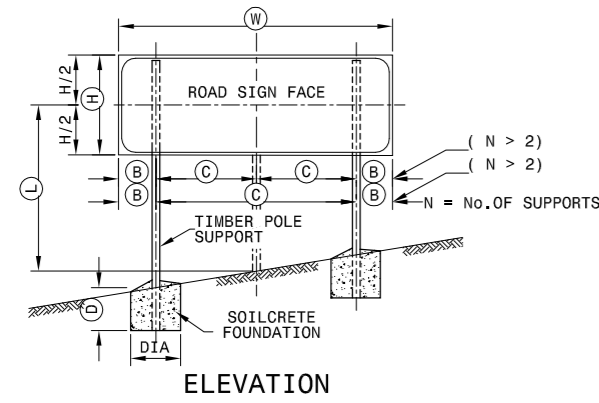
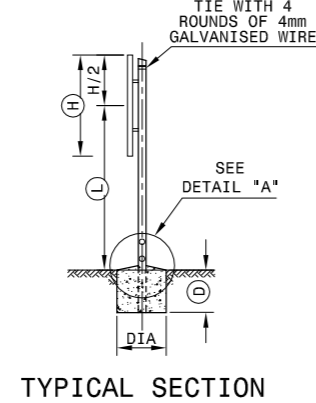


ROAD SIGNS SUPPORTS AND FOUNDATIONS / DETERMINATION: GENERAL DETAILS



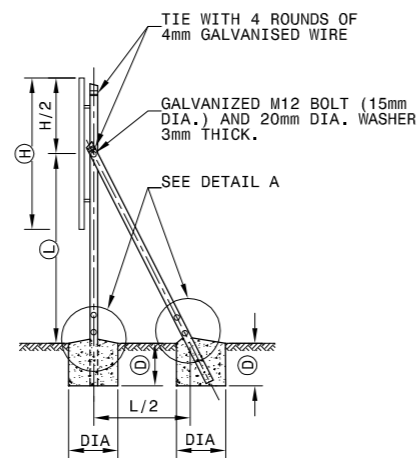
FREE STANDING SUPPORT
SCALE - N.T.S.



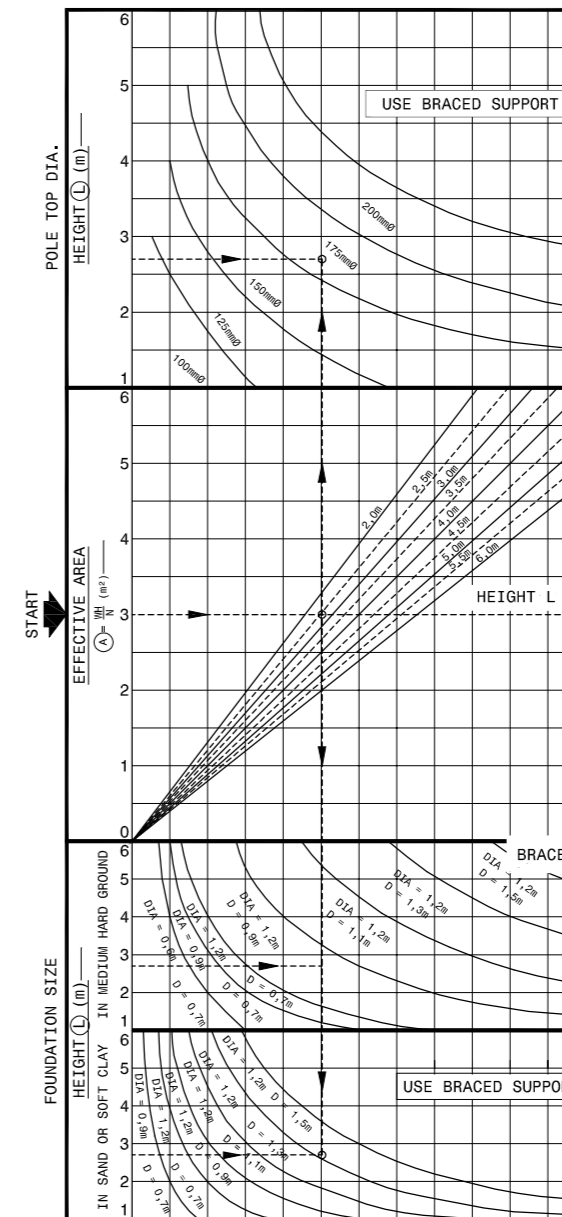
TYPICAL SECTION

NOTE:

1. **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 $L > 6m$: 1,25 kPa
WIND LOADING IS ASSUMED TO VARY LINEARLY FOR AVERAGE SIGN HEIGHTS FALLING BETWEEN THE ABOVE LIMITS.
2. **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.
3. **DESIGN PROCEDURE**
 - i) FROM TABLE 1 ON PLAN No.C-02-v1 DETERMINE FOR SIGN WIDTH W , THE NUMBER OF SUPPORTS N AND DIMENSIONS B AND C
 - ii) CALCULATE THE EFFECTIVE SIGN AREA $A = \frac{W \times H}{N}$ (m²) AND AVERAGE HEIGHT L (m)
 - iii) 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)
 - iv) 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.
 - v) DETERMINE FROM TABLE 2 THE DIAMETER OF HOLES TO BE DRILLED IN THE POLES AS SHOWN IN DETAIL "A"
4. **EXAMPLE (FREE STANDING SUPPORT)**
 $W = 5m$ $H = 1,8m$ $L = 2,7m$
FROM TABLE 1
 $N = 3m$ $B = 0,830m$ $C = 1,670m$
 $A = \frac{5 \times 1,8}{3} = 3,0m^2$
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.)

