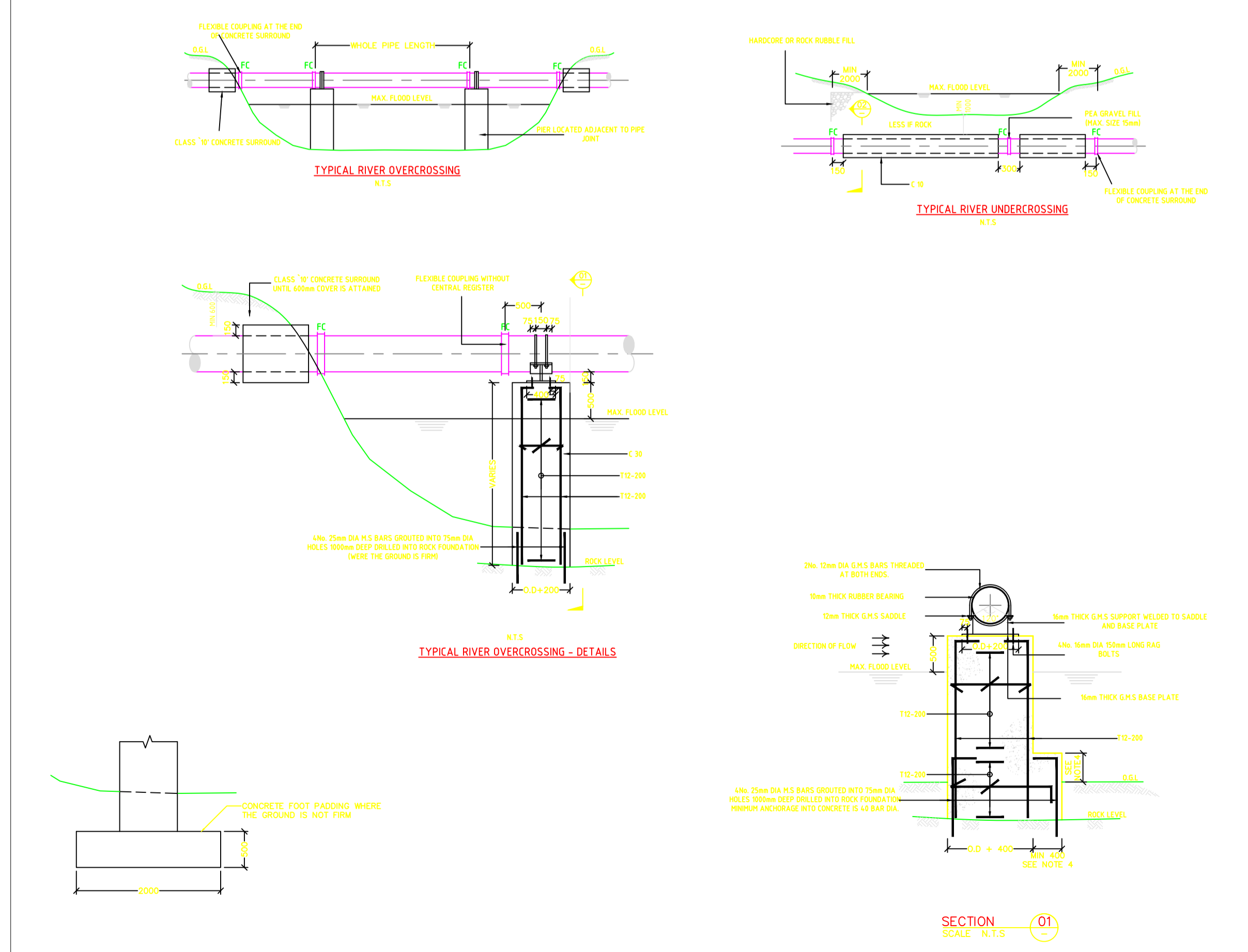
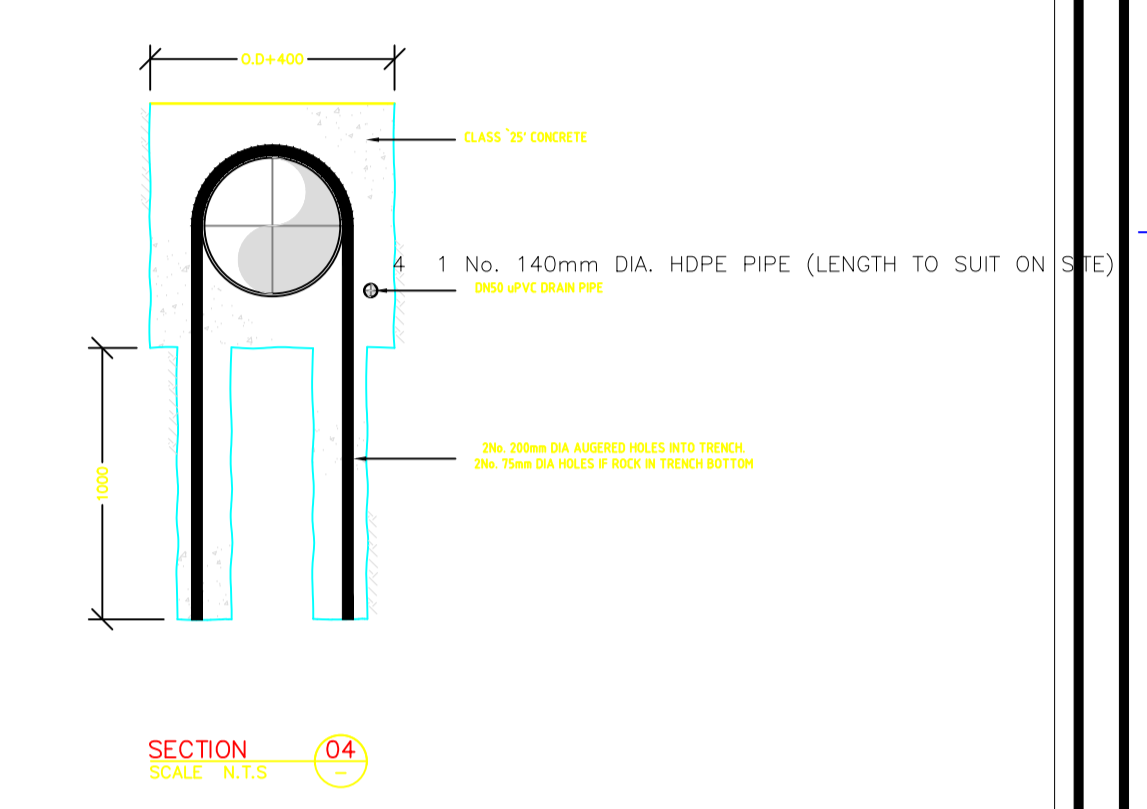
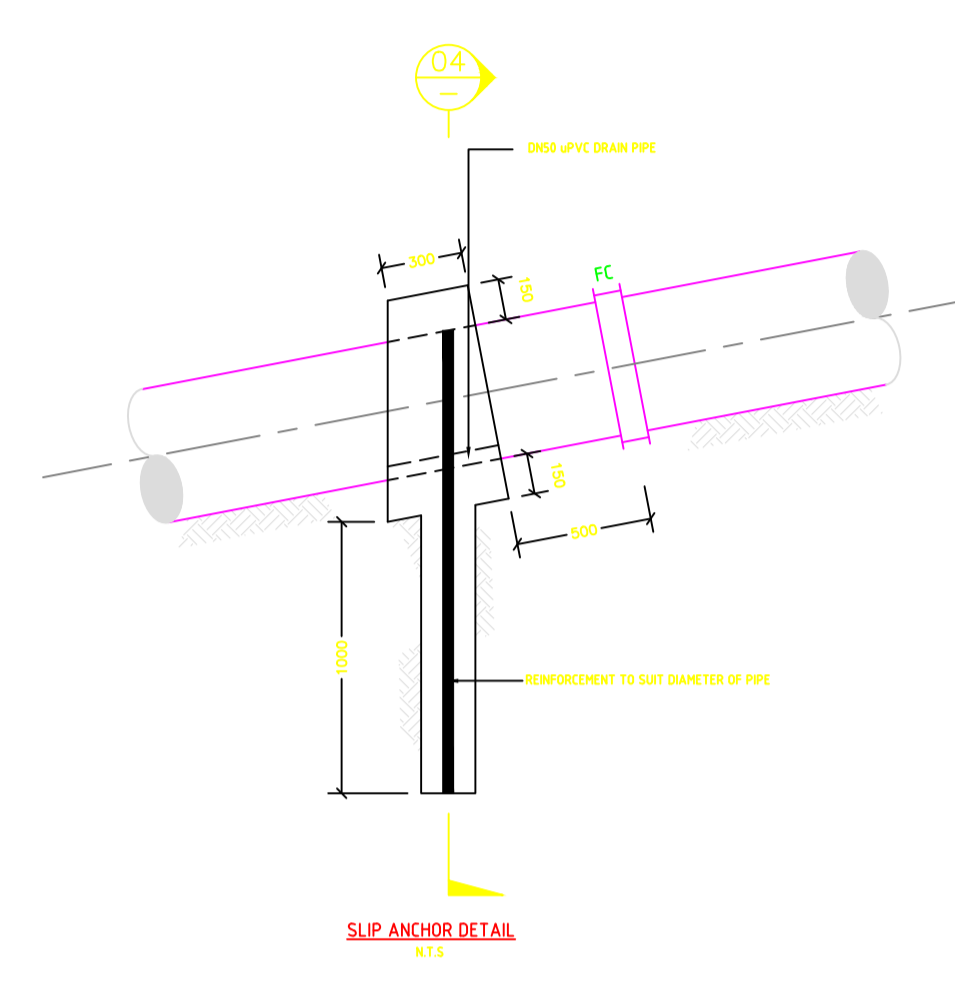
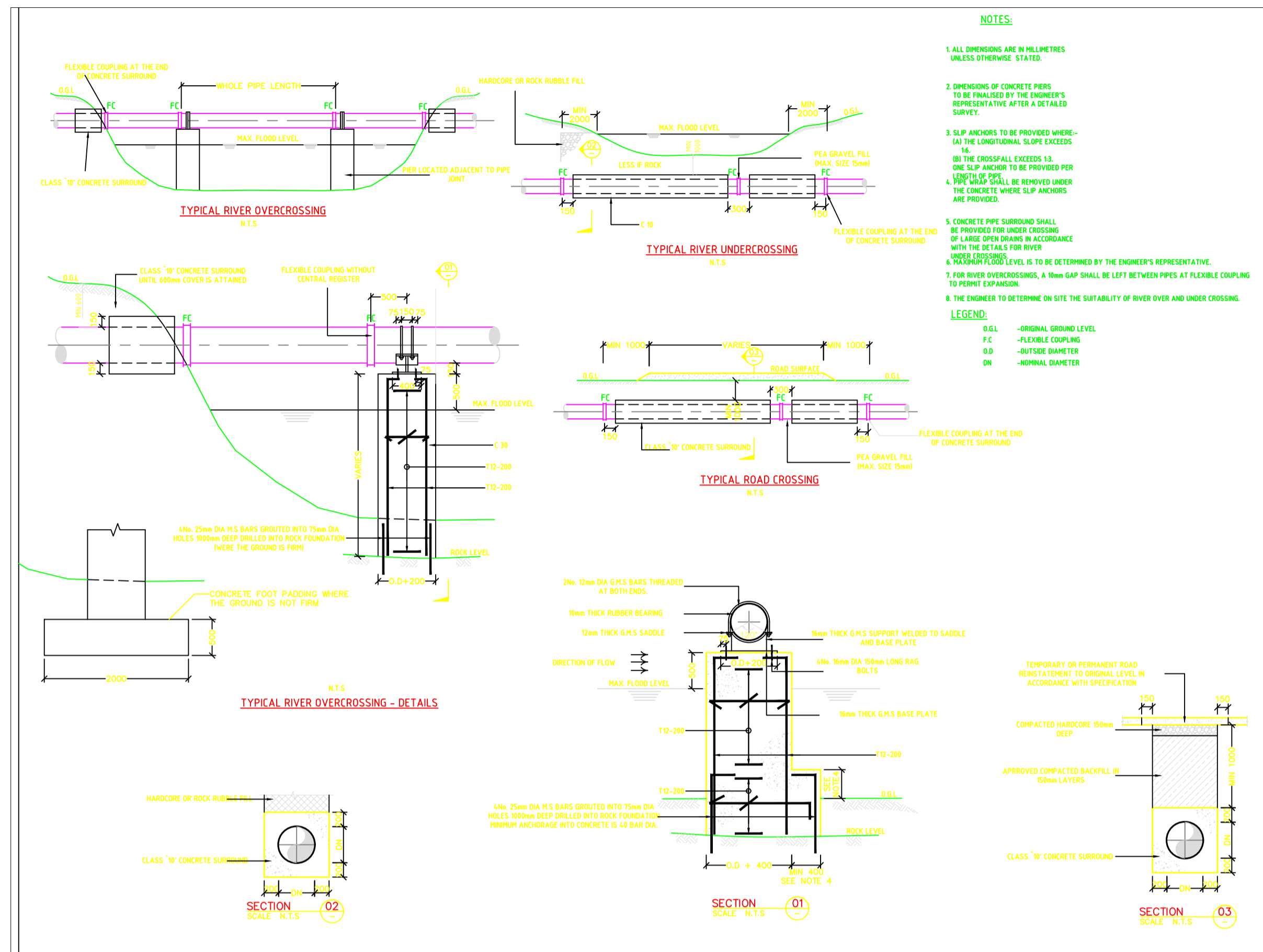


