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THE RESURFACING ON NATIONAL ROUTE N11 SECTION 12 FROM KM 76.1 TO KM 85.59

SANRAL TYPICAL DETAIL DRAWINGS

DRAWING NO.

DESCRIPTION

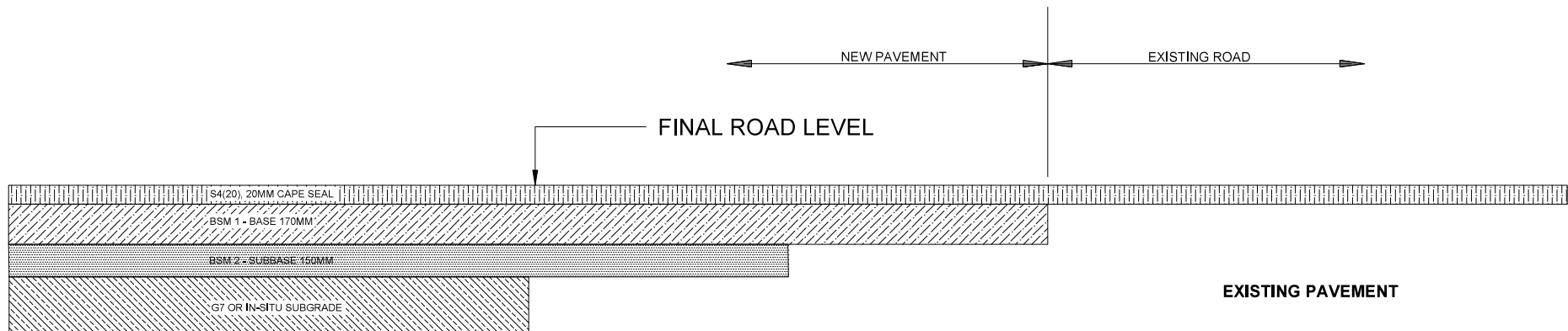
001-RD-01	SCHEMATIC ROAD LAYOUT AND MAINTENANCE INTERVENTIONS
001-RD-02	SCHEMATIC ROAD LAYOUT AND MAINTENANCE INTERVENTIONS
001-RD-03	SCHEMATIC ROAD LAYOUT AND MAINTENANCE INTERVENTIONS
001-RD-04	SCHEMATIC ROAD LAYOUT AND MAINTENANCE INTERVENTIONS
001-RD-05	SCHEMATIC ROAD LAYOUT AND MAINTENANCE INTERVENTIONS
002-RD-02	ROADWORKS DETAILS
003-TA-01	TRAFFIC ACCOMMODATION
004-TD-01	TYPICAL LAYOUT OFFICES AND LABORATORY UNITS
005-TD-01	ROAD SIGNS - SUPPORTS AND FOUNDATIONS - GENERAL DETAILS
005-TD-02	ROAD SIGNS - SUPPORTS AND FOUNDATIONS - DETERMINATION SHEET
005-TD-03	ROAD SIGNS - DETAIL OF ROAD SIGN - SIGN FACE SHEET
005-TD-04	ROAD SIGNS - SMALLER ROAD SIGNS - DETAIL
005-TD-05	ROAD SIGNS - SMALLER ROAD SIGNS - ATTACHMENT AND FIXING DETAILS SHEET 1 OF 2
005-TD-05	ROAD SIGNS - SMALLER ROAD SIGNS - ATTACHMENT AND FIXING DETAILS SHEET 2 OF 2
005-TD-06	ROAD MARKINGS LONGITUDINAL LINE TYPES
005-TD-07	RURAL LONGITUDINAL LINE COMBINATIONS
005-TD-08	MANDATORY DIRECTION ARROWS
005-TD-09	LANE REDUCTION ARROWS
005-TD-10	ROAD MARKINGS BIFURCATION ARROWS
005-TD-11	ROAD MARKINGS BARRIER LINE AHEAD ARROWS
005-TD-12	ROAD MARKINGS TYPICAL DETAILS - PAINTED ISLANDS

		OVERSIGHT ENGINEER		DESIGNER		CHECKED BY		HEAD OFFICE		NORTHERN REGION		ACCEPTANCE		PROJECT DESCRIPTION		PROJECT NUMBER		NRA 2025/0106					
		SANRAL PROJECT MANAGER		DRAWING NO.		DRAWING NO.		48 Tambotie Avenue Vid de Grace Pretoria 0184 PO Box 415 Pretoria 0001 South Africa Tel: (012) 844 8000		 BUILDING SOUTH AFRICA THROUGH BETTER ROADS		38 Ma Street Mabopane Pretoria 0001 Private Bag X17 Lynwood Ridge 0080 Tel: (012) 426 6200		THIS ACCEPTANCE FOR PROCEDURAL AND ADMINISTRATIVE PURPOSES ONLY. ACCEPTANCE ATTRIBUTES LIABILITY OR LIABILITY OF ANY ROADWORKS TO THE DRAWING OR PROJECT NUMBER.		CONTRACT SANRAL NRA 2025/0106 RESURFACING ON NATIONAL ROUTE N11 SECTION 12 FROM KM 76.1 TO KM 85.59		DRAWING LOCATION DATA		START		END	
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																SECTION		12		12			
																DRAWING km DISTANCE		76.1		85.59			
																DRAWING TYPE				DRAWING INDEX			
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																CONSULTANT DRAWING No.							
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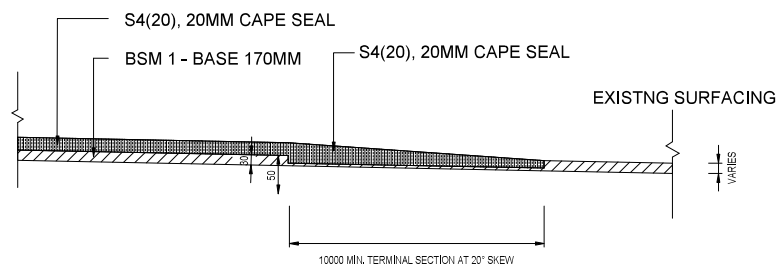
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		CONSULTANT RECORD CONSULTANT NAME: CONSULTANT ADDRESS: CONSULTANT PHONE: CONSULTANT EMAIL: CONSULTANT WEBSITE:		DESIGNER RECORD DESIGNER NAME: DESIGNER ADDRESS: DESIGNER PHONE: DESIGNER EMAIL: DESIGNER WEBSITE:		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:		HEAD OFFICE 38 Kios Street 46 Tamboers Avenue Val de Grace Pretoria 0184 0801 PO Box 415 Pretoria 0201 South Africa Tel: (012) 844 8000		SANRAL BUILDING SOUTH AFRICA THROUGH BETTER ROADS	
		SUPERVISOR RECORD SUPERVISOR NAME: SUPERVISOR ADDRESS: SUPERVISOR PHONE: SUPERVISOR EMAIL: SUPERVISOR WEBSITE:		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:		NORTHERN REGION 38 Kios Street 46 Tamboers Avenue Val de Grace Pretoria 0184 0801 PO Box 415 Pretoria 0201 South Africa Tel: (012) 844 8000		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:	
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		SUPERVISOR RECORD SUPERVISOR NAME: SUPERVISOR ADDRESS: SUPERVISOR PHONE: SUPERVISOR EMAIL: SUPERVISOR WEBSITE:		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:		NORTHERN REGION 38 Kios Street 46 Tamboers Avenue Val de Grace Pretoria 0184 0801 PO Box 415 Pretoria 0201 South Africa Tel: (012) 844 8000		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:		PROJECT TEAM RECORD PROJECT TEAM NAME: PROJECT TEAM ADDRESS: PROJECT TEAM PHONE: PROJECT TEAM EMAIL: PROJECT TEAM WEBSITE:	