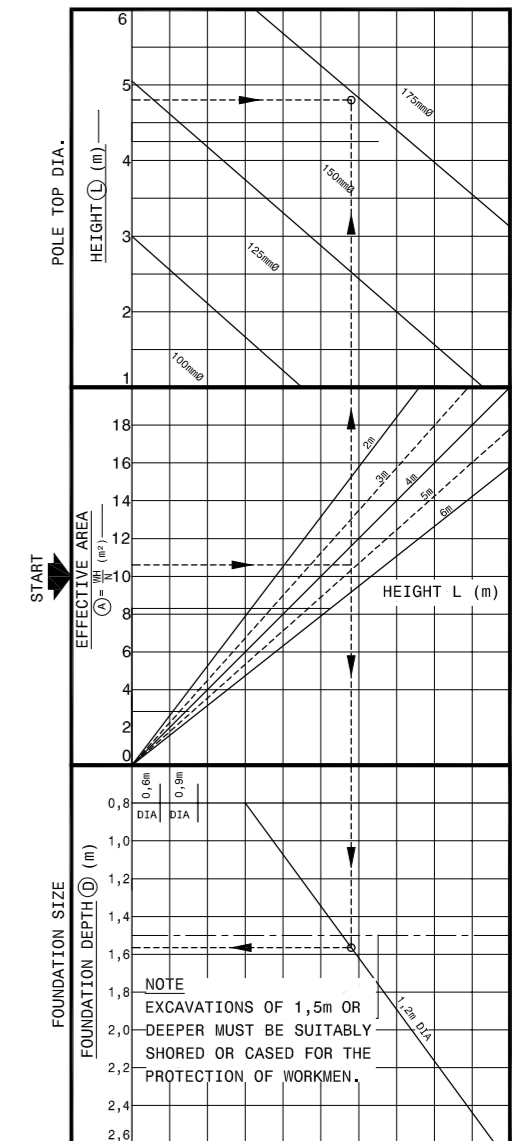


**TYPICAL SECTION
BRACED SUPPORT**
SCALE N.T.S.



DESIGN CHART 1

FREE STANDING SUPPORT
SCALE - N.T.S.



DESIGN CHART 2

BRACED SUPPORT
SCALE - N.T.S.

TABLE 1

WIDTH OF SIGN	No. OF SUPPORTS	DIMENSIONS	
(W)	(N)	(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

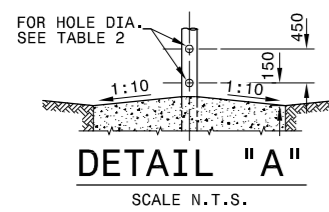


TABLE 2

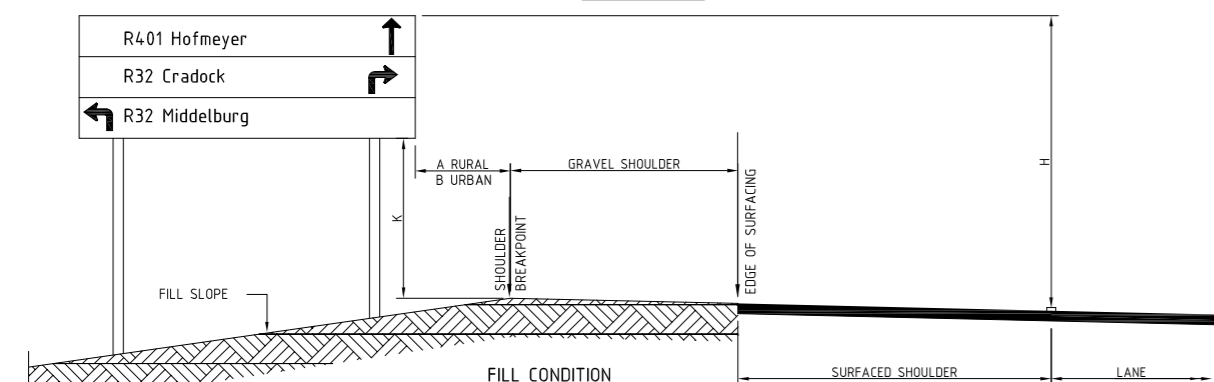
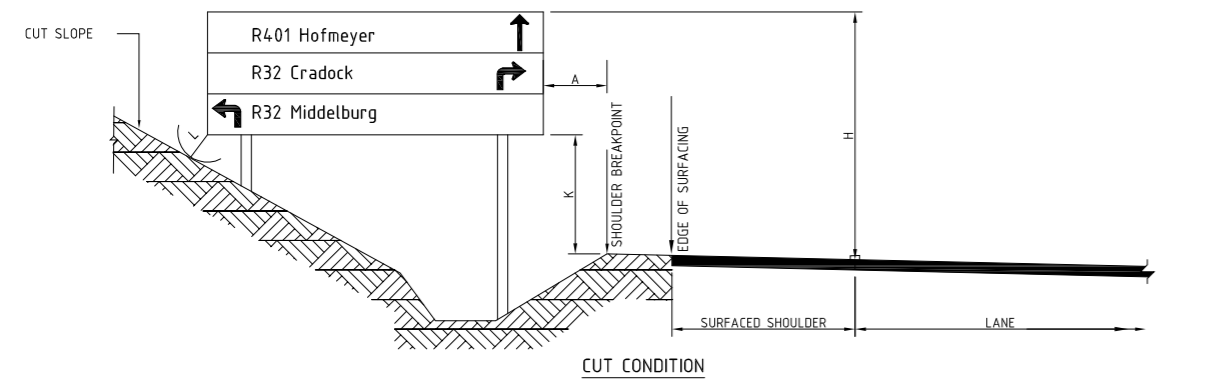
TIMBER POLE DIA. AT GROUND LEVEL (mm)	HOLE DIA. (mm)
≤ 140	NONE
141 - 170	40
171 - 200	50
201 - 225	65