ELEVATION

VERTICAL ANCHOR BLOCKS AT CRESTS (TYPE CV)



SECTION 7 – 7



General Notes

**NOTES:**

1. CONTOUR LEVELS ARE IN METERS AT TWO METER INTERVALS
2. GRID VALUES ARE IN METERS AT 200 METER INTERVALS
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4. FOR FITTING DETAILS SEE DRG. NO. BRT/GM005

**LEGEND:**

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
- CONTOURS
- ELECTRIC POST
- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
- KaNHHA / KeRRA ROAD BEACON
- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- 30° HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- LAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER

DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

R E V I S I O N S		SIGN	DATE	APPROVED
D	INVERTS AT ROAD CROSSING	BY	VJK	15/01
		CHECKED		
		BY		
		CHECKED		
		BY		
		CHECKED		
		BY		
		CHECKED		

**CLIENT:** THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT AGENCY  
P.O BOX 1292 - 10100, NYERI, KENYA

**ENGINEERS:** MANAGING DIRECTOR  
NYERI WATER AND SANITATION COMPANY  
P.O BOX 1520 - 10100, NYERI, KENYA

THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT AGENCY  
P.O BOX 1292 - 10100, NYERI, KENYA

**PROJECT TITLE:**

No.	Revision/Issue	Date
	CONTRACT No.	

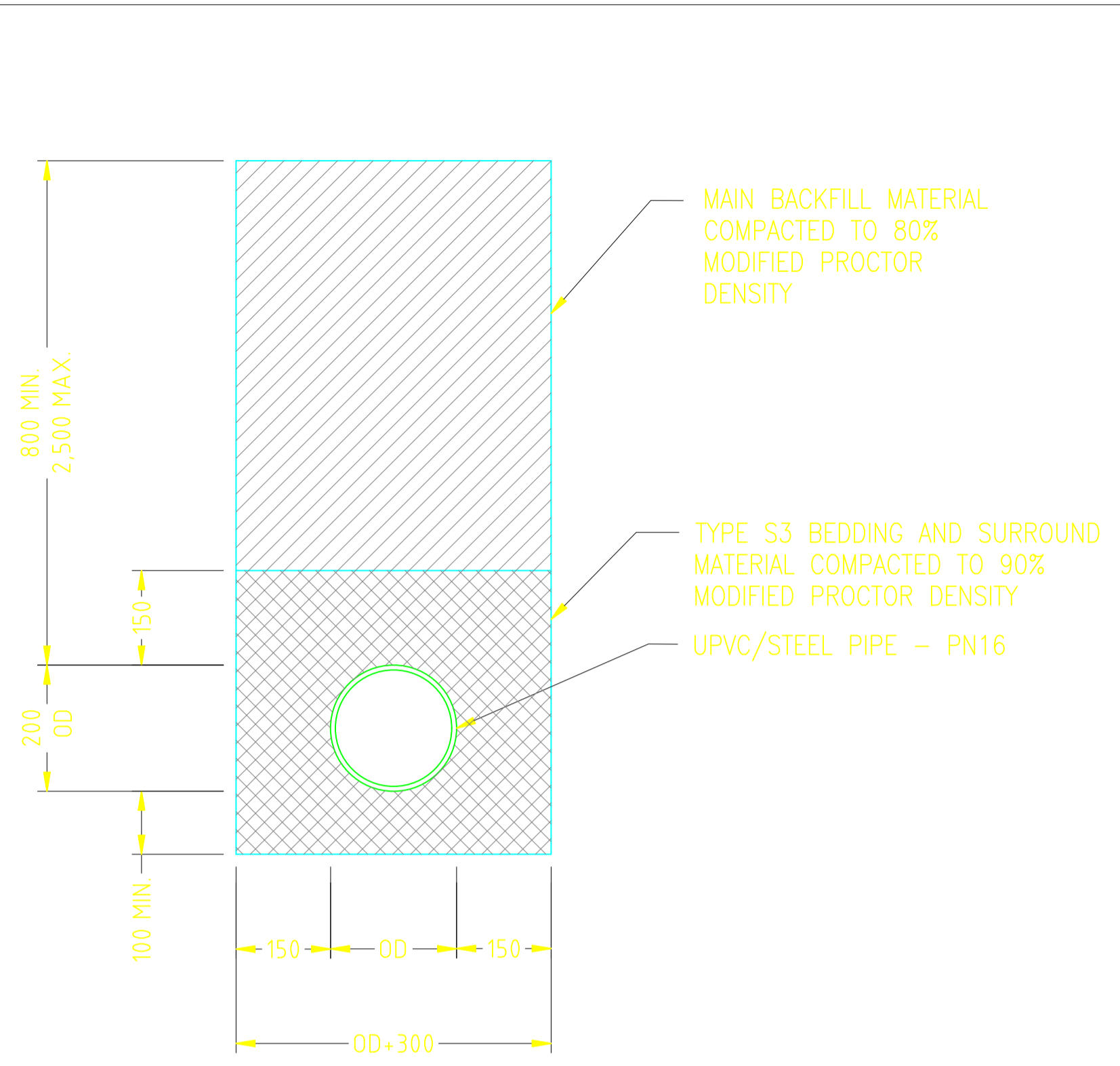
Firm Name and Address  
MAJI HOUSE, ALONG BADEN POWELL ROAD  
P.O. BOX, 1292 - 10100.  
Nyeri, Kenya  
+254 724 259 891, +254 61 2034118  
+254 61-2032282  
Email: info@fanawwda.go.ke  
Website: www.fanawwda.go.ke