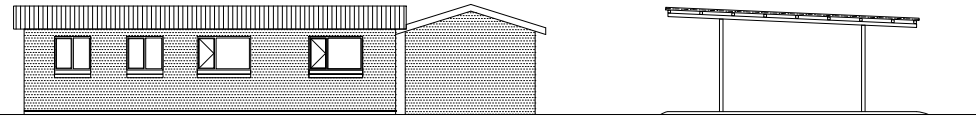
LONGITUDINAL CROSS SECTION
N.T.S



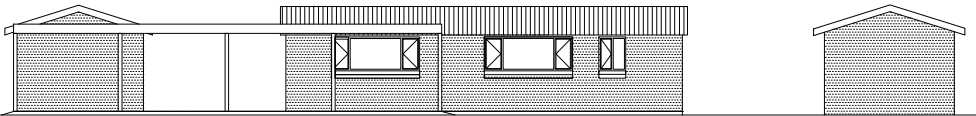
TRANSITION AT LIMIT OF ASPHALT OVERLAY
N.T.S

			CONSULTANT RECORD						REQUEST BY			SANRAL RECORD			HEAD OFFICE			NORTHERN REGION			ACCEPTANCE			PROJECT DESCRIPTION			PROJECT NUMBER			NRA 2025/0106					
			CONSULTANT NAME						NAME						48 Tambotie Avenue Vid de Grace Pretoria 0183			38 Ida Street Mabopane Pretoria 0001			THE ACCEPTANCE FOR PROCEEDING AND COMPLETION OF THE PROJECT IS ACCEPTED BY THE SANRAL BOARD OF DIRECTORS ON BEHALF OF THE SANRAL BOARD OF DIRECTORS			CONTRACT SANRAL NRA 2025/0106 RESURFACING ON NATIONAL ROUTE N11 SECTION 12 FROM KM 76,1 TO KM 85,9			DRAWING LOCATION DATA			START			END		
			CONSULTANT ADDRESS						ADDRESS						PO Box 415 Pretoria 0001 South Africa			Private Bag X17 Lynwood Ridge 0060			ROUTE			N11			DRAWING km DISTANCE			76,1			85,9		
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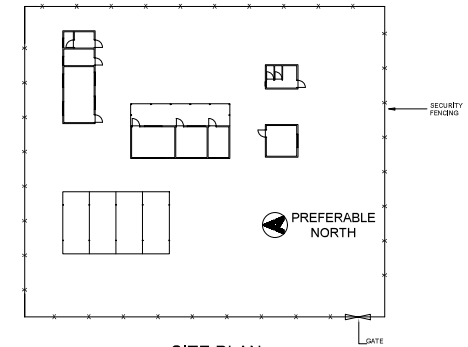
TYPICAL LAYOUT OF OFFICES AND LABORATORY UNITS



NORTH ELEVATION

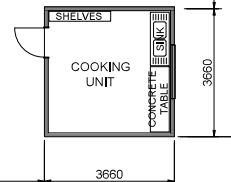
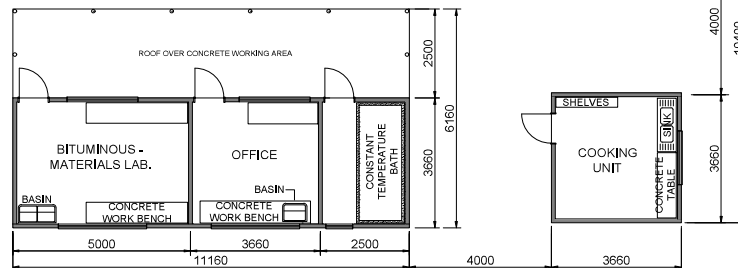
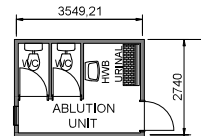
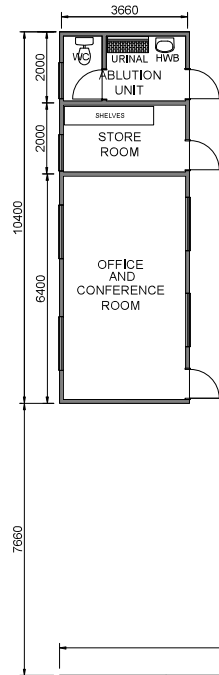


WEST ELEVATION

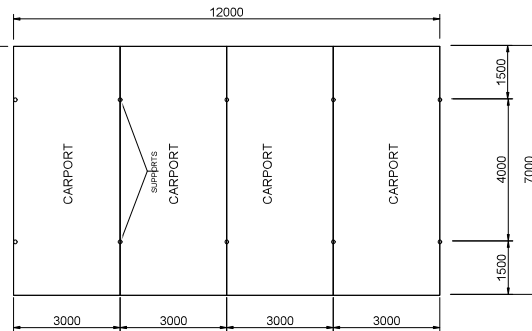


SITE PLAN

SCALE 1:200



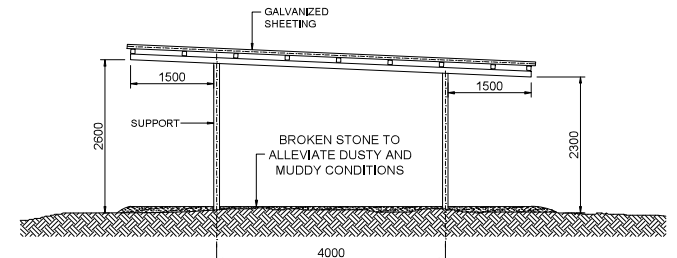
PLAN
SCALE 1 : 50



PLAN OF CARPORTS

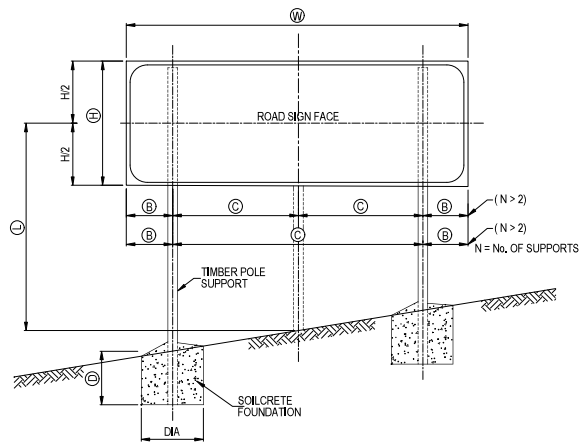
NOTE:

THE LAYOUT OF THE OFFICE AND LABORATORY UNITS IS ONLY A PROPOSAL AND IS SUBJECT TO ALTERNATIVES PROPOSED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.



SIDE ELEVATION OF CARPORTS

[illegible]



ELEVATION

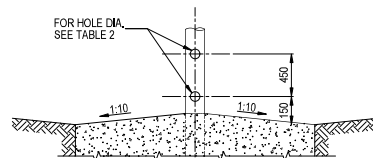
FREE STANDING SUPPORT

SCALE - N.T.S

TABLE 1

WIDTH OF SIGN (W)	No. OF SUPPORTS (N)	DIMENSIONS	
		(B)	(C)
1.2m OR LESS	1	W/2	-
1.2m - 4.0m	2	W/5	3W/5
4.0m - 7.2m	3	W/2N	W/N
7.2m - 9.6m	4		
9.6m - 12.0m	5		

NOTE : MAXIMUM DISTANCE BETWEEN SUPPORTS = 2,4 m

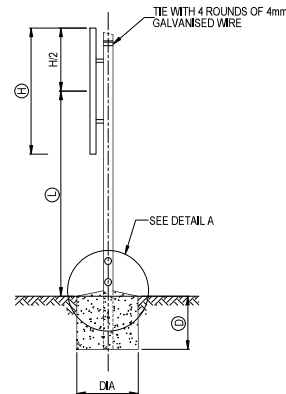


DETAIL A

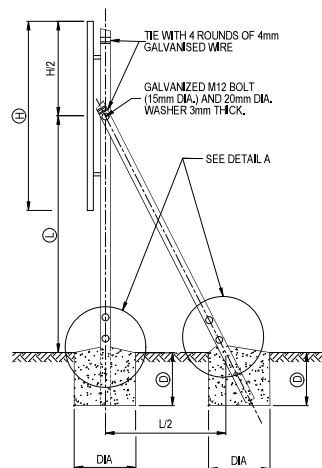
SCALE - N.T.S

TABLE 2

TIMBER POLE DIA. AT GROUND LEVEL (mm)	HOLE DIA. (mm)
≤ 140	NONE
141 - 170	40
171 - 200	50
201 - 225	65



TYPICAL SECTION



TYPICAL SECTION
BRACED SUPPORT

SCALE - N.T.S

GENERAL NOTES

SIZE AND SPACING OF ROAD SIGN SUPPORTS AND FOUNDATIONS
SIZE AND SPACING OF SUPPORTS AND FOUNDATIONS SHALL BE DETERMINED FROM INFORMATION SHOWN ON PLAN AND ON THE DESIGN CHARTS SHOWN ON DRAWING TD-RRS-002, THE SIZES AND SPACING OBTAINED ARE FOR USE WITH THE SIGN FACE SHOWN ON DRAWING TD-RRS-100, DETAILS OF SINGLE POLE SIGNS (LESS THAN 1,5m² IN AREA) ARE SHOWN ON DRAWING TD-RRS-200.

POSITION
ROAD SIGNS SHALL BE ERECTED IN THE POSITIONS SHOWN ON THE DRAWINGS OR INDICATED BY THE ENGINEER, STANDARD CLEARANCES ARE SHOWN IN THE SADC ROAD TRAFFIC SIGNS MANUAL.

EXCAVATION
EXCAVATIONS FOR FOUNDATIONS MUST BE MADE TO THE NEAT DIMENSIONS SPECIFIED, WHERE THE FOUNDATION DEPTH IS 1,5m OR GREATER, EXCAVATIONS MUST BE SUITABLY SHORED FOR THE PROTECTION OF WORKMEN.

