

Standard Proctor Compaction (BS Light)

Project		Pavement Investigation			
Client	Nippon Koei Co. Ltd				
Location	Mombasa County				
Delivered on		Sampling Point	H6 TP1		Depth (m)
					1.00 m
Test Date	22/2/2022	Sample No.		Code	BS 1377-4: 1990
Wt. of Mould (g)	3328	Volume of Mould (g)	1	Rammer Weight (kg)	2.5
Test No	NMC	1	2	3	
Wt. of mould + wet material (g)		5141	5313	5300	
Wt. wet material (g)		1813	1985	1972	
Bulk density (kg/m³)		1896	2076	2063	
Moisture content					
Container No	DJ	R5	N	15	
Wt. of container + wet material (g)	129.19	89.30	131.60	191.30	
Wt. of container (g)	34.11	27.15	32.86	44.80	
Wt. of container + dry material (g)	126.20	86.80	124.00	173.80	
Wt. dry material (g)	92.09	59.65	91.14	129.00	
Wt. of moisture (g)	2.99	2.50	7.60	17.50	
Moisture content (%)	3.24	4.19	8.34	13.57	
Dry density (kg/m³)		1820	1917	1816	
Optimum Moisture Content (%)	9	Remarks			
Maximum Dry Density (kg/m³)	1918				
Av. Bulk Density (kg/m³)	2012				
Av. Bulk Unit Weight (kN/m³)	19.7				

Tested	Stephen	David Adele (Director)
Checked	Lenana	
Approved	D. Adele	
Date	11/3/2022	

The graph plots Dry Density (kg/m³) on the y-axis (0 to 2100) against Moisture Content (%) on the x-axis (0 to 21). A smooth curve is drawn through three data points: (3.24, 1820), (4.19, 1917), and (8.34, 1816). The peak of the curve is at approximately 1918 kg/m³ at 9% moisture content.

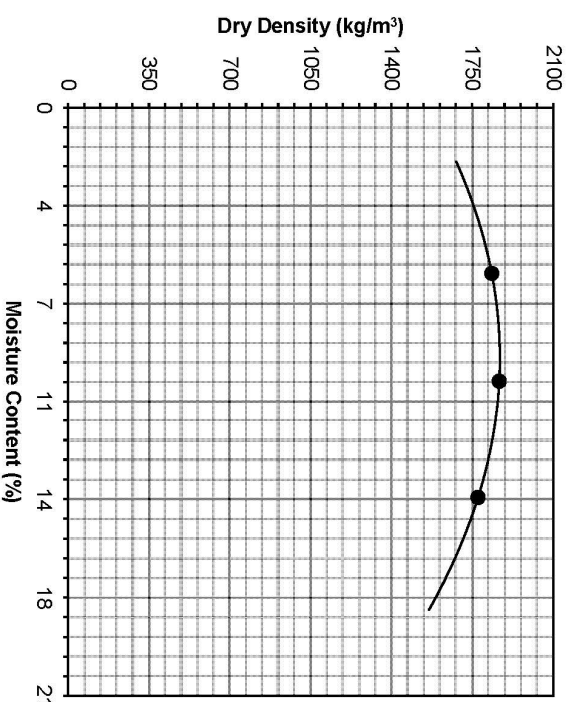
Standard Proctor Compaction (BS Light)

Project		Pavement Investigation			
Client		Nippon Koei Co. Ltd			
Location		Mombasa County			
Delivered on		Sampling Point	H6 TP2	Depth (m)	1.00 m
Test Date	23/2/2022	Sample No.		Code	BS 1377.4: 1990

Wt. of Mould (g)	2904	Volume of Mould (g)	1	Rammer Weight (kg)	2.5
Test No	NMC	1	2	3	
Wt. of mould + wet material (g)		4762	4864	4838	
Wt. wet material (g)		1858	1960	1934	
Bulk density (kg/m³)		1944	2050	2023	

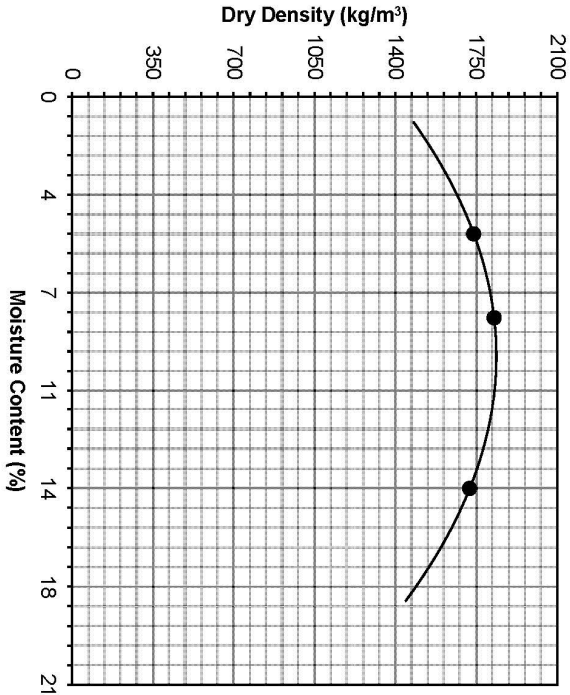
Moisture content					
Container No	CL	22	SK	OK	
Wt. of container + wet material (g)	119.20	129.40	188.20	174.00	
Wt. of container (g)	34.70	38.20	43.20	44.90	
Wt. of container + dry material (g)	115.60	124.30	175.30	158.20	
Wt. dry material (g)	80.90	86.10	132.10	113.30	
Wt. of moisture (g)	3.60	5.10	12.90	15.80	
Moisture content (%)	4.45	5.92	9.77	13.95	
Dry density (kg/m³)		1835	1868	1775	

Optimum Moisture Content (%)	9	Remarks	Tested	Stephen	David Adede (Director)
Maximum Dry Density (kg/m³)	1870		Checked	Lenana	
Av. Bulk Density (kg/m³)	2006		Approved	D. Adede	
Av. Bulk Unit Weight (kN/m³)	19.7		Date	11/3/2022	



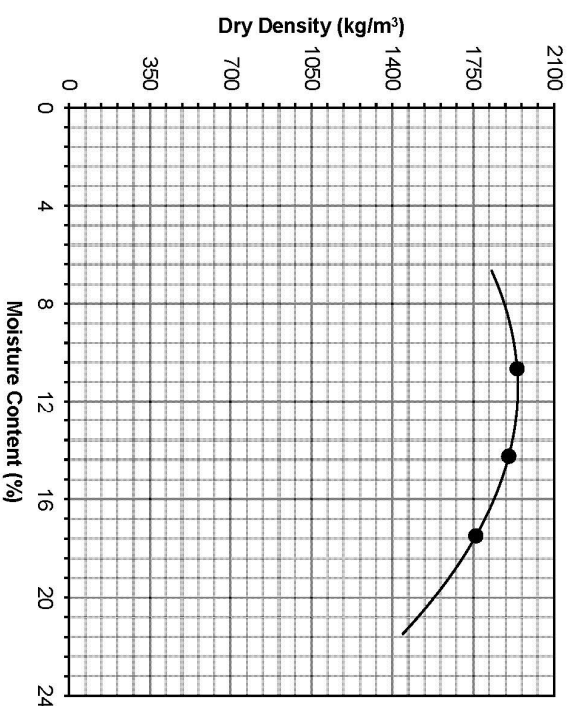
Standard Proctor Compaction (BS Light)

Project		Pavement Investigation					
Client		Nippon Koei Co. Ltd					
Location		Mombasa County					
Delivered on		Sampling Point	H6 TP3		Depth (m)	1.00 m	
Test Date	22/2/2022	Sample No.		Code	BS 1377.4: 1990		
Wt. of Mould (g)	2904	Volume of Mould (g)	1	2	3	Rammer Weight (kg)	2.5
Test No	NMC	1	2	3			
Wt. of mould + wet material (g)	4649	4790	4781				
Wt. wet material (g)	1745	1886	1877				
Bulk density (kg/m ³)	1825	1973	1963				
Moisture content							
Container No	OB	19	R9	LK			
Wt. of container + wet material (g)	88.50	157.80	136.90	210.00			
Wt. of container (g)	27.40	42.30	35.90	45.70			
Wt. of container + dry material (g)	88.00	152.40	129.50	189.80			
Wt. dry material (g)	60.60	110.10	93.60	144.10			
Wt. of moisture (g)	0.50	5.40	7.40	20.20			
Moisture content (%)	0.83	4.90	7.91	14.02			
Dry density (kg/m ³)		1740	1828	1722			
Optimum Moisture Content (%).		9	Remarks				
Maximum Dry Density (kg/m ³).		1837					
Av. Bulk Density (kg/m ³).		1921					
Av. Bulk Unit Weight (kN/m ³)		18.8					
Tested		Stephen					
Checked		Lenana					
Approved		D. Adede					
Date		11/3/2022	David Adede (Director)				