Project Name and Address  
**TYPE OF RIVER CROSSING**

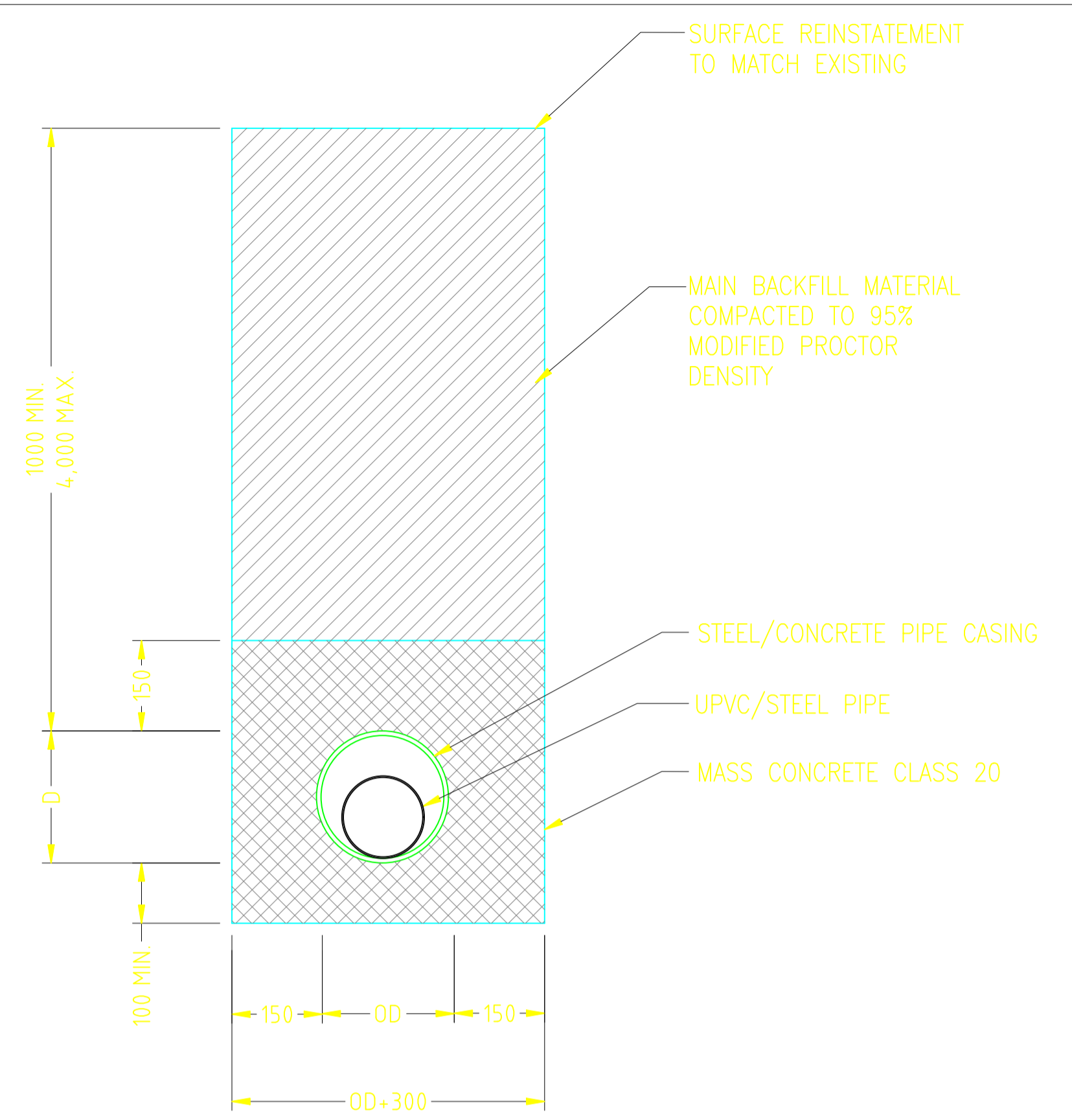
Project **WATER PROJECT** Sheet

Date **14.04.2022**

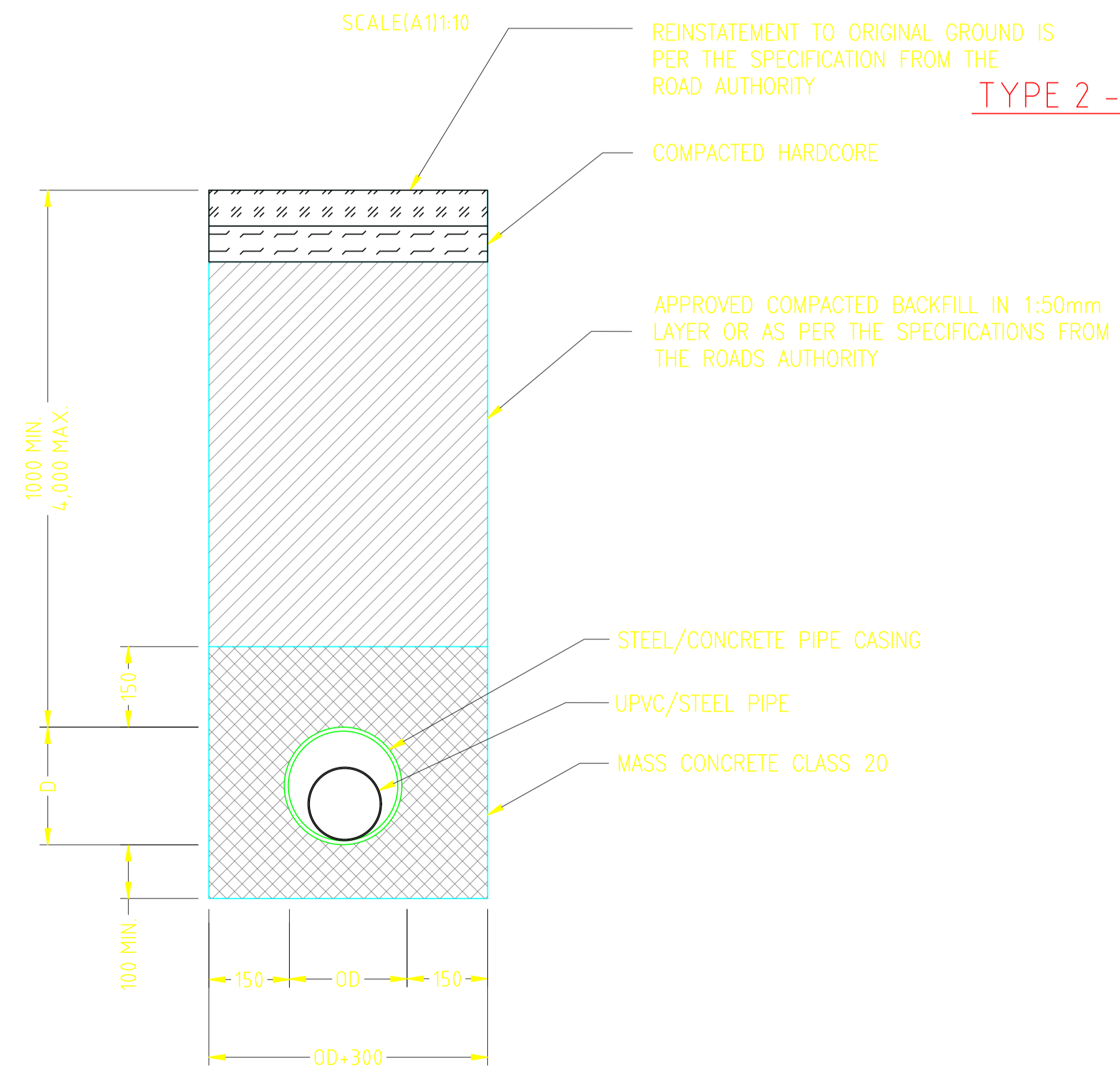
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**TYPE 1 - PIPE ACROSS OPEN GROUND**



**TYPE 2 - PIPE ACROSS EARTH AND GRAVEL ROADS**



**TYPE 3 - PIPE ACROSS TARMAC ROAD**

**NOTES**

1. TYPE S1 BEDDING AND SURROUND TO BE SINGLE SIZED GRANULAR MATERIAL.
2. TYPE S2 BEDDING AND SURROUND TO BE GRADED GRANULAR MATERIAL.
3. TYPE S3 BEDDING AND SURROUND TO BE SAND AND COARSE GRAINED SOIL WITH LESS THAN 12% FINES.
4. THE MINIMUM WIDTH OF PIPE TRENCH SHALL BE AS INDICATED ON THE DRAWING. THIS DIMENSION WILL BE USED FOR MEASUREMENT OF THE WORK AND NO SEPARATE MEASUREMENT WILL BE TAKEN OR ALLOWED FOR OVERBREAK.
5. THE CONTRACTOR SHALL ADVISE THE ENGINEER WHENEVER TRENCH INVERTS HAVE BEEN EXCAVATED AND TRIMMED AND ARE READY FOR INSPECTION. NO TRENCH INVERT SHALL BE COVERED WITH BEDDING MATERIAL OR PIPES LAID UNTIL THE INSPECTION HAS BEEN CARRIED OUT AND THE TRENCH INVERT APPROVED.
6. FOR EARTH ROADS CROSSINGS THE ENGINEER SHALL DETERMINE WHETHER TO CLASSIFY IT AS TYPE 1 OR TYPE 2 DEPENDING ON THE TRAFFIC SIZE.

