

# ROAD SIGNS DETERMINATION OF SUPPORTS AND FOUNDATIONS

**NOTE:**

1. REFERENCE PLANS  
THIS PLAN FORMS PART OF AND MUST BE READ IN CONJUNCTION WITH DRAWING N3TC-RS-02.

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  $L > 6m$  : 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.

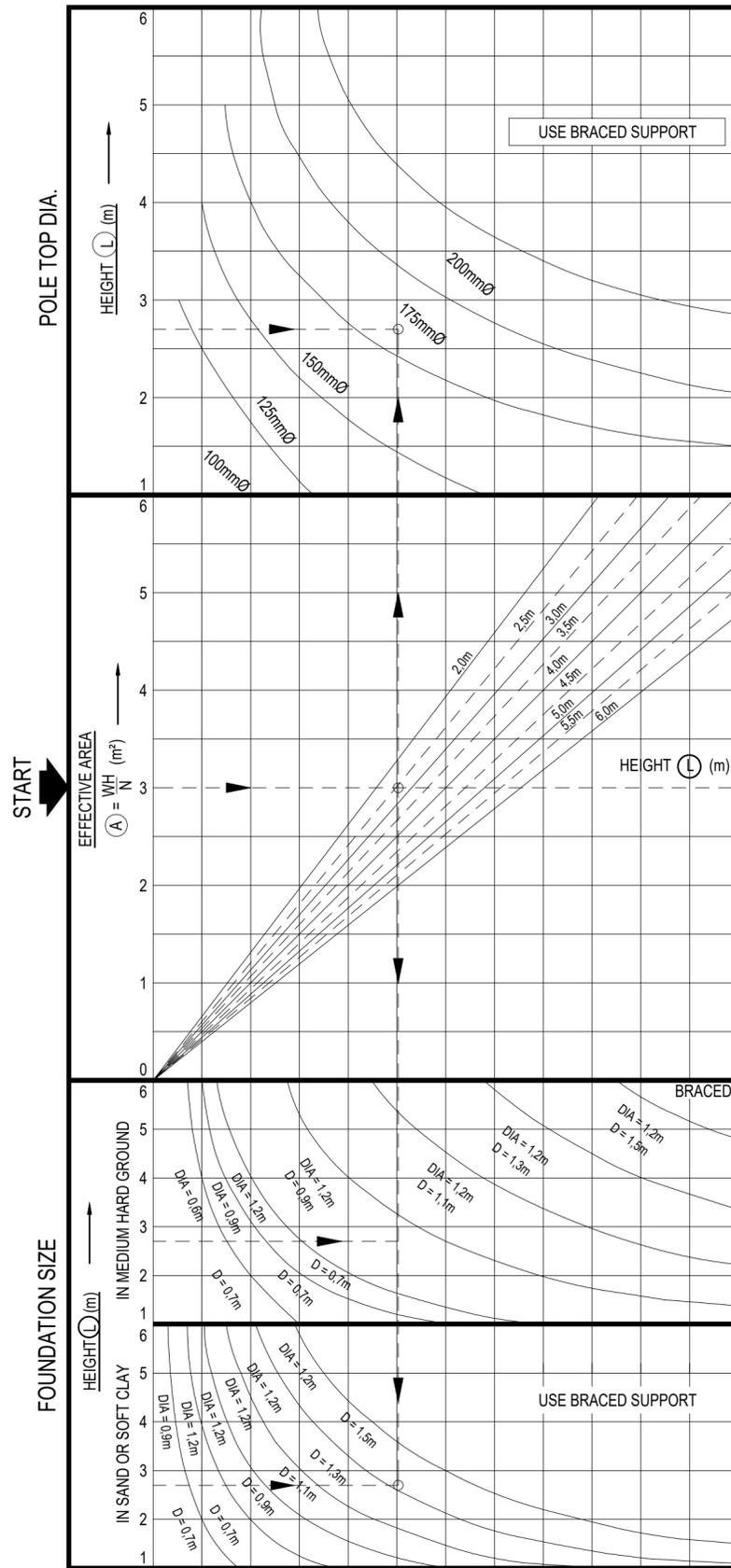
4. DESIGN PROCEDURE  
i) FROM TABLE 1 ON DRAWING N3TC-RS-02 DETERMINE FOR SIGN WIDTH  $W$ , THE NUMBER OF SUPPORTS  $N$  AND DIMENSIONS  $B$  AND  $C$   
ii) CALCULATE THE EFFECTIVE SIGN AREA  $A = \frac{W \times H}{N}$  (m<sup>2</sup>) AND AVERAGE HEIGHT  $L$  (m)  
iii) FROM DESIGN CHART 1 (FREE STANDING 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 6m<sup>2</sup> 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"