Standard Proctor Compaction (BS Light)

Project		Pavement Investigation			
Client	Nippon Koei Co. Ltd				
Location	Mombasa County				
Delivered on		Sampling Point	A7-4 TP1	Depth (m)	1.00 m
Test Date	22/2/2022	Sample No.		Code	BS 1377-4: 1990
Wt. of Mould (g)	3328	Volume of Mould (g)	1	Rammer Weight (kg)	2.5
Test No	NMC	1	2	3	
Wt. of mould + wet material (g)		5382	5409	5309	
Wt. wet material (g)		2054	2081	1981	
Bulk density (kg/m³)		2148	2177	2072	
Moisture content					
Container No	TK	Y3	6	68	
Wt. of container + wet material (g)	147.90	115.10	175.70	278.10	
Wt. of container (g)	27.90	37.20	33.10	34.30	
Wt. of container + dry material (g)	142.20	107.60	157.90	241.80	
Wt. dry material (g)	114.30	70.40	124.80	207.50	
Wt. of moisture (g)	5.70	7.50	17.80	36.30	
Moisture content (%)	4.99	10.65	14.26	17.49	
Dry density (kg/m³)		1941	1905	1763	
Optimum Moisture Content (%)	11	Remarks			
Maximum Dry Density (kg/m³)	1943				
Av. Bulk Density (kg/m³)	2132				
Av. Bulk Unit Weight (kN/m³)	20.9				
		Tested	Stephen	David Adede (Director)	
		Checked	Lenana		
		Approved	D. Adede		
		Date	11/3/2022		

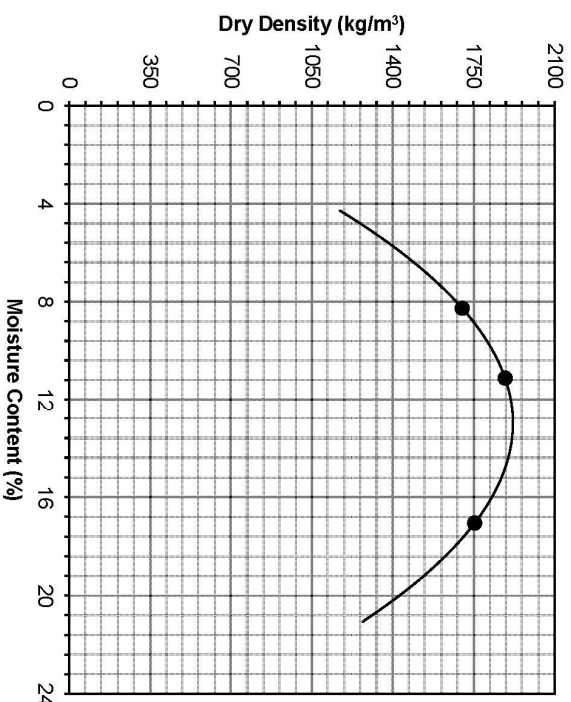


Standard Proctor Compaction (BS Light)

Pavement Investigation																																			
Project		Nippon Koei Co. Ltd																																	
Client		Mombasa County																																	
Location		A7-4 TP2																																	
Delivered on		Sampling Point		Depth (m)	1.00 m																														
Test Date		22/2/2022	Sample No.	Code	BS 1377.4: 1990																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Wt. of Mould (g)</td> <td>3328</td> <td>Volume of Mould (g)</td> <td>1</td> <td>Rammer Weight (kg)</td> <td>2.5</td> </tr> <tr> <td>Test No</td> <td>NMC</td> <td>1</td> <td>2</td> <td>3</td> <td></td> </tr> <tr> <td>Wt. of mould + wet material (g)</td> <td>5090</td> <td>5333</td> <td>5292</td> <td></td> <td></td> </tr> <tr> <td>Wt. wet material (g)</td> <td>1762</td> <td>2005</td> <td>1964</td> <td></td> <td></td> </tr> <tr> <td>Bulk density (kg/m³)</td> <td>1843</td> <td>2097</td> <td>2054</td> <td></td> <td></td> </tr> </table>						Wt. of Mould (g)	3328	Volume of Mould (g)	1	Rammer Weight (kg)	2.5	Test No	NMC	1	2	3		Wt. of mould + wet material (g)	5090	5333	5292			Wt. wet material (g)	1762	2005	1964			Bulk density (kg/m ³)	1843	2097	2054		
Wt. of Mould (g)	3328	Volume of Mould (g)	1	Rammer Weight (kg)	2.5																														
Test No	NMC	1	2	3																															
Wt. of mould + wet material (g)	5090	5333	5292																																
Wt. wet material (g)	1762	2005	1964																																
Bulk density (kg/m ³)	1843	2097	2054																																
Moisture content																																			
Container No	22	N5	20	CL																															
Wt. of container + wet material (g)	151.20	97.20	168.90	182.90																															
Wt. of container (g)	38.10	34.40	36.00	34.70																															
Wt. of container + dry material (g)	149.10	92.40	155.60	161.30																															
Wt. dry material (g)	111.00	58.00	119.60	126.60																															
Wt. of moisture (g)	2.10	4.80	13.30	21.60																															
Moisture content (%)	1.89	8.28	11.12	17.06																															
Dry density (kg/m ³)	1702	1887	1755																																

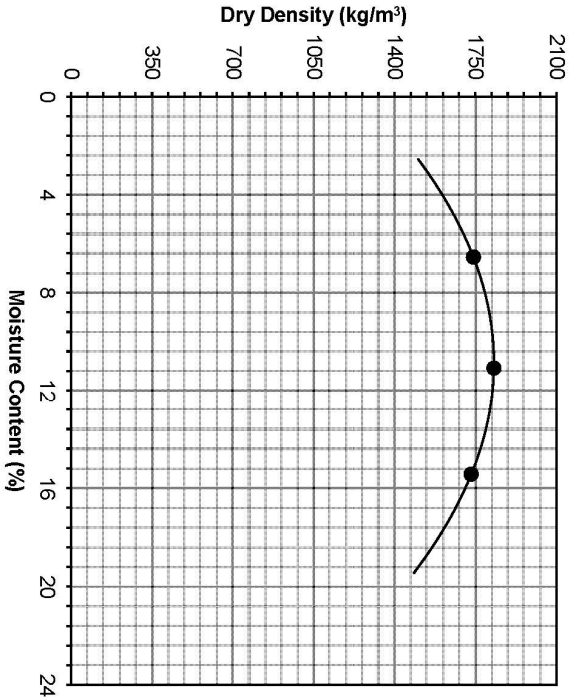
Optimum Moisture Content (%)		13		Remarks
Maximum Dry Density (kg/m ³)		1921		
Av. Bulk Density (kg/m ³)		1998		
Av. Bulk Unit Weight (KN/m ³)		19.6		

Tested		Stephen		David Adede (Director)
Checked		Lenana		
Approved		D. Adede		
Date		11/3/2022		



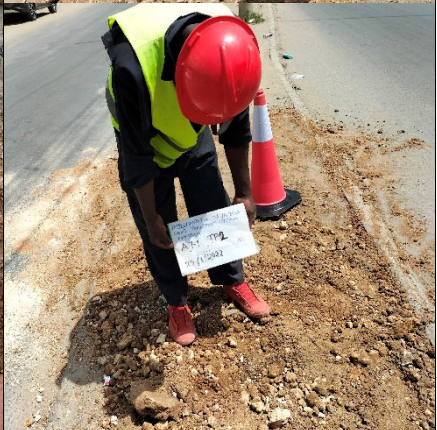
Standard Proctor Compaction (BS Light)