General Notes

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- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
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- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- LAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

R E V I S I O N S		SIGN	DATE	APPROVED
D	INVERTS AT ROAD CROSSING	BY	VJK	15/01
		CHECKED		
		BY		
		CHECKED		
		BY		
		CHECKED		
		BY		
		CHECKED		

CLIENT: **THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS  
DEVELOPMENT AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

ENGINEERS: **MANAGING DIRECTOR  
NYERI WATER AND SANITATION COMPANY**  
P.O BOX 1520 - 10100,  
NYERI, KENYA

**THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY**  
P.O BOX 1292 - 10100,  
NYERI, KENYA

PROJECT TITLE:

No.	Revision/Issue	Date
	CONTRACT No.	

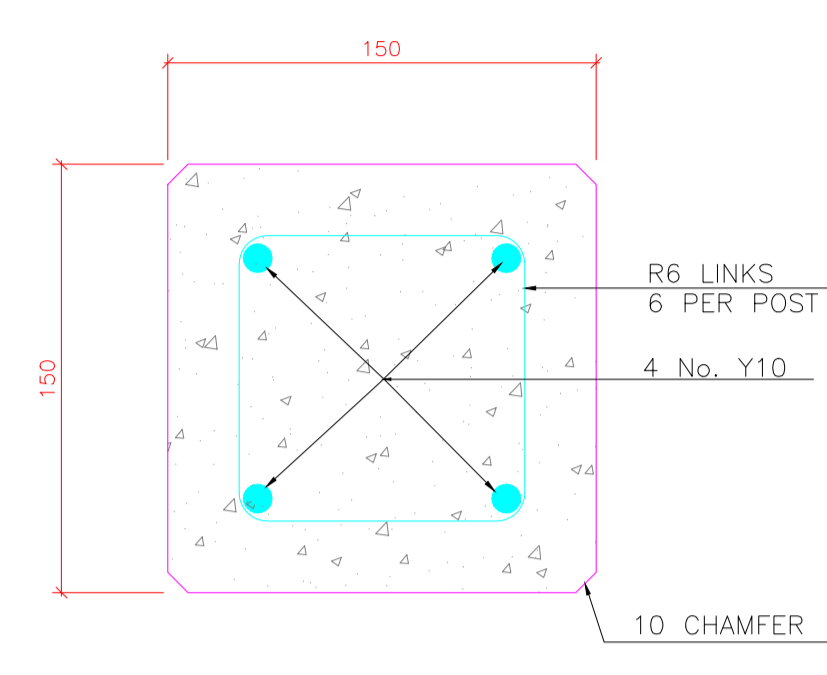
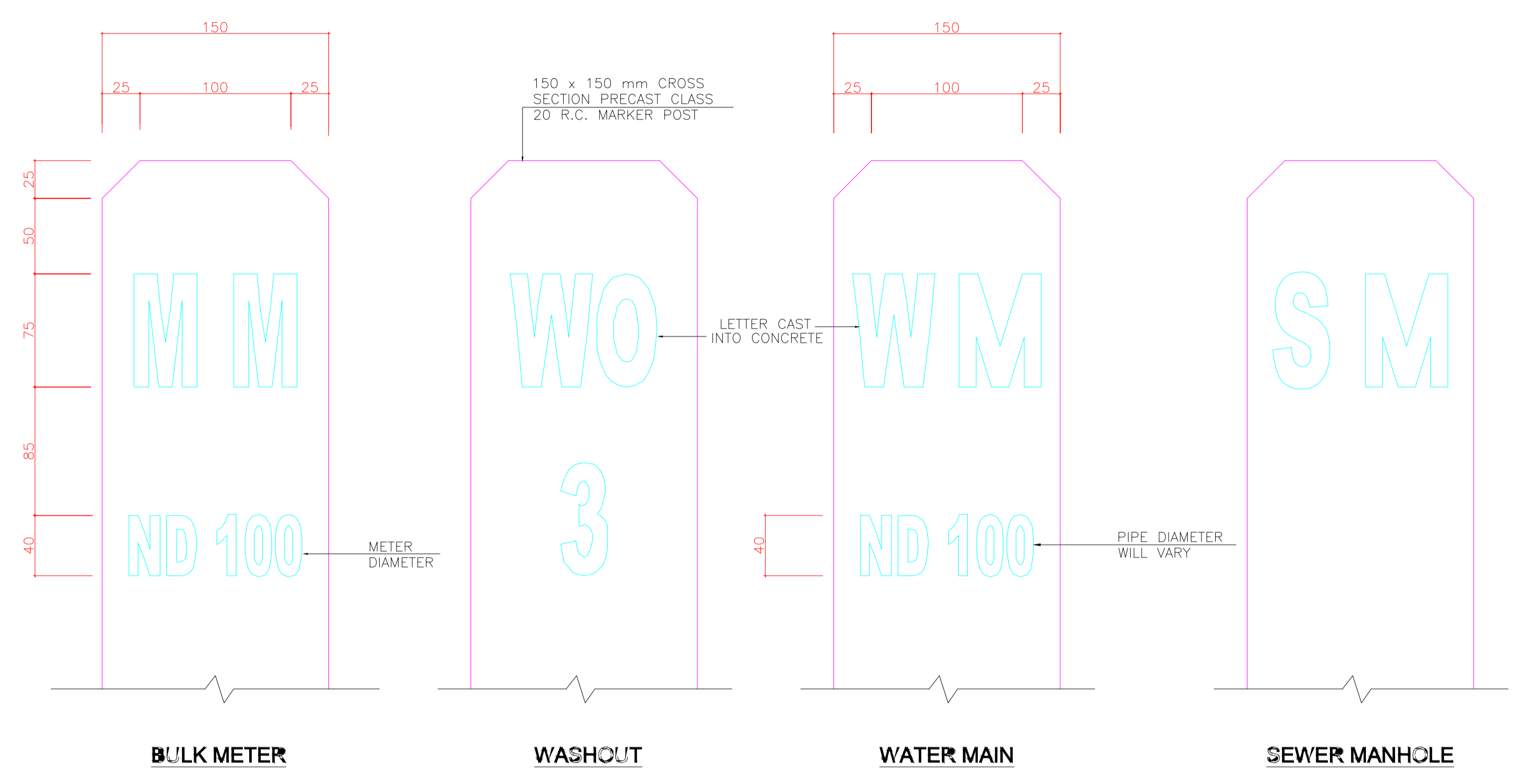
Firm Name and Address  
**MAJI HOUSE, ALONG BADEN  
POWELL ROAD  
P.O. BOX, 1292 -10100,  
Nyeri, Kenya  
+254 724 259 891,+254 61  
2034118  
+254 61-2032282  
Email: info@tanawwda.go.ke  
Website: www.tanawwda.go.ke**

