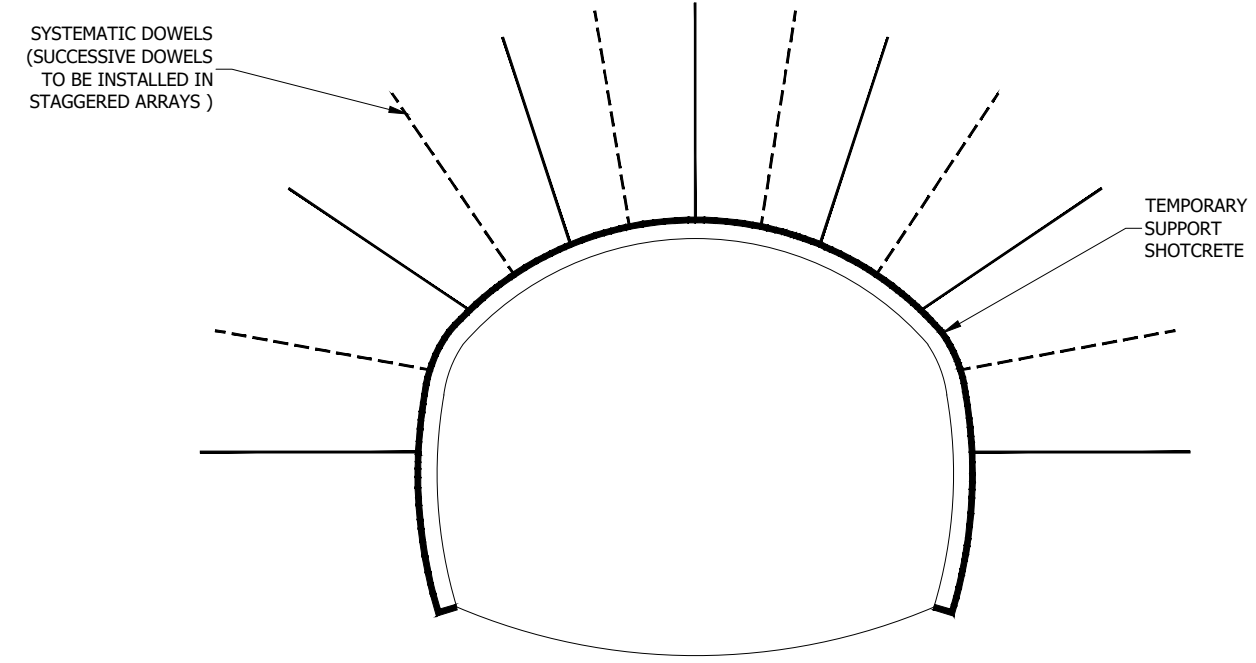


**NOTES:**

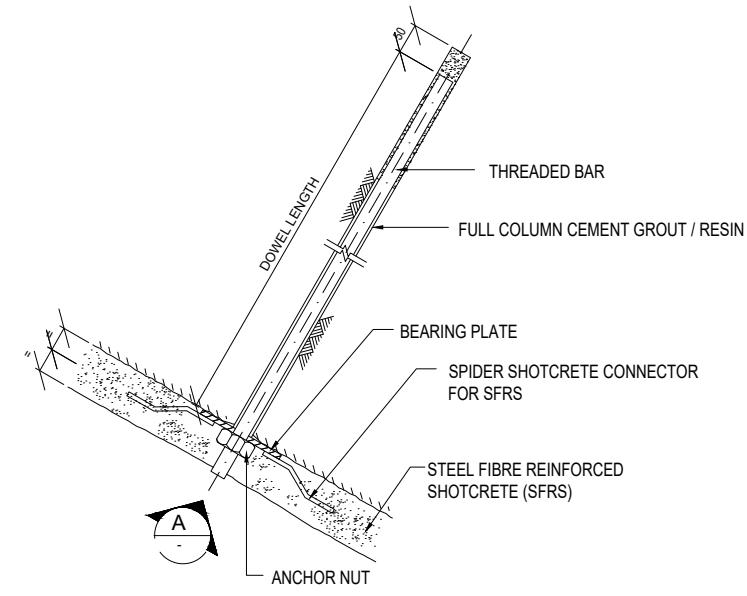
1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED.
2. ON COMPLETION OF EACH ROUND OF EXCAVATION THE EXPOSED ROCK SHALL BE INSPECTED AND MAPPED BY A SUITABLY QUALIFIED GEOLOGIST IN ACCORDANCE WITH THE ROCK MASS CLASSIFICATION Q SYSTEM AND THE SUPPORT DETERMINED ACCORDING TO TABLE A OF THIS DRAWING.
3. ALL SYSTEMATIC DOWELS SHALL BE INSTALLED PERPENDICULAR TO THE EXCAVATED PROFILE.
4. WHERE A LARGE ROCK WEDGE FEATURE OCCURS THE GEOLOGIST WILL ADVISE ON SPECIFIC BOLTING REQUIREMENTS.
5. FOR DETAILS ON THE q-SYSTEM REFER TO:

[1] BARTON, N., LIEN, R. & LUNDE, J. (1974). ENGINEERING CLASSIFICATION OF ROCK MASSES FOR THE DESIGN OF TUNNEL SUPPORT. ROCK MECHANICS AND ROCKENGINEERING VOL. 6 NO. 4.

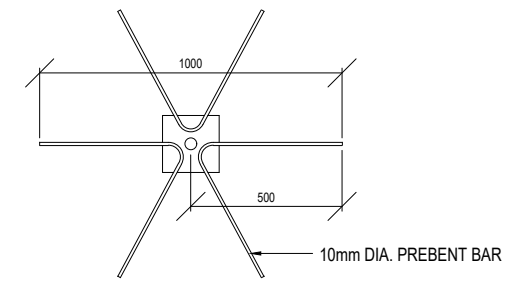
[2] GRIMSTAD E AND BARTON N.R. (1993). UPDATING OF THE Q-SYSTEM FOR NMT. IN INTERNATIONAL SYMPOSIUM ON SPRAYED CONCRETE, FARERNES, NORWAY. NORWEGIAN CONCRETE ASSOCIATION, PP. 46-66.



TYPICAL TEMPORARY SUPPORT CROSS SECTION - LACKAGH TUNNEL



TYPICAL DETAIL OF TEMPORARY CHEMICAL/CEMENT GROUTED ROCK DOWEL  
N.T.S.



VIEW A  
SCALE : N.T.S.

TABLE A (REFER TO NOTE 5)

SUPPORT CATEGORY	Q (AS MAPPED)	MIN. SUPPORT REQUIREMENT BASED ON Q-VALUE	
		ARCH	
1&2	$Q \geq 3.9$	FEATURE DOWELS: SYSTEMATIC DOWELS: SHOTCRETE:	AS NECESSARY NONE 50mm THICK ON LOCAL FRACTURE ZONES
3	$1.9 \leq Q < 3.9$	FEATURE DOWELS: SYSTEMATIC DOWELS: SHOTCRETE:	AS NECESSARY 4.3m LONG ON A 2.3m GRID 50mm THICK
4	$0.6 \leq Q < 1.9$	FEATURE DOWELS: SYSTEMATIC DOWELS: SHOTCRETE:	AS NECESSARY 4.3m LONG ON A 2m GRID 70mm THICK
5	$0.2 \leq Q < 0.6$	FEATURE DOWELS: SYSTEMATIC DOWELS: SHOTCRETE:	AS NECESSARY 4.3m LONG ON A 1.7m GRID 100mm THICK
6-9	$< 0.2$	PRE-SUPPORT AND PASSIVE LINING SYSTEM ON CONSULTATION WITH THE DESIGNER	

Clients

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Scale N.T.S.

Date: February 2018

Issue	Date	By	Chkd	Appd
I3	22/02/2018	KJ	PS	JC
I2	14/09/2017	KJ	PS	JC
I1	27/02/2017	KJ	PS	JC

Drawing Title  
Lackagh Tunnel & Western Approach Tunnel Temporary Support Details

Drawing Status

**For Information**

Job No	Drawing No	Issue
233985	GCOB-D-S11-01-013	13