Project		Pavement Investigation				
Client		Nippon Koei Co. Ltd				
Location		Mombasa County				
Delivered on		Sampling Point	L-5 TP1		Depth (m)	1.00 m
Test Date	23/2/2022	Sample No.		Code	BS 1377-4: 1990	
Wt. of Mould (g)	2904	Volume of Mould (g)	1	Rammer Weight (kg)	2.5	
Test No	NMC	1	2	3		
Wt. of mould + wet material (g)	4678	4848	4816			
Wt. wet material (g)	1774	1944	1912			
Bulk density (kg/m ³)	1856	2033	2000			
Moisture content						
Container No	R10	6	N5	XX		
Wt. of container + wet material (g)	145.50	130.90	124.80	160.80		
Wt. of container (g)	34.30	43.00	34.60	36.70		
Wt. of container + dry material (g)	142.30	125.50	115.80	144.20		
Wt. dry material (g)	108.00	82.50	81.20	107.50		
Wt. of moisture (g)	3.20	5.40	9.00	16.60		
Moisture content (%)	2.96	6.55	11.08	15.44		
Dry density (kg/m ³)		1742	1831	1732		
Optimum Moisture Content (%)		11	Remarks			
Maximum Dry Density (kg/m ³).		1831				
Av. Bulk Density (kg/m ³).		1963				
Av. Bulk Unit Weight (kN/m ³)		19.3				
Tested		Stephen	----- David Adede (Director)			
Checked		Lenana				
Approved		D. Adede				
Date		11/3/2022				



APPENDIX III

Site Photographs

A7-1		
Before Excavation	Section	After Excavation
		
		
		

A7-2





A7R-3





A7R-5

Before Excavation

Section

After Excavation



A8-1





A8-3

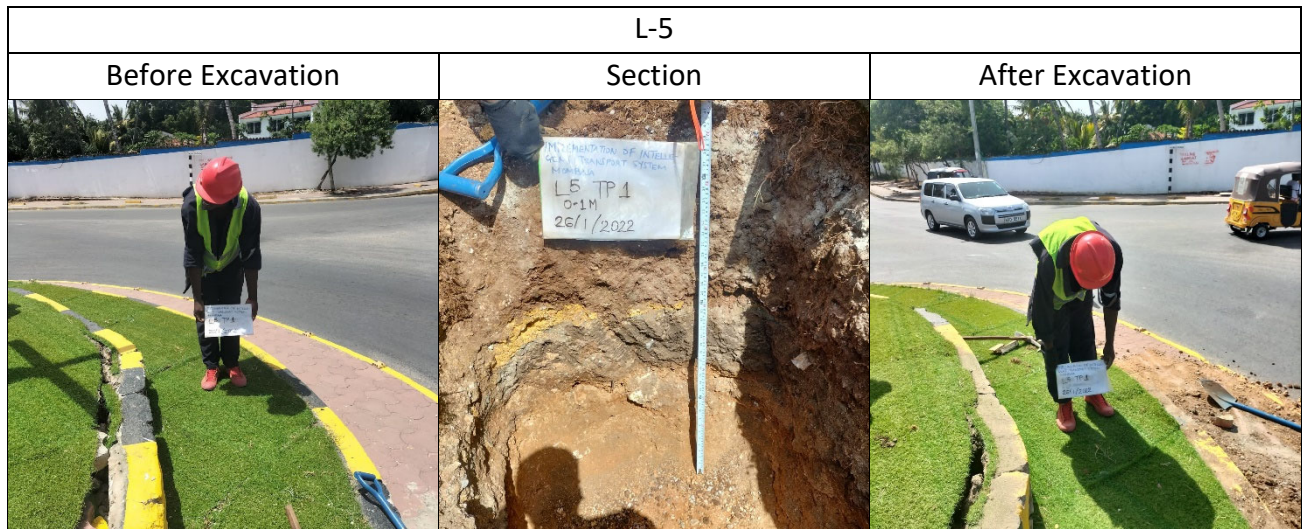


A8-4



H-1		
Before Excavation	Section	After Excavation
		
		
		

H-6		
Before Excavation	Section	After Excavation
		
		
		



M-1

Before Excavation	Section	After Excavation
		
		
		



Laboratory Photographs



CBR samples as received from site



Soaking of CBR samples



CBR test in progress



CBR samples as received from site



Wet sieving of soil samples



Oven drying of soil samples



Determination of moisture content

References

1. British Standards Institution (1999). *BS 5930-1999 Code of Practice for Site Investigations*. London: British Standard Institution.
2. Ministry of Transport and Communication (1987). *Road Design Manual Part III – Materials and Pavement Design for New Roads*.