Project Name and Address  
**TYPE  
OF  
ROAD  
CROSSING**

Project **WATER PROJECT** Sheet

Date **14.04.2022**

Scale **1:1000**

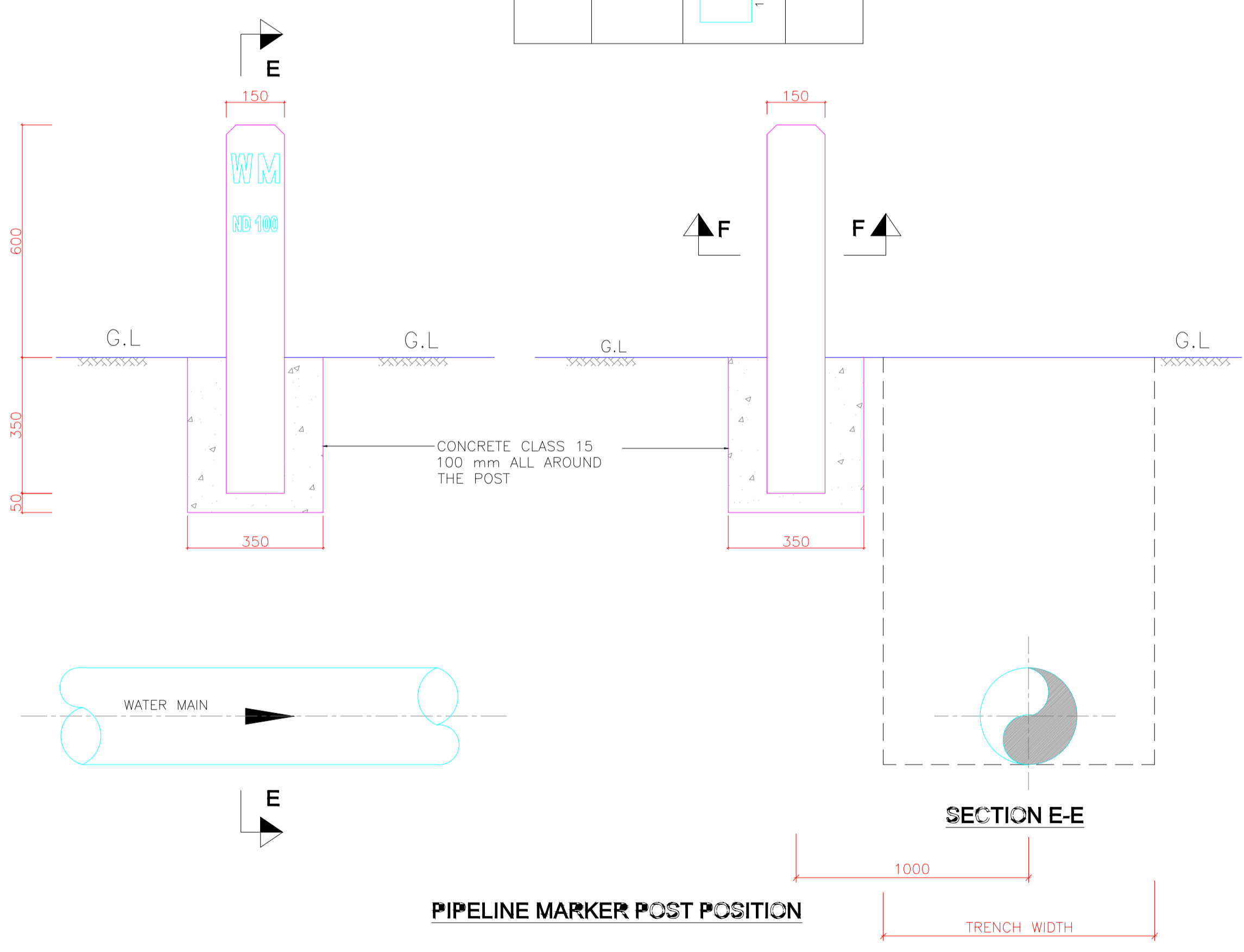
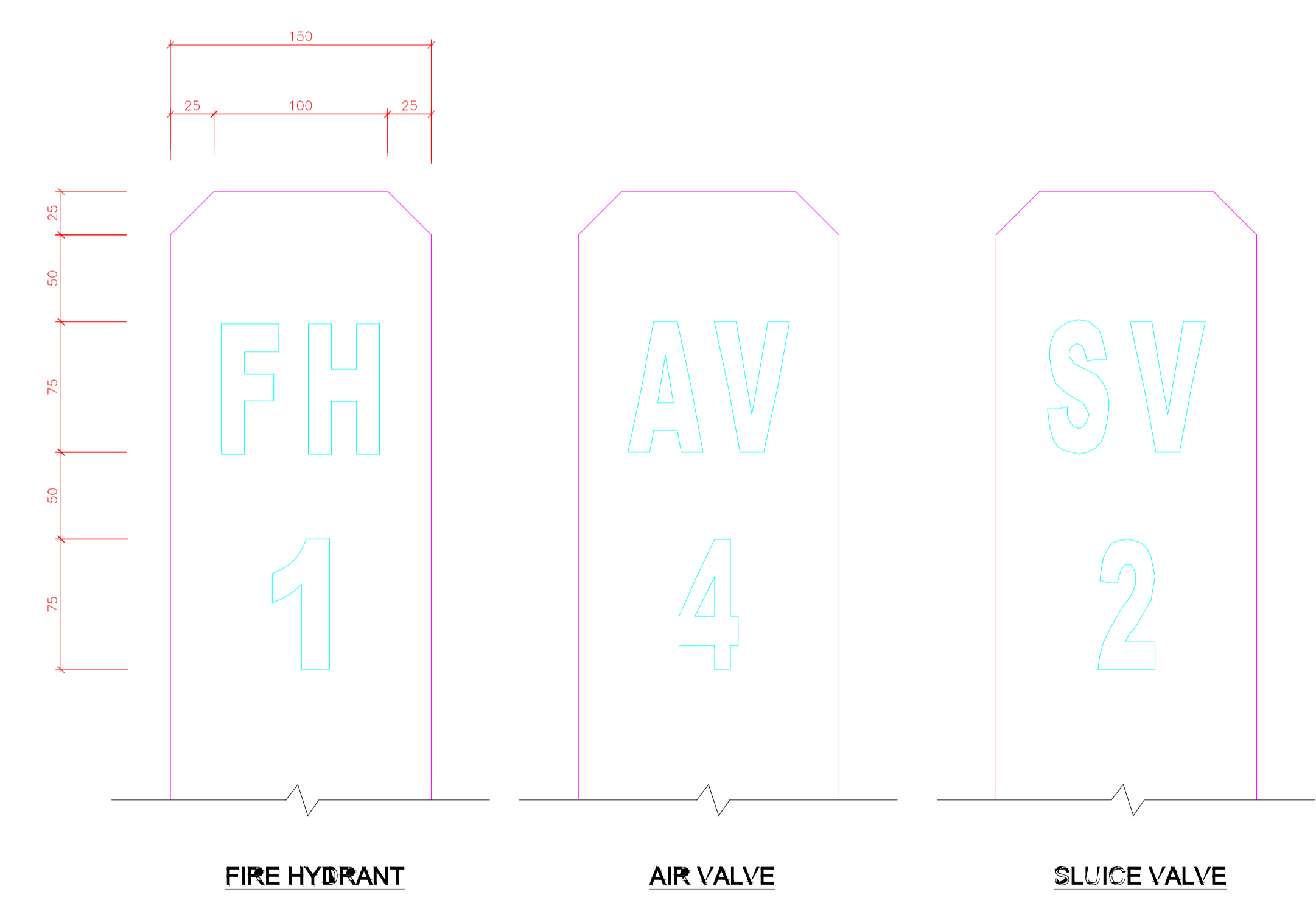


SECTION F-F  
1:2.5

BAR BENDING SCHEDULE

BAR	Nb. OFF	TYPE	LENGTH
Y10	4	STRAIGHT	1000
R6	6		500

1. THE RESPECTIVE INSCRIPTION TO BE MADE ONLY ON ONE FACE OF INDICATOR POST FACING THE ACCESS ROAD.
2. ALL STRUCTURAL CONCRETE TO BE CLASS 20 ALL OTHER CONCRETE TO BE CLASS 15.
3. INDICATOR POST TO BE PLACED AT ALL APPURTENANCE LOCATIONS, AND AT INTERVALS OF 250mm Ø ALONG PIPE (LENGTH TO SUIT ON SITE) WATER MAINS.
4. LETTERS TO BE INSCRIBED ON INDICATOR POLES SHOULD FACE ACCESS ROAD AND READ AS FOLLOWS:  
 AV FOR AIR VALVE  
 SV FOR SECTION VALVE  
 WO FOR WASHOUT  
 FH FOR FIRE HYDRANT  
 MM FOR MASTER METER  
 WM FOR WATER MAIN  
 SM FOR SEWER MANHOLE



PIPELINE MARKER POST POSITION

MARKER POST DETAILS  
1:2.5

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- CULVERT
- GATE
- TEMPORARY STRUCTURES
- BUILDINGS
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- PROPOSED TREATED WATER GRAVITY MAIN
- TP10 TRAVERSE POINT & No.
- TRIAL HOLE
- HORIZONTAL BEND (H) OR VERTICAL BEND (V) WITH ANGLE INDICATED
- 30°
- RIVER/STREAM
- V.J. VIKING JOHNSON
- GV GATE VALVE
- SV-01 SECTIONAL VALVE & No.
- WO-01 WASHOUT VALVE & No.
- LAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REVISIONS	BY	DATE	APPROVED
D	CHECKED	15/01	
	BY		
	CHECKED		
	BY		
	CHECKED		
	BY		
	CHECKED		

CLIENT: THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT AGENCY  
P.O BOX 1292 - 10100, NYERI, KENYA

