



COUNTY GOVERNMENT OF NYANDARUA

LANDS, HOUSING, PHYSICAL PLANNING, MUNICIPAL, ADMINISTRATION
AND URBAN DEVELOPMENT

SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP 2)

RFB No: KE-NYANDARUA COUNTY-398770-CW-RFB

**CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC
LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS
OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.**

VOLUME 2 OF 3

BOOK OF DRAWINGS

DECEMBER 2023

CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS, WATER SUPPLY AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.

S/No.	DESCRIPTION	Drawing No.
1	PROJECT LOCATION	WMCL/CR214/PLP
NJABINI SETTELEMENT - NYANDARUA		
2	GENERAL LAYOUT - Sheet 1 of 2	WMCL/CR214/NJB/GLP/01
3	GENERAL LAYOUT - Sheet 2 of 2	WMCL/CR214/NJB/GLP/02
4	PLAN AND PROFILES - Sheet 1 of 3	WMCL/CR214/NJB/PP/01
5	PLAN AND PROFILES - Sheet 2 of 3	WMCL/CR214/NJB/PP/02
6	PLAN AND PROFILES - Sheet 3 of 3	WMCL/CR214/NJB/PP/03
HURUMA SETTLEMENT - OLKALAU		
7	GENERAL LAYOUT - Sheet 1 of 2	WMCL/CR214/HRM/GLP/01
8	GENERAL LAYOUT - Sheet 2 of 2	WMCL/CR214/HRM/GLP/02
9	PLAN AND PROFILES - Sheet 2 of 4	WMCL/CR214/HRM/PP/01
10	PLAN AND PROFILES - Sheet 3 of 4	WMCL/CR214/HRM/PP/02
11	PLAN AND PROFILES - Sheet 4 of 4	WMCL/CR214/HRM/PP/03
STANDARD DETAILS		
12	TYPICAL ROAD CROSS SECTION	WMCL-CR214-SC- 01
13	TYPICAL BUS BAY DETAILS	WMCL-CR214-SC- 02
14	TYPICAL JUNCTION DETAILS	WMCL-CR214-SC- 03
15	TYPICAL ROAD SAFETY DETAILS	WMCL-CR214-SC- 04
16	TRAFFIC SIGNS FIXING DETAILS	WMCL-CR214-SC- 05
17	DESIGN CHANNEL DETAILS	WMCL-CR214-SC- 06
18	DETAILED SIGNING FOR DEVIATION	WMCL-CR214-SC- 07
19	DETAILED ROAD SIGNS	WMCL-CR214-SC- 08
20	DETAILED SLOTTED DRAIN AND SUB SOIL DRAIN DETAILS	WMCL-CR214-SC- 09
21	DETAILED SINGLE PIPE CULVERT DETAILS	WMCL-CR214-SC- 10
22	DETAILED MULTIPLE PIPE CULVERT DETAILS	WMCL-CR214-SC- 11
23	PROJECT SIGN BOARD	WMCL-CR214-SC- 12
24	STREET LIGHTING DETAILS	WMCL-CR214-SC- 13

PROJECT LOCATION



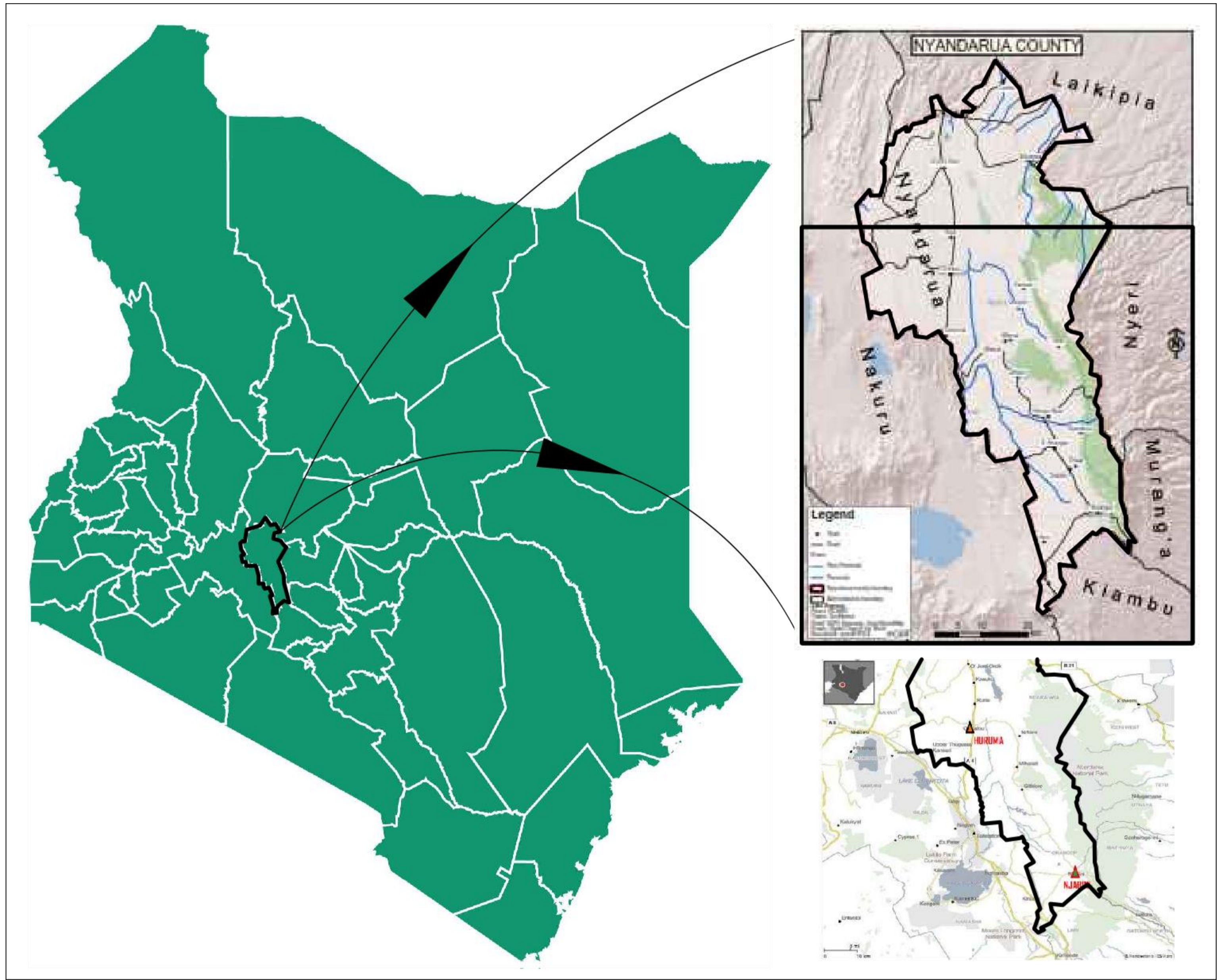
Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG.IKWM	Date						
CHECKED BY	ENG.PNG	Date						
DESIGNED BY	ENG.DMM	Date						
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.



CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	PROJECT LOCATION		
Date	Scale: As Shown	Date: OCTOBER:2023	



APPROVED BY	ENG. IKWM	Date						
CHECKED BY	ENG. PNG	Date						
DESIGNED BY	ENG. DMM	Date						
DRAWN BY	IM	Date						
No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.			

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	Drawing Title: PROJECT LOCATION MAP		
Date	Scale: As Shown	Date: OCTOBER:2023	Drq. No. WMCL/CR214/PLP
			Sheet No. 1 of 1

NJABINI SETTLEMENT



Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists . Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date
CHECKED BY	ENG. PNG	Date
DESIGNED BY	ENG. DMM	Date
DRAWN BY	SM	Date

No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.



CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date
Date
Date

Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.	
NJABINI SETTLEMENT	
Scale: As Shown	Date: DECEMBER 2023

GENERAL LAYOUT



APPROVED BY	ENG.IKWM	Date							
CHECKED BY	ENG.PNG	Date							
DESIGNED BY	ENG.DMM	Date							
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.	



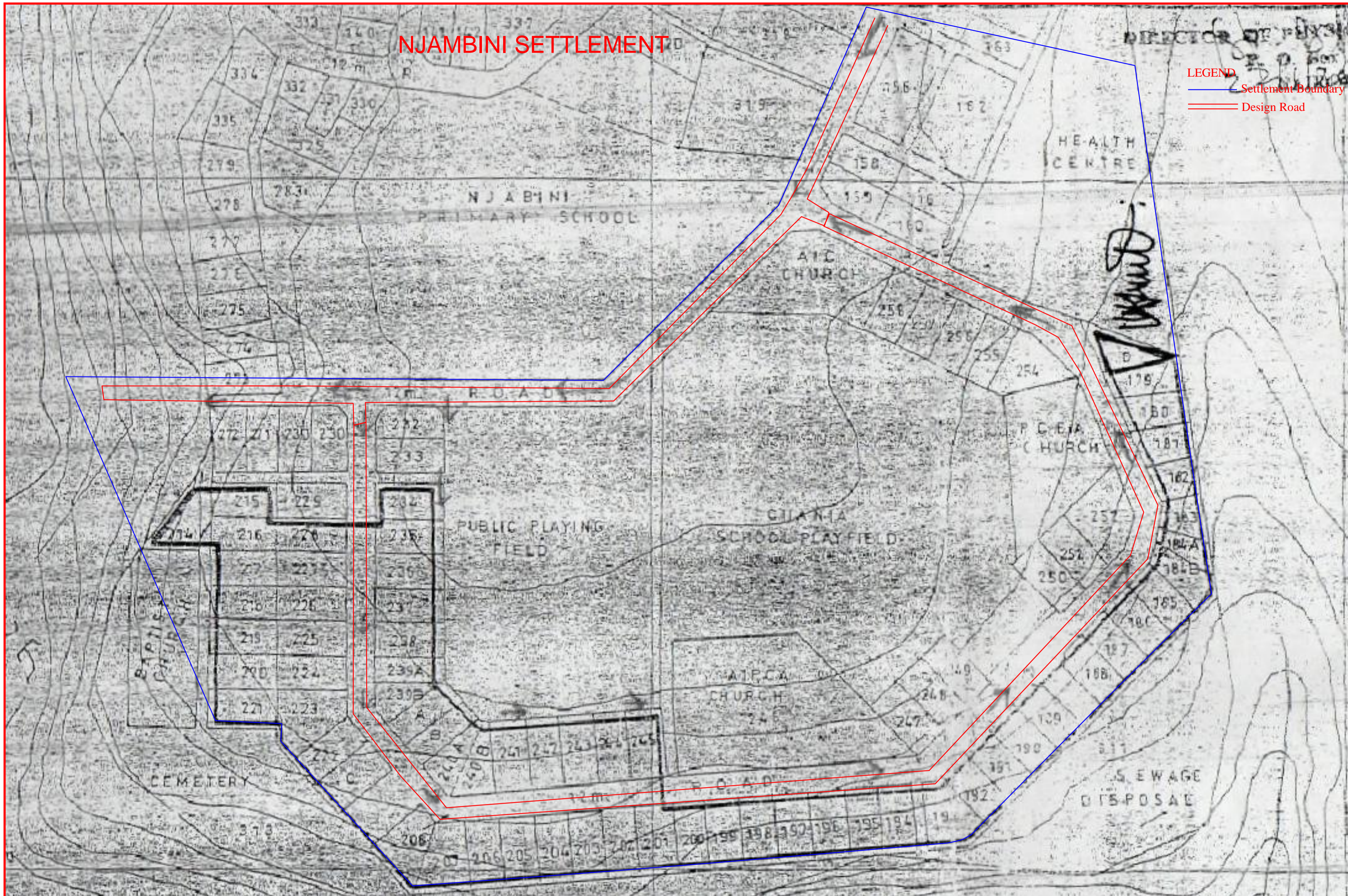
CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
HOUSING AND URBAN DEVELOPMENT**
State Department of Housing and Urban Development

Date
Date
Date

Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.	
GENERAL LAYOUT	
Scale: As Shown	Date: DECEMBER 2023

NJAMBINI SETTLEMENT

LEGEND
— Settlement Boundary
= Design Road



CONSULTANT



Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

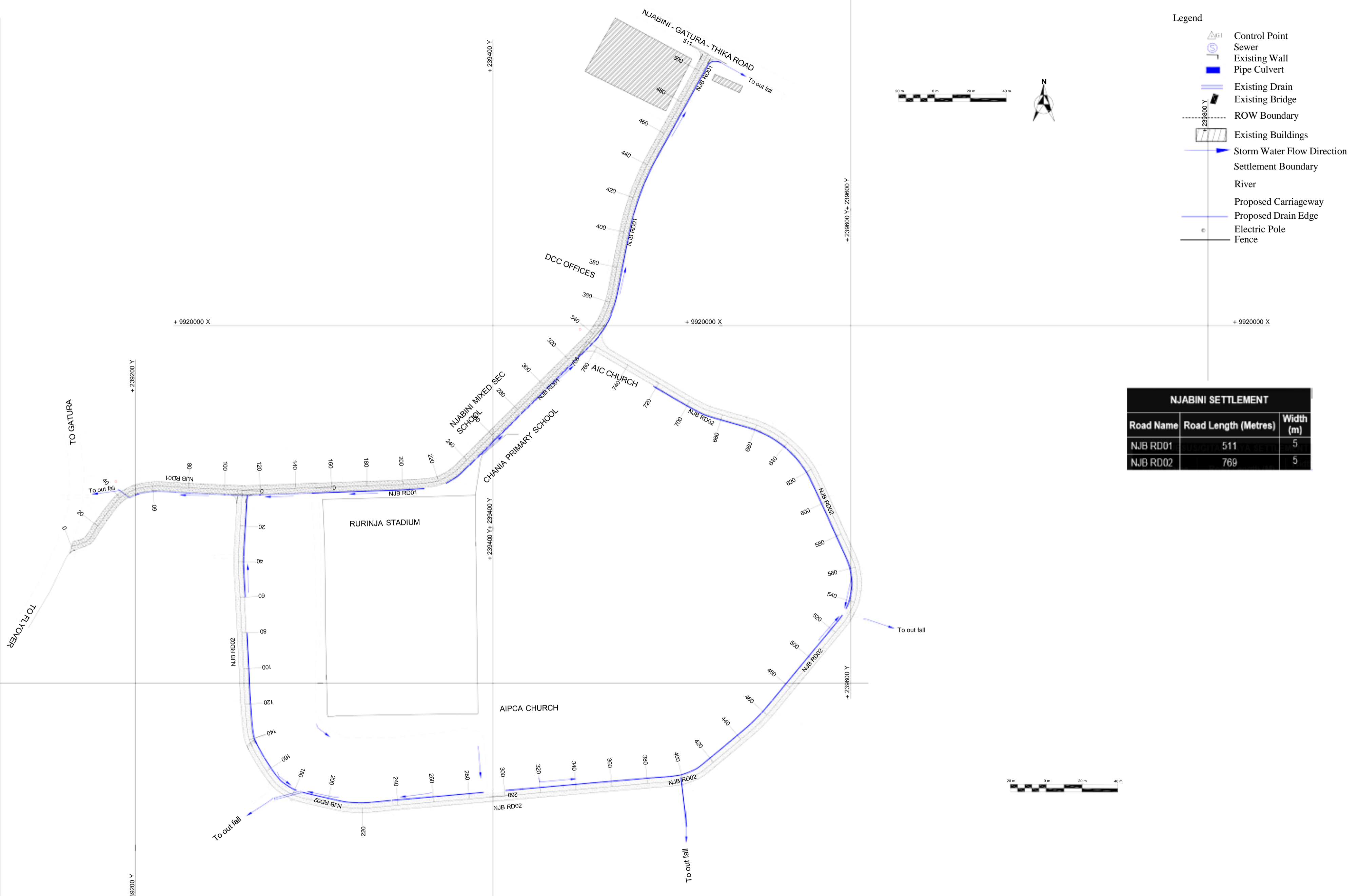
APPROVED BY	ENG. IKWM	Date						
CHECKED BY	ENG. PNG	Date						
DESIGNED BY	ENG. DMM	Date						
DRAWN BY	IM	Date						
No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.			

CLIENT:



**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION WORKS OF ROADS / FOOTPATHS AND DRAINAGE INFORMAL SETTLEMENTS WORKS IN NYANDARUA COUNTY (HURUMA & NJABINI)			
Date				
Date	Drawing Title: NJAMBINI SETTLEMENT LAYOUT PLAN			
Date	Scale: As Shown	Date: DECEMBER:2023	Drg. No. WMCL/CR214/NJB/GLP/01	Sheet No. 1 of 2



- Legend**
- Control Point
 - Sewer
 - Existing Wall
 - Pipe Culvert
 - Existing Drain
 - Existing Bridge
 - ROW Boundary
 - Existing Buildings
 - Storm Water Flow Direction
 - Settlement Boundary
 - River
 - Proposed Carriageway
 - Proposed Drain Edge
 - Electric Pole
 - Fence

NJABINI SETTLEMENT		
Road Name	Road Length (Metres)	Width (m)
NJB RD01	511	5
NJB RD02	769	5

CONSULTANT

Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY ENG. IKWM Date
 CHECKED BY ENG. PNG Date
 DESIGNED BY ENG. DMM Date
 DRAWN BY IM Date

No. Date AMMENDMENTS BY DRG. No. REFERENCE DRGS.

CLIENT:

**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date
 Date
 Date

Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.

Drawing Title: NJABINI SETTLEMENT LAYOUT PLAN

Scale: As Shown Date: DECEMBER:2023 Drg. No. WMCL/CR214/KSNJB/GLP/02 Sheet No. 2 of 2

PLANS AND PROFILES

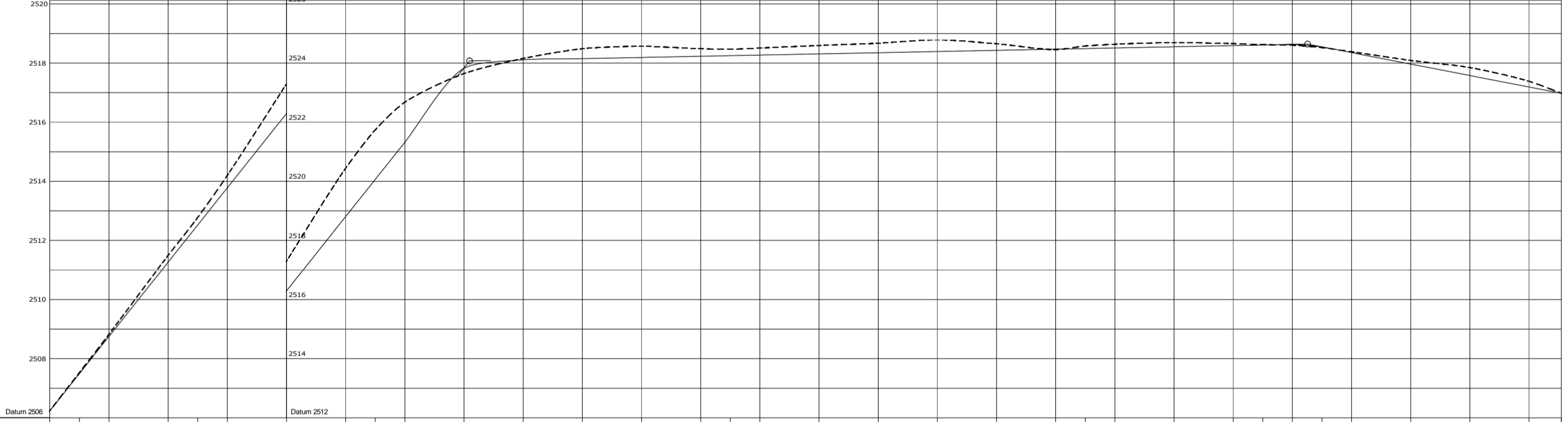
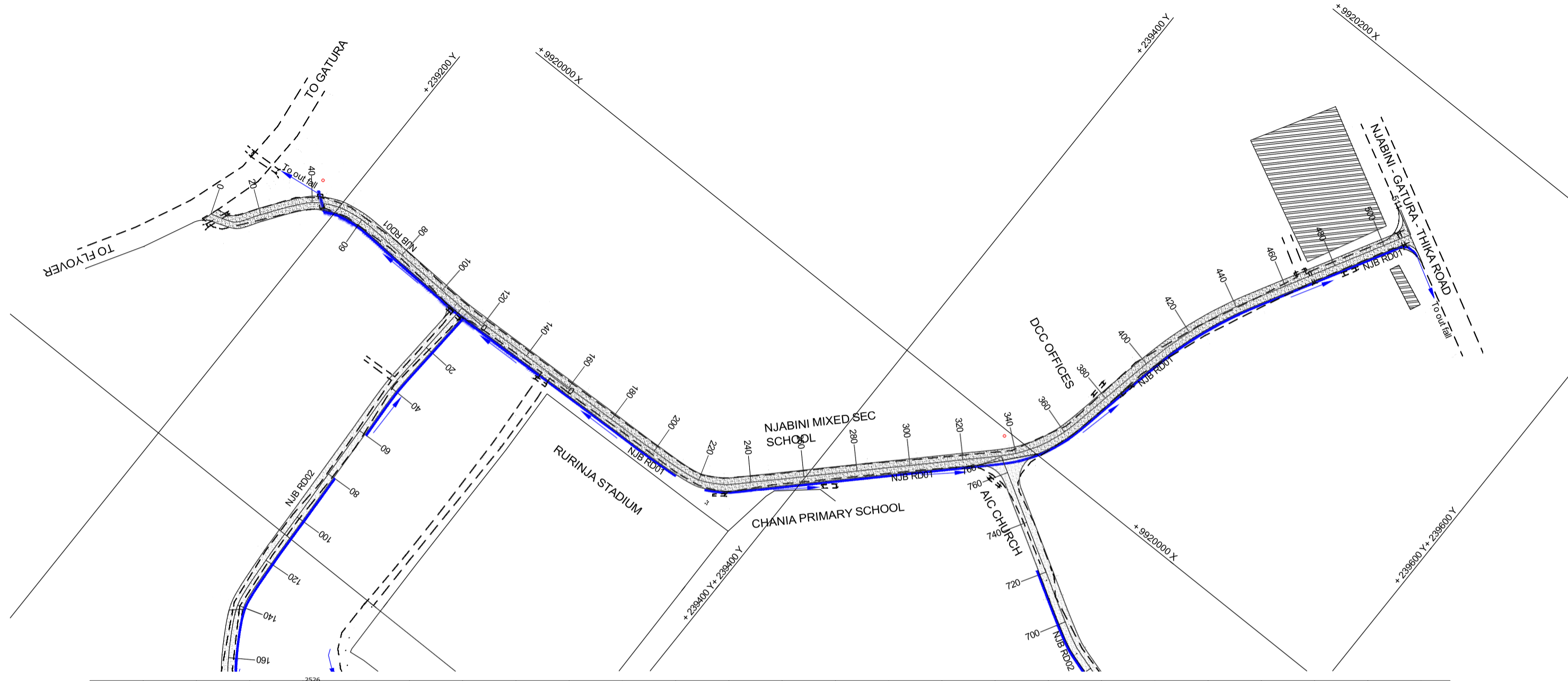


APPROVED BY	ENG.IKWM	Date							
CHECKED BY	ENG.PNG	Date							
DESIGNED BY	ENG.DMM	Date							
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.	



CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	PLANS AND PROFILES		
Date	Scale: As Shown	Date: DECEMBER 2023	



Chainages	0	10	20	40	50	60	80	100	110	120	140	160	180	200	220	230	240	260	280	300	320	340	350	360	380	400	410	420	430	440	460	480	500	510.881																																																																																																												
Original Ground Levels (OGL)	2506.233	2507.523	2508.820	2511.483	2512.767	2514.185	2517.281	2520.425	2521.727	2522.668	2523.639	2524.151	2524.481	2524.584	2524.480	2524.463	2524.584	2524.591	2524.667	2524.783	2524.649	2524.650	2524.488	2524.573	2524.508	2524.634	2524.546	2524.688	2524.588	2524.655	2524.620	2524.598	2524.517	2524.378	2524.083	2523.844	2523.378	2522.976																																																																																																								
Road Design	<table border="1"> <tr> <td>Center line levels</td> <td>2506.233</td><td>2507.489</td><td>2508.745</td><td>2511.258</td><td>2512.514</td><td>2513.770</td><td>2516.282</td><td>2518.795</td><td>2520.051</td><td>2521.307</td><td>2523.820</td><td>2524.107</td><td>2524.147</td><td>2524.187</td><td>2524.227</td><td>2524.247</td><td>2524.267</td><td>2524.307</td><td>2524.347</td><td>2524.387</td><td>2524.427</td><td>2524.468</td><td>2524.488</td><td>2524.508</td><td>2524.548</td><td>2524.588</td><td>2524.588</td><td>2524.628</td><td>2524.638</td><td>2524.542</td><td>2524.348</td><td>2523.961</td><td>2523.574</td><td>2523.187</td><td>2522.976</td> </tr> <tr> <td>Vertical Curve</td> <td colspan="38"> <table border="1"> <tr> <td>Gradient</td> <td colspan="10">12.6 %</td> <td colspan="10">0.2 %</td> <td colspan="8">-1.9 %</td> </tr> </table> </td> </tr> </table>																																						Center line levels	2506.233	2507.489	2508.745	2511.258	2512.514	2513.770	2516.282	2518.795	2520.051	2521.307	2523.820	2524.107	2524.147	2524.187	2524.227	2524.247	2524.267	2524.307	2524.347	2524.387	2524.427	2524.468	2524.488	2524.508	2524.548	2524.588	2524.588	2524.628	2524.638	2524.542	2524.348	2523.961	2523.574	2523.187	2522.976	Vertical Curve	<table border="1"> <tr> <td>Gradient</td> <td colspan="10">12.6 %</td> <td colspan="10">0.2 %</td> <td colspan="8">-1.9 %</td> </tr> </table>																																						Gradient	12.6 %										0.2 %										-1.9 %							
Center line levels	2506.233	2507.489	2508.745	2511.258	2512.514	2513.770	2516.282	2518.795	2520.051	2521.307	2523.820	2524.107	2524.147	2524.187	2524.227	2524.247	2524.267	2524.307	2524.347	2524.387	2524.427	2524.468	2524.488	2524.508	2524.548	2524.588	2524.588	2524.628	2524.638	2524.542	2524.348	2523.961	2523.574	2523.187	2522.976																																																																																																											
Vertical Curve	<table border="1"> <tr> <td>Gradient</td> <td colspan="10">12.6 %</td> <td colspan="10">0.2 %</td> <td colspan="8">-1.9 %</td> </tr> </table>																																						Gradient	12.6 %										0.2 %										-1.9 %																																																																																		
Gradient	12.6 %										0.2 %										-1.9 %																																																																																																																									
Drainage Design	<table border="1"> <tr> <td>Culvert Location</td> <td colspan="38"> </td> </tr> <tr> <td>Drainage Type</td> <td>LHS</td><td colspan="36"></td><td>RHS</td> </tr> </table>																																						Culvert Location																																							Drainage Type	LHS																																					RHS																										
Culvert Location																																																																																																																																														
Drainage Type	LHS																																					RHS																																																																																																								

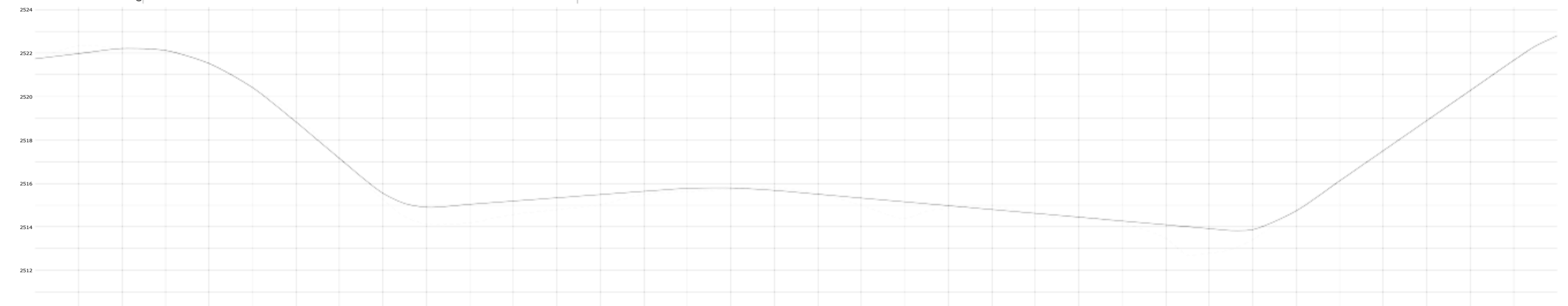
Longsection for 0 to 510

CONSULTANT
Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date	
CHECKED BY	ENG. PNG	Date	
DESIGNED BY	ENG. DMM	Date	
DRAWN BY	IM	Date	

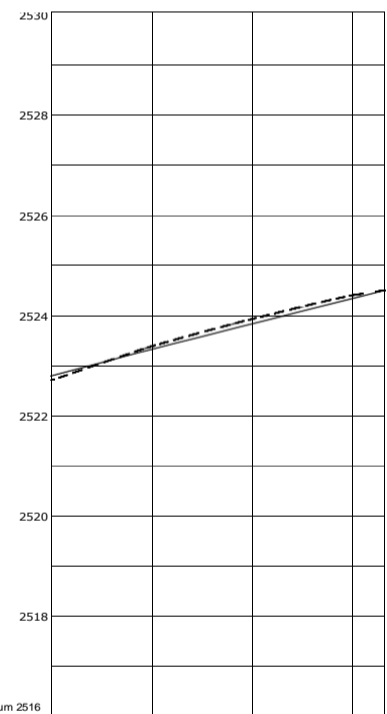
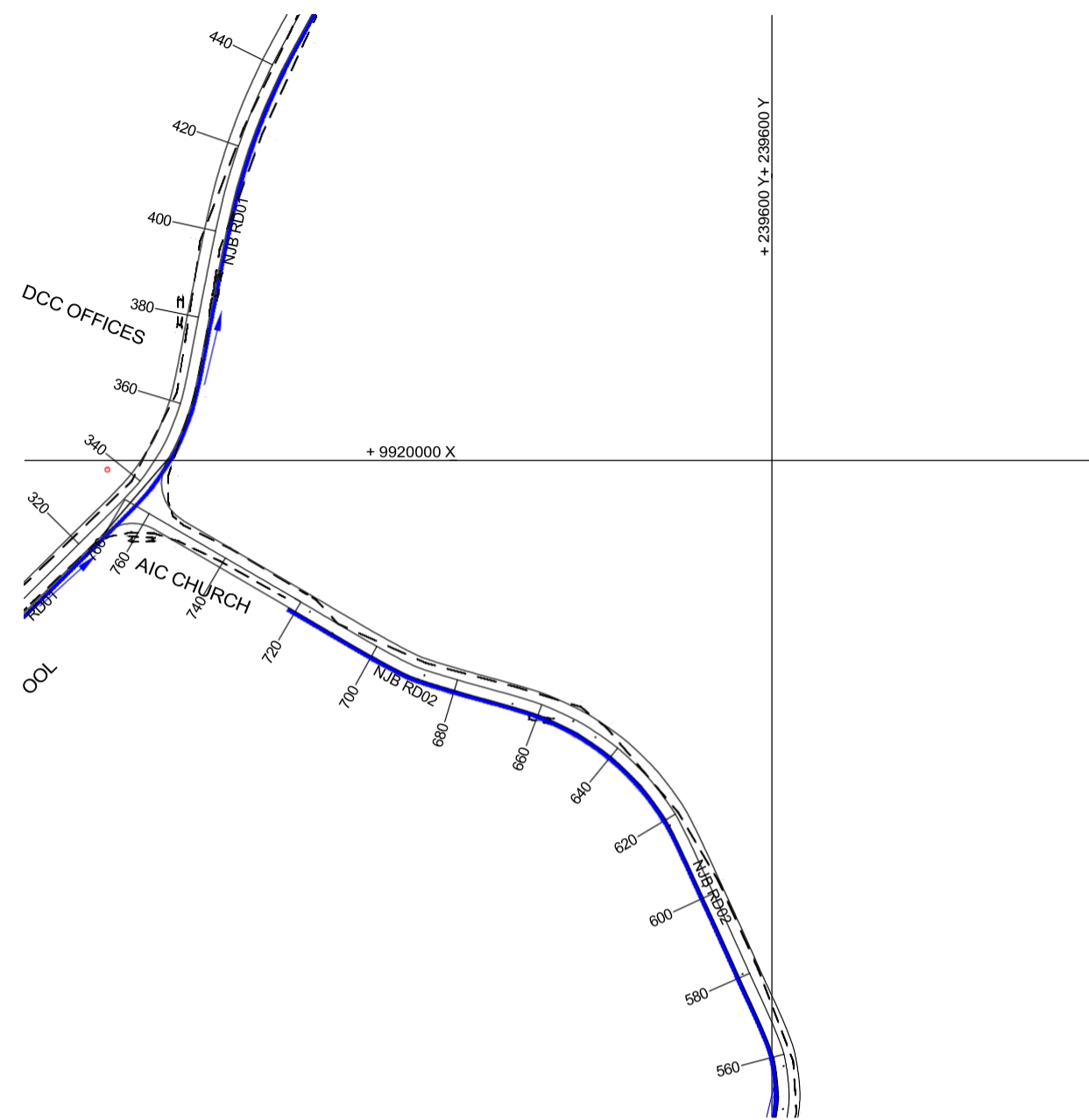
CLIENT:
MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.
Date	Drawing Title: NJABINI SETTLEMENT PLAN & PROFILE RD01
Date	Scale: As Shown Date: DECEMBER:2023 Drg. No. WMCL/CR214/NJB/PP/01 Sheet No. 1 of 3



Chainages	Original Ground Levels (OGL)	Center line levels	Vertical Curve	Gradient	Culvert Location	Drainage Type
0	2521.737	2521.737				LHS
20	2522.334	2521.975				
40	2522.226	2522.209	BVC 37 K=8	1.2 %		
60	2522.123	2522.122	75m VC K=8	74.8 2522.6		
80	2521.534	2521.523	112 EVC	-8.4 %		
100	2520.466	2520.413				
120	2519.091	2518.830				
140	2517.162	2517.151	BVC 153 K=3			
160	2515.263	2515.546	30m VC K=3	168.0 2514.8		
170	2514.462	2515.073	183 EVC			
180	2514.125	2514.904				
200	2514.183	2515.040				
210	2514.379	2515.114				
220	2514.575	2515.189				
240	2514.788	2515.339		0.7 %		
260	2515.027	2515.489				
280	2515.481	2515.638	BVC 290 K=31			
300	2515.612	2515.771	50m VC K=31	315.0 2515.9		
320	2515.732	2515.791				
340	2515.807	2515.680	340 EVC			
360	2515.537	2515.504				
380	2514.996	2515.328				
400	2514.382	2515.152				
410	2514.721	2515.064				
420	2514.867	2514.976				
440	2514.975	2514.800		-0.9 %		
450	2514.793	2514.712				
460	2514.461	2514.624				
480	2514.472	2514.448				
500	2514.173	2514.272				
520	2513.475	2514.096				
530	2512.703	2514.008				
540	2512.783	2513.920	BVC 590 K=4			
550	2512.951	2513.832	30m VC K=4	565.0 2513.7		
560	2513.415	2513.874	580 EVC	565.0 2513.7		
580	2514.818	2514.739				
600	2516.090	2516.123				
620	2517.431	2517.508		6.9 %		
630	2518.128	2518.200				
640	2518.820	2518.892				
650	2519.563	2519.585				
660	2520.265	2520.277				
680	2521.683	2521.662	BVC 695 K=5			
690	2522.285	2522.326	20m VC K=5	695.0 2522.7		
700	2522.709	2522.798		695.0 2522.7		

Longsection for NJB RD01 0+000 to 0+700



Chainages	700	720	740	760	766.369	
Original Ground Level (OGL)	2522.709	2523.385	2523.925	2524.395	2524.493	
Road Design	Center line levels	2522.798	2523.328	2523.831	2524.333	2524.493
	Vertical Curve	20m VC K = 5 EVC				
Gradient		2.5 %				
Drainage Design	Culvert Location					
	Drainage Type	LHS	---			
		RHS				

Longsection for NJB RD02 0+700 to 0+766

CONSULTANT



Wanjohi Mutonyi Consult Ltd.
Engineers, Environmentalists, Project Managers
Corner Ngong/Ndemi Road,
P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date						
CHECKED BY	ENG.PNG	Date						
DESIGNED BY	ENG.DMM	Date						
DRAWN BY	IM	Date						
No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.			

CLIENT:



MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	Drawing Title: NJAMBINI SETTLEMENT - PLANS & PROFILES RD02		
Date	Scale: As Shown	Date: DECEMBER:2023	Drg. No. WMCL/CR214/NJB/PP/03
	Sheet No. 3 of 3		

HURUMA SETTLEMENT - OL KALAU



Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists . Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG.IKWM	Date						
CHECKED BY	ENG.PNG	Date						
DESIGNED BY	ENG.DMM	Date						
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.



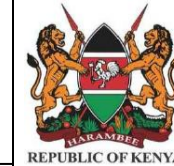
CLIENT
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	STANDARD DETAILS		
Date	Scale: As Shown	Date: DECEMBER	

GENERAL LAYOUT



APPROVED BY	ENG.IKWM	Date						
CHECKED BY	ENG.PNG	Date						
DESIGNED BY	ENG.DMM	Date						
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.



CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
HOUSING AND URBAN DEVELOPMENT**
State Department of Housing and Urban Development

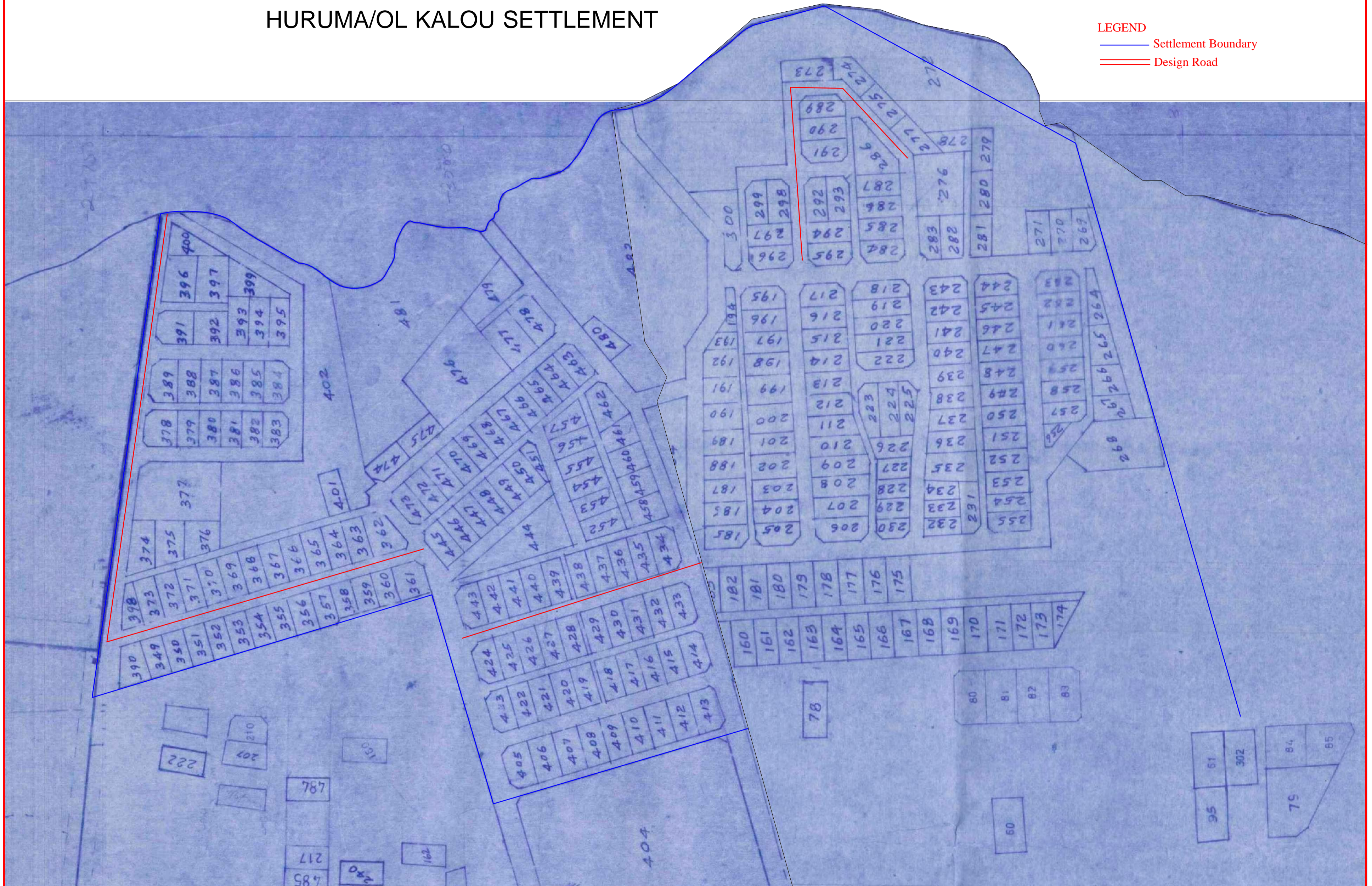
Date
Date
Date

Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.	
GENERAL LAYOUT	
Scale: As Shown	Date: DECEMBER 2023

HURUMA/OL KALOU SETTLEMENT

LEGEND

- Settlement Boundary
- = Design Road



CONSULTANT



Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date	
CHECKED BY	ENG. PNG	Date	
DESIGNED BY	ENG. DMM	Date	
DRAWN BY	IM	Date	
No.	Date	AMMENDMENTS	BY
		DRG. No.	REFERENCE DRGS.

