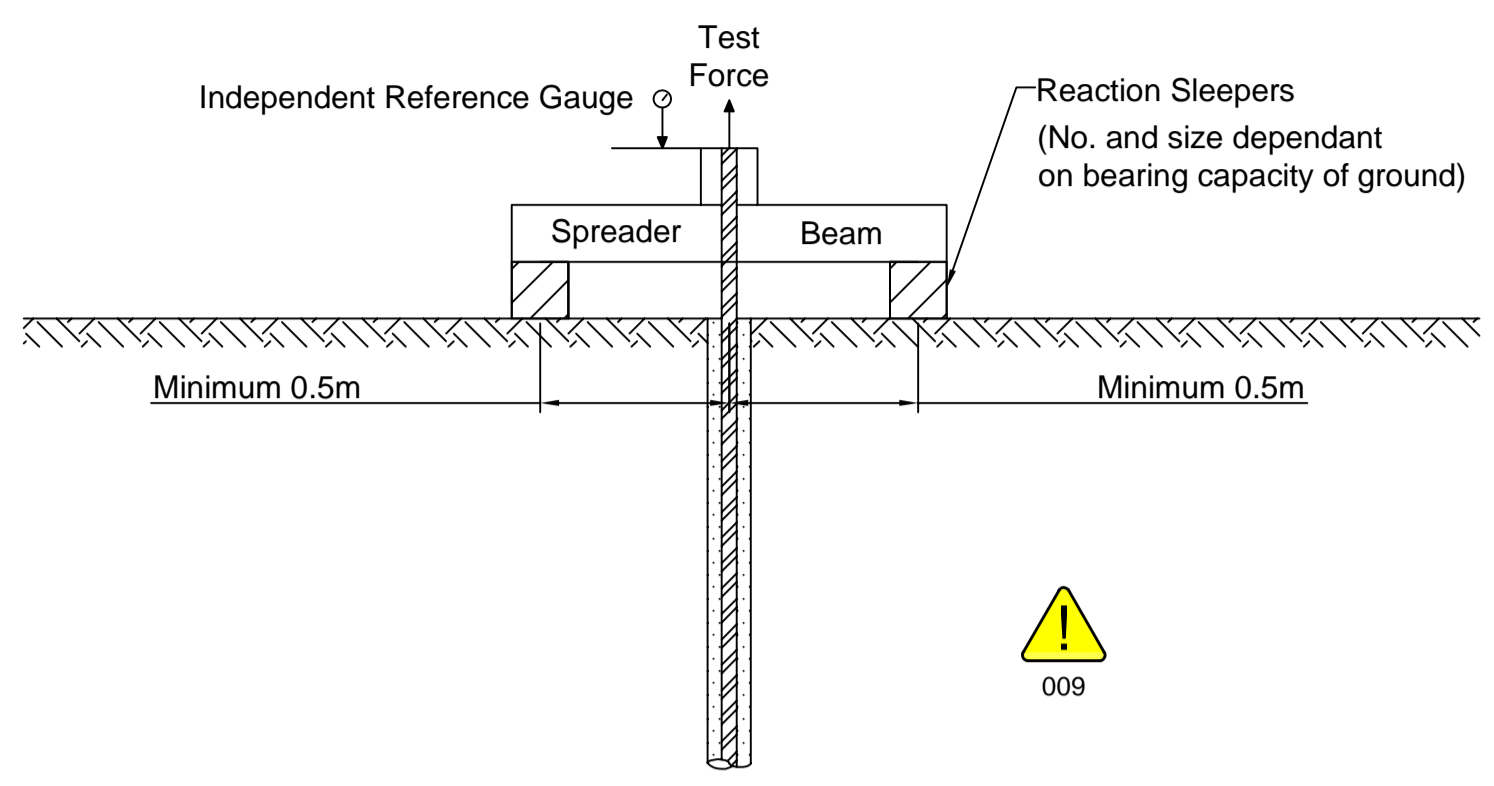


Nail ref	Nail type	Bore ϕ (mm)	Installation angle (°)	Embedded Nail Length (m)	Approx. Additional Nail Length (m)	Total Nail length (m)	Approx. vertical spacing (m)	Approx. horizontal spacing (m)
A1	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A2	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A3	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A4	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A5	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A6	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A7	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A8	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A9	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
A10	Minova R32	75	20	5.0	0.8	5.8	1.0	1.5
B1	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B2	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B3	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B4	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B5	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B6	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B7	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B8	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
B9	Minova R32	75	20	5.0	1.3	6.3	1.0	1.5