TIMBER POLE SUPPORTS
TIMBER SUPPORTS SHALL BE STRAIGHT ROUND POLES COMPLYING WITH THE REQUIREMENTS OF SANS 457-3 AND SHALL NOT EXHIBIT EXCESSIVE CRACKING AT THE ENDS

● **LENGTH:**
WHEREVER POSSIBLE POLE LENGTHS CORRESPONDING TO AVAILABLE NOMINAL LENGTHS SHALL BE USED.

● **CUTTING:**
WHERE CUTTING TO LENGTH AFTER PRESERVATIVE TREATMENT IS UNAVOIDABLE, ONLY ONE CUT PER POLE SHALL BE ALLOWED, THE CUT SHALL BE NEAR THE TOP END OF THE POLE AND THE EXPOSED SURFACE SHALL BE TREATED WITH TWO COATS OF THE APPLICABLE PRESERVATIVE AND THE POLE Banded IN ACCORDANCE WITH SANS 457-3.

● **PRESERVATIVE TREATMENT:**
THE POLES SHALL BE TREATED WITH EITHER A MIXTURE OF COPPER-CHROMIUM-ARSENIC COMPOUNDS COMPLYING WITH THE REQUIREMENTS OF TYPE II OF SANS 673 (HICKSONS 'TANALITH C' OR EQUAL) OR WITH CREOSOTE THAT COMPLIES WITH SANS 538 OR SANS 539.

● **ERECTION:**
POLES SHALL BE SELECTED FOR STRAIGHTNESS AND ERECTED AT AN ORIENTATION WHICH WILL PERMIT THE SIGN FACE TO BE FASTENED IN A VERTICAL PLANE WITHOUT UNDUE DISTORTION.

● **BREAKAWAY HOLES:**
ALL TIMBER POLES HAVING A DIAMETER >140mm SHALL BE DRILLED WITH TWO HOLES PERPENDICULAR TO THE DIRECTION OF TRAFFIC AS SHOWN IN DETAIL A, THE EXPOSED TIMBER SURFACES SHALL BE TREATED WITH TWO COATS OF THE APPLICABLE PRESERVATIVE.

SOILCRETE FOUNDATIONS
SOILCRETE SHALL CONSIST OF 12 PARTS APPROVED GRANULAR SOIL OR GRAVEL MIXED WITH 1 PART PORTLAND CEMENT AND ONLY SUFFICIENT WATER TO GIVE IT A CONSISTENCY THAT WILL PERMIT THE SOILCRETE TO BE VIBRATED OR TAMPED TO EXCLUDE VOIDS. TIMBER SUPPORT POLES SHALL BE SET VERTICAL AND FIRMLY PROPPED IN POSITION PRIOR TO PLACING OF THE SOILCRETE. PROPS SHALL REMAIN IN POSITION FOR A MINIMUM OF 12 HOURS AFTER PLACING THE SOILCRETE, THE SURFACE OF THE SOILCRETE SHALL BE NEATLY FINISHED WITH SUFFICIENT FALL TO ENSURE PROPER DRAINAGE, CONCRETE SHALL NOT BE SUBSTITUTED FOR SOILCRETE, TOPPING OF SOILCRETE FOUNDATION TO BE STEEL FLOATED.

BOLTS, NUTS AND WASHERS
EXCEPT WHERE OTHERWISE SPECIFIED STEEL BOLTS AND NUTS SHALL CONFORM TO SANS 135 OR SANS 1143 AND ALL COMPONENTS SHALL HAVE A HOT-DIP (GALVANIZED) ZINC COATING THAT COMPLIES WITH THE REQUIREMENTS OF SANS 121 : 2000 (ISO 1461 : 1999) FOR COATINGS ON TYPE C1 ARTICLES.

ROAD SIGN FACES
ROAD SIGN FACES SHALL BE MANUFACTURED STRICTLY IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWING TD-RS-100. TRANSPORTATION AND ERECTION OF SIGN FACES SHALL BE CARRIED OUT IN SUCH A WAY THAT DAMAGE TO THE SIGN IS PREVENTED, THE LOWER EDGE OF SIGN FACES SHALL BE HORIZONTAL AFTER COMPLETION OF ERECTION, THE MONTH AND YEAR OF ERECTION OF THE ROAD SIGN SHALL BE INDICATED BY MEANS OF WHITE PAINT ON THE BACK OF THE SIGN IN THE BOTTOM RIGHT HAND CORNER, THE LETTERS AND FIGURES SHALL BE 25mm HIGH.

			DESIGNER		CHECKED/REVISED		HEAD OFFICE		NORTHERN REGION		ACCEPTANCE		PROJECT DESCRIPTION		PROJECT NUMBER		NRA 2025/0195	
			NAME		NAME		48 Tambora Avenue		38 Bala Street		THE ACCEPTANCE FOR PROCEEDING AND COMPLETION OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CLIENT. THE CLIENT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PROJECT.		CONTRACT SANRAL NRA 2025/0195 RESURFACING ON NATIONAL ROUTE M11 SECTION 12 FROM KM 76,1 TO KM 85,59		DRAWING LOCATION DATA		START	
			PROJECT NO.		PROJECT NO.		Vid de Grace		Mamela Park		ROUTE		SECTION		N11		N11	
			DATE		DATE		0188		Private Bag X17		DRAWING NO. DISTANCE		DRAWING TYPE		76,1		85,59	
			DRAWING NO.		DRAWING NO.		PO Box 415		Lyndwood Ridge		DRAWING INDEX		BRIDGE STRUCTURE NO.		DWG 005 TD01		VER	
			CONSULTANT		CONSULTANT		Tsh (012) 844 8000		Tsh (012) 426 8000		AS SHOWN		SHEET 1 OF 2		SANRAL DOCUMENT #		V2	

ROAD SIGNS DETERMINATION OF SUPPORTS AND FOUNDATIONS

NOTE:

1. REFERENCE PLANS
THIS PLAN FORMS PART OF AND MUST BE READ IN CONJUNCTION WITH DRAWING TO-R-RS-001

2. DESIGN LOADING

NOMINAL WIND LOAD ACTING ON THE SIGN FACE HAS BEEN ASSUMED AS FOLLOWS -
AVERAGE SIGN HEIGHT $L < 2m$: 0,75 kPa
AVERAGE SIGN HEIGHT $L > 2m$: 1,25 kPa
WIND LOADING IS ASSUMED TO VARY LINEARLY FOR AVERAGE SIGN HEIGHTS FALLING BETWEEN THE ABOVE LIMITS.

3. FOUNDING MATERIAL

FOUNDATIONS FOR FREE STANDING SUPPORTS DEPEND ON SOIL TYPE ENCOUNTERED.
THE GRAPHS FOR "MEDIUM HARD GROUND" ARE APPLICABLE FOR ANY MATERIAL WHICH REQUIRES A PICK FOR EXCAVATION.
FOR SOFTER FOUNDING MATERIAL THE GRAPH FOR "SAND OR SOFT CLAY" MUST BE USED.
FOUNDATIONS FOR SIGNS USING BRACED SUPPORTS ARE INDEPENDENT OF FOUNDING MATERIAL TYPE.
FOUNDATIONS FOR SIGNS LOCATED IN HARD ROCK MAY REQUIRE SPECIAL DESIGNS.

4. DESIGN PROCEDURE

- FROM TABLE 1 ON PLAN No. C-02-v1 DETERMINE FOR SIGN WIDTH W , THE NUMBER OF SUPPORTS N AND DIMENSIONS B AND C
- CALCULATE THE EFFECTIVE SIGN AREA $A = W \times H$ (m²) AND AVERAGE HEIGHT L (m)
 N
- FROM DESIGN CHART 1 (FREE STANDING SUPPORT), DETERMINE THE FOLLOWING:-
a) THE TOP DIAMETER OF THE POLE
b) THE FOUNDATION DIAMETER AND DEPTH FOR THE APPLICABLE FOUNDING MATERIAL. (SEE NOTE 3)
- WHERE THE EFFECTIVE SIGN AREA EXCEEDS 6m² OR WHERE NECESSARY AS INDICATED ON DESIGN CHART 1, CHART 2 FOR BRACED SUPPORTS MUST BE USED.
IN THIS CASE THE POLE TOP DIAMETER AND FOUNDATION SIZES OBTAINED ARE APPLICABLE TO BOTH THE UPRIGHT AND DIAGONAL BRACE MEMBERS.
- DETERMINE FROM TABLE 2 THE DIAMETER OF HOLES TO BE DRILLED IN THE POLES AS SHOWN IN DETAIL "A"