Location Map



資料 8

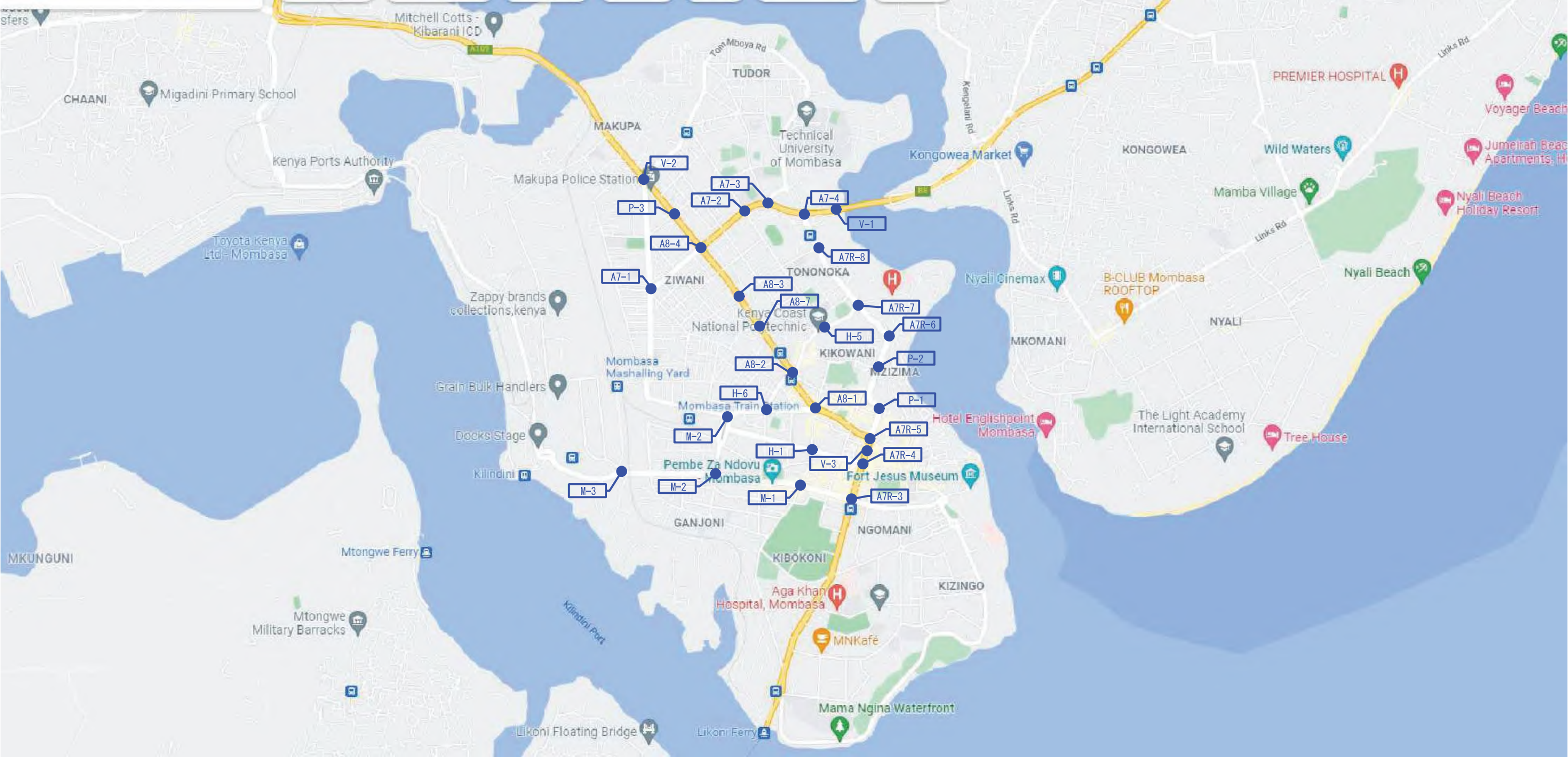
概略設計図（参考図）

PREPARATORY SURVEY FOR THE PROJECT FOR IMPLEMENTATION OF INTELLIGENT TRANSPORT SYSTEM IN MOMBASA REGION

Japan International Cooperation Agency

June 2022

NIPPON KOEI CO.,LTD.
Katahira & Engineers International
Ingerosec Corporation



COUNTY GOVERNMENT OF
MOMBASA REPUBLIC OF KENYA



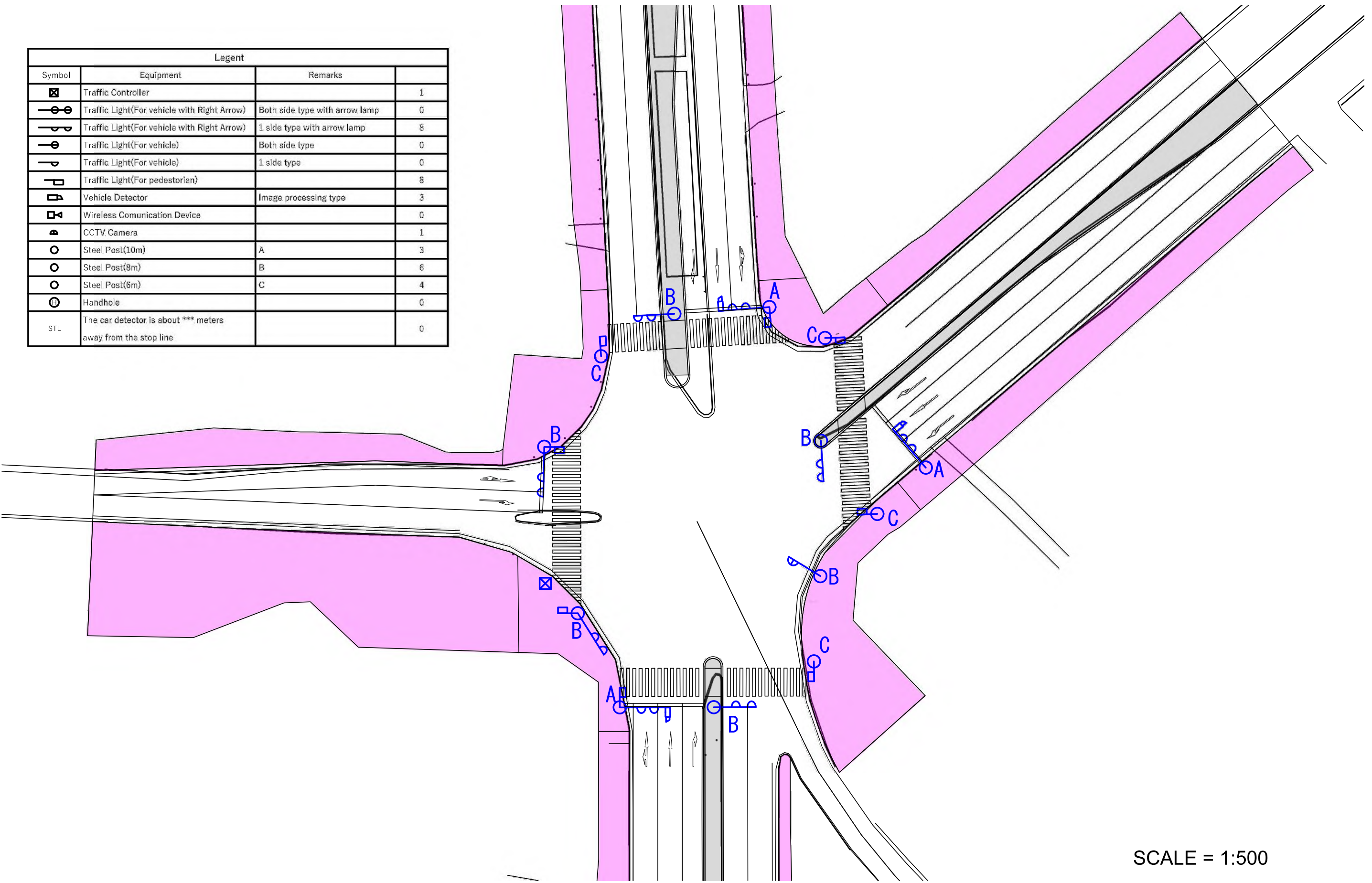
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NIPPON KOEI CO.,LTD.
KATAHIRA & ENGINEERS INTERNATIONAL
INGEROSEC CORPORATION

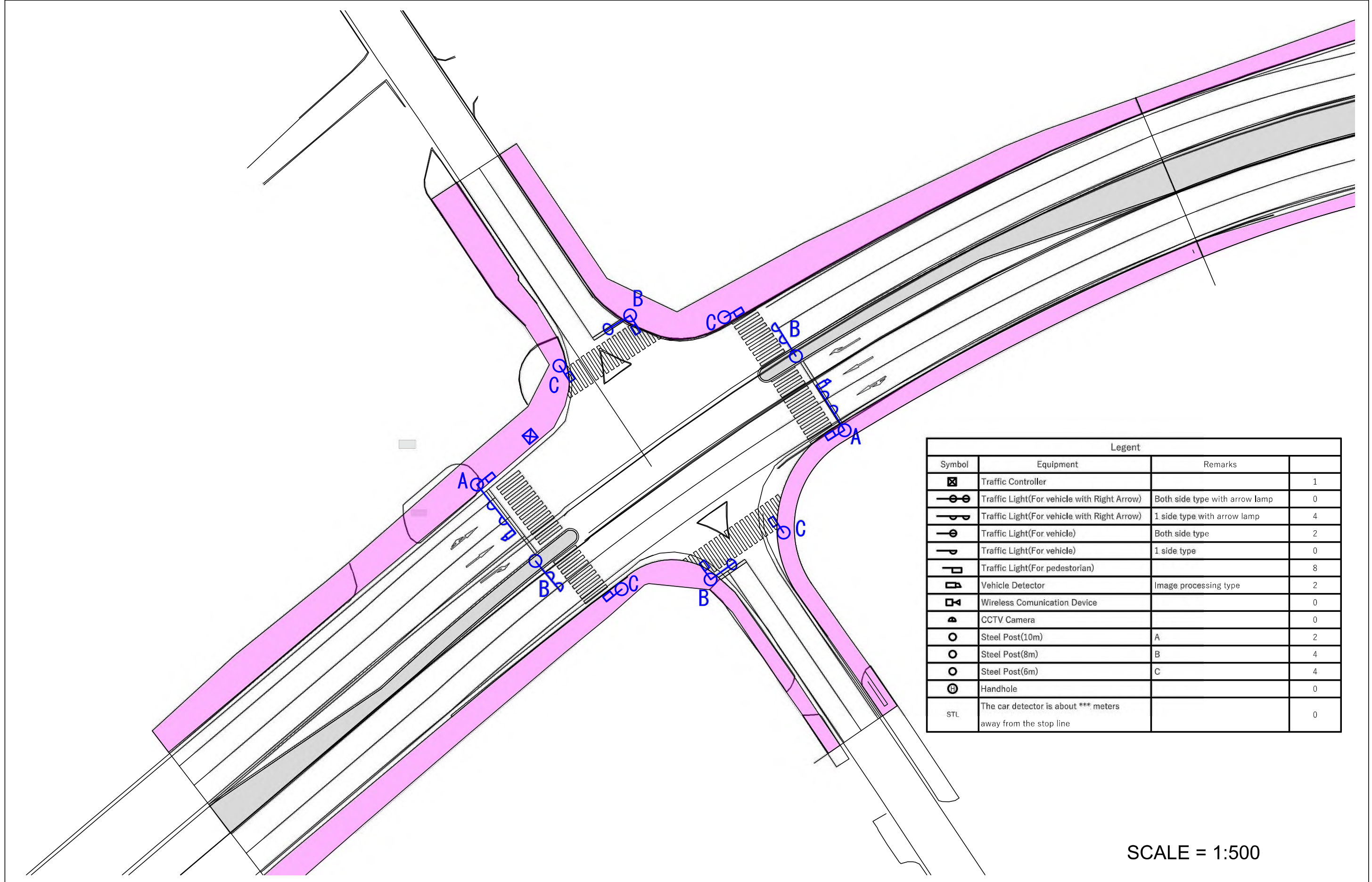
THE PREPARATORY SURVEY FOR THE
PROJECT FOR
IMPLEMENTATION OF INTELLIGENT
TRANSPORT SYSTEM IN MOMBASA REGION