ENGINEERS: MANAGING DIRECTOR  
NYERI WATER AND SANITATION COMPANY  
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TANA WATER WORKS DEVELOPMENT AGENCY  
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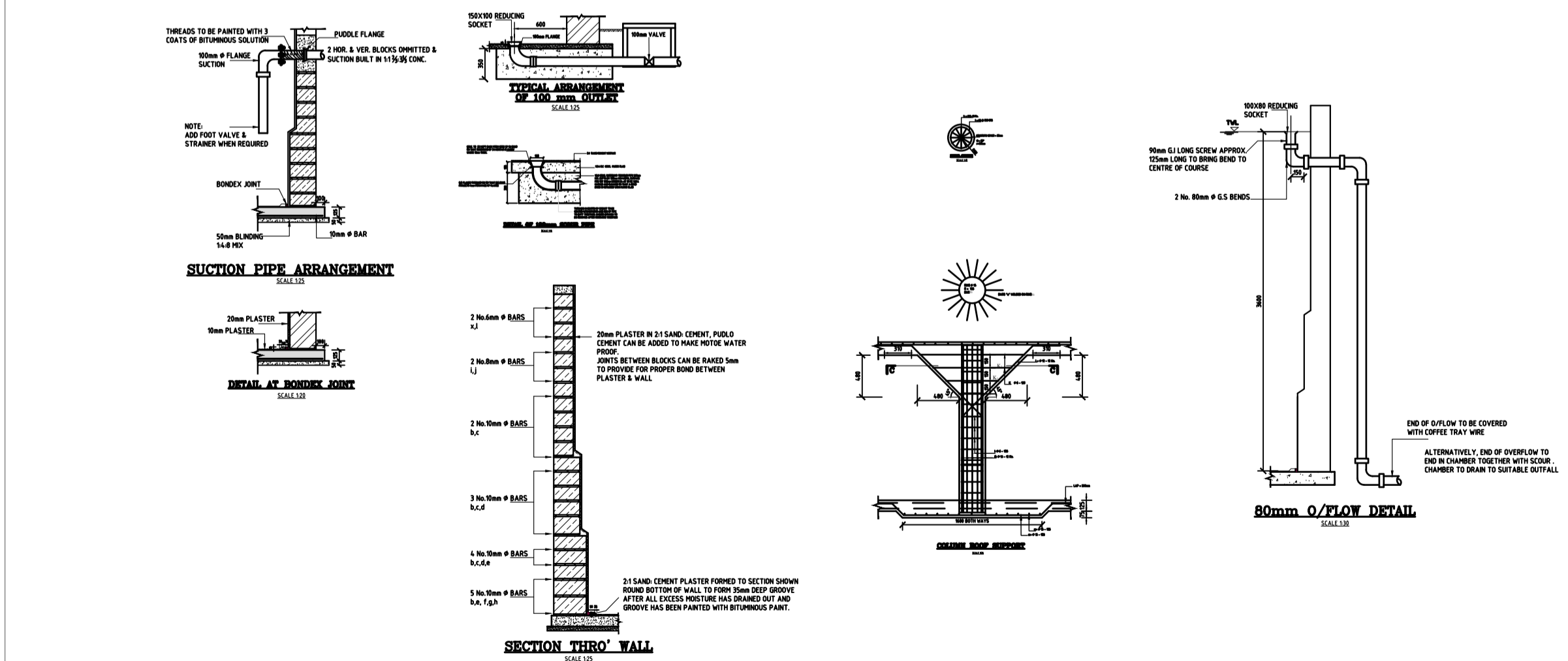
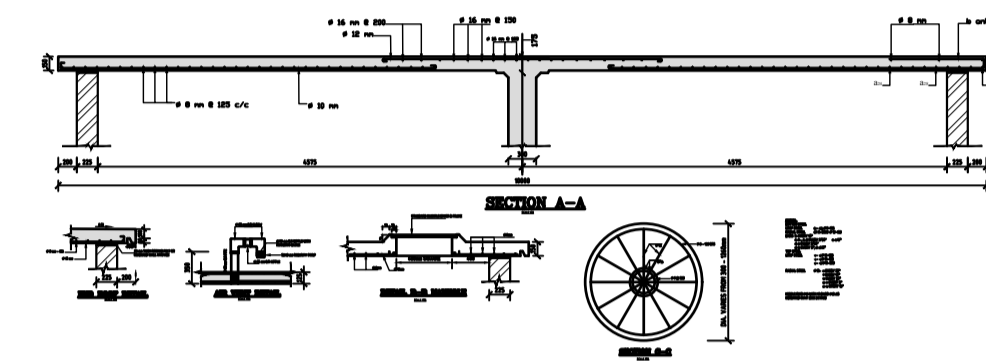
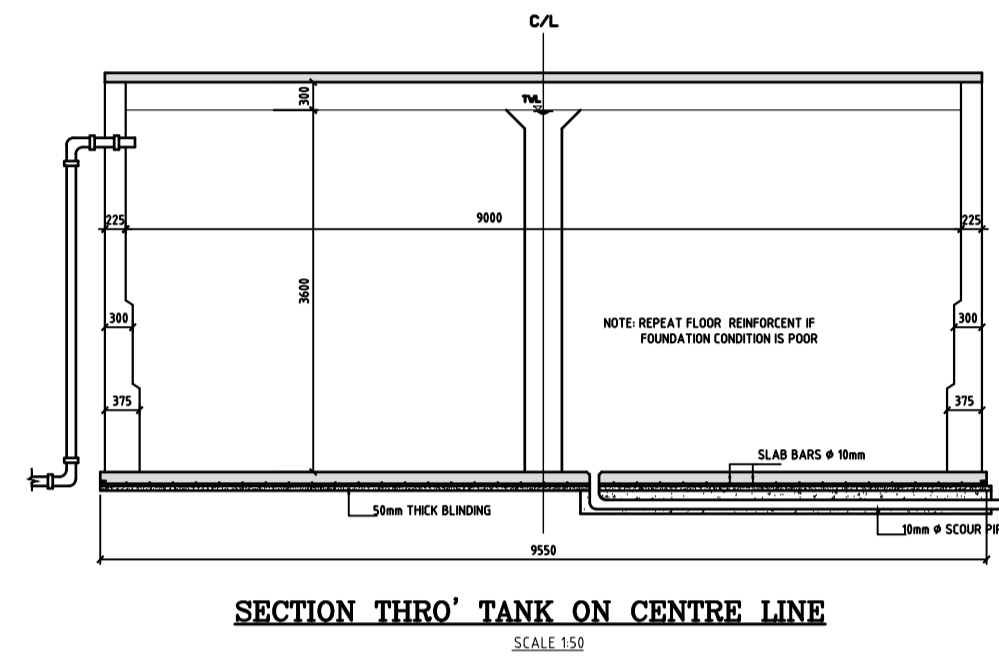
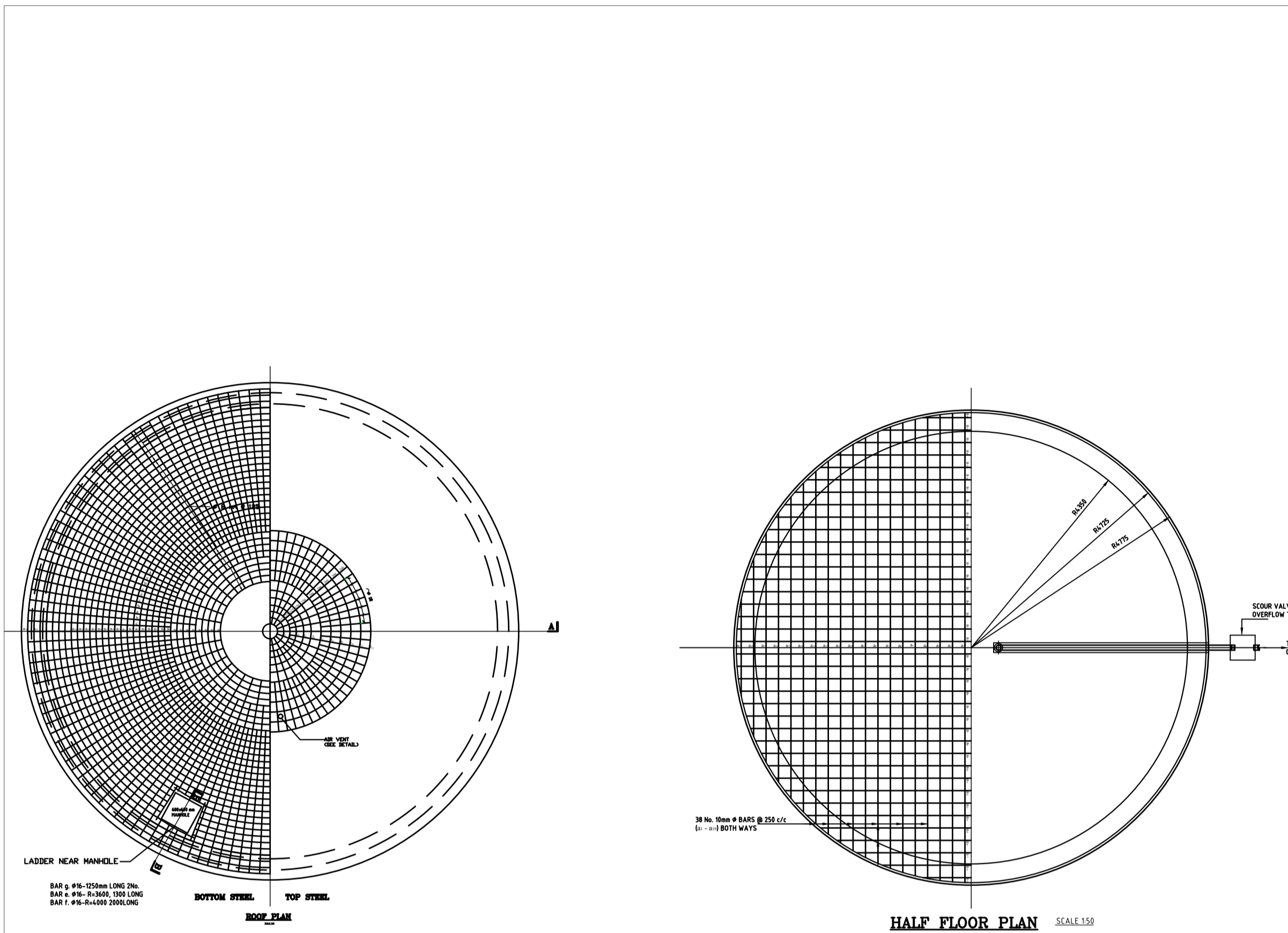
PROJECT TITLE:

No.	Revision/Issue	Date
	CONTRACT No.	