5. EXAMPLE (FREE STANDING SUPPORT)

$W = 5m$ $H = 1,8m$ $L = 2,7m$

FROM TABLE 1

$N = 3m$ $B = 0,830m$ $C = 1,670m$

$A = 5 \times 1,8 = 3,0m^2$

3

FROM DESIGN CHART 1

FOR $A = 3,0m^2$ AND $L = 2,7m$

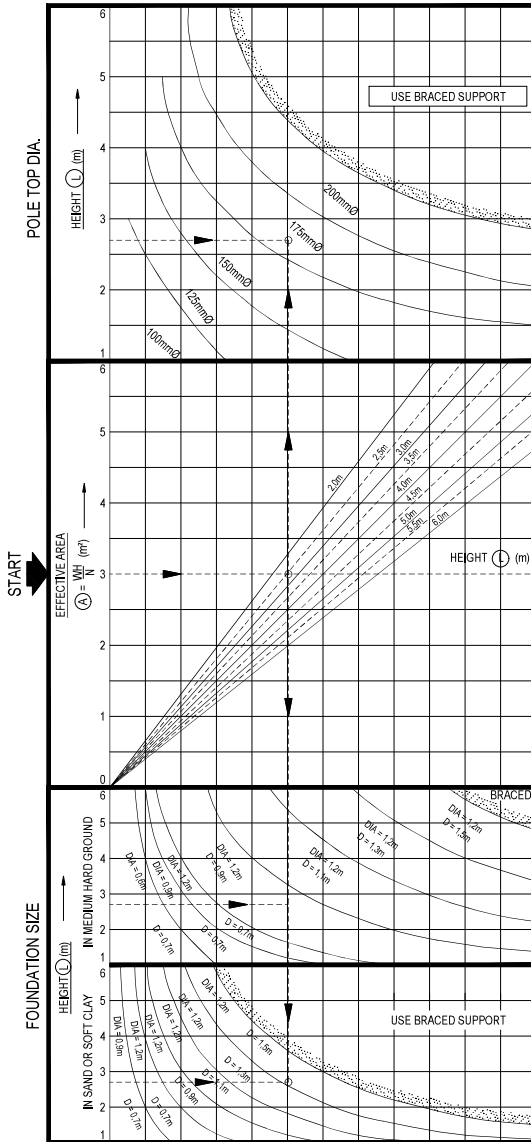
POLE TOP DIA. = 175mm

FOUNDATION SIZE = 1,2m DIA, 0,9m DEEP (MEDIUM HARD GROUND)

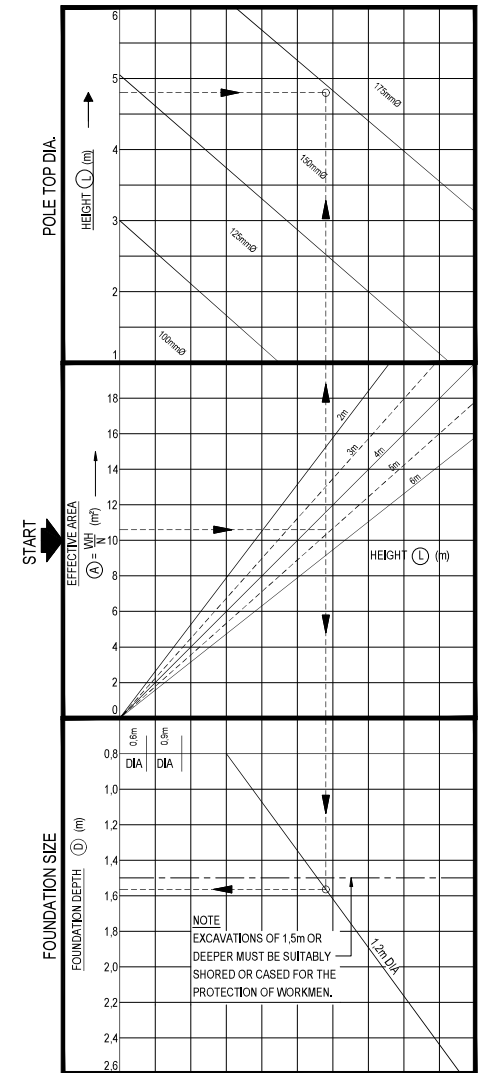
OR 1,2m DIA, 1,5m DEEP (SAND OR SOFT CLAY)

FROM TABLE 2

HOLES TO BE DRILLED (DETAIL "A" = 40mm DIA.)



DESIGN CHART 1
FREE STANDING SUPPORT



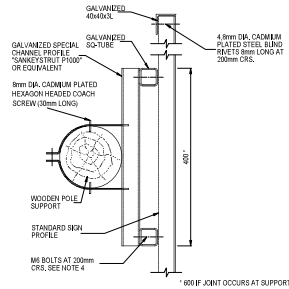
DESIGN CHART 2
BRACED SUPPORT

SCALE - N.T.S

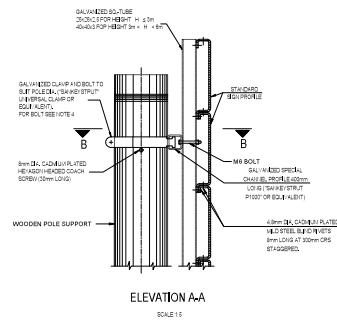
			COPYRIGHT INFRINGEMENT			DESIGNED BY			PROJECT NAME / REFERENCE			HEAD OFFICE			SOUTH AFRICAN ROAD REPAIRS SOCIETY			NORTHERN REGION			PROJECT DESCRIPTION			PROJECT NUMBER		
			ROADS CONTRACT PROJECTS			NAME			3816 Ste Street			CONTRACT SANRAL NRA 2025/106 RESURFACING ON NATIONAL ROUTE M11 SECTION 12 FROM KM 76,1 TO KM 85,59			DRAWING LOCATION DATA			START			END					
						PROJECT No.			Mundo Park Pretoria 0164			ROUTE			N11			SECTION			12					
									0081			Private Bag X17 Lynnwood Ridge 0040			DRAWING km DISTANCE			76,1			85,59					
			GENERAL PROJECT REFERENCE			NAME									DRAWING TYPE			DRAWING INDEX								
						PROJECT No.									BRIDGE/STRUCTURE No.			-								
															CONSULTANT DRAWING No.			DWG 005/106/2								
						DRAWN BY									GENERAL DOCUMENT A			VER 2								
						SCALE									A3 AS SHOWN			SHEET 2 OF 2								
No.			DATE			REVISION			CONSULT.																	

THE ROAD SIGN FACES SHALL BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

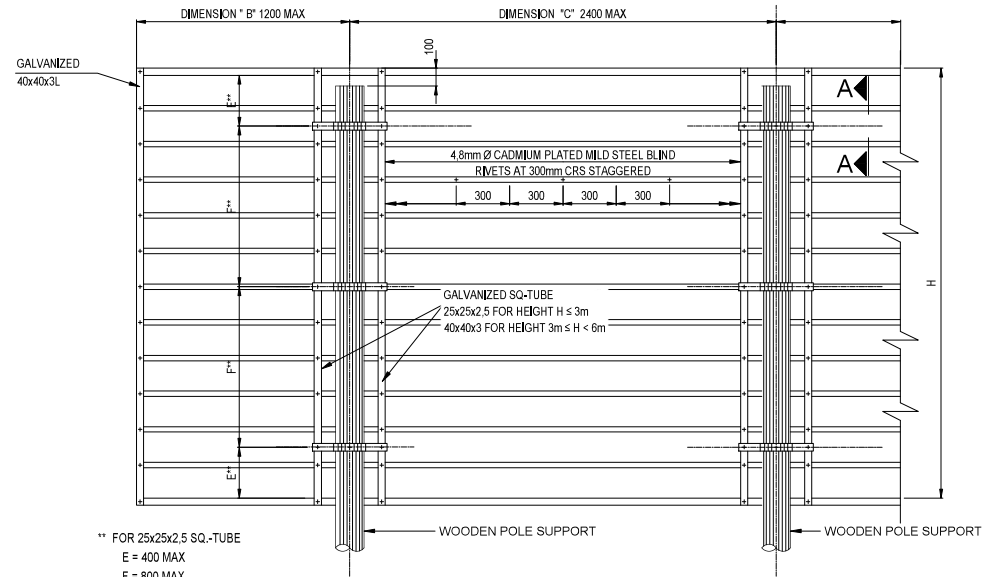
1. THE STANDARD SIGN PROFILE IF APPLICABLE SHALL BE MADE IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWING TD-R-RS-101.
2. A SIGN FACE WHICH EXCEEDS 6m LENGTH MAY BE MANUFACTURED IN TWO SECTIONS. THE JOINT SHALL BE MADE IN ACCORDANCE WITH DETAILS SHOWN ON DRAWING TD-R-RS-101.
3. STRUCTURAL STEEL SECTIONS SHALL BE MILD STEEL CONFORMING TO THE REQUIREMENTS OF SANS 1431, GRADE 300W. RECTANGULAR HOLLOW SECTION AND SPECIAL CHANNEL PROFILES MAY BE COLD FORMED OF COMMERCIAL QUALITY MILD STEEL. ALL SECTIONS SHALL BE HOT-DIP GALVANISED IN ACCORDANCE WITH THE REQUIREMENTS OF SANS 121 : 2000 (ISO 1461 : 1999).
4. BOLTS, WASHERS AND NUTS SHALL COMPLY WITH THE REQUIREMENTS OF SANS 1700-S-1 AND SHALL BE GALVANISED IN ACCORDANCE WITH THE REQUIREMENTS OF SANS 121 : 2000 (ISO 1461 : 1999).
5. BLIND RIVETS SHALL BE 4.8mm DIA CADMIUM PLATED MILD STEEL.
6. REFERENCE MUST BE MADE TO THE RELEVANT ROAD SIGNS DETAIL DRAWING FOR DETAILS OF THE ROAD SYMBOLS AND LEGEND FOR EACH INDIVIDUAL SIGN.