CLIENT

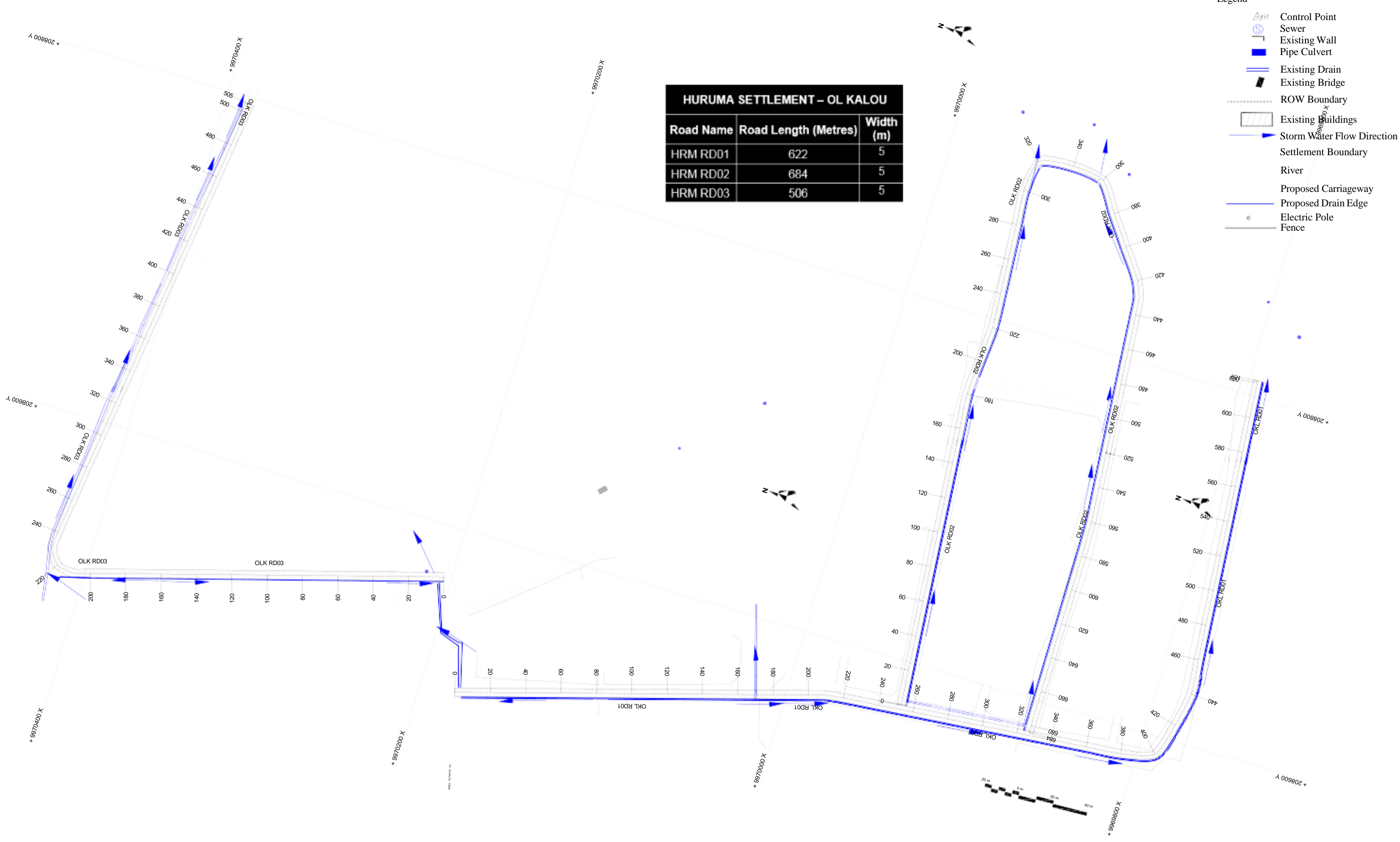


MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION WORKS OF ROADS / FOOTPATHS AND DRAINAGE INFORMAL SETTLEMENTS WORKS IN NYANDARUA COUNTY (HURUMA & NJABINI)
Date	
Date	Drawing Title: HURUMA SETTLEMENT LAYOUT PLAN
Scale: As Shown	Date: DECEMBER:2023
Drq. No. WMCL/CR214/HRM/GLP/01	Sheet No. 1 of 2

- Legend
- Control Point
 - Sewer
 - Existing Wall
 - Pipe Culvert
 - Existing Drain
 - Existing Bridge
 - ROW Boundary
 - Existing Buildings
 - Storm Water Flow Direction
 - Settlement Boundary
 - River
 - Proposed Carriageway
 - Proposed Drain Edge
 - Electric Pole
 - Fence

HURUMA SETTLEMENT – OL KALOU		
Road Name	Road Length (Metres)	Width (m)
HRM RD01	622	5
HRM RD02	684	5
HRM RD03	506	5



PLANS AND PROFILES



APPROVED BY	ENG.IKWM	Date							
CHECKED BY	ENG.PNG	Date							
DESIGNED BY	ENG.DMM	Date							
DRAWN BY	SM	Date	No	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.	

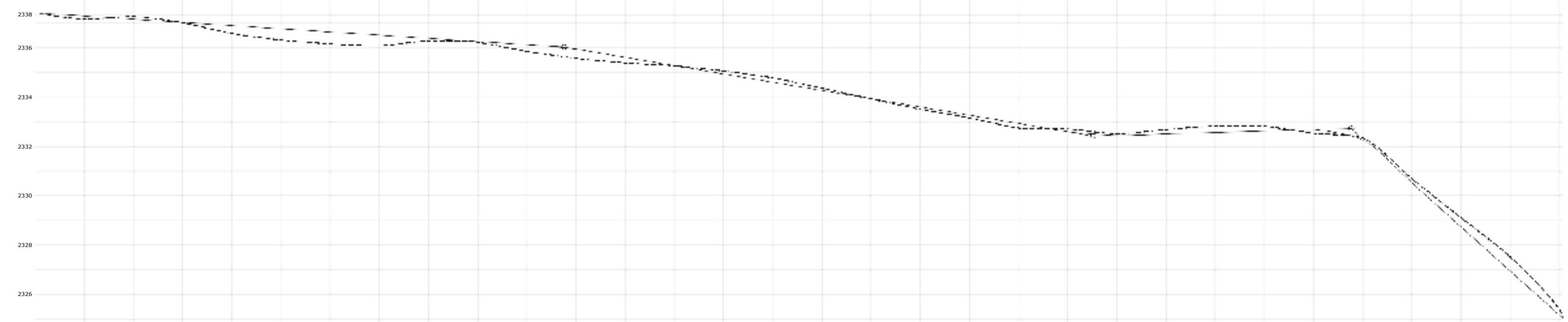
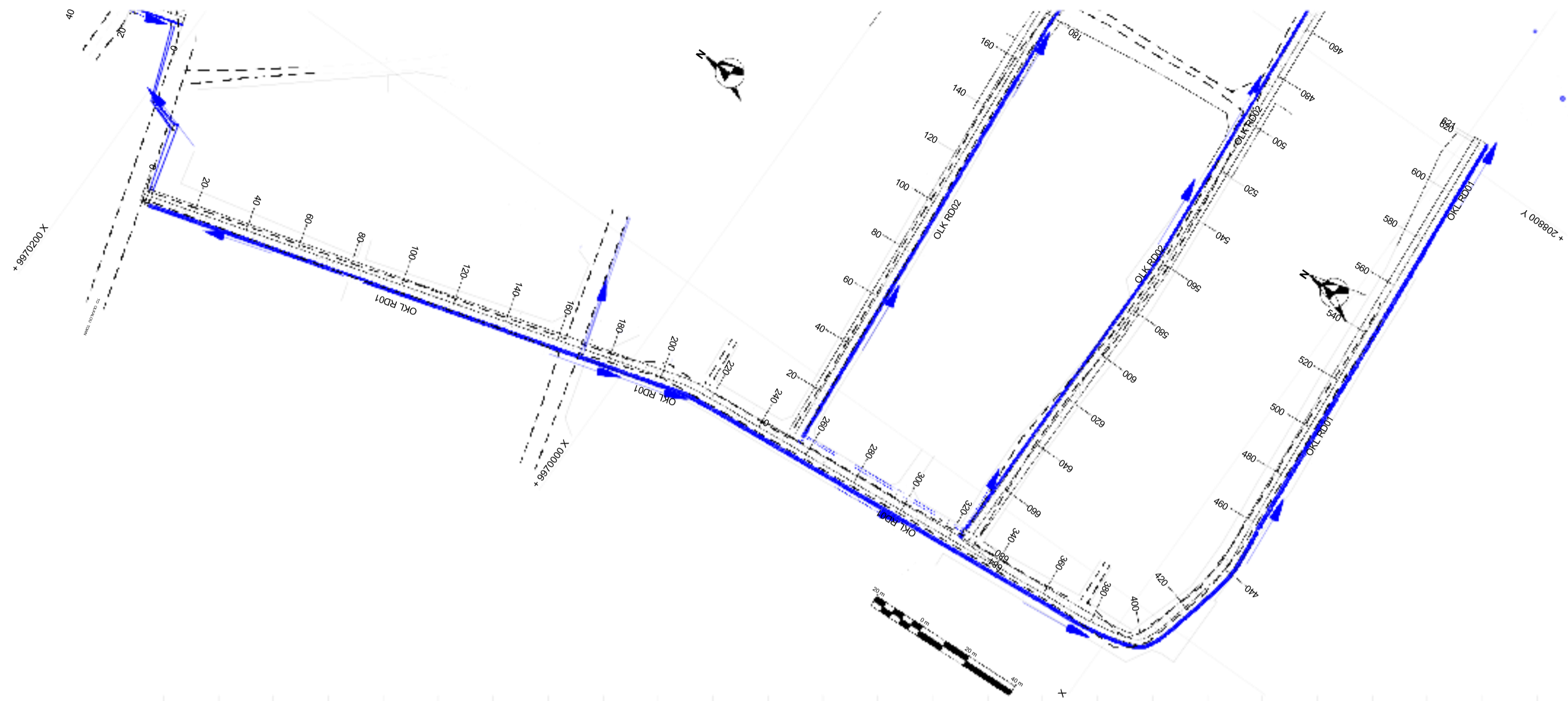


CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	PLANS AND PROFILES		
Date	Scale: As Shown	Date: DECEMBER 2023	

Legend

- Control Point
- Sewer
- Existing Wall
- Pipe Culvert
- Existing Drain
- Existing Bridge
- ROW Boundary
- Existing Buildings
- Storm Water Flow Direction
- Settlement Boundary
- River
- Proposed Carriageway
- Proposed Drain Edge
- Electric Pole
- Fence



Chainages	0	20	40	60	80	100	120	140	160	180	200	210	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	621.349	
Original Ground Level (OGL)	2337.393	2337.124	2337.244	2336.980	2336.550	2336.287	2336.130	2336.053	2336.255	2336.190	2335.823	2335.881	2335.537	2335.358	2335.233	2335.000	2334.755	2334.327	2333.900	2333.473	2333.126	2332.719	2332.579	2332.466	2332.659	2332.798	2332.784	2332.594	2332.307	2330.632	2329.666	2327.469	2325.314	2324.967	
Center line levels	2337.393	2337.263	2337.134	2337.004	2336.875	2336.745	2336.615	2336.486	2336.356	2336.227	2336.097	2336.030	2335.914	2335.581	2335.247	2334.912	2334.577	2334.242	2333.907	2333.572	2333.237	2332.902	2332.567	2332.428	2332.486	2332.486	2332.600	2332.657	2332.234	2330.467	2328.680	2326.894	2325.107	2324.967	
Vertical Curve											5m VC K = 15 215.0 2336.0											20m VC K = 10 430.0 2332.4						15m VC K = 2 535.0 2332.7							
Gradient						-0.6 %																													
Culvert Location																																			
Drainage Type	LHS																																		
	RHS																																		

Longsection for HRM RD01 0+000 to 0+621

CONSULTANT

Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists, Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

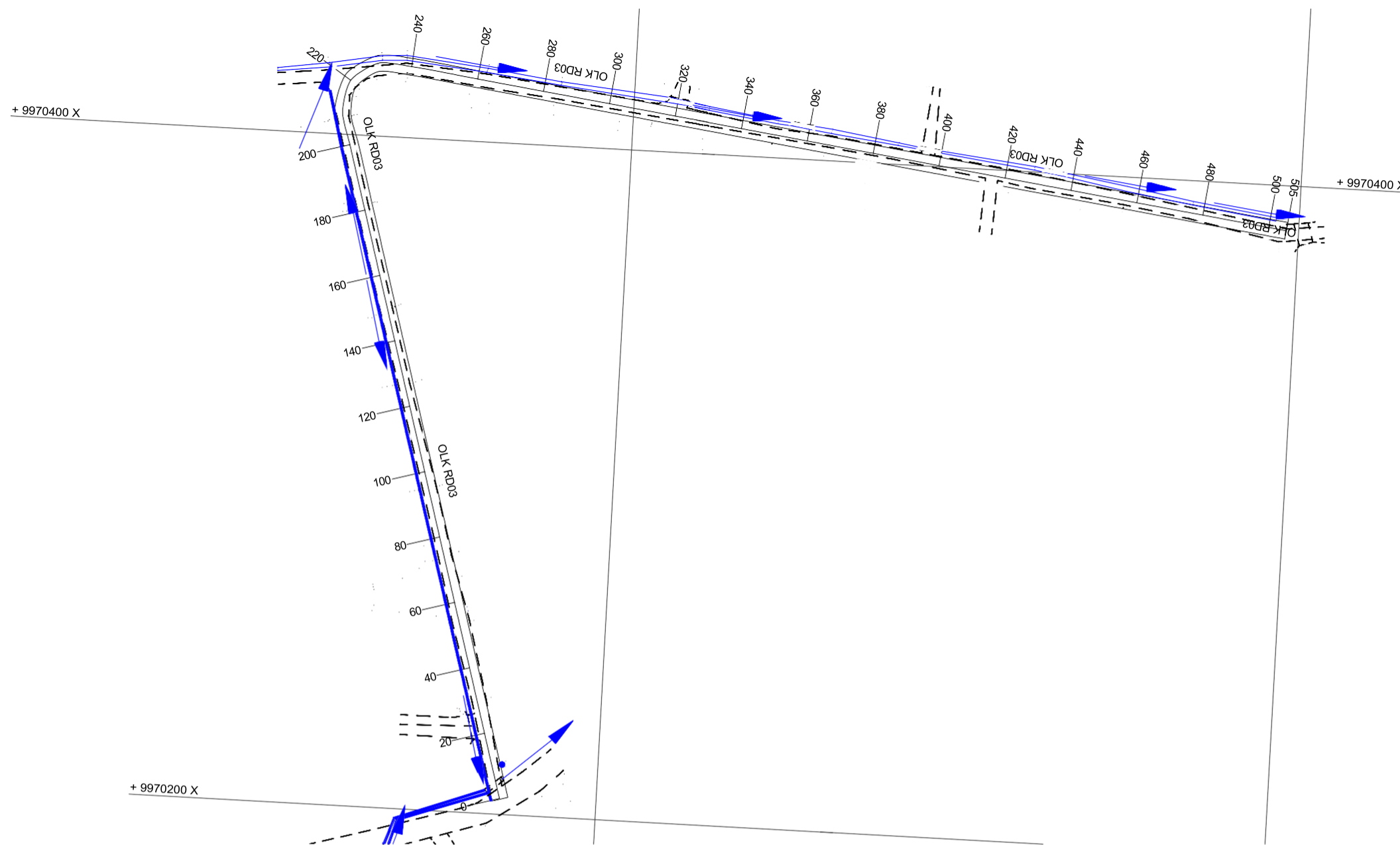
APPROVED BY ENG. IKWM Date
 CHECKED BY ENG. PNG Date
 DESIGNED BY ENG. DMM Date
 DRAWN BY IM

No. Date AMMENDMENTS BY DRG. No. REFERENCE DRGS.

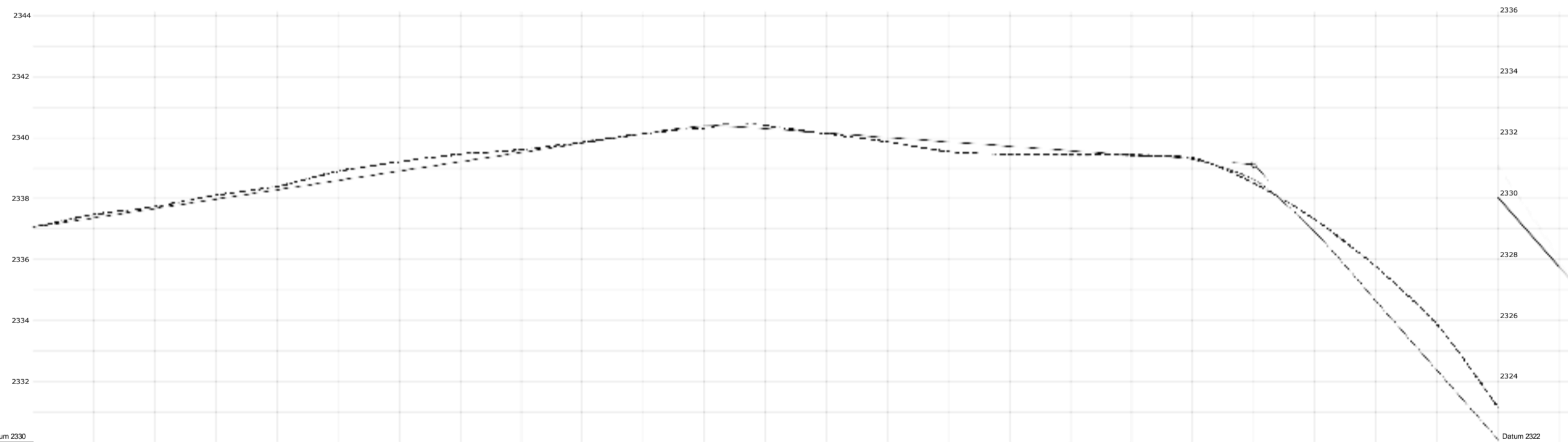
CLIENT:

**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

Date Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.
 Date Drawing Title: HURUMA SETTLEMENT - PLANS & PROFILES - RD01.
 Date Scale: As Shown Date: DECEMBER:2023 Drg. No. WMCL/CR214/HRM/PP/01 Sheet No. 1 of 3



- Legend**
- Control Point
 - Sewer
 - Existing Wall
 - Pipe Culvert
 - Existing Drain
 - Existing Bridge
 - ROW Boundary
 - Existing Buildings
 - Storm Water Flow Direction
 - Settlement Boundary
 - River
 - Proposed Carriageway
 - Proposed Drain Edge
 - Electric Pole
 - Fence



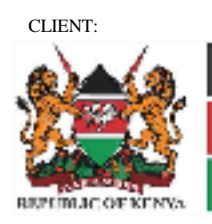
Datum 2330		Datum 2322	
Chainages	0	20	40
Original Ground Level (OGL)	2337.026	2337.440	2337.699
Center line levels	2337.026	2337.333	2337.639
Vertical Curve		2337.946	2338.075
Gradient		2338.253	2338.363
Culvert Location		2338.560	2338.861
Drainage Design	LHS	2338.866	2338.171
Drainage Type	RHS	2339.173	2339.421
		2339.480	2339.585
		2339.787	2339.818
		2340.093	2340.093
		2340.247	2340.207
		2340.344	2340.277
		2340.328	2340.459
		2340.256	2340.352
		2340.111	2340.088
		2339.967	2339.823
		2339.822	2339.502
		2339.678	2339.410
		2339.533	2339.390
		2339.389	2339.386
		2339.244	2339.291
		2338.570	2338.450
		2336.835	2337.257
		2334.571	2335.708
		2332.306	2333.801
		2330.042	2331.088
		2327.777	2328.137
		2327.170	2327.170

Longsection for HRM RD03 0+000 to 0+505



APPROVED BY ENG. IKWM Date
 CHECKED BY ENG. PNG Date
 DESIGNED BY ENG. DMM Date
 DRAWN BY IM Date

No. Date AMMENDMENTS BY DRG. No. REFERENCE DRGS.



MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT
 State Department of Housing and Urban Development

Date Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.
 Date Drawing Title: HURUMA SETTLEMENT - PLANS & PROFILES RD02
 Date Scale: As Shown Date: DECEMBER:2023 Drg. No. WMCL/CR214/HRM/PP/03 Sheet No. 3 of 3

STANDARD DETAILS



Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists . Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

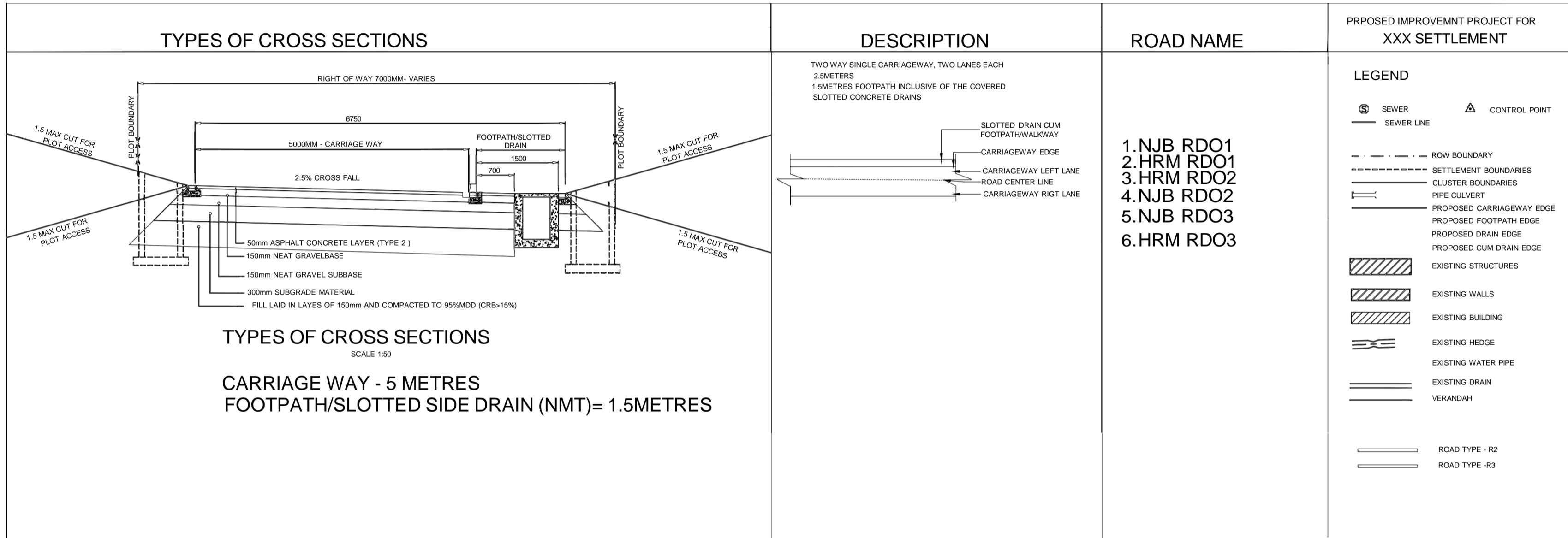
APPROVED BY	ENG.IKWM	Date						
CHECKED BY	ENG.PNG	Date						
DESIGNED BY	ENG.DMM	Date						
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.



CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
 HOUSING AND URBAN DEVELOPMENT**
 State Department of Housing and Urban Development

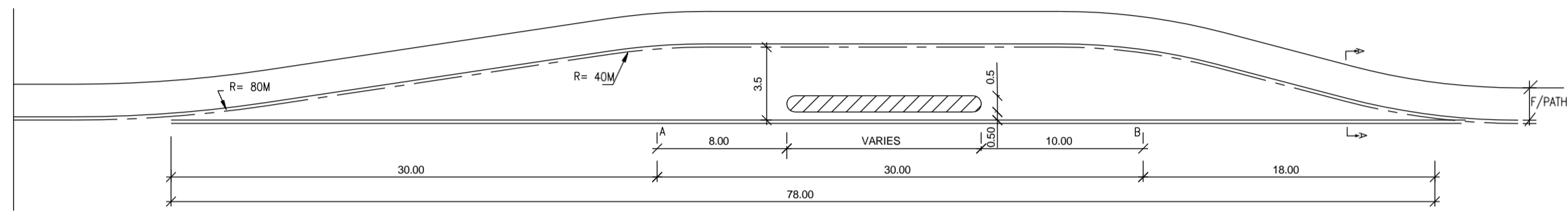
Date
 Date
 Date

Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.	
STANDARD DETAILS	
Scale: As Shown	Date: DECEMBER 2023

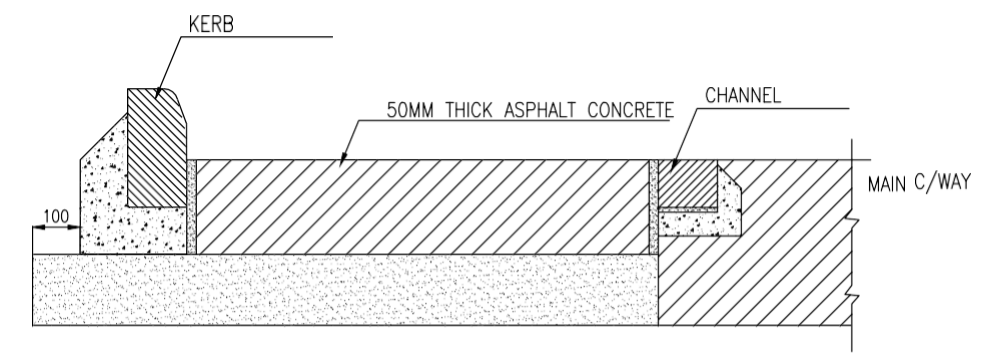


APPROVED BY	ENG.IKWM	Date							
CHECKED BY	ENG.PNG	Date							
DESIGNED BY	ENG.DMM	Date							
DRAWN BY	SM	Date							
	No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.			

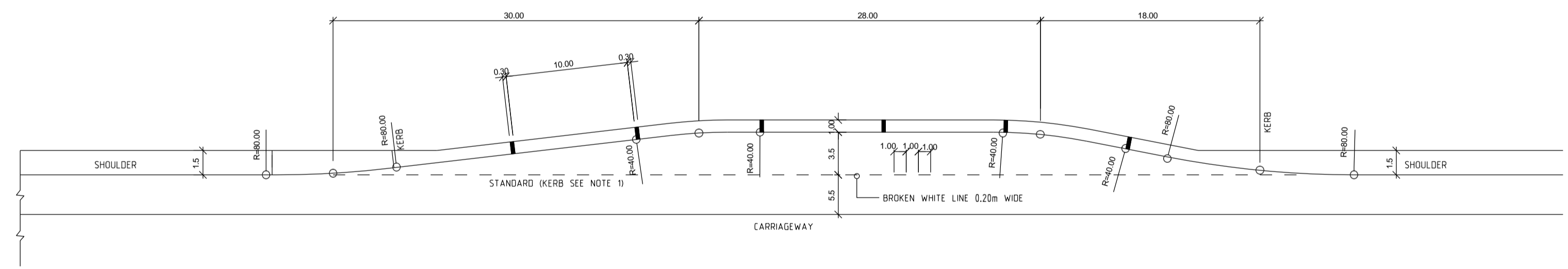




DETAILS OF STANDARD BUS LAY-BY
SCALE 1:200



SECTION A-A
SCALE 1:10



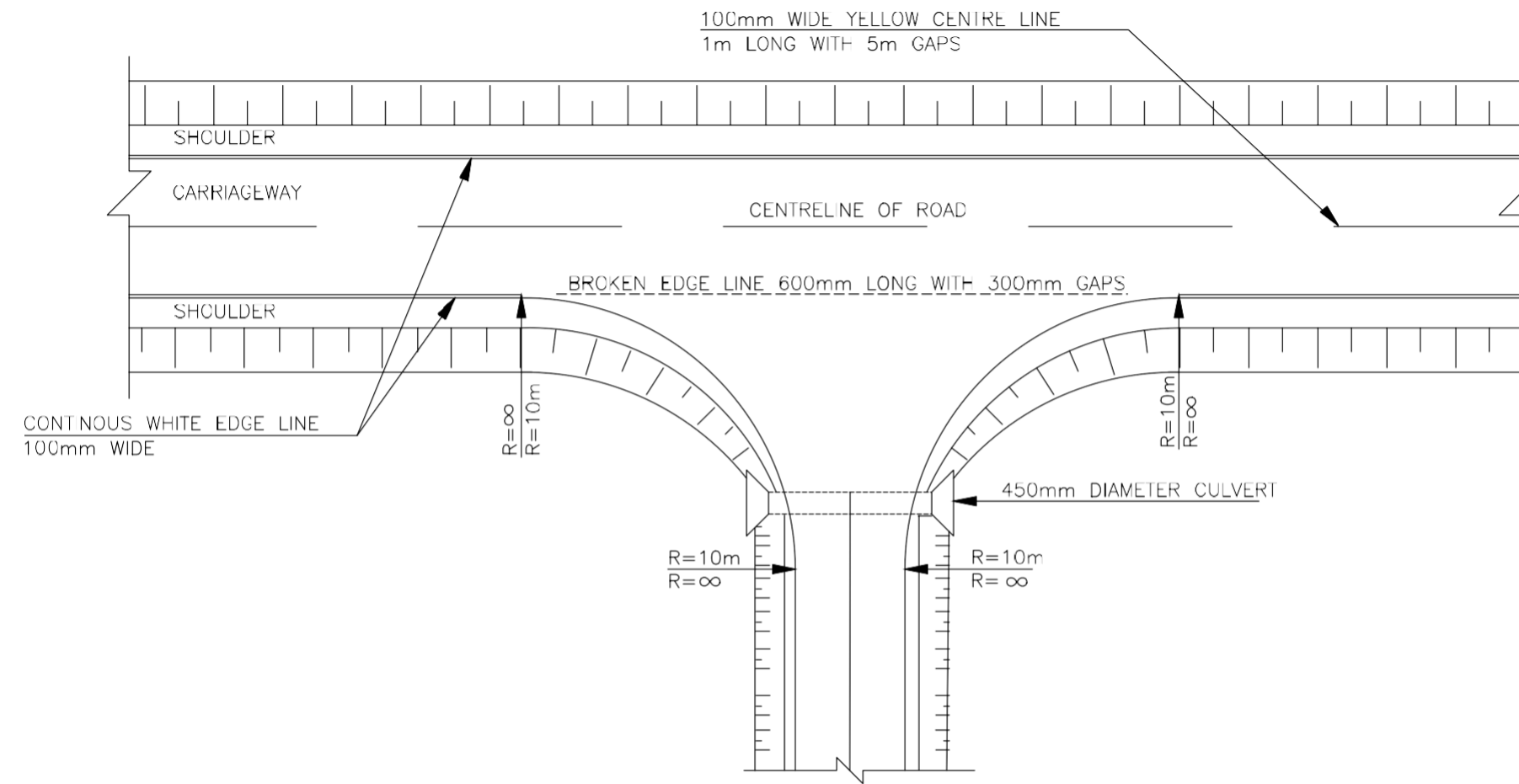
BUS-BAY DETAILS
1:200

Wanjohi Mutonyi Consult Ltd.
Engineers, Environmentalists . Project Managers
Corner Ngong/Ndemi Road,
P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date					
No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.		

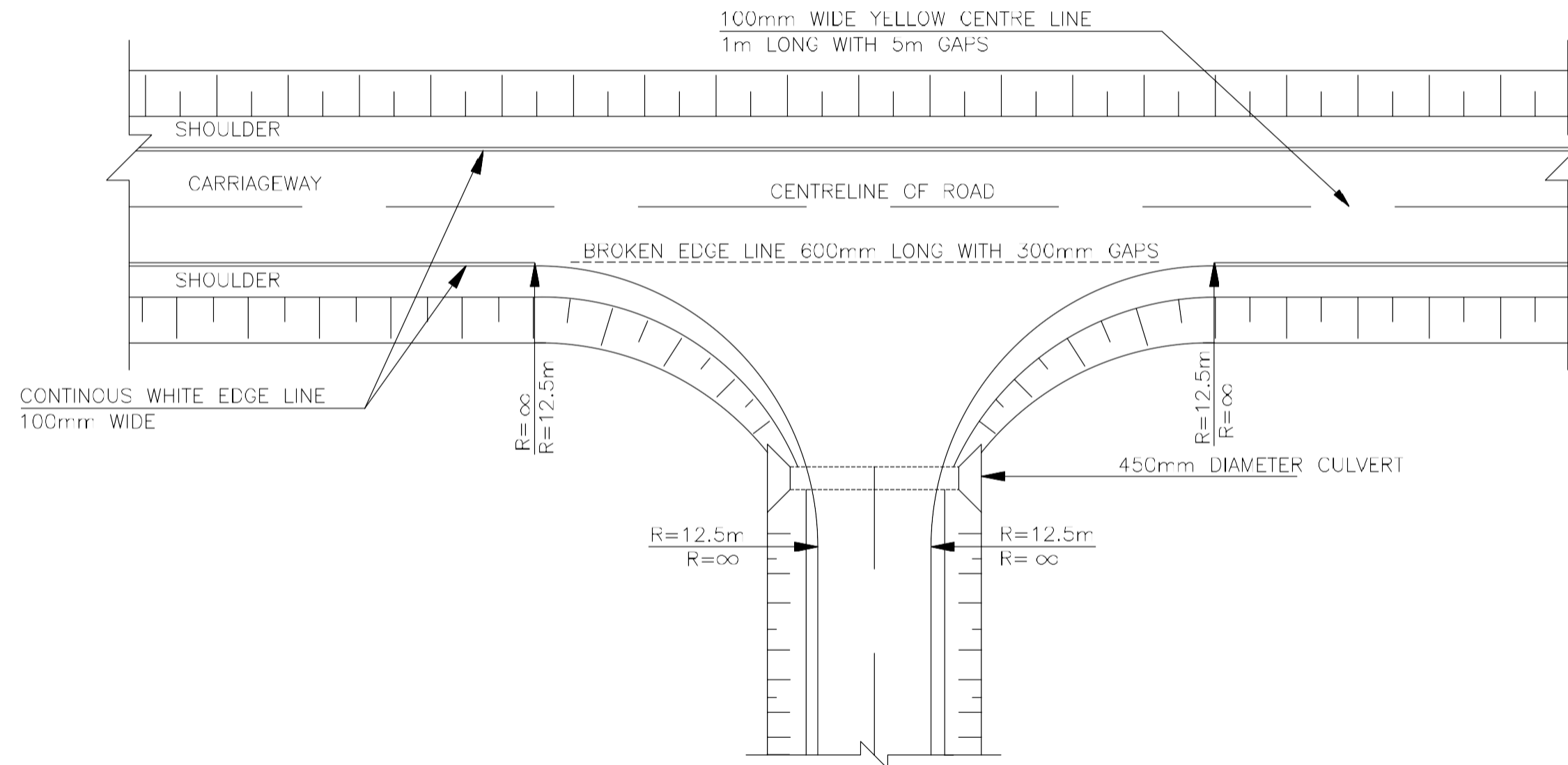
CLIENT:
**MINISTRY OF LANDS, PUBLIC WORKS,
HOUSING AND URBAN DEVELOPMENT**
State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	Drawing Title: TYPICAL BUS BAY DETAILS.		
Date	Scale: As Shown	Date: DECEMBER 2023	Drg. No. WMCL/CR214/SD/02
			Sheet No. 2 of 13



- NOTES:**
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
 2. THE ACTUAL LOCATION OF PRIVATE ACCESS TO BE AS DIRECTED

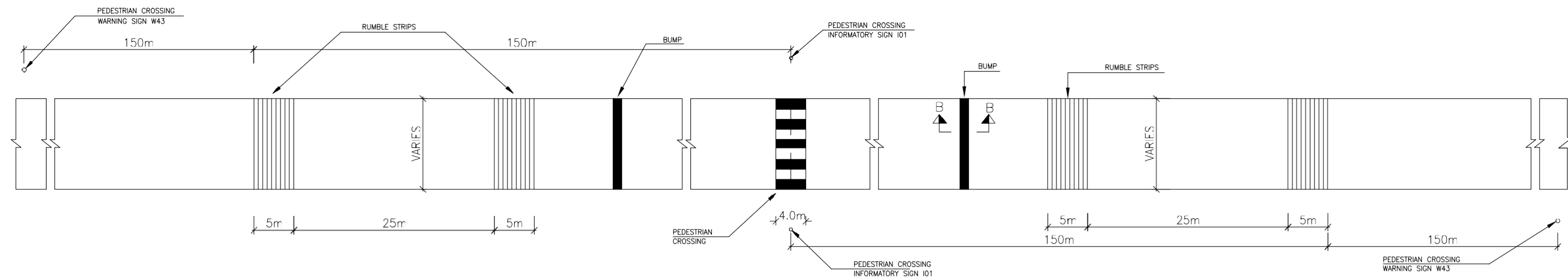
JUNCTION A : R=10M
SCALE 1:100



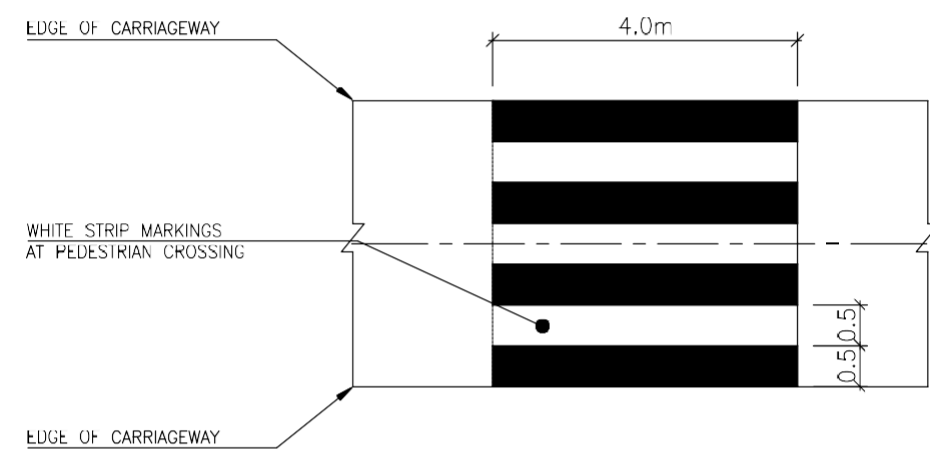
JUNCTION B : R=12.5M
SCALE 1:100

APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.
							REFERENCE DRGS.