Firm Name and Address  
MAJI HOUSE, ALONG BADEN POWELL ROAD  
P.O. BOX, 1292 - 10100, Nyeri, Kenya  
+254 724 259 891, +254 41 2034118  
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Email: info@tanawwda.go.ke  
Website: www.tanawwda.go.ke

Project Name and Address  
TYPE OF MARKER POST

Project WATER PROJECT  
Date 14.04.2022  
Scale 1:1000



DESTINATION	BAR MARK	TOTAL No.	BAR BENDING SCHEDULE						REMARKS
			NO.	DIAM.	LENGTH PER BAR (mm)	PER BAR	TOTAL LENGTH	PER BAR MARK	
BOTTOM RADIAL	B	57	12	12	1200	14400	14400	STRAIGHT	
	C	60	10	1400	84000	84000			
	D	12	10	2000	24000	24000			
TOP RADIAL	U	18	16	1900	54000	54000	STRAIGHT		
	V	36	16	1900	108000	108000			
	W	18	16	1700	28800	28800			
BOTTOM LOOP	AN	32	8	6,283	201056	201056	BENDING		
	AO	4	8	36,830	147320	147320			
TOP LOOP	HA	12	16	785	30480	30480	BENDING		
	HB	18	16	12,567	226206	226206			
AT MANHOLE	F	1	8	1700	13600	13600	BENDING		
	G	1	8	2000	16000	16000			
	H	2	10	2000	40000	40000			
COLUMN	D	12	16	4,450	53400	53400	BENDING		
	E	1	16	6	800	800			
COLUMN TOP	K	3	6	2000	12000	12000	BENDING		
	L	1	12	12	14400	14400			
COLUMN BOTTOM	I	26	16	2350	61060	61060	BENDING		
	J	1	16	6	800	800			
TOTAL LENGTH				220985.65	211440	211440	186.45	IN METERS	
TOTAL WEIGHT				164277kg	339kg	339kg	298kg	TOTAL 999 kg - 1.0 TON	

COMPONENT	No.	BAR MARK	BAR DIA.	UNBENT LENGTH	BENDING	REMARKS	
FLOOR SLAB	1	B	12	2500			
		C	10	3750			
		D	10	4725			
		U	16	5475			
		V	16	6500			
		W	16	6500			
		AN	8	7875			
		AO	8	8175			
		HA	16	8175			
		HB	16	9525			
WALL	1	B	16	1300		BENT TO NET RANGE OF 4000 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000. BENT TO NET RANGE OF 2500 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000. BENT TO NET RANGE OF 1500 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000. BENT TO NET RANGE OF 1000 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000. BENT TO NET RANGE OF 500 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000. BENT TO NET RANGE OF 250 ± LENGTH, SEE 1 LENGTH EDGE WITH 3 LAPS OF BAR EACH NET LENGTH OF BAR 20000.	
		C	16	2350			
		D	10	2995			
		E	10	3645			
		F	2	10	38275		
		G	2	10	23800		
		H	2	10	38250		
		I	3	8	38250		
		J	3	8	38250		
		K	3	8	38250		

**GENERAL NOTES:**

- THE TANK THICK 3:1 SAND-CEMENT PLASTER TO BE FLATTED TO A SMOOTH FINISH WITH A STEEL STRAIGHT EDGE UNITS, A DENSE SURFACE REIN IN CEMENT IS OBTAINED GROOVE FOR BRICKS JOINTS TO BE FINISHED AT THE SAME TIME.
- THE TANK WALL MUST NOT BE BENT TO THE FLOOR SLAB. TO ENSURE THIS, BEFORE COMMENCING TO BUILD THE TANK WALL THE SURFACE TO THE FLOOR SLAB IS TO BE WELL COATED WITH BITUMINOUS PAINT ONLY.
- ALL BALLAST FOR CONCRETE TO BE BROKEN FROM SOURCE INTO A MAXIMUM SIZE OF 20mm. IT MUST PASS THROUGH A 20mm MESH SCREEN AND SHOULD BE EVENLY GRADED TO MIN. SIZE OF 75mm APPROX. SIZE IS RETAINED ON A 10mm MESH AND NOT LESS THAN 20% PASSED A 5mm MESH.
- ALL SAND USED MUST BE CLEAN, SHARP AND FREE FROM ALL CLAY, VEGETATION AND OTHER DELETERIOUS MATTER.
- WALL STRENGTH TO BE CHECKED BY SHARPENED WATER PRESSURE LAYING.
- PARTICULAR CARE SHOULD BE TAKEN TO ENSURE THAT ALL JOINTS BETWEEN STONES IN THE WALL ARE FILLED WITH MORTAR. ALL JOINTS BETWEEN STONES TO BE 25mm.
- 30mm MIN COVER TO ALL REINFORCEMENT TO BE PROVIDED.

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**LEGEND:**

- ROAD (TARMAC)
- ROAD / TRACK (EARTH / MURRAM)
- FENCE / HEDGE
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- LAV-01 AIR VALVE & No.
- WM WATER METER
- PROPOSED MASONRY CHAMBER
- DIRECTION (SLOPE MIN. OR 1 IN n)

**ISSUED FOR CONSTRUCTION**

REV	NO.	DESCRIPTION	BY	CHECKED	DATE	APPROVED
D	1	INVERTS AT ROAD CROSSING	VJK	VJK	15/01	

**CLIENT:** THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS  
DEVELOPMENT AGENCY  
P.O BOX 1292 - 10100,  
NYERI, KENYA