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 932/J7. 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.



GROUND MOUNTED DIRECTION SIGNS

LATERAL AND VERTICAL POSITIONING OF ROAD SIGNS

**LATERAL AND VERTICAL
SIGN PLACEMENT DIMENSIONS**

DIMENSION	MINIMUM (mm)	PREFERRED (mm)	MAXIMUM (mm)
A	1200	1500	2000
B	300	600	-
C	750	2100	2500
D	2100	2500	3000
E	0	200	200
F	600	1200	2000
G	800	1200	1600
H	-	-	6000
K	1600	2000	2400
L	750	-	-

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 IN THE DESIGN CHARTS SHOWN ON DRAWING. THE SIZES AND SPACING OBTAINED ARE FOR USE WITH THE SIGN FACE SHOWN ON DRAWING. DETAILS OF SINGLE POLE SIGNS (LESS THAN 1,5m² IN AREA) ARE SHOWN ON DRAWING 1106/G5.

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.

	<p>CONSTRUCTION RECORD (AS-BUILT) WORKS CONTRACT ENGINEER</p> <p>Name: _____ Prof. Reg. No.: _____ Date: _____</p> <p>SANRAL PROJECT MANAGER</p> <p>Name: _____ Date: _____</p>	<p>SNA CIVIL AND STRUCTURAL ENGINEERS (PTY) LTD</p> <p>SNABA BUILDING 285 ALBERTUS STREET LA MONTAGNE 0184</p> <p>Tel: 012-842 0000 Fax: 012-803 4429 e-mail: pta@sna.co.za web: www.sna.co.za</p>	<p>DESIGNED BY</p> <p>NAME: G. LOUBSER Prof. Reg. No.: 880359 CHECKED BY</p>	<p>CONSULTANT APPROVAL</p> <p>Name: J.W.B. STOLTZ Prof. Reg. No.: 880512 Date: APRIL 2016</p>	<p>HEAD OFFICE 48 Tambotie Avenue Val de Grace Pretoria 0184</p> <p>PO Box 415 Pretoria 0001 South Africa</p> <p>Tel: (012) 844 8000</p>	<p>NORTHERN REGION 38 Jts Street Menlo Park Pretoria 0081</p> <p>Private Bag X17 Lynnwood Ridge 0040</p> <p>Tel: (012) 426 6200</p>	<p>ACCEPTANCE</p> <p>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</p> <p>for the SA NATIONAL ROADS AGENCY SOC LTD. Date: _____</p>	<p>PROJECT DESCRIPTION MAPUTO DEVELOPMENT CORRIDOR (MDC) PRETORIA TO LEBOMBO BORDER POST ROUTINE ROAD MAINTENANCE</p> <p>DRAWING DESCRIPTION ROAD SIGNS: SUPPORTS AND FOUNDATIONS / DETERMINATION: GENERAL DETAILS</p>	<p>PROJECT NUMBER DRAWING LOCATION DATA</p> <p>ROUTE SECTION DRAWING km DISTANCE DRAWING TYPE BRIDGE/STRUCTURE No. CONSULTANT DRAWING No.</p> <p>TRAC/MAINT-2019-01 START END PRETORIA LEBOMBO BORDER ROADS - TYPICAL DETAILS SNA-TP1915-F6 VER V1</p>	<p>SCALE: AS SHOWN (A0) SHEET 1 OF 1 SANRAL DOCUMENT #</p>
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