SECTION B - B
SCALE - 1:5

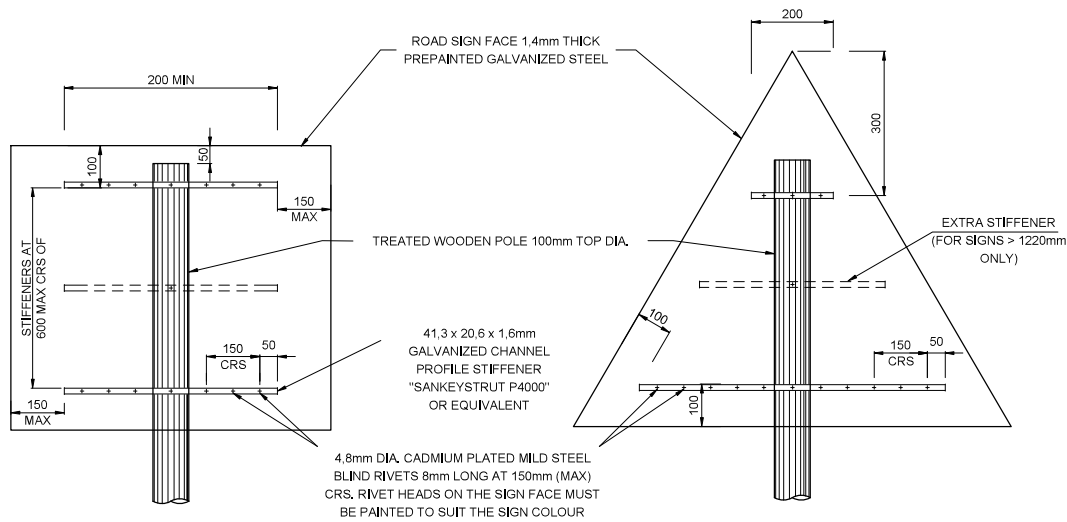


ELEVATION A-A
SCALE 1/8"



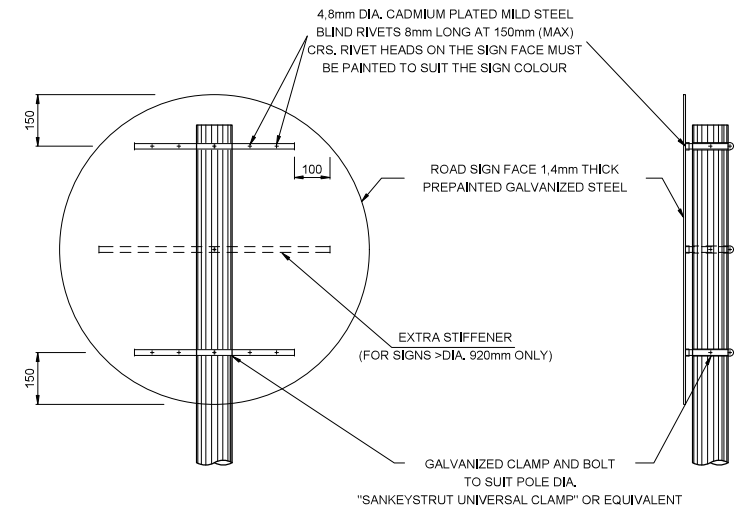
REAR ELEVATION
SCALE 1:20

[illegible]



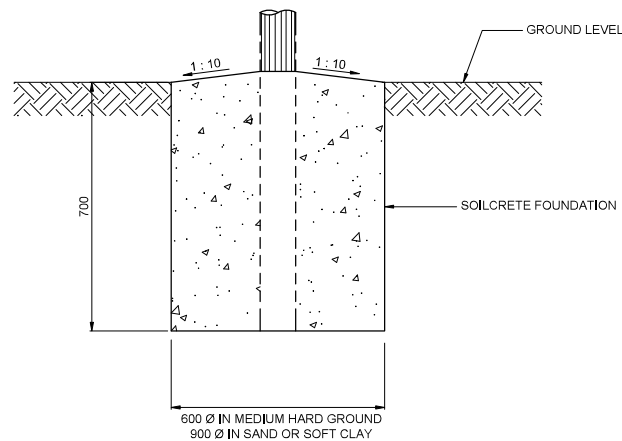
REAR ELEVATION

REAR ELEVATION



REAR ELEVATION

TYPICAL SIDE ELEVATION



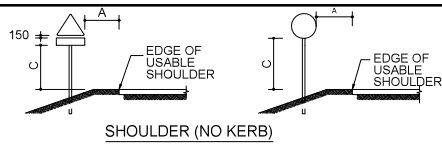
TYPICAL FOUNDATION

NOTES :

THE ROAD SIGN FACES SHALL BE MANUFACTURED AND ERECTED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS :

1. DETAILS ON THIS DRAWING ARE APPLICABLE TO ROAD SIGNS SMALLER THAN 1,5m² REQUIRING DOUBLE / SINGLE SUPPORTS.
2. BOLTS, WASHERS AND NUTS SHALL COMPLY WITH THE REQUIREMENTS OF SANS 1700-5-1 AND SHALL BE GALVANISED IN ACCORDANCE WITH THE REQUIREMENTS OF SANS 121 : 2000 (ISO 1461 : 1999).
3. BLIND RIVETS SHALL BE 4,8mm DIA CADMIUM PLATED MILD STEEL.
4. REFERENCE MUST BE MADE TO THE RELEVANT ROAD SIGNS DETAIL DRAWING FOR DETAILS OF THE ROAD SIGN SYMBOLS AND LEGEND FOR EACH INDIVIDUAL SIGN.

					<div>CONSTRUCTION RECORD WORKS CONTRACT ENGINEER</div>		<div>HEAD OFFICE 48 Tambotie Avenue Val de Grace Pretoria 0184</div>		<div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div> <div>SANRAL</div> <div>SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD</div> <div>BUILDING SOUTH AFRICA THROUGH BETTER ROADS</div>		<div>NORTHERN REGION 38 Ida Street Menlo Park Pretoria 0081</div> <div>Private Bag X17 Lynwood Ridge 0040</div> <div>Tel: (012) 426 6200</div>		<div>ACCEPTANCE</div> <div>THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OR LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWEVER ARISING</div> <div>for CEO: SA NATIONAL ROADS AGENCY SOC LTD. Date:</div>		<div>PROJECT DESCRIPTION</div> <div>CONTRACT SANRAL NRA 2025/0106 RESURFACING ON NATIONAL ROUTE N11 SECTION 12 FROM KM 76.1 TO KM 85.59</div>		<div>PROJECT NUMBER</div> <div>NRA 2025/0106</div>	
					<div>SANRAL PROJECT MANAGER</div>								<div>DRAWING LOCATION DATA</div>		<div>START</div> <div>N11</div>		<div>END</div> <div>N11</div>	
													<div>ROUTE</div>					
													<div>SECTION</div>					
													<div>DRAWING km DISTANCE</div>					
													<div>DRAWING TYPE</div>				<div>DRAWING INDEX</div>	
													<div>BRIDGE/STRUCTURE No.</div>					
													<div>CONSULTANT DRAWING No.</div>				<div>DWG 006/TO/04</div>	
													<div>SANRAL DOCUMENT #</div>				<div>VER</div>	
													<div>AS SHOWN</div>		<div>SHEET 2 OF 2</div>		<div>V2</div>	
No.	DATE	REVISION	CONSULT. ENG.															