TITLE
Location Map

Drawing No.	G-1
SCALE	S=1/30000
DATE	

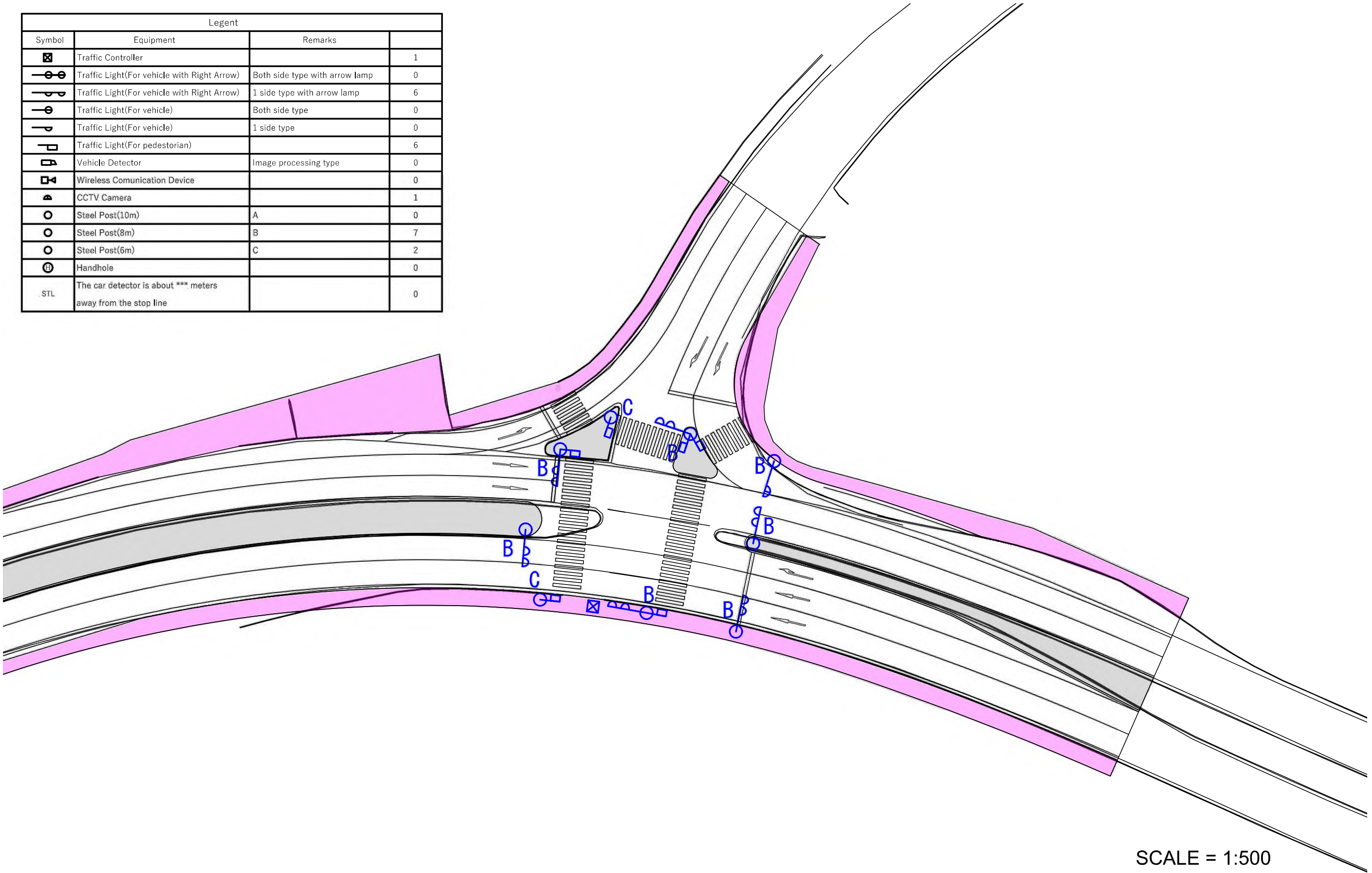
Legent			
Symbol	Equipment	Remarks	
☒	Traffic Controller		1
⬇⬇⬇	Traffic Light(For vehicle with Right Arrow)	Both side type with arrow lamp	0
⬇⬇⬇	Traffic Light(For vehicle with Right Arrow)	1 side type with arrow lamp	8
⬇⬇⬇	Traffic Light(For vehicle)	Both side type	0
⬇⬇⬇	Traffic Light(For vehicle)	1 side type	0
⬇⬇⬇	Traffic Light(For pedestrian)		8
⬇⬇⬇	Vehicle Detector	Image processing type	3
⬇⬇⬇	Wireless Communication Device		0
⬇⬇⬇	CCTV Camera		1
○	Steel Post(10m)	A	3
○	Steel Post(8m)	B	6
○	Steel Post(6m)	C	4
⊕	Handhole		0
STL	The car detector is about *** meters away from the stop line		0