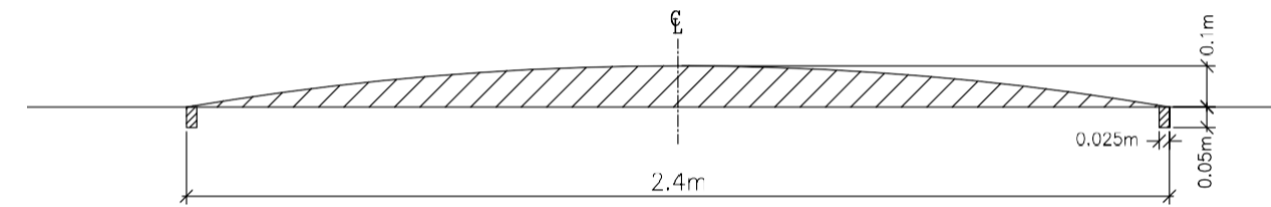
Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.			
Date	Drawing Title: TYPICAL JUNCTION DETAILS			
Date	Scale: As Shown	Date: DECEMBER:2023	Drq. No. WMCL/CR214/SD/03	Sheet No. 3 of 13



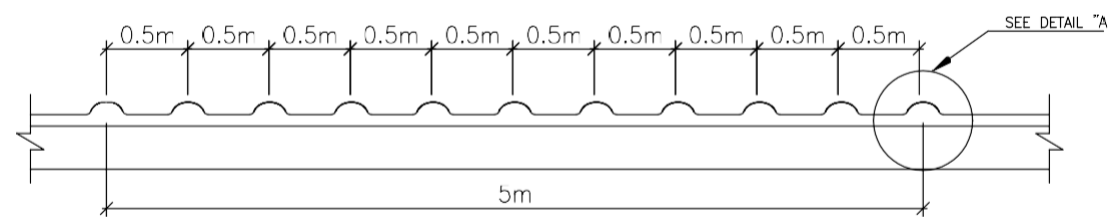
LAYOUT PLAN : RAISED PEDESTRIAN CROSSING
SCALE 1:150



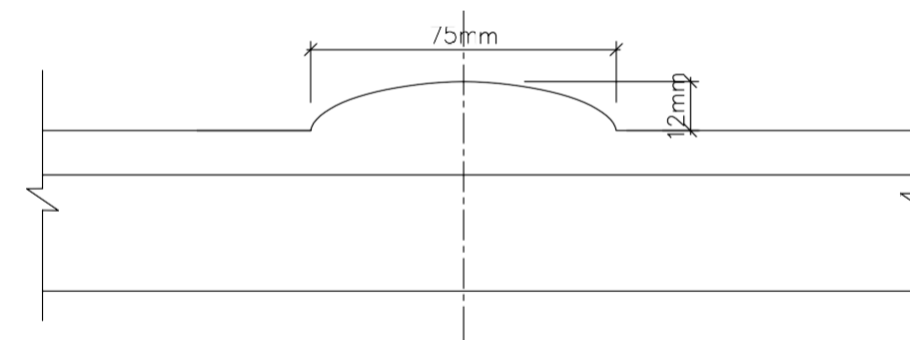
ROAD MARKING FOR PEDESTRIAN CROSSING
SCALE 1:20



SECTION B-B
BUMP CROSSING DETAILS
SCALE 1:5



RUMBLE STRIPS

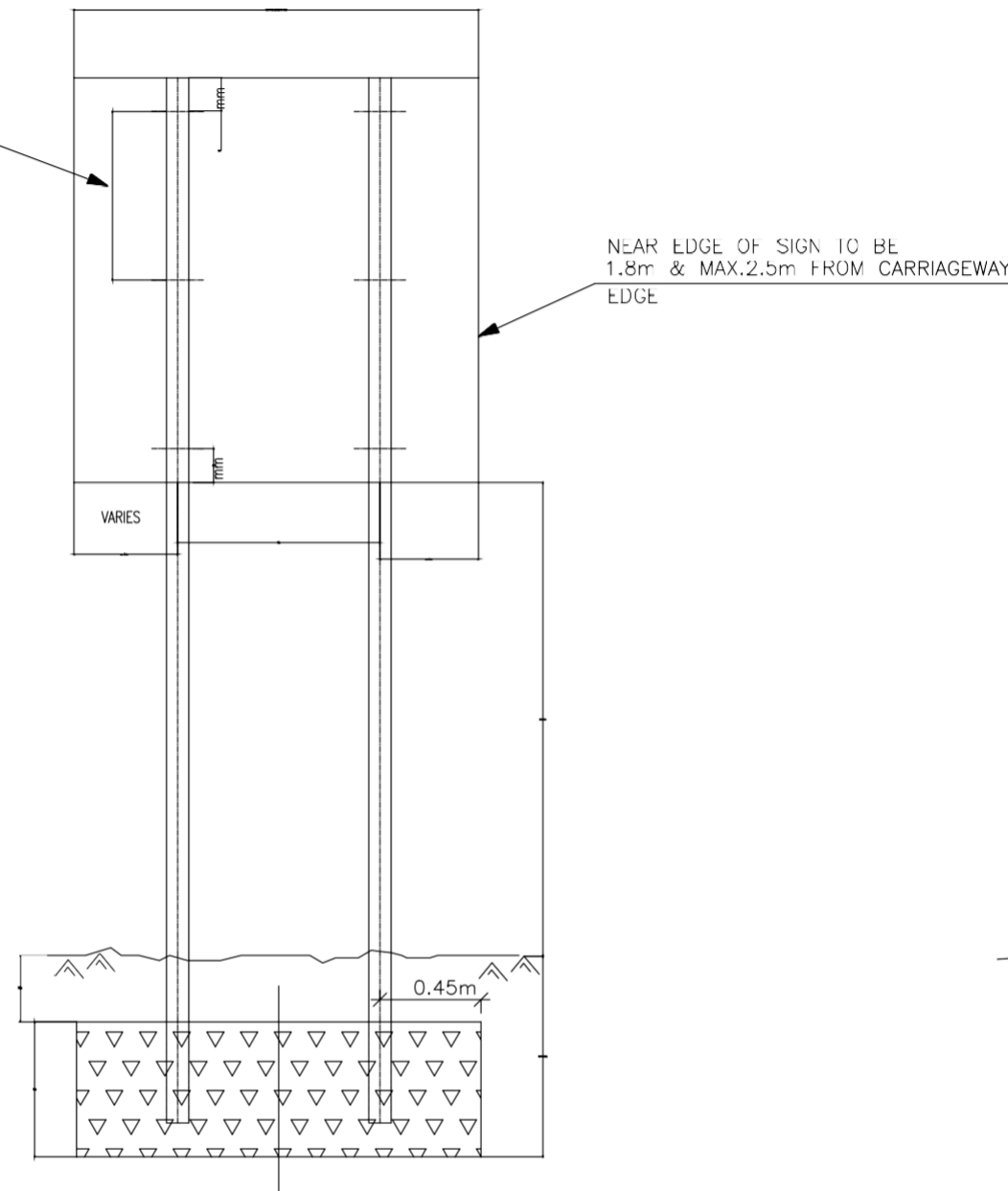


NOTES:

1. ALL UNITS ARE IN METRES UNLESS STATED OTHERWISE.
2. BUMP CROSSING TO BE CONSTRUCTED USING ASPHALT CONCRETE OR COLD PREMIX.
3. PEDESTRIAN CROSSING MARKINGS TO BE 0.5m WIDE STRIPS, 3.7m LONG AS SHOWN.
4. PEDESTRIAN CROSSING WARNING SIGNS SHALL BE INSTALLED 300m IN ADVANCE OF THE CROSSING AND INFORMATORY SIGN SHALL BE INSTALLED AT THE CROSSING ON EITHER SIDE.
5. TWO SETS OF RUMBLE STRIPS SHALL BE CONSTRUCTED ON EITHER SIDE OF THE RAISED CROSSING.
6. LOCATION FOR PEDESTRIAN CROSSING TO BE DETERMINED ON SITE.

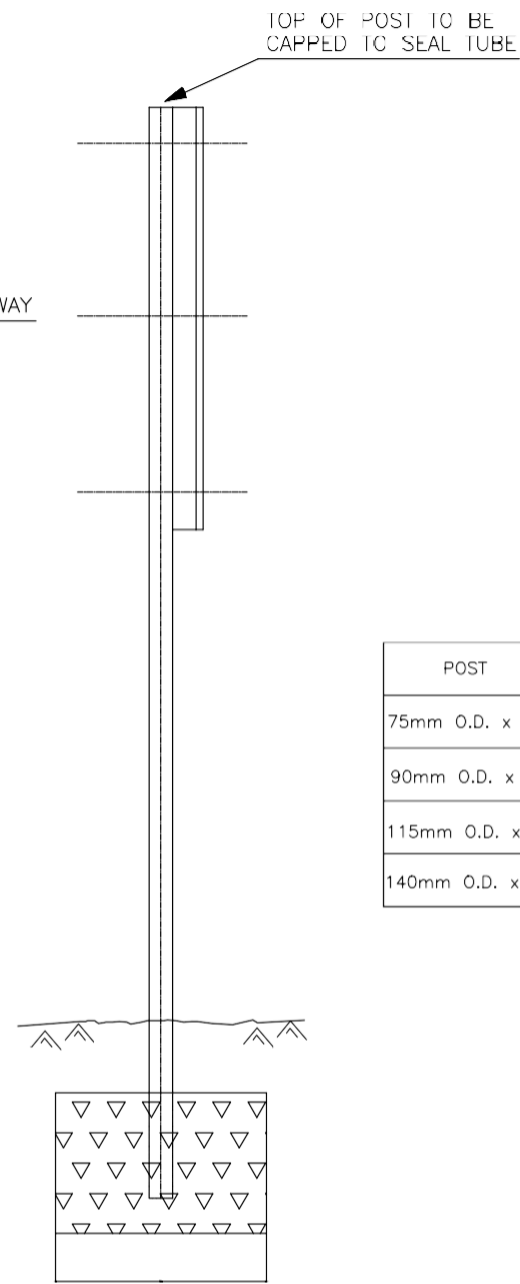
APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	BY	DRG. No.
			REFERENCE DRGS.				

SIGN TO BE BOLTED TO POST AT MAX. SPACING OF 0.90m

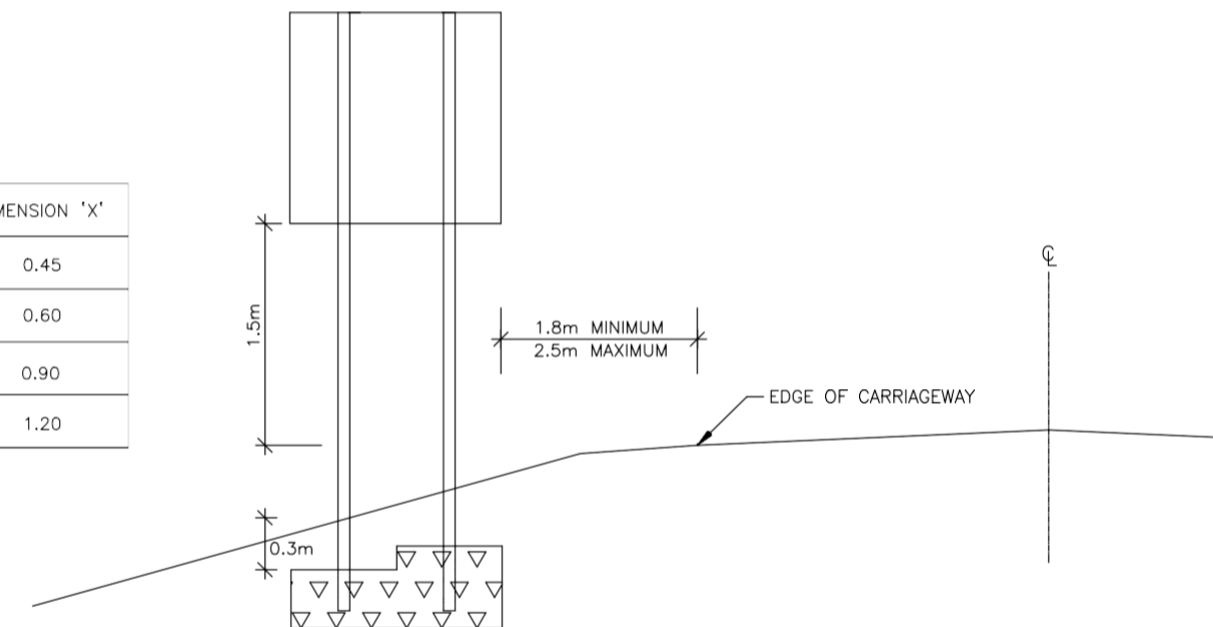


STANDARD SIGN POST DETAILS

SCALE 1:20

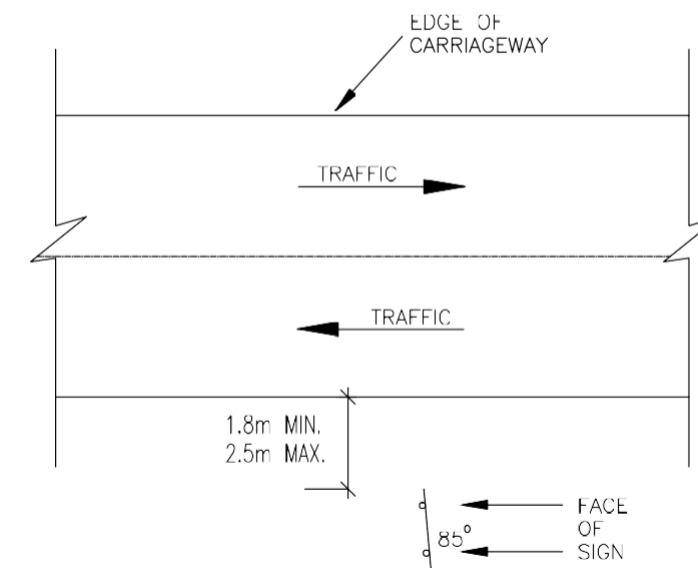
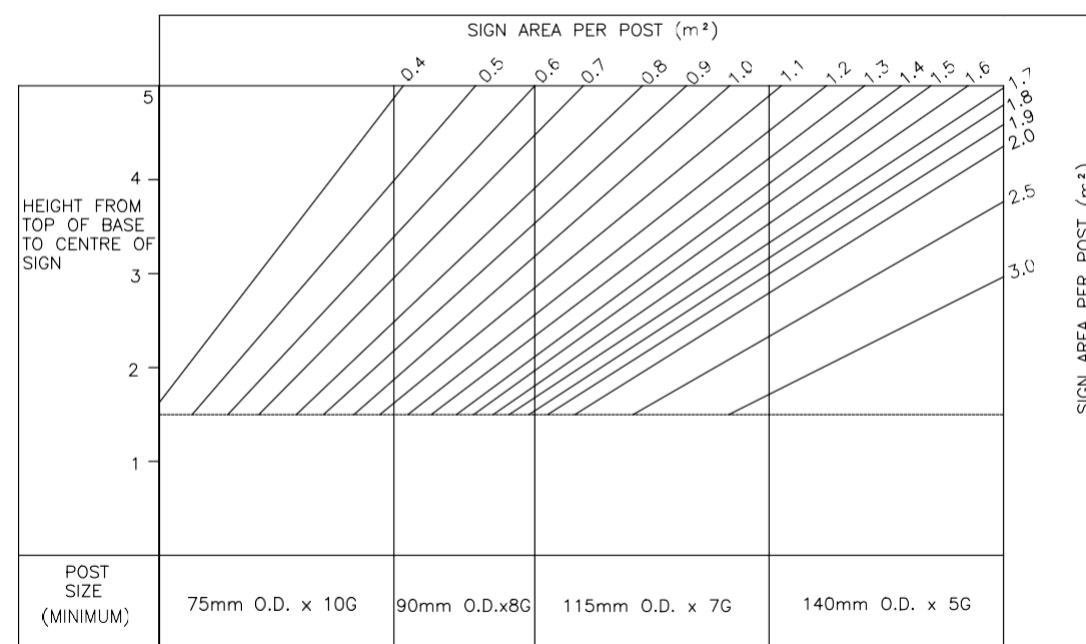


POST	DIMENSION 'X'
75mm O.D. x 10G	0.45
90mm O.D. x 8G	0.60
115mm O.D. x 7G	0.90
140mm O.D. x 5G	1.20



SIGN PLACEMENT

SCALE 1:50

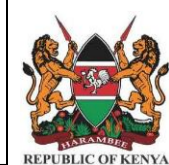


PLAN

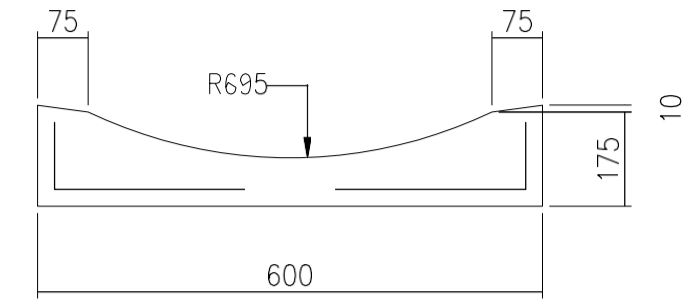
NOTES:

- WHERE POSTS ARE ON DIFFERENT LENGTH, FOOTING TO BE STEPPED AT POINT MIDWAY BETWEEN POSTS TO GIVE 0.3m COVER OF SOIL AT POST
- FOOTING TO BE CLASS 15 CONCRETE
- FOR A SINGLE POST THE SIZE IN THE CONCRETE FOOTING WILL BE 0.9m x 0.6m x 0.45m
- FOR PROHIBITORY, WARNING, MANDATORY AND PRIORITY SIGNS THE SIZE OF THE CONCRETE FOOTING WILL BE 0.45m x 0.45m
- SIGN POST SHALL BE CYLINDRICAL, GALVANIZED WROUGHT IRON TUBES OR SIMILAR APPROVED BY THE ENGINEER, OF SIZES IN ACCORDANCE WITH THE DESIGN TABLE BELOW

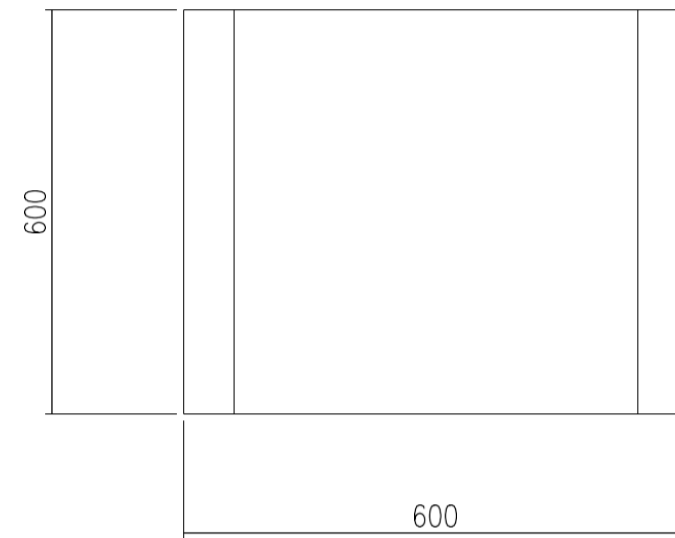
APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date	No.	Date	AMMENDMENTS	REFERENCE DRGS.	



Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.			
Date	Drawing Title: TYPICAL TRAFFIC SIGNS FIXING DETAILS.			
Date	Scale: As Shown	Date: DECEMBER:2023	Drg. No. WMCL/CR214/SD/05	Sheet No. 5 of 13

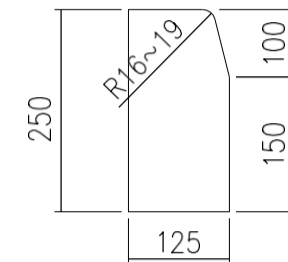


Section

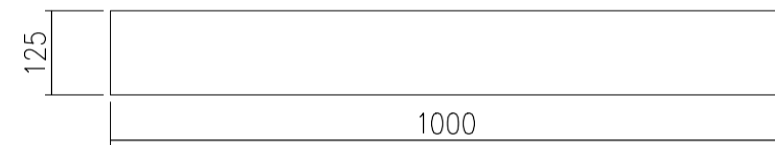


Plan

DISHED CHANNEL

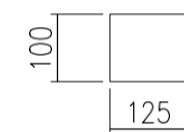


HALF BATTERED KERB

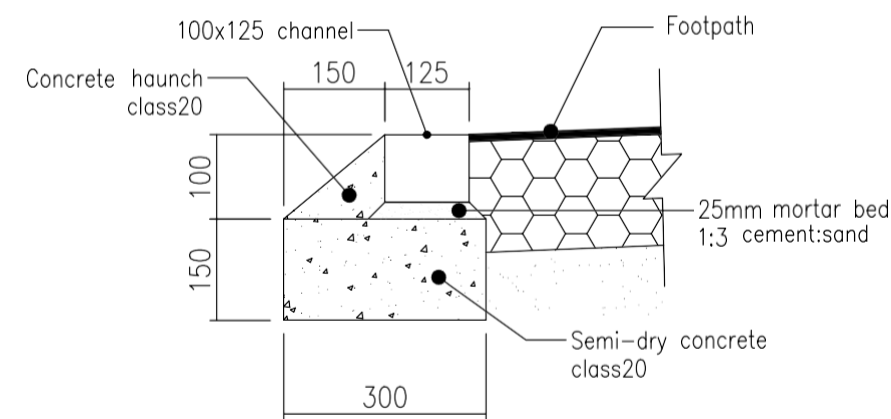


Plan

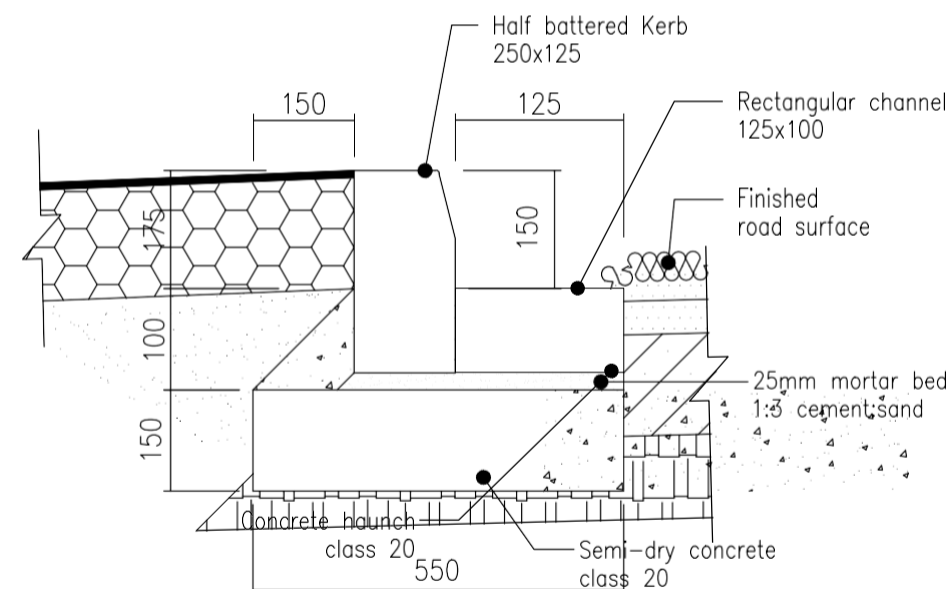
RECTANGULAR CHANNEL



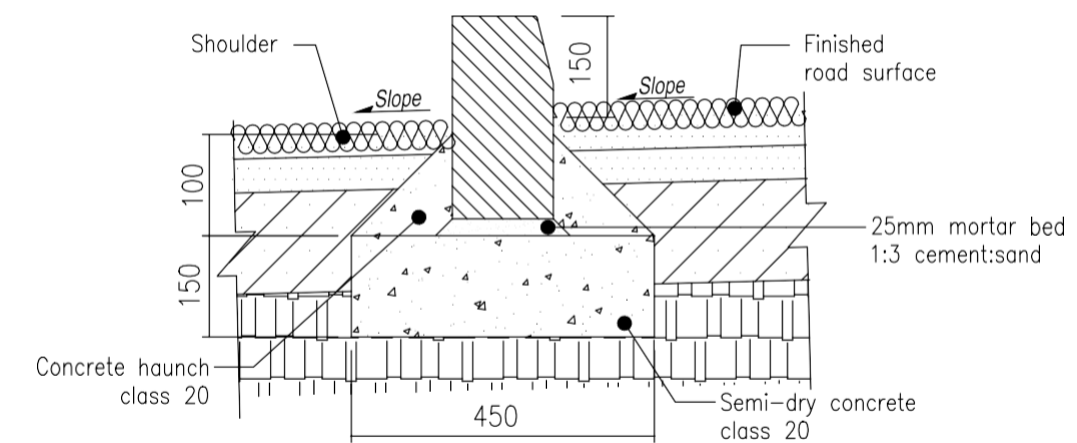
Section



**TYPICAL BEDDING AND BACKING
DETAIL FOR CHANNELBLOCK**



**TYPICAL BEDDING AND BACKING
DETAIL FOR KERB - ONE SIDE
RAISED FOOTPATH**



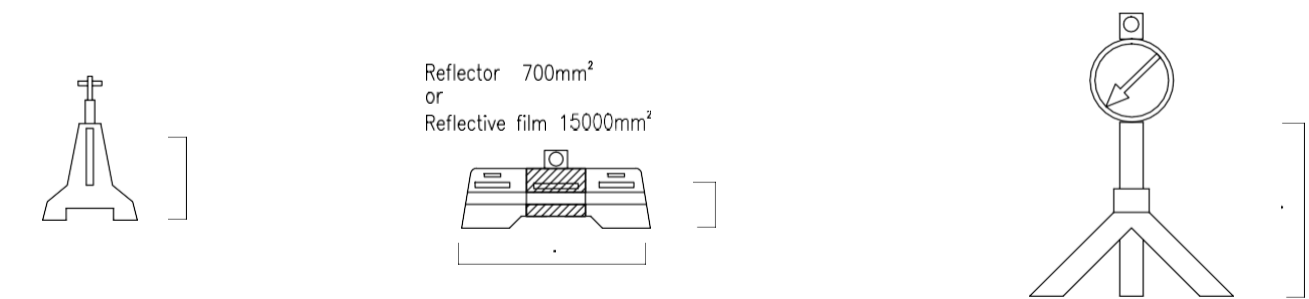
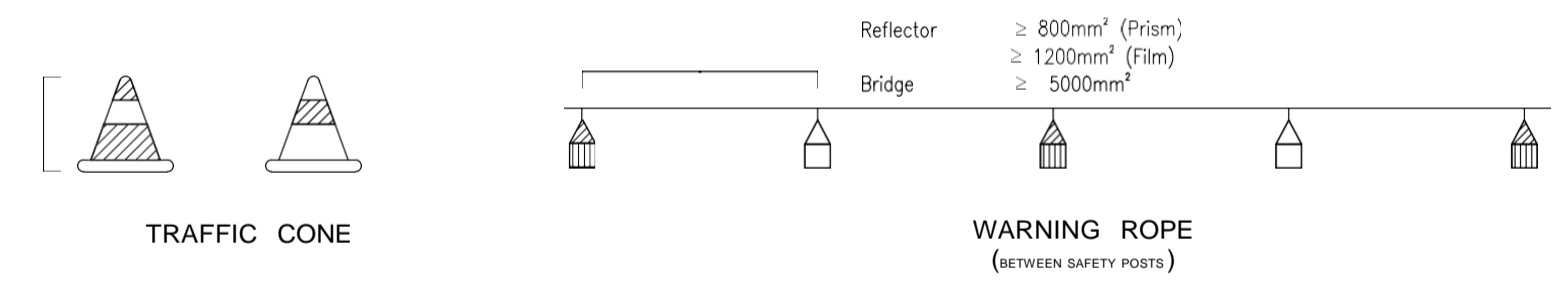
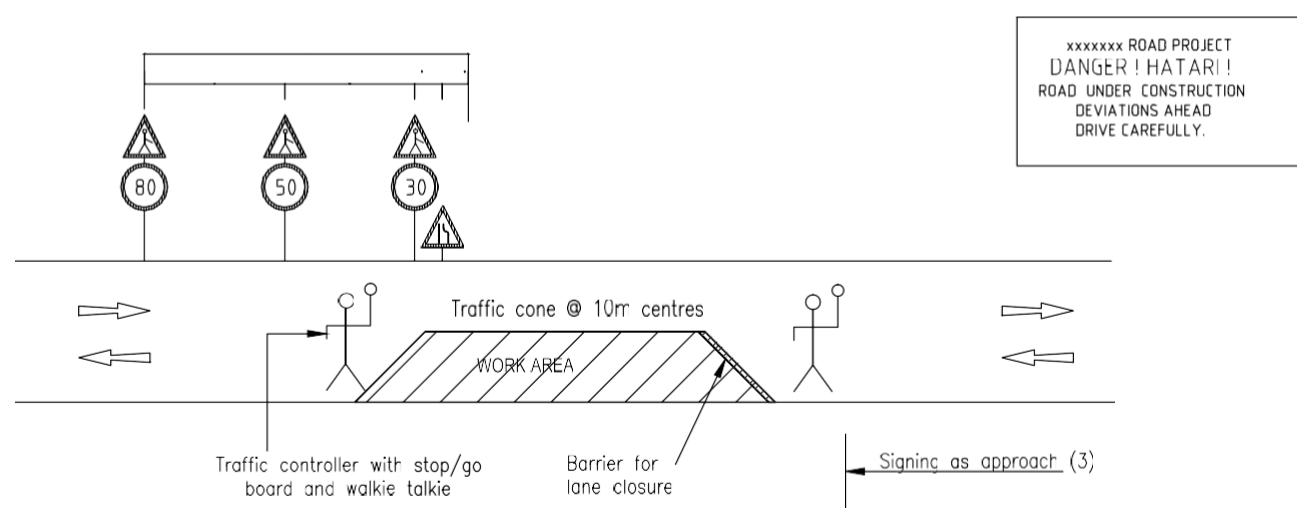
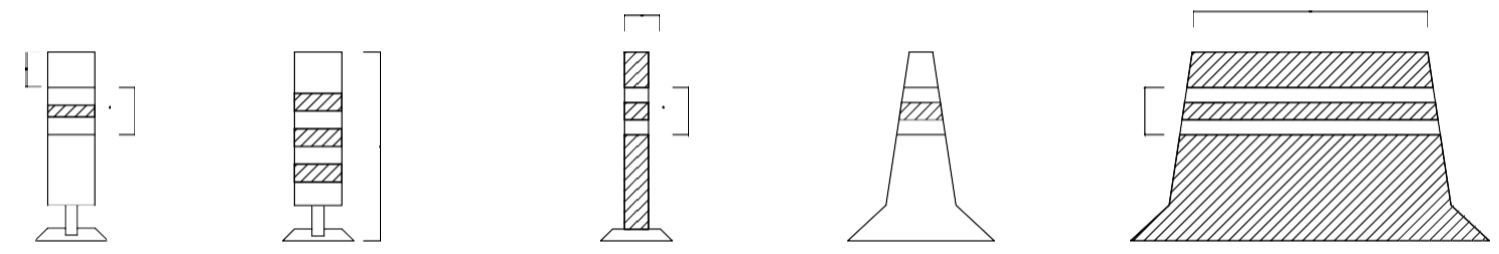
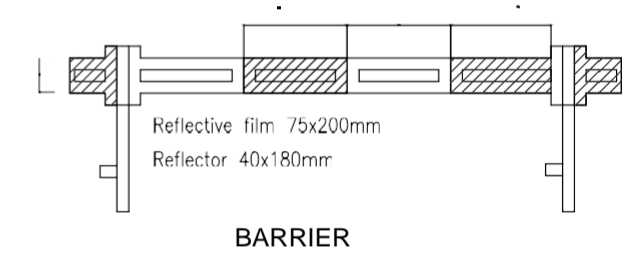
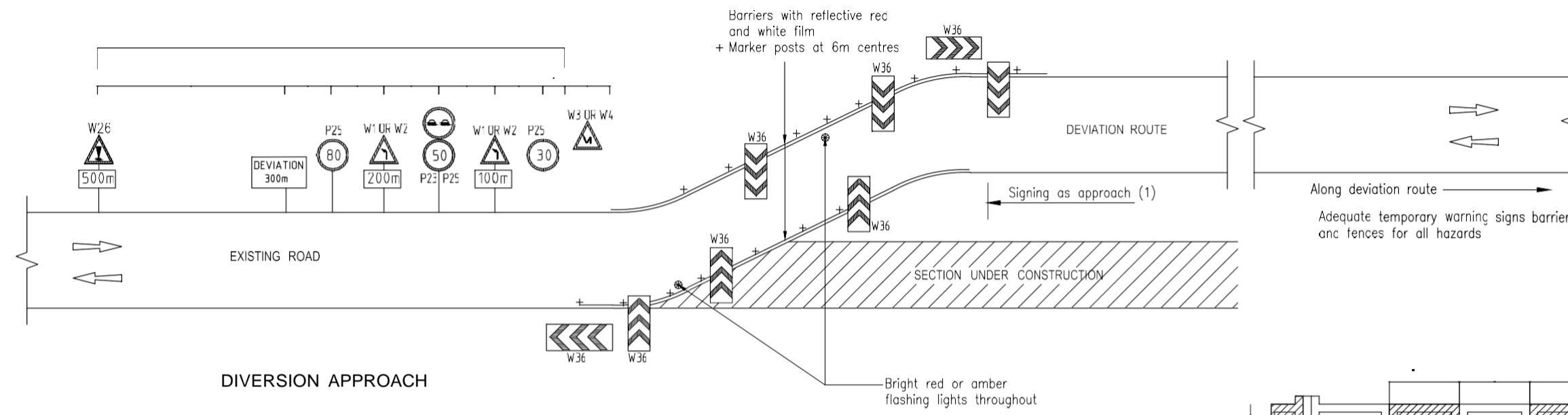
**TYPICAL BEDDING AND BACKING
DETAIL FOR KERB AT BUS STOP**

Notes:

(1). Dimensions are in millimetres, unless otherwise indicated.

APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date					
No.	Date	AMMENDMENTS				REFERENCE DRGS.	

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	Drawing Title: DESIGN CHANNEL DETAILS		
Date	Scale: As Shown	Date: DECEMBER:2023	Drg. No. WMCL/CR214/SD/06
			No. 6 of 13



TEMPORARY LANE CLOSURES

- NOTES:**
1. All temporary signs must be retro-reflective
 2. Numbers, lettering and colours to be in accordance with the Manual of Traffic Signs in Kenya Part II (JUNE 1975)
 3. Marker posts to be unbreakable plastic or glass fibre vergemaster or similar
 4. All signs must be kept clean and visible at all times.
 5. Sketches shown on this drawing are the minimum requirements, signs may be varied or adjusted as directed by the Resident Engineer to suit each particular site
 6. Fences and barriers shall be provided as directed by the Resident Engineer to separate pedestrians and traffic where they will need to use road or deviation for access
 7. All works and temporary signs are to comply with the requirements of Section 9 of the Standard Specification

TYPES OF BARRIERS

Wanjohi Mutonyi Consult Ltd.
 Engineers, Environmentalists . Project Managers
 Corner Ngong/Ndemi Road,
 P.O. Box 21714-00505, Nairobi.

APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	SM	Date					
No.	Date	AMMENDMENTS				REFERENCE DRGS.	

CLIENT:
MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
 State Department of Housing and Urban Development

Date	Project Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.		
Date	Drawing Title: DETAILED SIGNING FOR DEVIATION.		
Date	Scale: As Shown	Date: DECEMBER:2023	Drq. No. WMCL/CR214/SD/07
			Sheet No. 7 of 13

	W.1 Sharp left-hand bend ahead		W.18 Children crossing ahead		W.32 Distance indicators
	W.2 Sharp right-hand bend ahead		W.19 Section of road ahead frequented by cyclists		W.34 Location of rail crossing without barrier
	W.3 Sharp bends ahead first one to the left		W.20 Cattle crossing ahead		W.35 Location of rail crossing with at least two tracks
	W.4 Sharp bends ahead first one to the right		W.21 Section of road ahead frequented by wild animals		W.36 Arrow direction marking showing extremely dangerous change of direction
	W.5 Steep descent ahead		W.22 Road works in progress ahead		W.37 Exit from main road
	W.6 Steep ascent ahead		W.23 Traffic light signals ahead		W.38 Hazard demarcation
	W.7 Road narrows ahead		W.24 Low-flying aircraft crossing ahead		
	W.8 Road narrows (from ahead)		W.25 Two-way traffic ahead		
	W.9 Road narrows (from ahead)		W.26 Hazard ahead		
	W.10 River bank or quayside (without barrier) ahead		W.27 Road junction ahead		
	W.11 Uneven road surface ahead		W.28 Junction ahead, stop or give way		
	W.12 Severe bump ahead		W.28 Junction ahead with acceleration lane of a road from the right		
	W.13 Severe dip ahead		W.28 Junction ahead with acceleration lane of a road from the left		
	W.13 River-bend crossing (drift) ahead		W.29 Junction ahead with acceleration lane of a road from the left		
	W.14 Slippery road surface ahead		W.29 Junction ahead with acceleration lane of a road from the right		
	W.15 Road surface of loose stones ahead		W.30 Roundabout ahead		
	W.16 Danger of falling or falling rocks ahead		W.31 Railway crossing with barrier		
	W.17 Crossing for pedestrians ahead		W.32 Railway crossing without barrier		

WARNING SIGNS

	R.1 STOP and do not proceed into the junction until it is possible to clear the way without causing danger or inconvenience to any other road user		R.2 GIVE WAY and if traffic is approaching from the right for the left stop unless it is possible to proceed without causing danger or inconvenience to such traffic
--	--	--	--

PRIORITY SIGNS

	M.1 Requires all vehicles to turn to the left. (The direction of the arrow may be reversed)		M.5 Requires all vehicles to pass to the right of the sign
	M.2 Requires all vehicles to travel straight ahead		M.6 Requires all vehicles to traverse roundabout in direction indicated by arrows
	M.3 Requires all vehicles to turn to the right at the next junction		M.7 Compulsory cycle track
	M.4 Requires all vehicles either to travel straight or to turn to the left at the next junction		M.8 Compulsory minimum speed
	M.5 Requires all vehicles to pass to the left of the sign		M.9 End of compulsory minimum speed

MANDATORY SIGNS

	I.1 Toilets		I.3 No through road		I.4 Pass either side
	I.2 Parking place		I.3b In		I.45 First Aid Station
	I.3 Pedestrian crossing		I.37 Out		I.5 Ferry
	I.30 One way traffic		I.38 No Entry		S.2 Lifesaver
	I.30 One way traffic		I.39 No Exit		S.3 Chevrons
	I.30 One way traffic		I.4 Taxi		

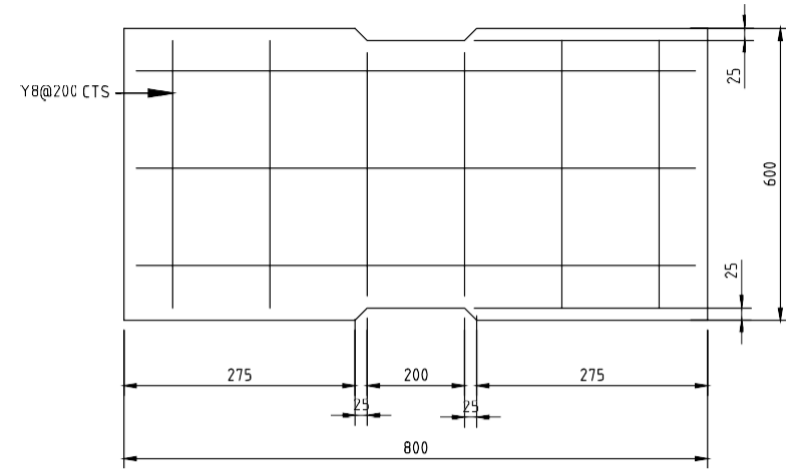
STANDARD INFORMATORY SIGNS

	P.1 NO ENTRY. Entry forbidden to all vehicles		P.10 No entry for heavy commercial vehicles		P.21 No right turn		P.27 Stop for children crossing
	P.2 ROAD CLOSED. Entry forbidden to all vehicles		P.11 No entry for vehicles exceeding height shown		P.22 No U-turn		P.28 Priority for on-coming traffic
	P.3 Entry forbidden for bicycles		P.12 No entry for vehicles exceeding weight shown		P.23 Overtaking of four-wheeled vehicles prohibited		P.29 End of all prohibitions
	P.4 No entry for pedestrians		P.13 No entry for vehicles exceeding weight on one axle		P.24 Overtaking of goods vehicles prohibited		P.30 End of speed limit
	P.5 No entry for hand carts		P.14 No entry for vehicles exceeding length shown		P.25 Speed limit		P.31 Parking prohibited
	P.6 No entry for farm vehicles		P.15 Driving vehicles less than distance shown apart prohibited		P.26 Sounding of horns or sirens prohibited		P.32 Parking or waiting prohibited
	P.7 No entry for heavy commercial vehicles		P.16 No left turn		P.27a Stop at control post		P.33 Controlled parking zone