REGULATORY AND WARNING SIGNS

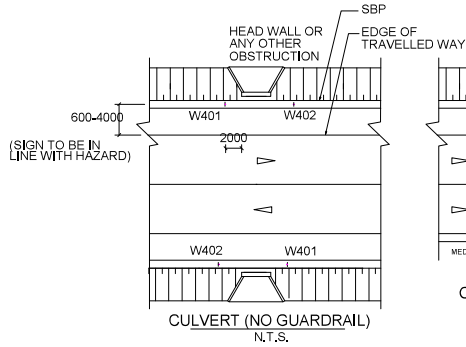


DIAGRAMMATIC SIGN

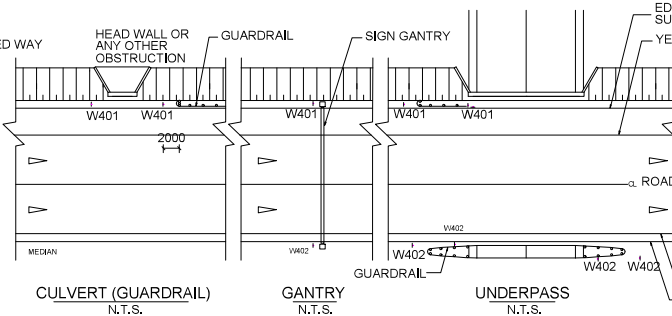


LOCATION AND ROUTE MARKER SIGNS

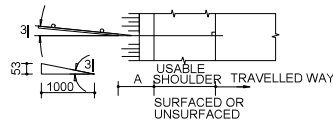
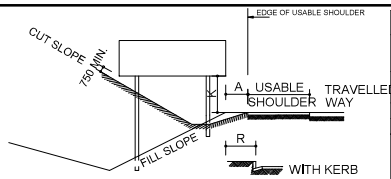
SMALL TO MEDIUM SIZED GUIDANCE AND INFORMATION SIGNS



LOCATION DETAILS
(SINGLE CARRIAGEWAY)



LOCATION DETAILS
(DUAL CARRIAGEWAY)



TYPICAL DIRECTION SIGN

TABLE 1 PERMANENT SIGN PLACEMENT DIMENSIONS			
POSITIONING	PREFERRED	RANGE	
VERTICAL	(mm)	(mm)	
A	1500	1200-2000	
B	750	500-	
C	2100	600-2500	
D	2500	2100-3000	
E	0	0-200	
F	1200	600-2000	
G	1200	800-1600	
K	2000	1600-2400	
R	1500	600-	

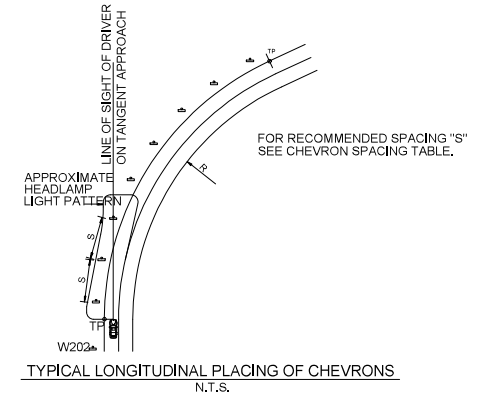
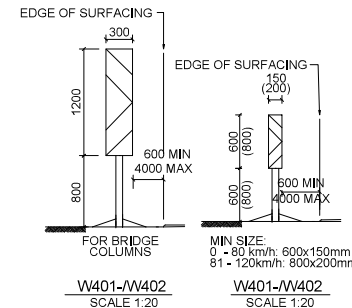
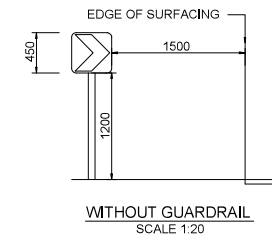
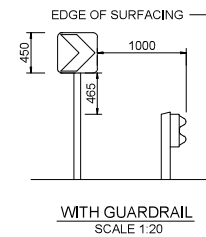
CHEVRON SPACING	
CURVE RADIUS (m)	SINGLE MODULE SPACING "S" (m)
60	8-15
150	15-25
300	25
600	25

NOTES:

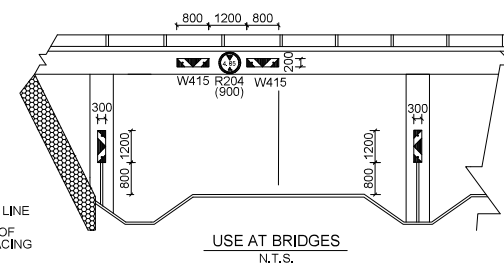
- A MINIMUM OF 5 CHEVRON ARROWS PER DIRECTION ARE NORMALLY REQUIRED
- AT LEAST 3 CHEVRON ARROWS SHOULD BE VISIBLE AT ANY ONE TIME
- WHERE RADII ARE LESS THAN ABOUT 30m A MULTIPLE CHEVRON SIGN CONSISTING OF AT LEAST 3 MODULES SHOULD BE USED
- WHERE CHEVRON ARROWS FOR RIGHT AND LEFT HAND CURVES OVERLAP:
 - SPACING SHOULD REMAIN AS SHOWN IN THE TABLE AS FAR AS POSSIBLE
 - WHERE THE DISTANCE BETWEEN LEFT AND RIGHT HAND CURVE CHEVRON ARROWS IS LESS THAN 2.0m PLACE BOTH CHEVRON ON A SINGLE POST BACK TO BACK

SANRAL STD

VHD-TT-17



HAZARD PLATE SIGNS



TYPICAL DETAILS FOR THE POSITIONING OF GROUND MOUNTED SIGNS

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No.	DATE	REVISION	CONSULT. ENG.
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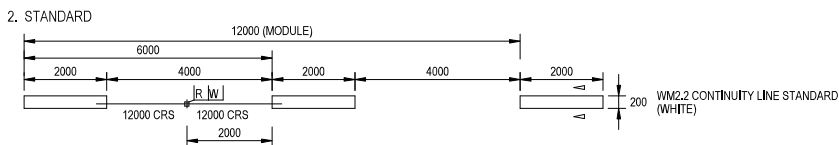
W401 DANGER PLATE



TYPICAL MANUFACTURING AND ERECTION DETAILS OF REGULATORY AND WARNING ROAD SIGNS - TIMBER POSTS

NOTES :
1 DETAILS ON THIS DRAWING ARE APPLICABLE TO ROAD SIGNS SMALLER THAN 1.5m REQUIRING A SINGLE SUPPORT

				CONSTRUCTION RECORD WORKS CONTRACTS ENGINEER	HEAD OFFICE 48 Tamboti Avenue Val de Grace Pretoria 0184 PO Box 415 Pretoria 0001 South Africa Tel: (012) 844 8000	 SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD BUILDING SOUTH AFRICA THROUGH BETTER ROADS	NORTHERN REGION 38 Ida Street Menlo Park Pretoria 0081 Private Bag X17 Lynwood Ridge 0040 Tel: (012) 426 6200	ACCEPTANCE THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OR LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWEVER ARISING for CEO: SA NATIONAL ROADS AGENCY SOC LTD, Date: _____	PROJECT DESCRIPTION CONTRACT SANRAL NRA 2025/0106 RESURFACING ON NATIONAL ROUTE N11 SECTION 12 FROM KM 76.1 TO KM 85.59 ATTACHMENT AND FIXING DETAILS	PROJECT NUMBER NRA 2025/0106	DRAWING LOCATION DATA ROUTE SECTION DRAWING km DISTANCE DRAWING TYPE BRIDGE/STRUCTURE No. CONSULTANT DRAWING No. SANRAL DOCUMENT #	START N11 12 76.1 DRAWING INDEX - DWS 008/0106 V2	END N11 12 85.59 DRAWING INDEX - V2
No.	DATE	REVISION	CONSULT. ENG.							AS SHOWN	SHEET 2 OF 2		



7. A LANE LINE, CONTINUITY LINE OR CHANNELIZING LINE SHALL NOT BE USED BETWEEN OPPOSING TRAFFIC MOVEMENTS.

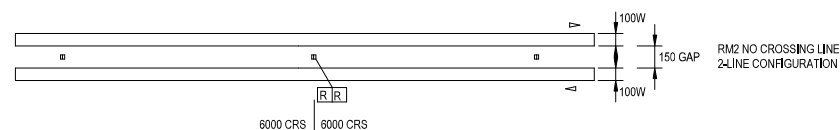
[illegible]

Diagram illustrating the layout of the 108m test track. The track is divided into segments of 24m, 36m, 48m, and 108m. Key features include the START OF NO OVERTAKING LINE, WM8.2 ARROW, and WM3 DIVIDING LINE (150W/ 4m LINE/ 8m GAP).