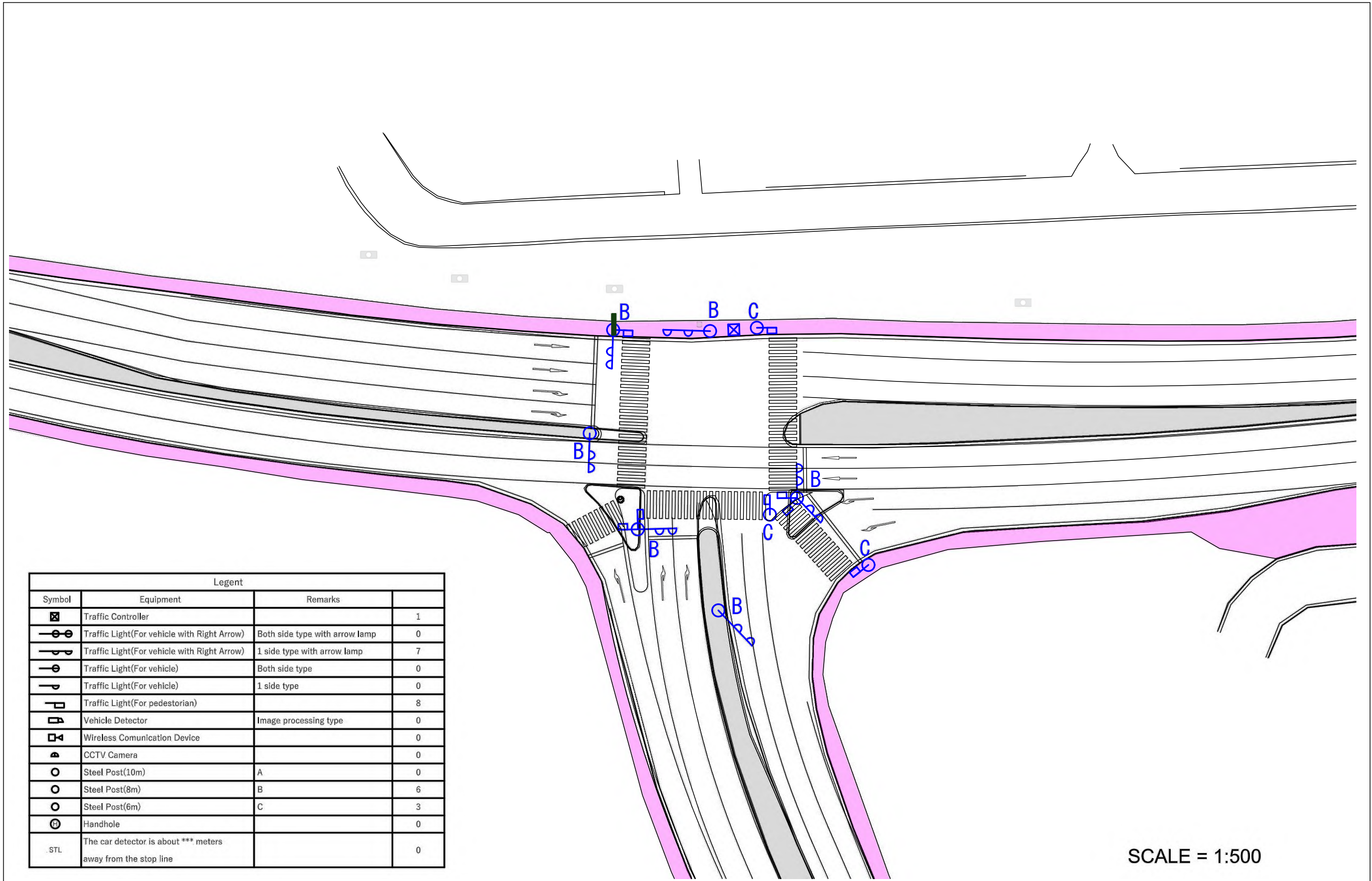




SCALE = 1:500

Legent			
Symbol	Equipment	Remarks	
	Traffic Controller		1
	Traffic Light(For vehicle with Right Arrow)	Both side type with arrow lamp	0
	Traffic Light(For vehicle with Right Arrow)	1 side type with arrow lamp	6
	Traffic Light(For vehicle)	Both side type	0
	Traffic Light(For vehicle)	1 side type	0
	Traffic Light(For pedestorian)		6
	Vehicle Detector	Image processing type	0
	Wireless Communication Device		0
	CCTV Camera		1
	Steel Post(10m)	A	0
	Steel Post(8m)	B	7
	Steel Post(6m)	C	2
	Handhole		0
STL	The car detector is about *** meters away from the stop line		0





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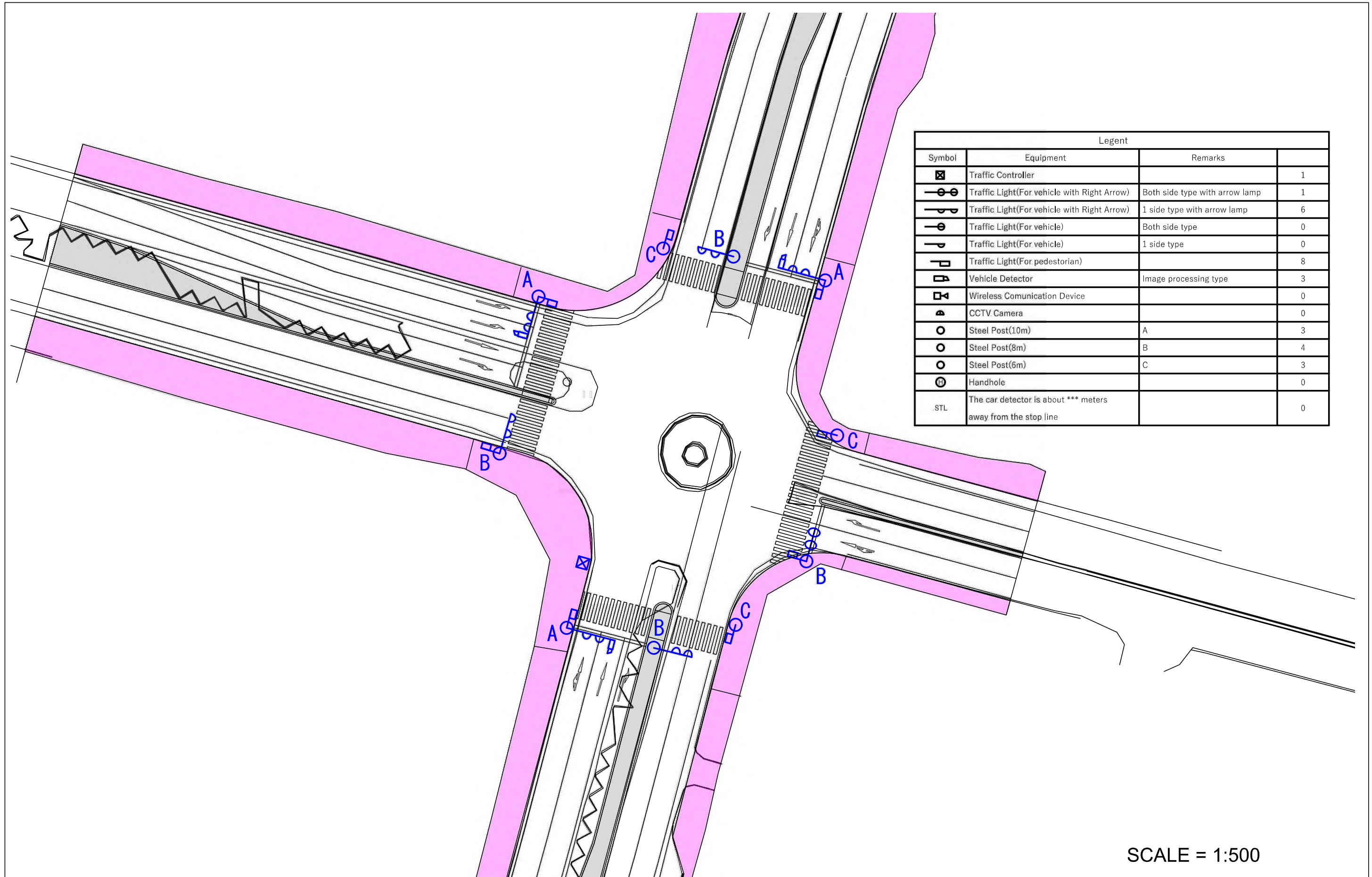


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TRANSPORT SYSTEM IN MOMBASA REGION

TITLE
Detail Location of Traffic Signal (A7-4)

Drawing No.	S-4
SCALE	S=1/500
DATE	



Legent			
Symbol	Equipment	Remarks	
	Traffic Controller		1
	Traffic Light(For vehicle with Right Arrow)	Both side type with arrow lamp	1
	Traffic Light(For vehicle with Right Arrow)	1 side type with arrow lamp	6
	Traffic Light(For vehicle)	Both side type	0
	Traffic Light(For vehicle)	1 side type	0
	Traffic Light(For pedestrian)		8
	Vehicle Detector	Image processing type	3
	Wireless Communication Device		0
	CCTV Camera		0
	Steel Post(10m)	A	3
	Steel Post(8m)	B	4
	Steel Post(6m)	C	3
	Handhole		0
.STL	The car detector is about *** meters away from the stop line		0