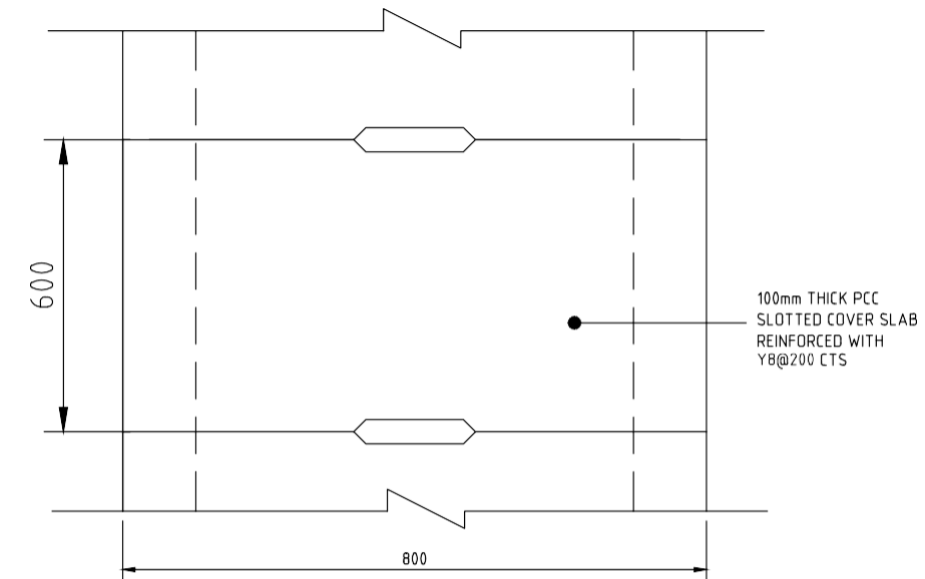
PROHIBITORY SIGNS

KEY

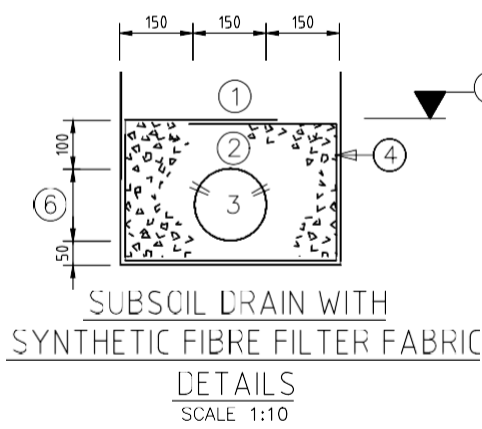
BLUE	
BLACK	
RED	
WHITE	
YELLOW	
GREEN	



SECTION THROUGH COVER SLAB
SCALE 1:10

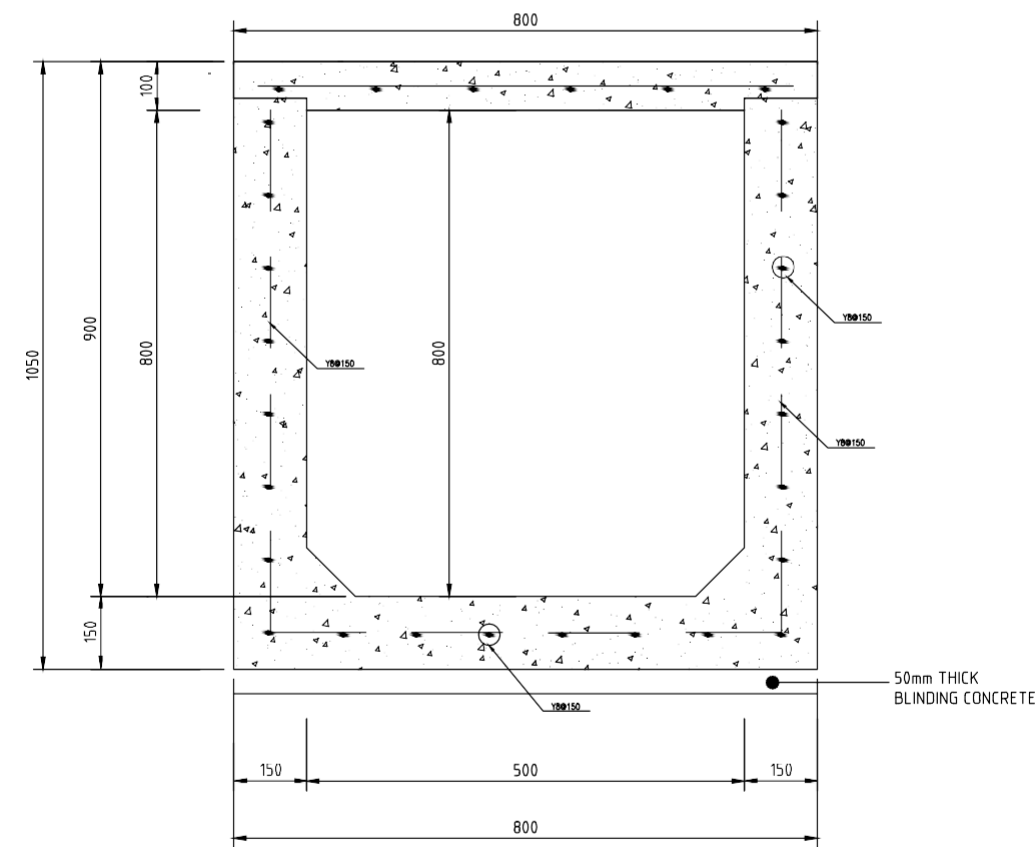


PLAN - SLOTTED INLET DRAIN
SCALE 1:10



No	DESCRIPTION
①	APPROVED COHESIVE SOIL BACK FILL
②	FILTER STONE : FINE OR COARSE GRADE AS REQUIRED.
③	PERFORATED SUBSOIL DRAINAGE PIPES.
④	SYNTHETIC FIBRE FILTER FABRIC
⑤	LEVEL TO WHICH SURROUNDING AREA IS TO BE DRAINED (WATER TABLE).
⑥	INTERNAL PIPE DIAMETER: 150mm.

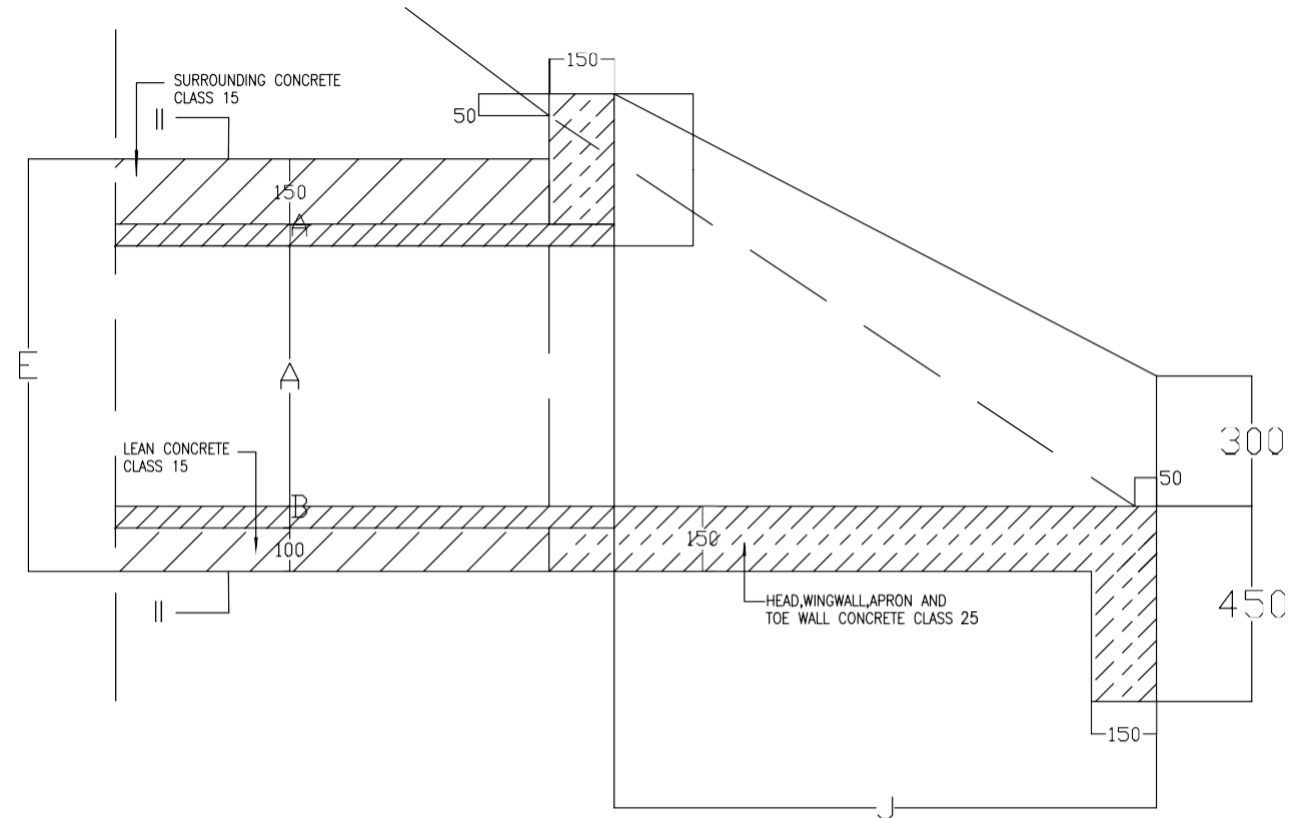
NOTE:
LOCATION TO BE CONFIRMED ON SITE



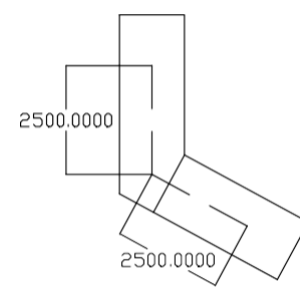
SECTION THROUGH SLOTTED DRAIN
SCALE: 1:10

No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.

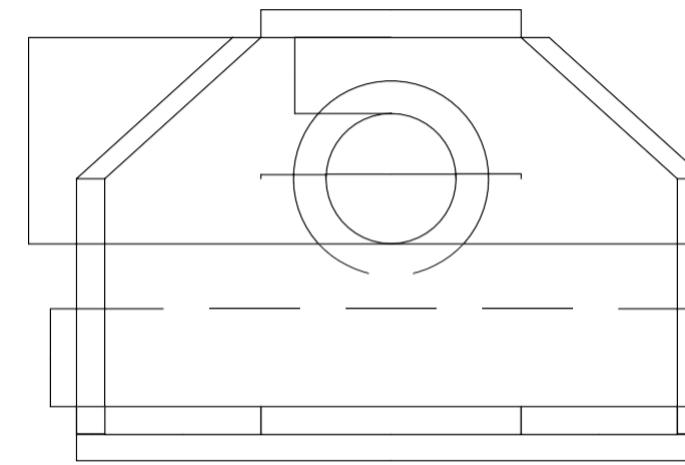
Date	Project Title:
	CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMS AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY.
Date	Drawing Title:
	DETAILED SLOTTED DRAIN AND SUB SOIL DRAIN DETAILS.
Date	Scale:
	As Shown
Date	Date:
	DECEMBER:2023
Date	Drg. No.:
	WMCL/CR214/SD/09
Date	Sheet No.:
	9 of 13



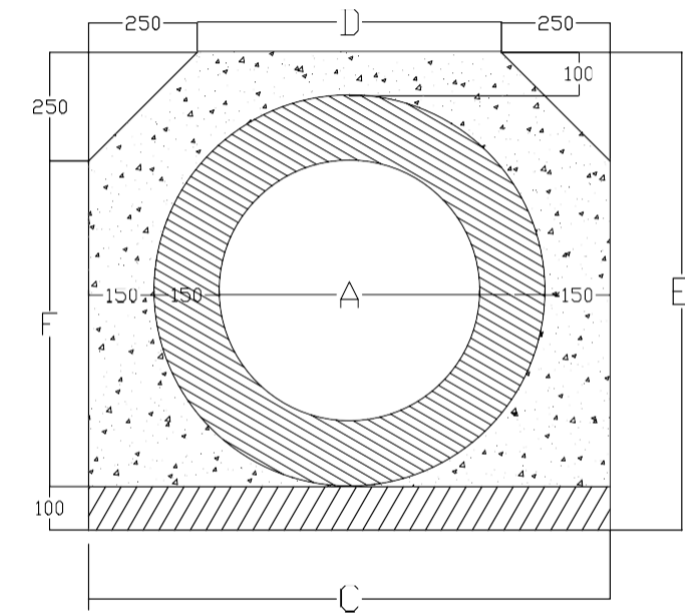
SECTION I-I



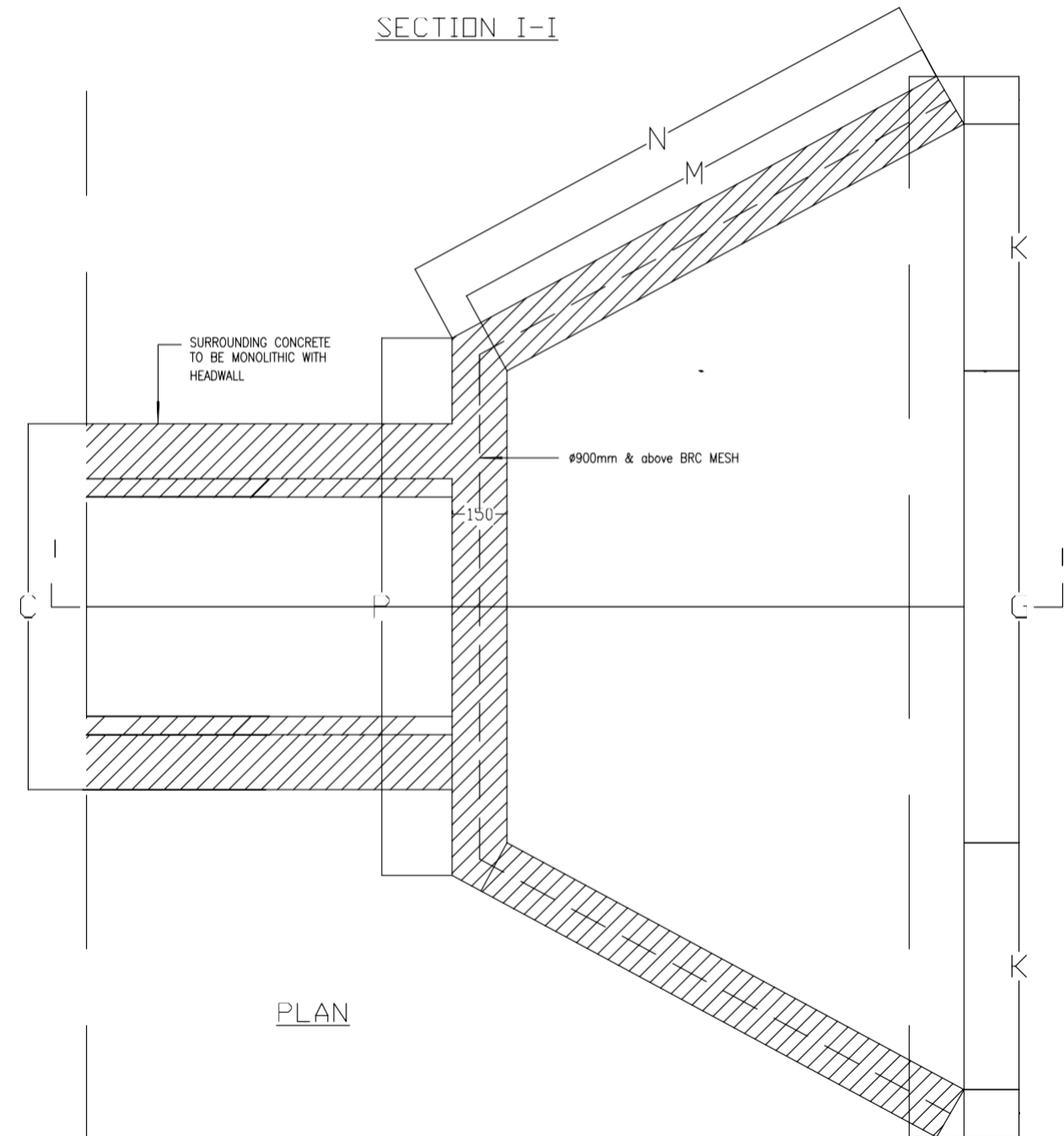
DOWEL BARS



FRONT ELEVATION



SECTION II-II

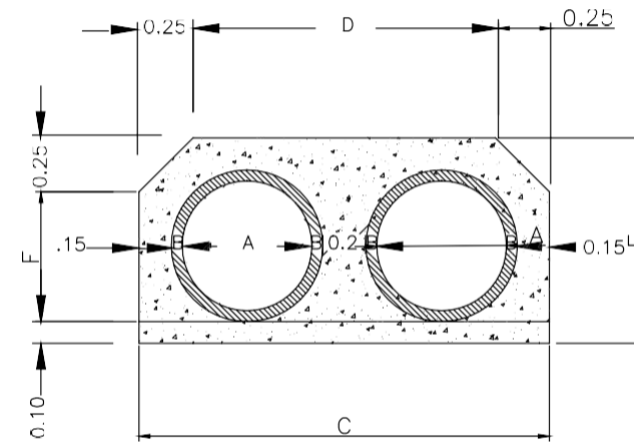
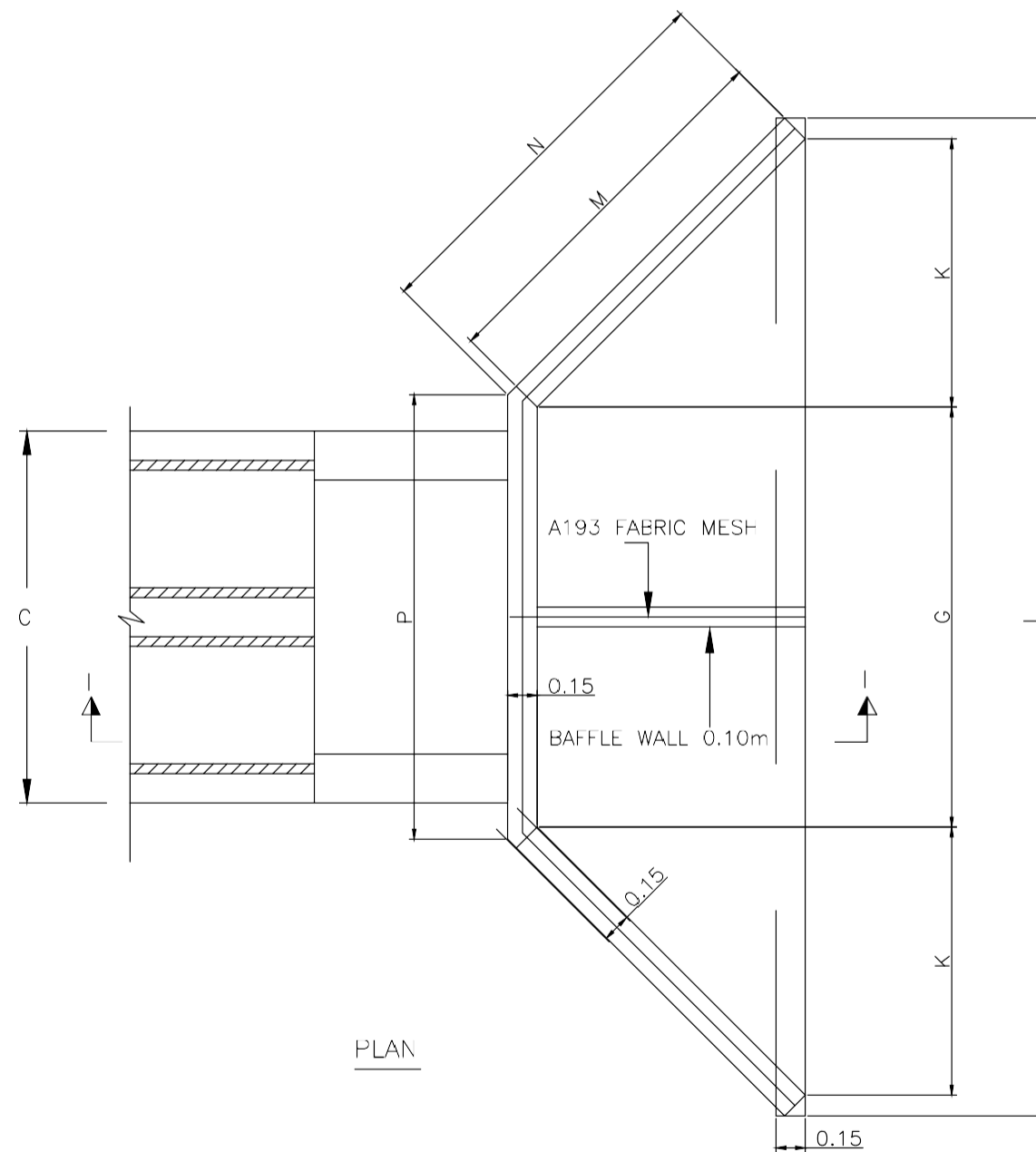
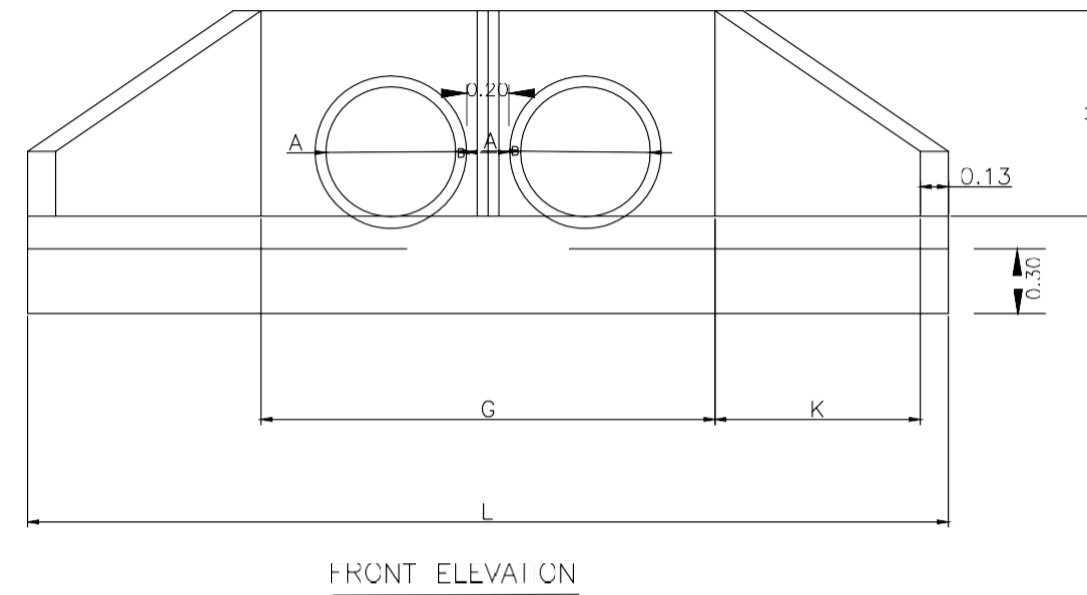
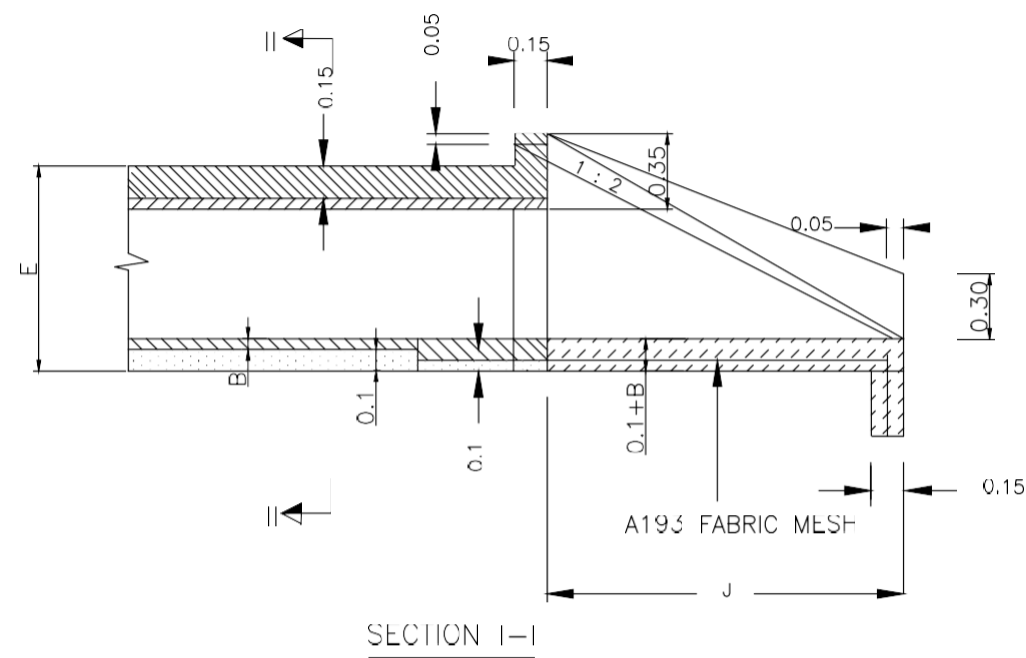