C1	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C2	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C3	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C4	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C5	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C6	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C7	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
C8	Minova R32	75	20	5.0	1.0	6.0	1.0	1.5
D1	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D2	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D3	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D4	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D5	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D6	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
D7	Minova R32	75	20	5.0	0.7	5.7	1.0	1.5
Total						202.6		

Approximate area of face requiring mesh = 65m²

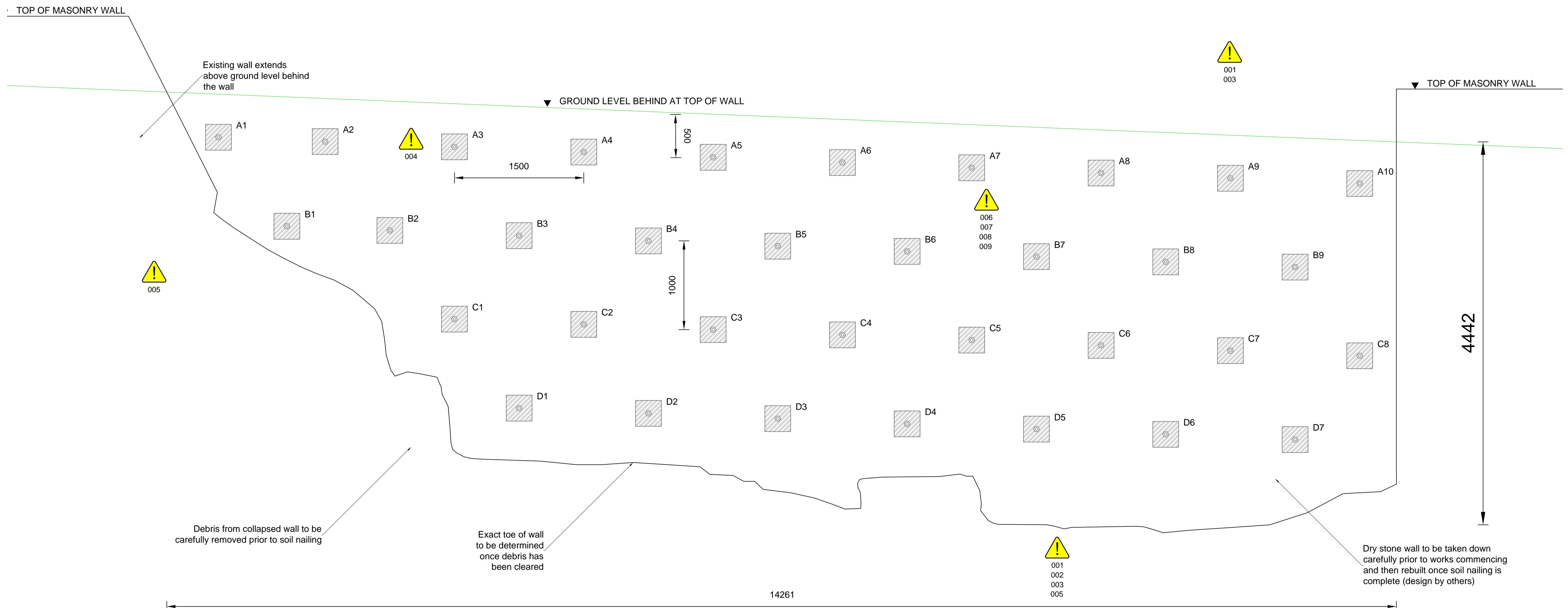
In addition to the soil nailing works an allowance should be made for rock bolts / dowels to support the rock face beneath the wall.

1. 6 No. 20mm diameter GEWI steel bars x 2.0m long.
2. Bars to be spun in using resin or alternatively grout may be used.
3. Each bolt to be fitted with a 200 x 200 x 10mm thk Grade S275 steel head plate.
4. Final requirements will be confirmed once the debris in front of the face has been removed.