SCALE = 1:500



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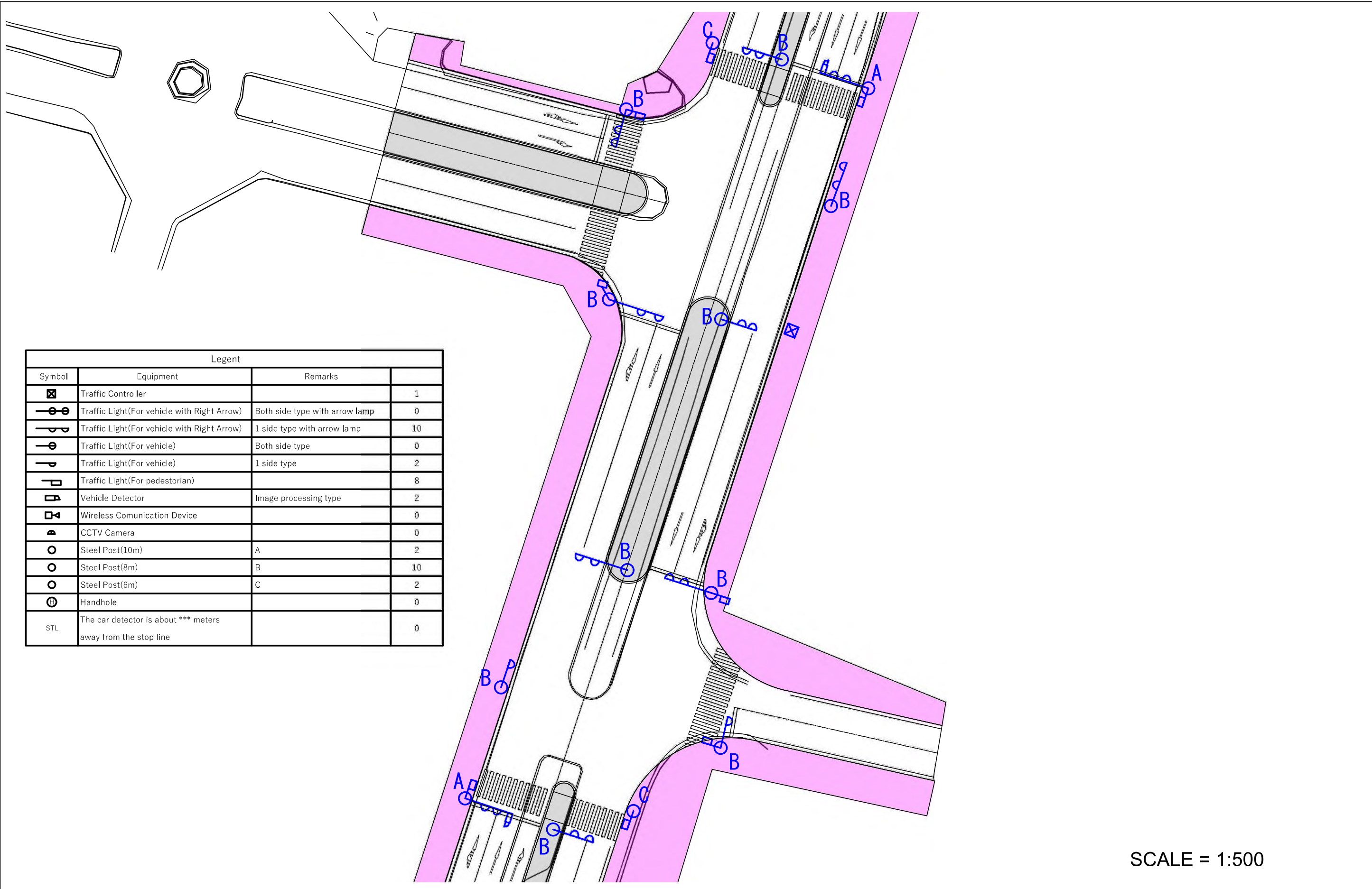


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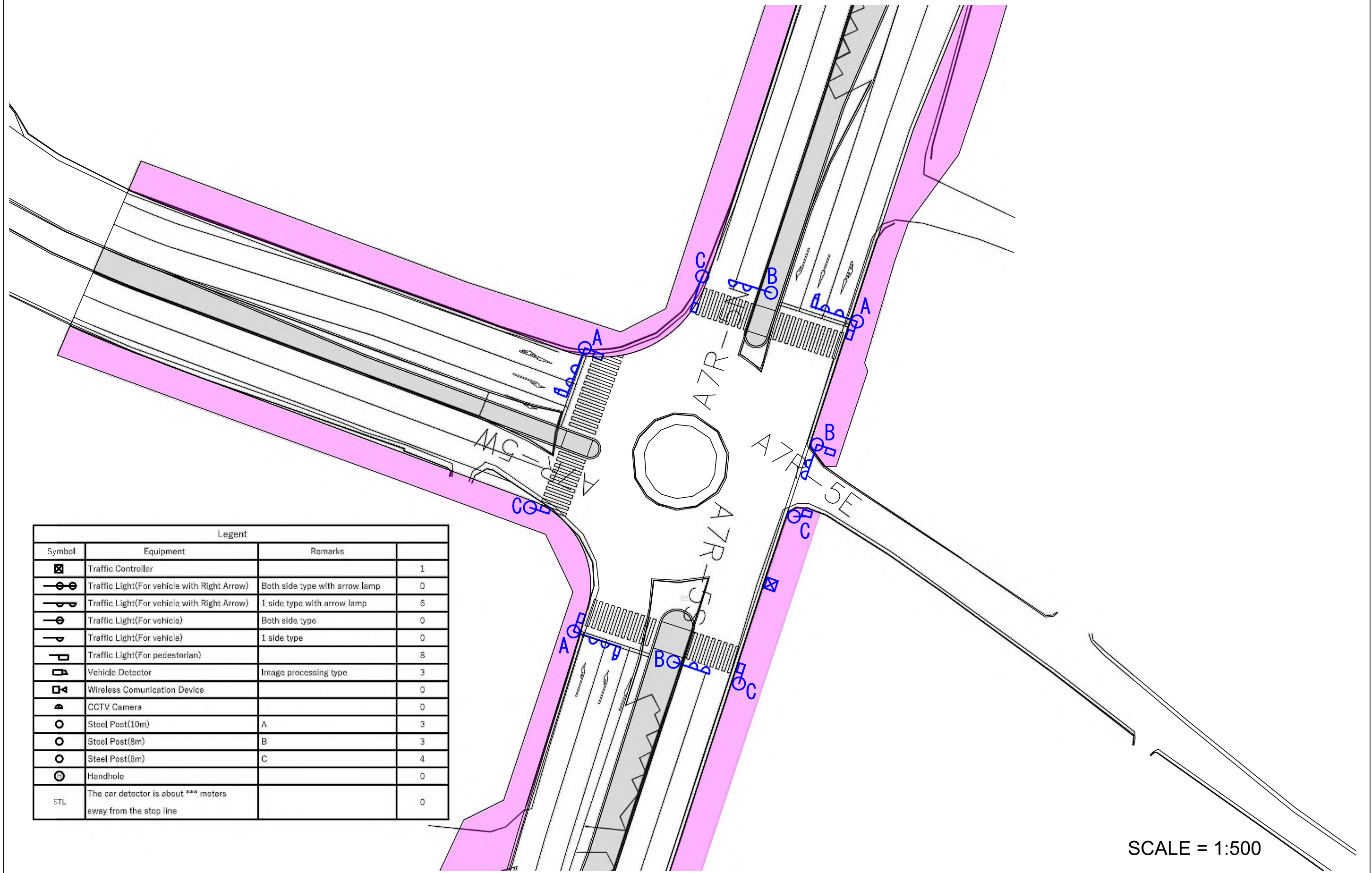
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IMPLEMENTATION OF INTELLIGENT
TRANSPORT SYSTEM IN MOMBASA REGION

TITLE
Detail Location of Traffic Signal (A7R-3)