PLAN

CULVERT	A m	B m	C m	D m	E m	F m	G m	H m	J m	K m	L m	M m	N m	P m	CONCRETE CLASS 25 INLET & OUTLET	CONCRETE CLASS 15 SURROUND & BEAV PER RUNNING M
0.60m ϕ	0.60	0.05	1.00	0.50	0.95	0.60	1.20	0.95	1.25	0.72	2.90	1.44m	1.53	1.29	1.9/m	0.50m
0.90m ϕ	0.90	0.07	1.34	0.84	1.29	0.94	1.50	1.25	1.70	0.98	3.72	1.96m	2.05	1.59	3.12m	0.82m

NOTES

1. INLET AND OUTLET ARE ONLY REINFORCED WITH DOWEL BARS
2. DOWEL BARS OF Y12 BARS TO BE POSITIONED AT \approx 0.20m SPACING
3. THE SLOPE OF PIPE SHALL BE AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE



NOTES

1. ALL FABRIC MESH REINFORCEMENT TO BE PLACED AS SHOWN.
2. THE SLOPE OF THE PIPE SHALL BE DIRECTED BY THE ENGINEER'S REPRESENTATIVE.
3. ALL DIMENSIONS ARE IN METRES.
4. BAFFLE WALL TO BE CONSTRUCTED ONLY ON THE INLET SIDE.
5. CONCRETE FOR HEADWALL, APRON, TOEWALL, BAFFLEWALL TO BE CLASS 25/20.
6. CONCRETE FOR BLINDING AND SURROUND TO BE CLASS 15/20.
7. CONCRETE SURROUND FOR 1.20m DIAMETER PIPE IS 0.20m AND NOT 0.15m.
8. TABLE A SHOWS INCREMENTS IN DIMENSIONS AND QUANTITIES FOR EACH ADDITIONAL MULTIPLE PIPE.
9. TABLE B SHOWS DIMENSIONS AND QUANTITIES FOR STANDARD TWIN CULVERTS.
10. CONCRETE SURROUND SHALL AT ALL TIMES BE BELOW THE ROAD SURGRADE UNLESS INSTRUCTED OTHERWISE BY THE ENGINEER.
11. THE LENGTH OF THE PIPE TO BE LAID SHALL AT ALL TIMES PROVIDE FOR ENTIRE ROAD CROSS SECTION.





SECTION II-II

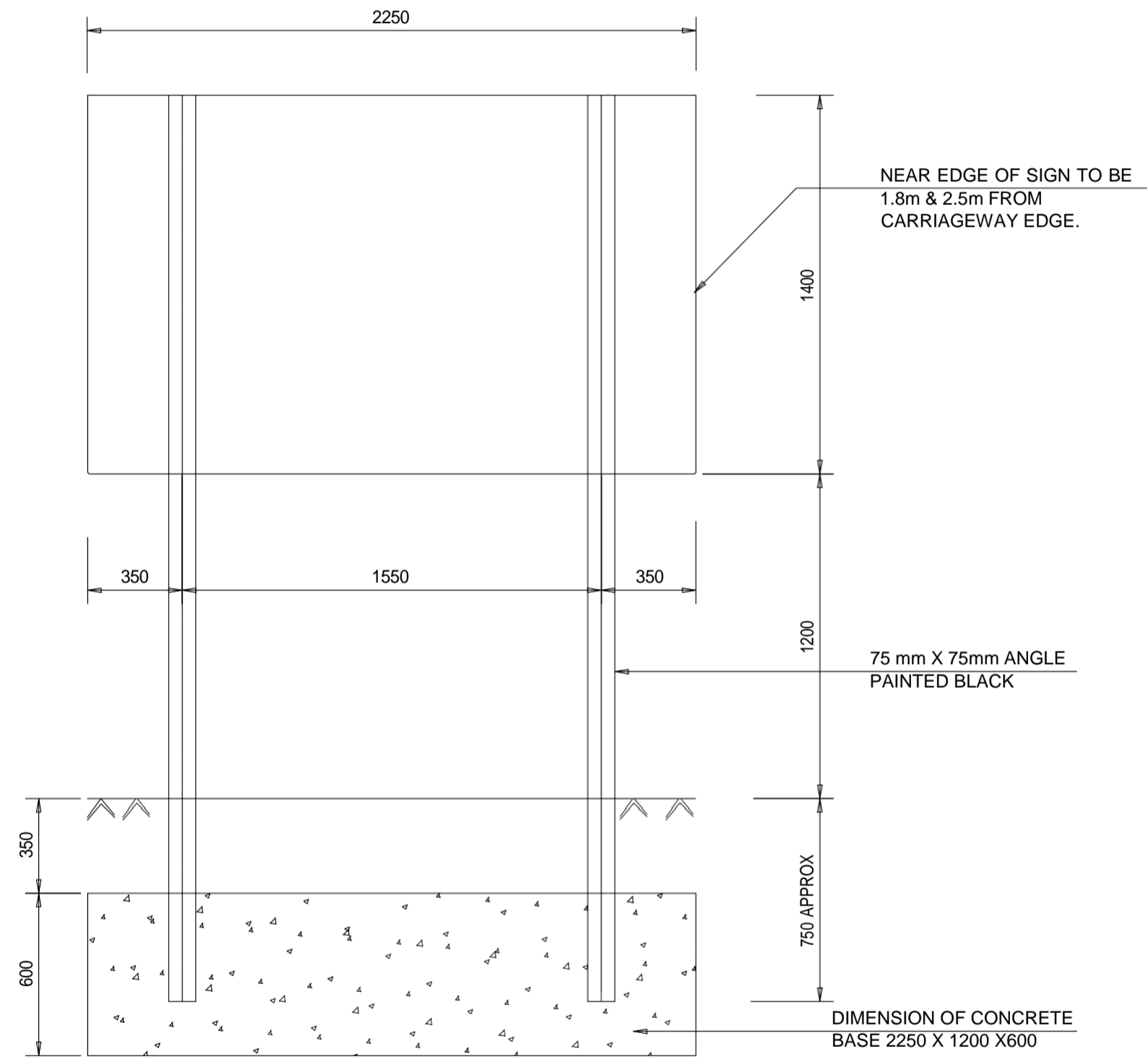
TABLE A

CULVERT	ΔC m	ΔD m	ΔG m	ΔL m	ΔP m	ADDITIONAL CONCRETE CLASS 25/20 INLET & OUTLET	ADDITIONAL CONCRETE CLASS 15/20 SURROUND & BED per running m
0.60m DIAM.	0.90	0.90	0.90	0.30	0.90	0.80m ³	0.47m ³
0.90m DIAM.	1.28	1.28	1.28	1.28	1.28	2.13m ³	0.73m ³
1.20m DIAM.	1.60	1.60	1.60	1.60	1.60	3.38m ³	1.18m ³

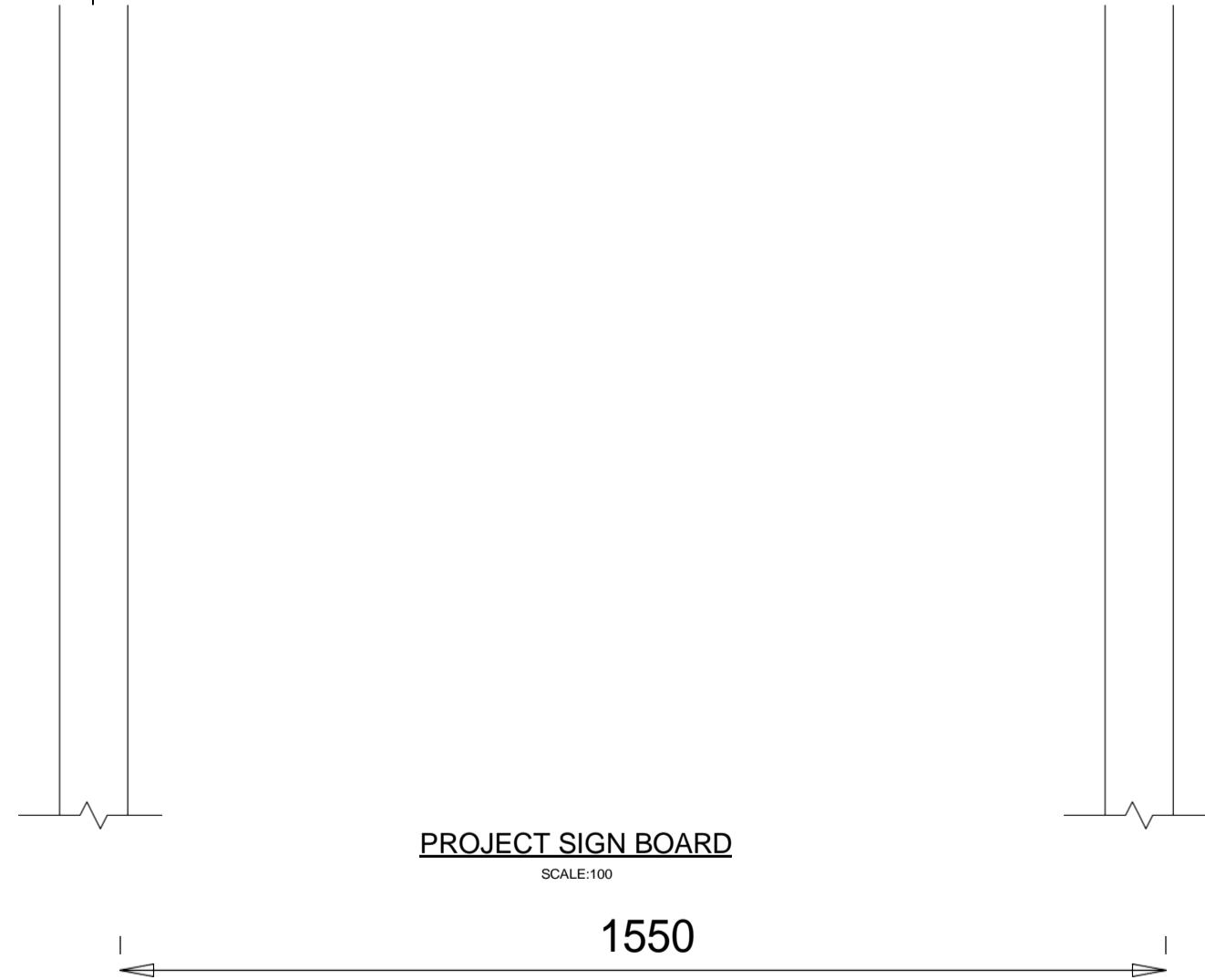
TABLE B

CULVERT	A m	B m	C m	D m	E m	F m	G m	H m	J m	K m	L m	M m	N m	P m	ADDITIONAL CONCRETE CLASS 25/20 INLET & OUTLET	ADDITIONAL CONCRETE CLASS 15/20 SURROUND & BED per running m
0.60m DIAM.	0.60	0.05	1.90	1.40	0.95	0.60	2.10	0.95	1.65	0.95	4.26	1.91	2.00	2.27	3.26m ³	0.97m ³
0.90m DIAM.	0.90	0.09	2.66	2.16	1.33	0.98	2.74	1.25	2.25	1.30	5.60	2.60	2.69	2.91	6.10m ³	1.59m ³
1.20m DIAM.	1.20	0.10	3.40	2.90	1.70	1.35	3.36	1.55	2.85	1.65	6.92	3.29	3.38	3.55	9.24m ³	2.64m ³

350	1900
	PROJECT: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEMES AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENT OF HURUMA IN OL KALAU AND NJABINI WITHIN NYANDARUA COUNTY CONTRACT NO:
	CLIENT: MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT STATE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT; COUNTY GOVERNMENT OF NYANDARUA
	FINANCIER: THE WORLD BANK
	CONSULTANTS: WANJOHI MUTONYI CONSULT LTD. Engineers, Environmentalists, Project Managers CORNER NGONG/NDEMI ROAD, P.O. Box 21714-00505, NAIROBI.
(LOGO)	CONTRACTOR:



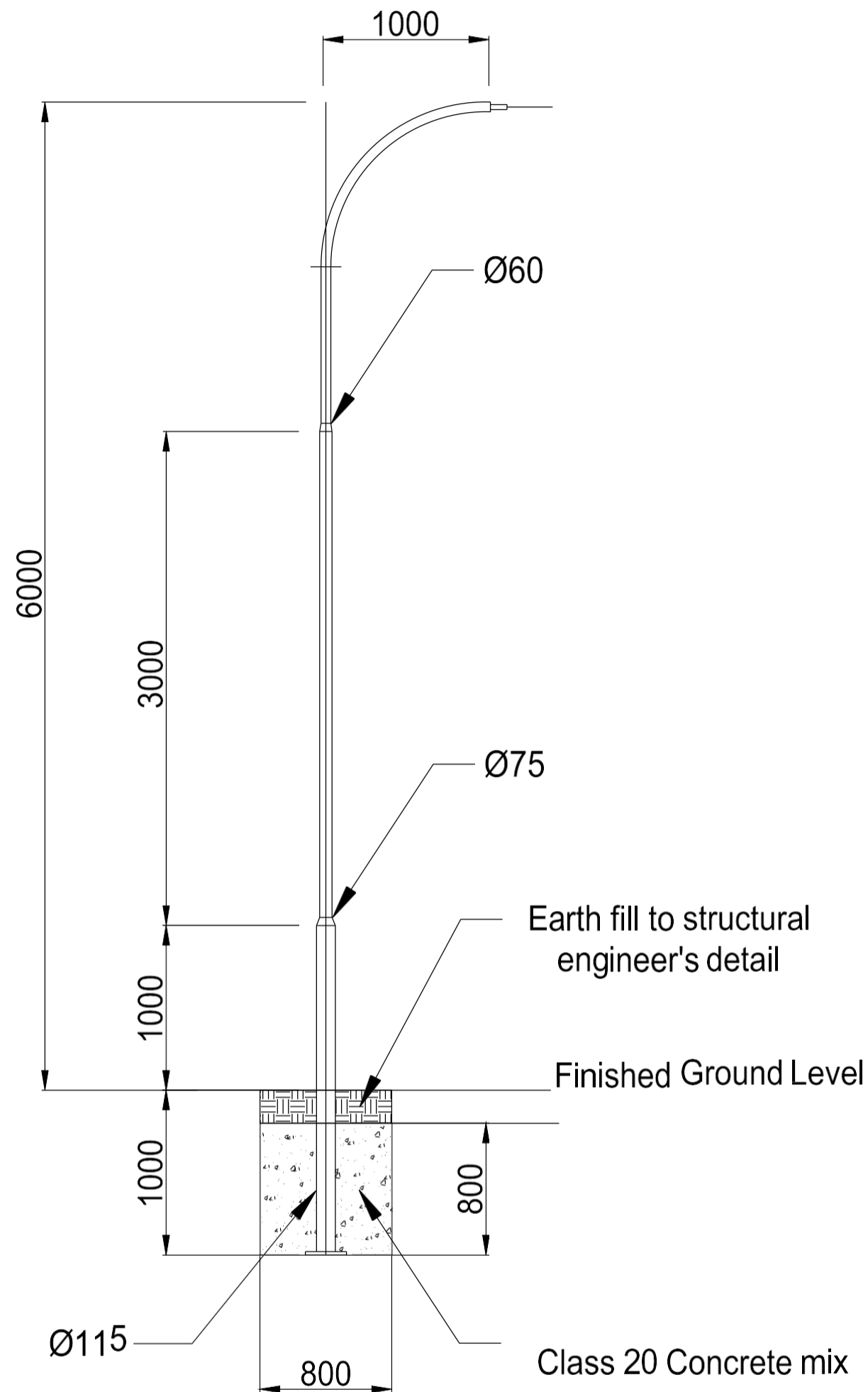
SIGN BOARD INSTALLATION DETAILS
SCALE: 1:100



APPROVED BY	IKWM	Date
CHECKED BY	PNJ	Date
DRAWN BY	DMM	Date
DATE	SM	Date

No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.





6m high Single-Arm Lighting Pole with 1m bracket, 0-deg tilt angle

Longsection for RRU RD01 0+700 to 0+861

APPROVED BY	ENG. IKWM	Date					
CHECKED BY	ENG. PNG	Date					
DESIGNED BY	ENG. DMM	Date					
DRAWN BY	IM	Date					
No.	Date	AMMENDMENTS	BY	DRG. No.	REFERENCE DRGS.		