Typical soil nail test set up
(Scale 1:20)

Soil Nail Schedule



Elevation on Retaining Wall and 75° Slope
(Scale 1:25)

CDM 2015 :

The following presents a brief summary of the designers record of the significant hazards which are considered for the scope of this design. Refer to calculations for full details. Routine hazards which should be managed by the main contractor are not listed.

No.	Hazard
1	The location of services & drains located within or behind the soil nail slopes shall be positively located and diverted (by others).
2	Heavy steel elements need to be lifted using correct lifting techniques and by plant where possible.
3	Appropriate barriers to be put in place to separate the construction works from the public.
4	Nails should be provided with end caps in the temporary case and are to be buried in the permanent case.
5	To prevent further collapse of the wall careful removal of debris and existing wall. Plants are to be cleared to allow clear visual monitoring of the wall. 1.5m sections of the wall to be cleared, regraded and soil nailed before the next is cleared. Exposed slope to be protected in inclement weather. An exclusion zone should be set up around the walls Temporary support to be provided if necessary.
6	No site investigation increases the risk of unexpected ground conditions as such careful record of conditions encountered during drilling to be kept. If very soft or loose zones of soil are encountered behind the wall then the geotechnical designer should be contacted immediately before further soil nails are installed.
7	If hard drilling conditions are met and the ground cannot be penetrated the designer should be contacted.
8	The grout level in the bore should be monitored and topped up as necessary. The remaining void should be filled with a stiff mortar. If the soil nail is not completely filled after the theoretical capacity has been pumped then the grouting should be stopped to ensure that excess pressure does not build up behind the wall and the designer contacted immediately.
9	Test loads should not exceed 45kN. The designer should be contacted if the soil shows excessive displacement.

- Suggested construction sequence
1. Remove failed wall material in 1.5m sections and clean and stack the stone carefully
 2. Trim ground to nominal 75° slope in the made ground behind the wall.
 3. Install R32N self-drilling hollow bar soil nail using grout flush to maintain borehole stability and to achieve a good grout to ground bond capacity, as well as filling up any voids and / or weak areas of ground with high strength fluid grout.
 4. Place Minova 7mm Mesh against exposed soil face
 5. Place 300 x 300 x 10mm thick square headplate on to the soil nails to secure Minova 7mm Mesh to soil face. Connect headplate to soil nail using a securing washer & nut and tighten up with a socket wrench using -0.5m manual leverage (extension attachment required) and then using impactor after 3 days.
 6. Repeat step 1 to 5 until 7.5m of exposed slope has 6 no. rows of soil nails at 1m horizontal centres
 7. Upon completion of all soil nailing rebuild stone wall in front using the cleaned and stacked stone and fill gap between the soil nails and wall.

- NOTES :
- General
1. All dimensions mm UNO
 2. All elevations MOD UNO
 3. Do not scale, use figured dimensions only
 4. All soil nails to be formed using galvanised Minova R32N self drilling rebar (or similar approved) and installed using a nominal 75mm ϕ sacrificial drill bit
 5. Soil Nails to be formed using a neat OPC grout, strength 35MPa at 28 days and maximum water cement ratio of 0.4
 6. All steel work for head plate assembly to Grade S275 UNO
 7. Minimum 3 No. soil nail tests to be carried out at a maximum test load of 45kN in 5 No. increments at 9kN, 18N, 27kN, 36kN & 45kN
 8. Dry stone wall to be rebuilt upon completion of the soil nailing to be in keeping with the rest of the wall (design by others).

REV.	AMENDMENTS	DRAWN	CHECK	DATE
-	-	-	-	-



Client: MASON CLARK ASSOCIATES

Project: Wentworth Castle

Title: SOIL NAIL LAYOUT DRAWING 2 of 2

Drawing Status: FOR APPROVAL

INITIALS	DATE	SCALE	DRAWING NUMBER
DRAWN: SJ	14/12/23	AS SHOWN	2718 - 002
CHECKED: WF	14/12/23		
DATE: December 2023	ORIGINAL SHEET SIZE: A1		REVISION: 0