**ENGINEERS:** MANAGING DIRECTOR  
NYERI WATER AND SANITATION COMPANY  
P.O BOX 1520 - 10100,  
NYERI, KENYA

THE CHIEF EXECUTIVE OFFICER  
TANA WATER WORKS DEVELOPMENT  
AGENCY  
P.O BOX 1292 - 10100,  
NYERI, KENYA

**PROJECT TITLE:**

No.	Revision/Issue	Date

Firm Name and Address  
**MAJI HOUSE, ALONG BADEN  
POWELL ROAD  
P.D. BOX, 1292 -10100,  
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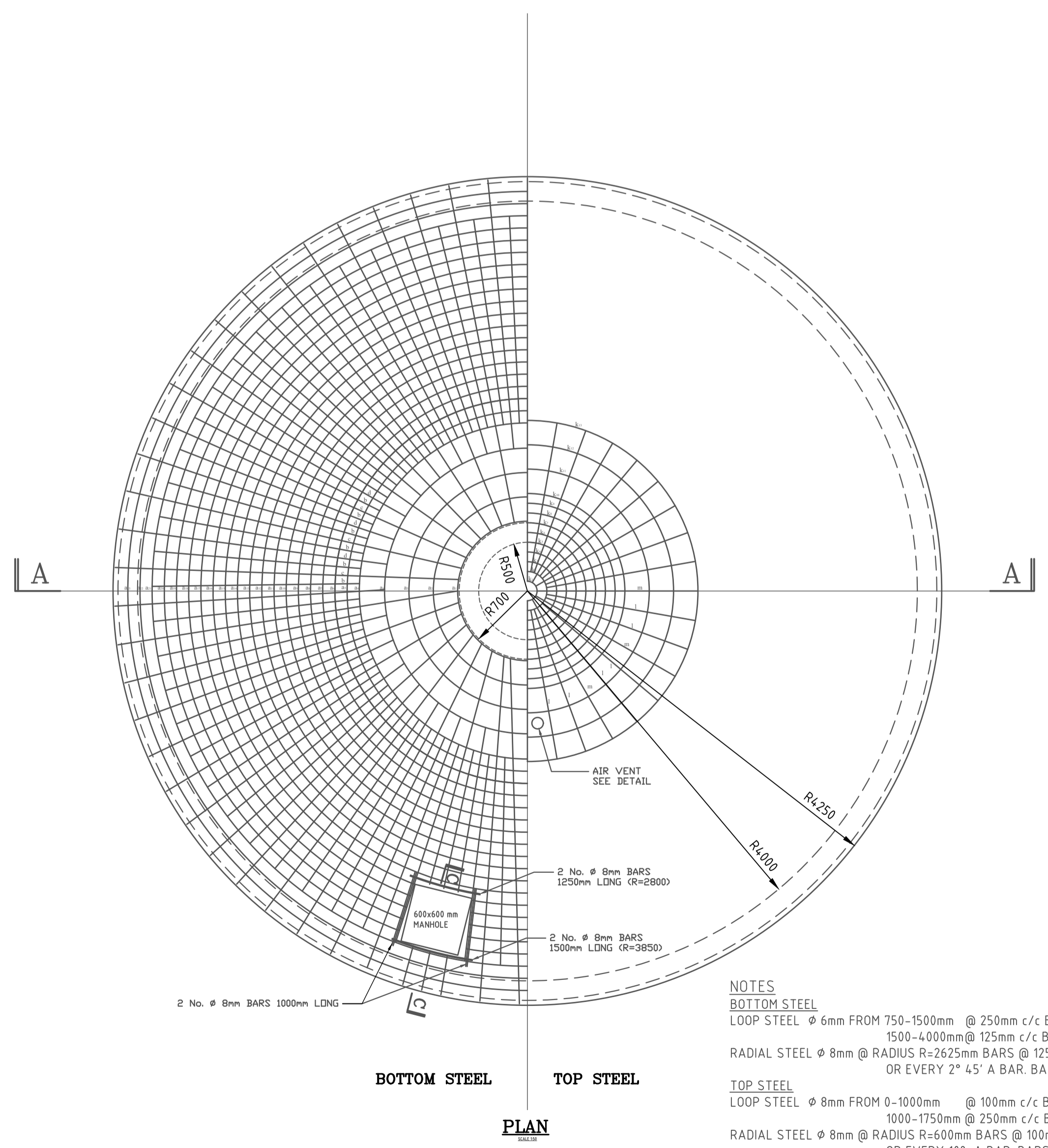
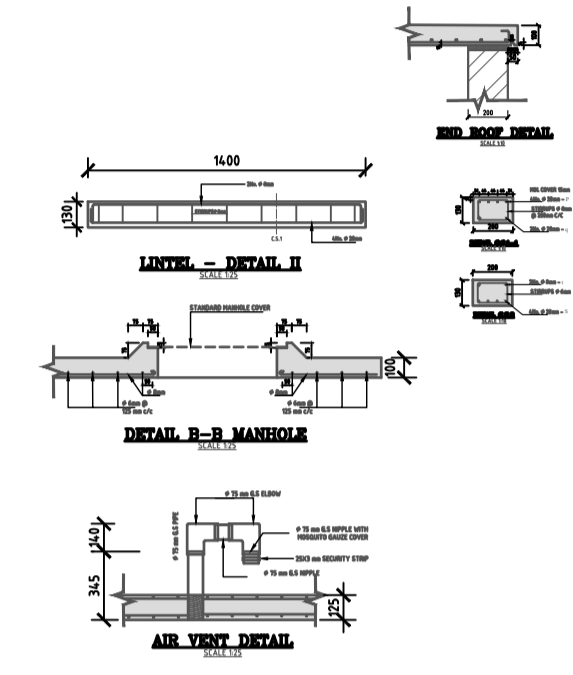
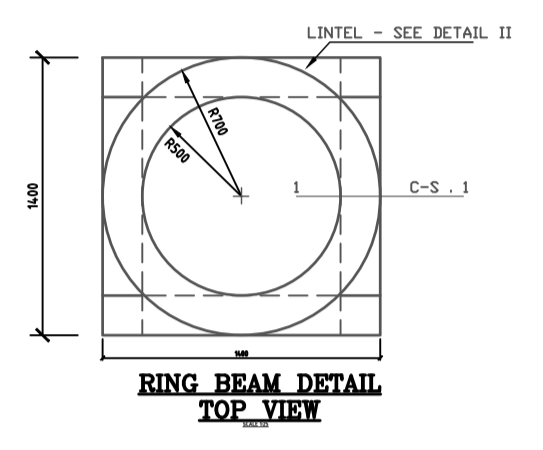
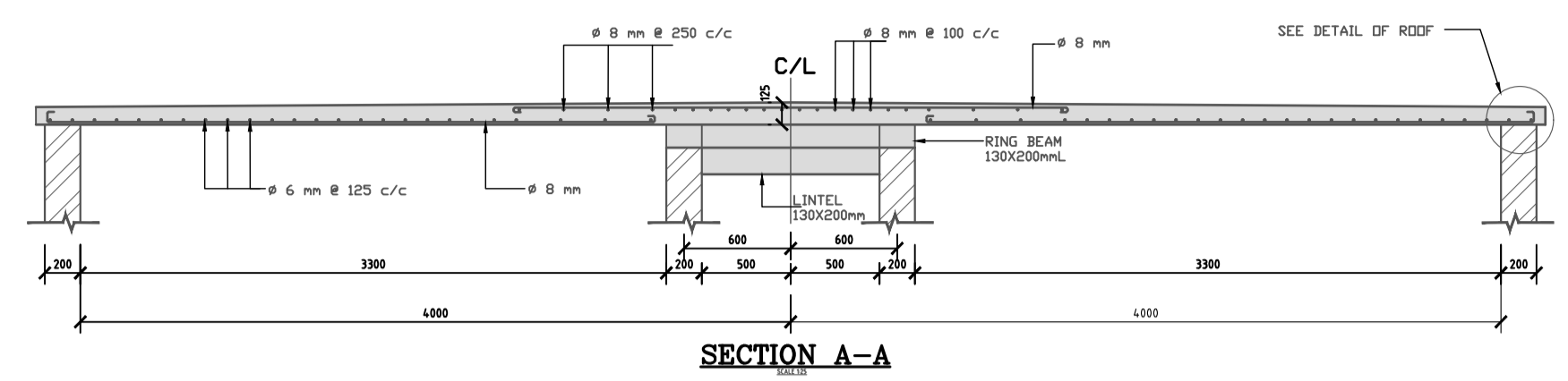
Project Name and Address  
**225M<sup>3</sup>  
OF  
MASONRY  
TANK**

Project  
**WATER PROJECT**

Date  
**14.04.2022**

Scale  
**1:1000**

Sheet



**NOTES**  
**BOTTOM STEEL**  
 LOOP STEEL  $\phi$  6mm FROM 750-1500mm @ 250mm c/c BARS a1-a4  
 1500-4000mm @ 125mm c/c BARS a1-a4  
 RADIAL STEEL  $\phi$  8mm @ RADIUS R=2625mm BARS @ 125mm c/c  
 OR EVERY 2° 45' A BAR. BARS b,c,d

**TOP STEEL**  
 LOOP STEEL  $\phi$  8mm FROM 0-1000mm @ 100mm c/c BARS k1-k4  
 1000-1750mm @ 250mm c/c BARS k4-k9  
 RADIAL STEEL  $\phi$  8mm @ RADIUS R=600mm BARS @ 100mm c/c  
 OR EVERY 10° A BAR. BARS l,m

POSITION	BAR MARK	TOTAL No.	BAR DIA. mm	LENGTH PER BAR (m)	TOTAL LENGTH PER $\phi$ (m)			BENDING	REMARKS
					$\phi$ 6	$\phi$ 8	$\phi$ 20		
TOP RADIAL	l	24	8	1.17		28.08			
	m	24	8	1.87		44.88			
BOTTOM RADIAL	b	64	8	2.22		142.08			
	c	32	8	2.92		93.44			
	d	32	8	3.42		105.44			
TOP LOOP	k1	1	8	0.63		62.80 (LAPS)			NOT INCLUDING LAPS 1 LAP $\phi$ 8mm. STEEL 460mm LONG
	k10	1	8	10.99		6.04			
BOTTOM LOOP	a1	1	6	4.71	381.00 (LAPS)	7.50			1 LAP $\phi$ 6mm. STEEL 340mm LONG
	a24	1	6	25.12	14.62				
RING BEAM	p	4	20	3.35 - 4.2		15.10			R= 531mm = 577mm = 623mm = 669mm
	q	2	20	3.35 - 4.2	7.55	7.55			
	r	19	8	0.60	14.40	14.40			
LINTEL	s	8	20	1.50		12.00			
	t	4	8	1.35		5.40			
	u	22	6	0.62	13.64				
TOTAL LENGTH					409.26	510.06	34.65		
TOTAL WEIGHT					94	196	60	350	

General Notes

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**CLIENT:** THE CHIEF EXECUTIVE OFFICER  
 TANA WATER WORKS  
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 P.O BOX 1292 - 10100,  
 NYERI, KENYA

**ENGINEERS:** MANAGING DIRECTOR  
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**PROJECT TITLE:**

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	CONTRACT No.	

**Client Name and Address:**  
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**Project Name and Address:**  
 150M<sup>3</sup>  
 OF  
 MASONRY  
 TANK

Project	Sheet
WATER PROJECT	
Date	
14.04.2022	
Scale	
1:1000	