[illegible]

ROAD MARKINGS - MANDATORY DIRECTION ARROWS AND DIRECTION ARROW AHEAD

5000

50

100

SCALE 1 : 25

5000

50

100

SCALE 1 : 25

5000

50

100

5000

50

100

5000

50

100

5000

50

100

5000

50

100

5000

50

100

(YELLOW)
(WHITE)

RM 8.1
WM 7.1

LEFT TURN

RM 8.2
WM 7.2

STRAIGHT AHEAD
AND LEFT TURN

RM 8.3
WM 7.3

STRAIGHT AHEAD

RM 8.4
WM 7.4

STRAIGHT AHEAD
AND RIGHT TURN

RM 8.5
WM 7.5

RIGHT TURN

(YELLOW)
(WHITE)

RM 8.6
WM 7.6

LEFT TURN
AND RIGHT TURN

APPLICATIONS

OPERATING SPEED km/h	TYPICAL APPLICATIONS	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
30 - 40	CITY CENTRE	2500	600	350	450	884	200	417	1000	1700	250	550	1250	700	380	1450	58	30	29
50 - 90	URBAN/RURAL EXPRESSWAY	4000	960	560	720	1406	320	666	1600	2720	400	880	2000	1120	608	2320	93	48	46
100 - 120	RURAL AND FREEWAYS	5000	1200	700	900	1767	400	833	2000	3400	500	1100	2500	1400	760	2900	116	60	58
ALL	SPECIAL APPLICATIONS	7500	1800	1050	1350	2651	600	1250	3000	5100	750	1650	3750	2100	1140	4350	174	90	87

ALL OPERATING SPEEDS

	N	O	P	Q	R	S	T
AND APPLICATIONS	210	180	350	300	500	400	600

NOTES:

- THESE ARROWS MAY BE USED IN LANES TO INDICATE THAT DRIVERS SHALL PROCEED ONLY IN THE DIRECTION OR DIRECTIONS SHOWN. THEY SHOULD ONLY BE USED IF THE JUNCTION CONCERNED REQUIRED TURNING MOVEMENT CONTROL BY LANE.
- THE FINAL ARROW NEAREST THE POINT OF TURN OR STRAIGHT ON MOVEMENT SHALL BE YELLOW. ANY ARROWS MARKED IN ADVANCE OF THIS POINT TO WARN DRIVERS OF THE MANDATORY MOVEMENT AHEAD SHALL BE WHITE.
- A MANDATORY OR WARNING DIRECTION ARROW SHALL NOT BE USED IN ADVANCE OF A WIDENING OF THE ROADWAY TO A GREATER NUMBER OF LANES. THIS SHALL BE INDICATED IF NECESSARY, BY USING FURCATION ARROWS.

5000

50

100

5000

50

100

5000

50

100

5000

50

100

5000

50

100

5000

50

100

(YELLOW)
(WHITE)

RM 8.1
WM 7.1

LEFT TURN

RM 8.2
WM 7.2

STRAIGHT AHEAD
AND LEFT TURN

RM 8.3
WM 7.3

STRAIGHT AHEAD

RM 8.4
WM 7.4

STRAIGHT AHEAD
AND RIGHT TURN

RM 8.5
WM 7.5

RIGHT TURN

(YELLOW)
(WHITE)

RM 8.6
WM 7.6

LEFT TURN
AND RIGHT TURN

APPLICATIONS

OPERATING SPEED km/h	TYPICAL APPLICATIONS	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
30 - 40	CITY CENTRE	2500	600	350	450	884	200	417	1000	1700	250	550	1250	700	380	1450	58	30	29
50 - 90	URBAN/RURAL EXPRESSWAY	4000</																	




CONSULTANT'S RECORD (DO NOT COMPLETE FOR THIS PROJECT)			CONSULTANT APPROVAL		HEAD OFFICE 45 Tambora Avenue Van de Graaf Pretoria 0184 PO Box 415 Pretoria 9001 South Africa Tel: (012) 844 8000		 SANRAL SOUTH AFRICAN NATIONAL ROADS AND BRIDGES		NORTHERN REGION 39 Mo Street Mudefo Park Pretoria 0081 Private Bag 317 Lynnwood Ridge 0040 Tel: (012) 428 8200		THE ACCEPTANCE FOR PROCEEDING AND ADMINISTRATION OF THE PROJECTS OF THE ROUTE WILL BE THE RESPONSIBILITY OF THE PROJECT MANAGER. THE PROJECT MANAGER SHALL BE RESPONSIBLE FOR THE CAUSE OF ANY DAMAGE TO THE ROUTE.		PROJECT DESCRIPTION CONTRACT SANRAL N/A 2025/106 RESURFACING ON NATIONAL ROUTE W11 SECTION 12 FROM KM 75.1 TO KM 85.9		PROJECT NUMBER N/A 2025/106		DRAWING LOCATION DATA START N11 END N11		SECTION 12 12 12		DRAWING NO. DISTANCE 76.1 85.9		DRAWING TITLE DRAWING INDEX		BRIDGE/STRUCTURE NO. SANRAL DOCUMENT # DWS 095/2008		VER V2	
CONSULTANT'S RECORD (DO NOT COMPLETE FOR THIS PROJECT)			CONSULTANT APPROVAL		HEAD OFFICE 45 Tambora Avenue Van de Graaf Pretoria 0184 PO Box 415 Pretoria 9001 South Africa Tel: (012) 844 8000		 SANRAL SOUTH AFRICAN NATIONAL ROADS AND BRIDGES		NORTHERN REGION 39 Mo Street Mudefo Park Pretoria 0081 Private Bag 317 Lynnwood Ridge 0040 Tel: (012) 428 8200		THE ACCEPTANCE FOR PROCEEDING AND ADMINISTRATION OF THE PROJECTS OF THE ROUTE WILL BE THE RESPONSIBILITY OF THE PROJECT MANAGER. THE PROJECT MANAGER SHALL BE RESPONSIBLE FOR THE CAUSE OF ANY DAMAGE TO THE ROUTE.		PROJECT DESCRIPTION CONTRACT SANRAL N/A 2025/106 RESURFACING ON NATIONAL ROUTE W11 SECTION 12 FROM KM 75.1 TO KM 85.9		PROJECT NUMBER N/A 2025/106		DRAWING LOCATION DATA START N11 END N11		SECTION 12 12 12		DRAWING NO. DISTANCE 76.1 85.9		DRAWING TITLE DRAWING INDEX		BRIDGE/STRUCTURE NO. SANRAL DOCUMENT # DWS 095/2008		VER V2	
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Figure 1 consists of four diagrams arranged in a 2x2 grid, illustrating the location of three electrodes (WM 6.1, WM 6.4, and WM 6.5) relative to two landmarks: LANE and C. The top row shows WM 6.1 from the left, and the bottom row shows WM 6.4 (from left only) and WM 6.5 (from right only). Each diagram features a vertical line with a dashed segment in the middle, representing the LANE and C landmarks. The electrodes are represented by stylized arrow shapes pointing towards the landmarks.

LANE

C

WM 6.1

FROM THE LEFT

LANE

C

WM 6.4

FROM LEFT ONLY

LANE

C

WM 6.5

FROM RIGHT ONLY

[illegible]

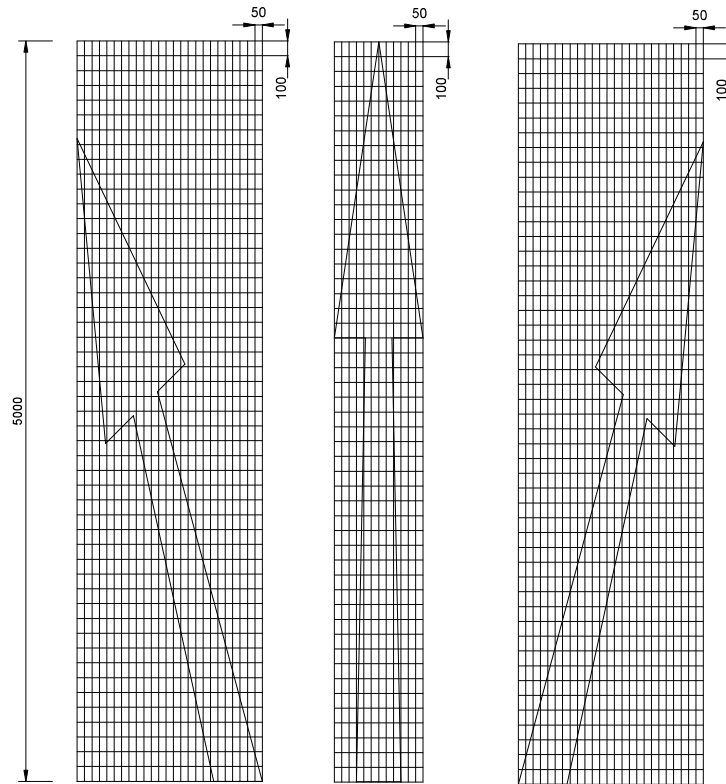
ARROW AREA / (m ²)			
a	WM6.1/ WM6.3	WM6.2	WM6.4 / WM6.5
4000	2.08	2.06	1.03
5000	2.61	2.58	1.29
7500	3.92	3.88	1.94
12000	6.56	6.20	3.10