5. EXAMPLE (FREE STANDING SUPPORT)  
 $W = 5m$   $H = 1,8m$   $L = 2,7m$

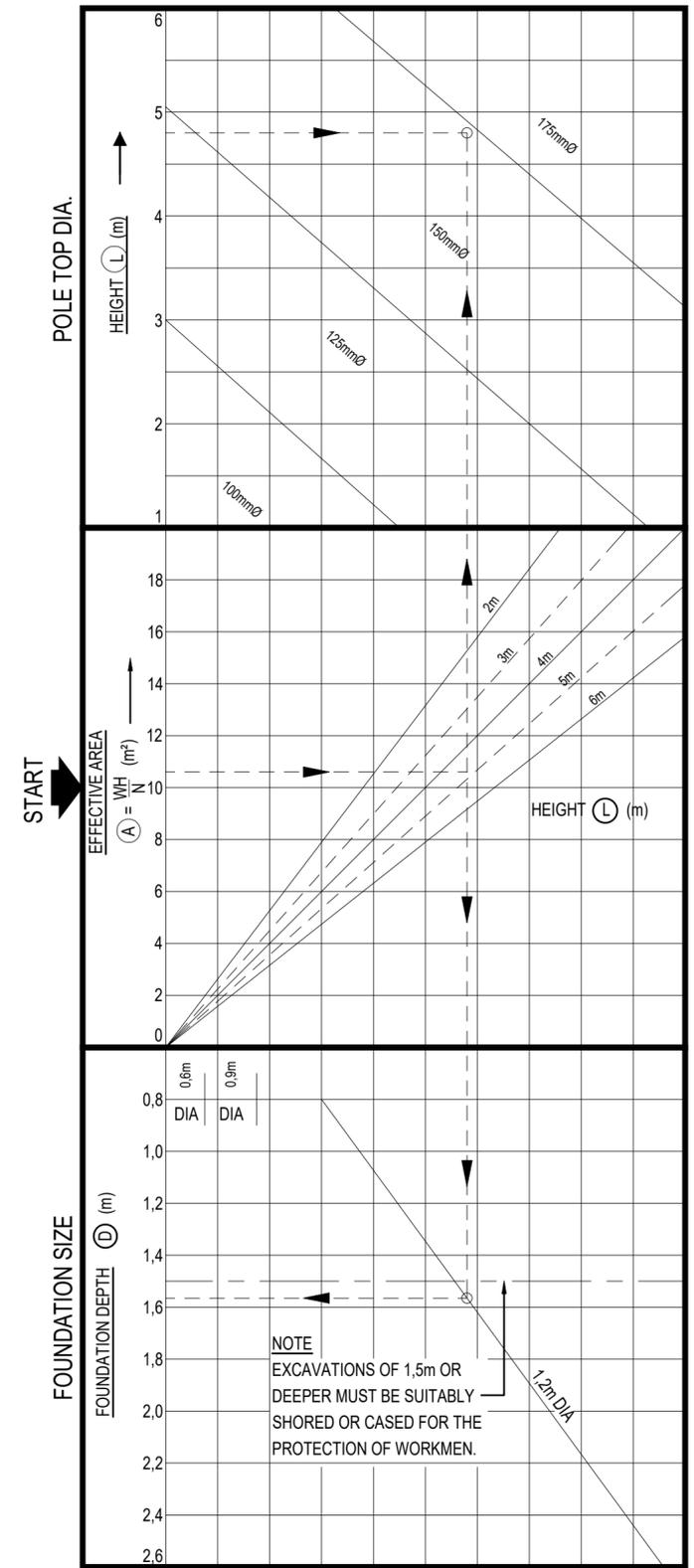
FROM TABLE 1  
 $N = 3m$   $B = 0,830m$   $C = 1,670m$   
 $A = \frac{5 \times 1,8}{3} = 3,0m^2$   
3

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**  
SCALE - N.T.S



**DESIGN CHART 2  
BRACED SUPPORT**  
SCALE - N.T.S

CONSTRUCTION RECORD (AS-BUILT)		<b>KBK ENGINEERS (Pty) Ltd.</b>	
WORKS CONTRACT ENGINEER		314 Glenwood Road, Block A Lynnwood Park, Pretoria, 0081 Tel: (012) 348-1822 Fax: (012) 348-1823 PO Box 74786, Lynnwood Ridge, 0040	
N3TC PROJECT MANAGER		Name: J.C. MARKRAM Date: 2020/12/01	
No.	DATE	REVISION	CONSULT. ENG.
V1	12-2020	ORIGINAL VERSION	J.C. MARKRAM

DESIGNED BY		CONSULTANT APPROVAL	
Name: J.C. MARKRAM Prof. Reg. No.: 980187 Date: 2020/12/01		Name: J.C. MARKRAM Prof. Reg. No.: 980187 Date: DECEMBER 2020	
CHECKED BY		Name: D.D. ROBERTSON Prof. Reg. No.: 2020/1486 Date: 2020/12/01	
DRAWN BY		NAME: TA VAN DER MERWE	

<b>N3TC</b>		<b>SANRAL</b>	
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ACCEPTANCE		PROJECT DESCRIPTION	
THIS ACCEPTANCE IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OR LIABILITY OF ANY KIND FROM WHATEVER CAUSE OR HOWEVER ARISING		ROUTINE ROAD MAINTENANCE OF NATIONAL ROUTE 3: N3 TOLL ROAD BETWEEN CEDARA AND HEIDELBERG SOUTH INTERCHANGE	
for N3TC CONCESSIONAIRE		DRAWING DESCRIPTION	
Date:		ROAD SIGNS SUPPORTS AND FOUNDATIONS DETERMINATION SHEET 2 OF 2	
for SA NATIONAL ROADS AGENCY LTD.		SCALE: AS SHOWN	
Date:		SHEET 2 OF 2	

PROJECT NUMBER		CONTRACT N3TC/RM-2021-600	
DRAWING LOCATION DATA		START END	
ROUTE		N3 N3	
SECTION		4 11	
DRAWING km DISTANCE		0 415	
DRAWING TYPE		ROADS - TYPICAL DETAIL	
BRIDGE/STRUCTURE No.			
CONSULTANT DRAWING No.		N3TC-RS-03	
SANRAL DOCUMENT #		VER V1	

DRAWING No. N3TC-RS-08