Drawing No.	S-5
SCALE	S=1/500
DATE	



SCALE = 1:500



COUNTY GOVERNMENT OF
MOMBASA REPUBLIC OF KENYA

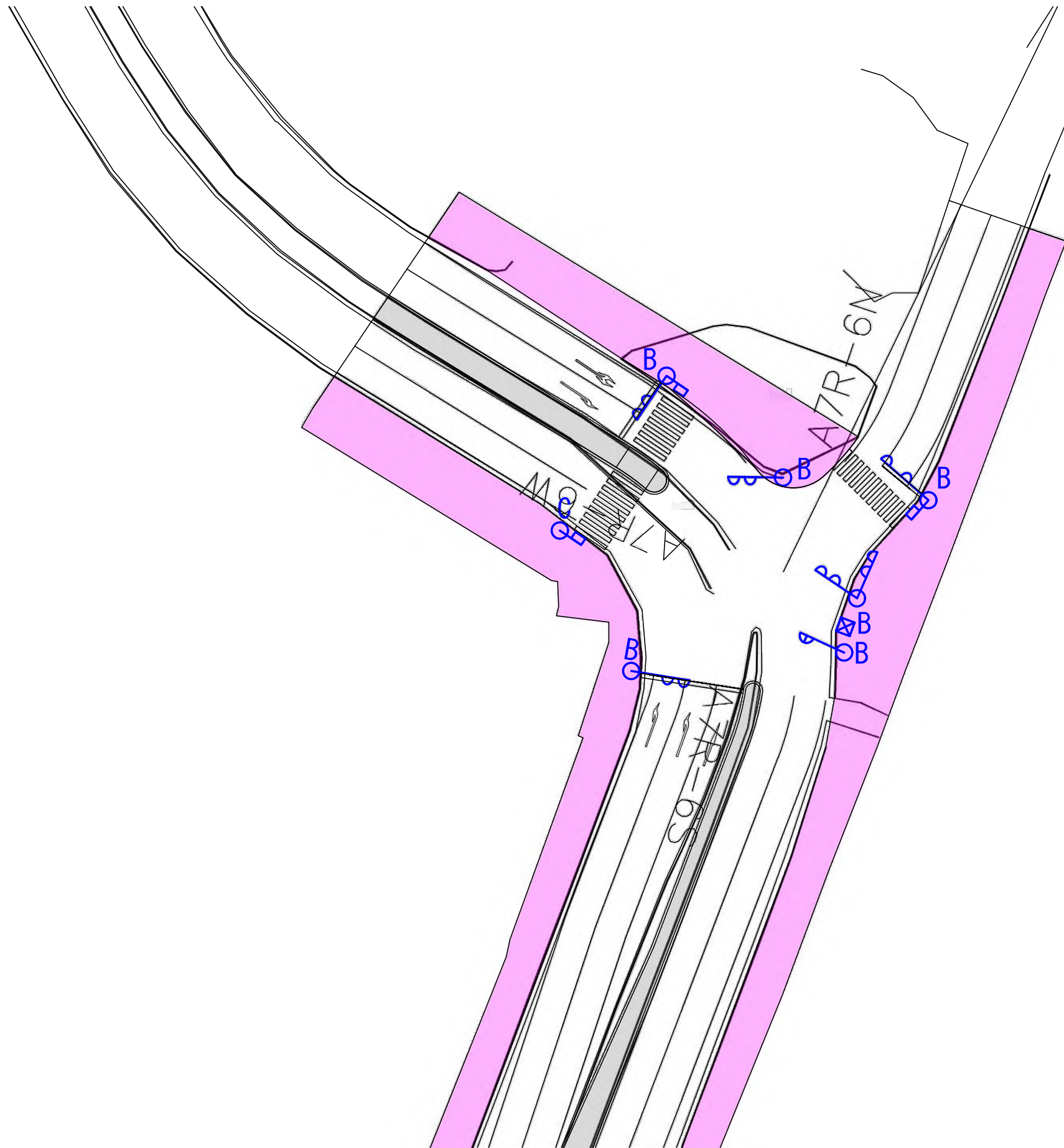


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THE PREPARATORY SURVEY FOR THE
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TRANSPORT SYSTEM IN MOMBASA REGION

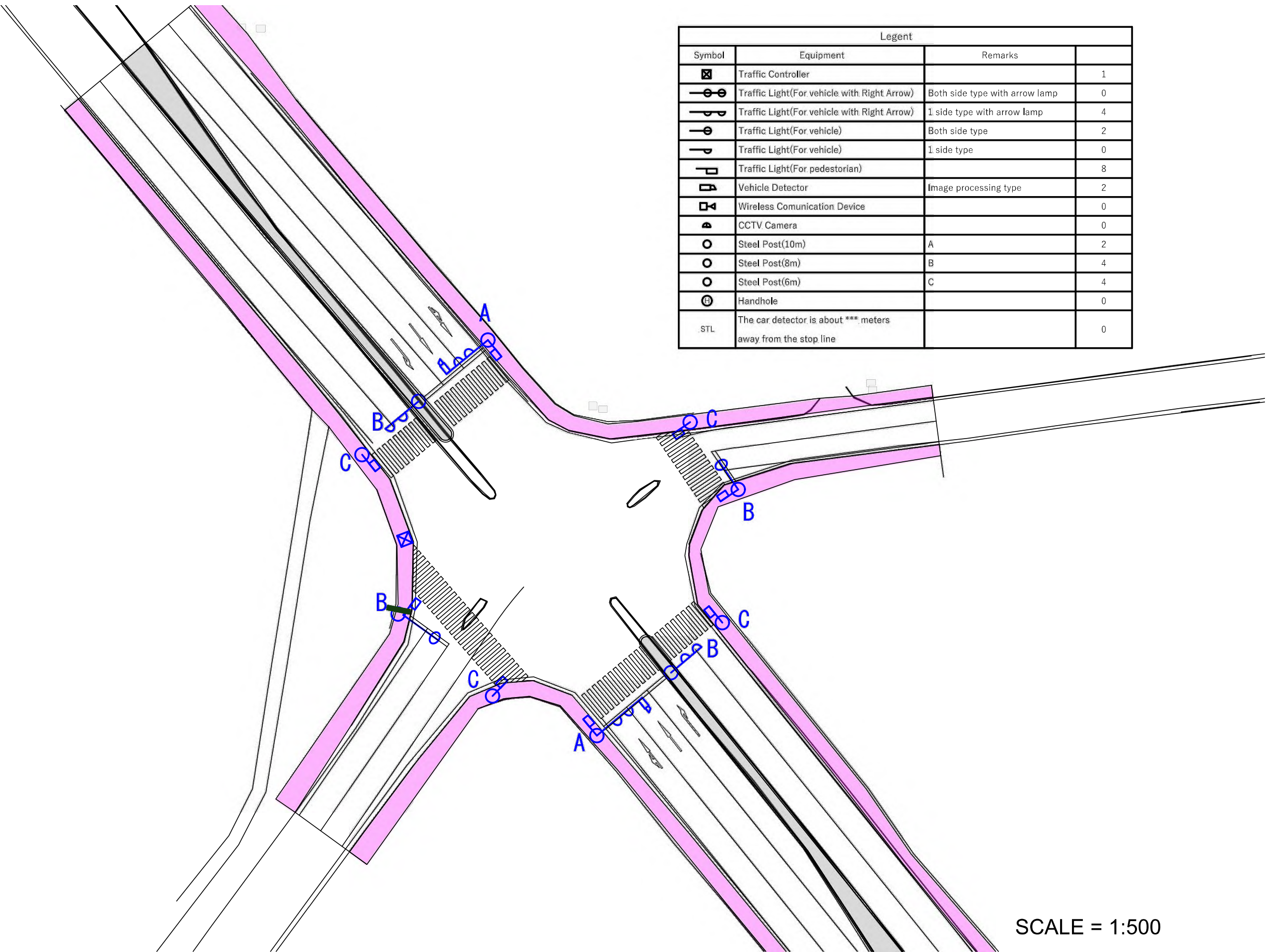
TITLE
Detail Location of Traffic Signal (A7R-5)

Drawing No.	S-7
SCALE	S=1/500
DATE	



Legent			
Symbol	Equipment	Remarks	
	Traffic Controller		1
	Traffic Light(For vehicle with Right Arrow)	Both side type with arrow lamp	0
	Traffic Light(For vehicle with Right Arrow)	1 side type with arrow lamp	6
	Traffic Light(For vehicle)	Both side type	0
	Traffic Light(For vehicle)	1 side type	0
	Traffic Light(For pedestorian)		3
	Vehicle Detector	Image processing type	0
	Wireless Communication Device		0
	CCTV Camera		1
	Steel Post(10m)	A	0
	Steel Post(8m)	B	6
	Steel Post(6m)	C	1
	Handhole		0
STL	The car detector is about *** meters away from the stop line		0

SCALE = 1:500



Legent			
Symbol	Equipment	Remarks	
	Traffic Controller		1
	Traffic Light(For vehicle with Right Arrow)	Both side type with arrow lamp	0
	Traffic Light(For vehicle with Right Arrow)	1 side type with arrow lamp	4
	Traffic Light(For vehicle)	Both side type	2
	Traffic Light(For vehicle)	1 side type	0
	Traffic Light(For pedestorian)		8
	Vehicle Detector	Image processing type	2
	Wireless Communication Device		0
	CCTV Camera		0
	Steel Post(10m)	A	2
	Steel Post(8m)	B	4
	Steel Post(6m)	C	4
	Handhole		0
.STL	The car detector is about *** meters away from the stop line		0

SCALE = 1:500



COUNTY GOVERNMENT OF
MOMBASA REPUBLIC OF KENYA



JAPAN INTERNATIONAL COOPERATION AGENCY
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THE PREPARATORY SURVEY FOR THE
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IMPLEMENTATION OF INTELLIGENT
TRANSPORT SYSTEM IN MOMBASA REGION

TITLE
Detail Location of Traffic Signal (A7R-7)

Drawing No.	S-9
SCALE	S=1/500
DATE	