OPERATING SPEED km/h	TYPICAL APPLICATIONS	a	b	c	d	e	f	g	h	i	j	k
30 - 40	CITY CENTRE	4000	2400	1600	3200	1271	847	227	855	1696	1277	1126
50 - 60	URBAN ROADS	5000	3000	2000	4000	1589	1058	284	1069	2120	1596	1407
70 - 90	URBAN ARTERIAL ROADS/ RURL EXPRESSWAYS	7500	4500	3000	6000	2384	1587	426	1603	3180	2394	2111
100 - 120	RURAL ROADS AND FREEWAYS	12000	7200	4800	9600	3814	2539	681	2566	5089	3830	3377

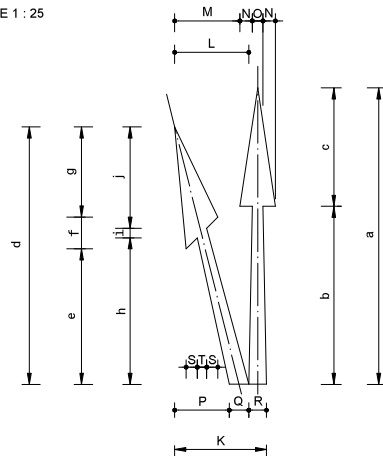
ALL OPERATING SPEEDS	M	N	O	P	Q	R	S	T	U	V
AND APPLICATIONS	300	210	180	1300	898	402	155	370	32	390

[illegible]

ROAD MARKINGS - BIFURCATION ARROWS

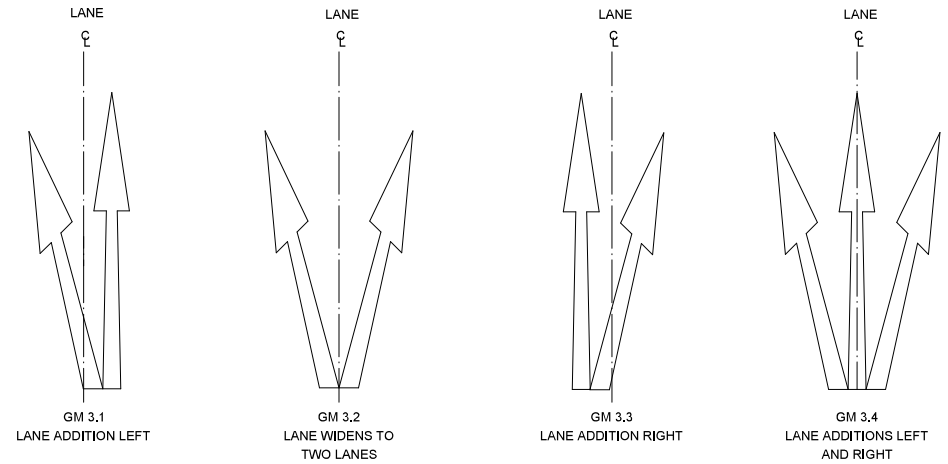


SCALE 1 : 25



NOTES:

1. THESE ARROWS MAY BE USED TO INDICATE THAT THE NUMBER OF LANES ARE INCREASING AHEAD. ONLY ONE SET OF ARROWS SHOULD BE USED UNLESS A LEFT AND RIGHT TURN LANE ARE ADDED TO A MULTI-LANE ROADWAY AT THE SAME POINT WHERE TWO SETS MAY BE USED.
2. DIRECTION ARROWS AHEAD SHALL NOT BE USED TO INDICATE THE ADDITION OF LANES AHEAD.
3. AS A GENERAL RULE BIFURCACTION ARROWS SHOULD BE LOCATED TWO TO THREE MARKING MODULES BEFORE THE START OF THE LANE GENERATING TAPER OR CURVE.



APPLICATIONS

DIMENSIONS (mm)

OPERATING SPEED km/h	TYPICAL APPLICATIONS	a	b	c	d	e	f	g	h	i	j
30 - 40	CITY CENTRE	2500	1500	1000	2170	1141	268	761	1235	81	855
50 - 60	URBAN ROADS	4000	2400	1600	3472	1826	429	1218	1976	129	1367
70 - 90	URBAN ARTERIAL ROADS/ RURAL EXPRESSWAYS	5000	3000	2000	4340	2282	536	1522	2470	161	1709
100 - 120	RURAL ROADS AND FREEWAYS	7500	4500	3000	6510	3423	804	2283	3705	242	2564

ALL OPERATING SPEEDS	K	L	M	N	O	P	Q	R	S	T
AND APPLICATIONS	1700	1250	1100	210	180	921	329	300	188	161

ARROW AREA (m²)			
a	GM3.1/GM3.3	GM3.2	GM3.4
2500	1.30	1.27	1.93
4000	2.07	2.04	3.09
5000	2.59	2.55	3.87
7500	3.89	3.82	5.80

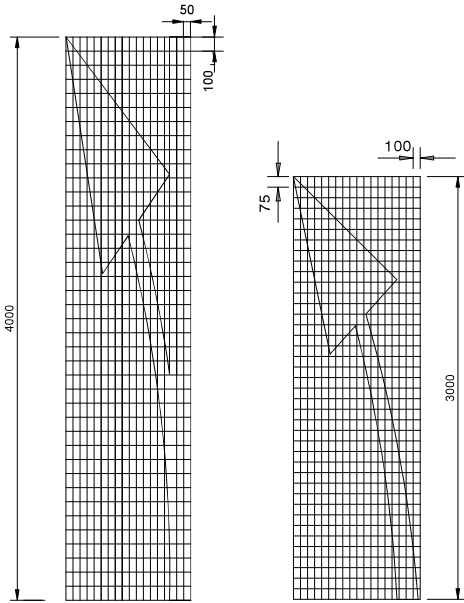
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BARRIER LINE AHEAD ARROWS

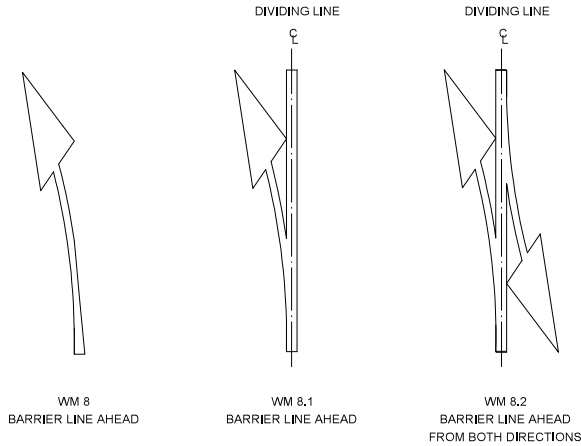
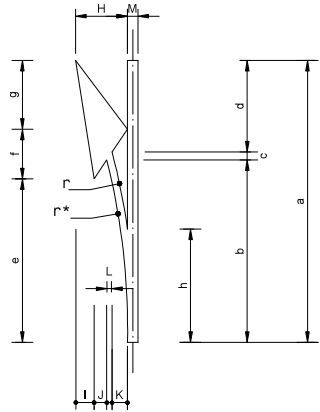
LEGEND:

R = RED

W = WHITE
Y = YELLOW



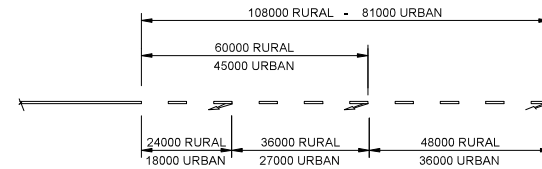
SCALE 1 : 25



APPLICATIONS
SCALE 1 : 50

DIMENSIONS (mm)										
TYPICAL APPLICATIONS	a	b	c	d	e	f	g	h	r	r *
URBAN	3000	1941	83	976	1741	528	731	1206	5620	5820
RURAL	4000	2588	111	1301	2321	704	975	1608	9900	10000

ALL APPLICATIONS	H	I	J	K	L	M
	735	260	181	219	75	100 or 150



MARKING SPACING

ARROW AREA / (m) ²	
a	PER ARROW
3000	0.62
4000	0.82

NOTES: (BARRIER LINE AHEAD ARROWS)

1. THESE ARROWS SHOULD BE USED IN MULTIPLES OF THREE (AT LEAST) IN ADVANCE OF THE START OF A SECTION OF NO OVERTAKING LINE. NO CROSSING LINE OR PAINTED ISLAND WHEN SUCH BARRIER LINES REPLACE A DIVIDING LINE.
2. THE ARROWS MAY BE MARKED ON TOP OF EXISTING DIVIDING LINE MARKINGS (IF THE EXISTING LINE IS A CENTRE LINE TO A 12m OR 7.2m MODULE THE POINT OF THE ARROW SHOULD BE LINED UP WITH THE FORWARD END OF THE LINE).
3. WHEN OVERTAKING SECTIONS ARE REGULARLY INTERSPERSED WITH NO OVERTAKING SECTIONS AND ARE SHORT IN LENGTH MARKING WM 8.2 MAY BE USED AT THE CENTRE OF THE OVERTAKING SECTION.

[illegible]

