

SPECIAL GEOTECHNICAL MEASURES FORM (SGMF)

H1

- 1) Project details;
 - Installation of ground anchors to stabilise an existing embankment
- 2) Name of project;
 - Ponsharden Jewish and Congregationalist Cemetery, Falmouth
- 3) Type of highway;
 - Minor, B Road
- 4) Permitted traffic speed;
 - 40mph
- 5) Nature of project/project element (for example new highway construction, highway widening, earthworks maintenance):
 - Stabilisation of embankment bordering Falmouth Road, as part of the renovation project at the cemetery

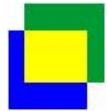
H2 SGM

- 1) Generic type of SGM, for example strengthened soil, gabions, soil nailing, crib wall, chemical additions, electro-osmotic treatment;
 - Use of ground anchors & geotextile to stabilise the existing embankment
- 2) Purpose of SGM, for example to allow highway widening, for earthworks failure reinstatement, for new construction in area of restricted land take;
 - To stabilise an existing embankment
- 3) Intended location(s) for use (a schedule of proposed lengths of SGM and locations):
 - Falmouth Road. Length approximately 21m

H3 Outline of existing ground and groundwater conditions (to be referenced to the relevant sections of the GIR)

- 1) Ground investigation data (list report references and comment on extent of data);
 - Geotechnical Report by AGS Ground Solutions, Ref: A2292-1, dated March 2021
- 2) Existing ground conditions (brief summary of natural geological sequence, presence of 'made ground', etc):

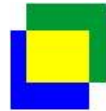
Stratum	Depth to top of Layer (m)	Thickness (m) – Where proven	Depth to base of Layer (m) – Where encountered
Made Ground (MGR)	0.00	0.30 – 0.75	0.30 – 0.75
Weathered Mylor Slate Formation (MRSL)	0.30 – 0.75	1.70 – 3.70	2.00 – 4.00
Mylor Slate Formation (MRSL)	Not Encountered	Not proven	Not Encountered



- 3) Existing groundwater conditions (note on groundwater levels);
 - Groundwater not encountered during ground investigation.
- 4) Geochemistry (note on sulphate/chloride/pH conditions and/or ground contamination and microbiological action);
 - Not verified during the ground investigation
- 5) Existing geotechnical risks (any factors of geotechnical significance related to the existing ground conditions, for example slope failures, solution features; mineworkings, slopes with marginal factors of safety, very soft/highly compressible soils):
 - No significant risks envisaged

H4 Proposed SGM

- 1) Description of SGM (range of and average height of proposed strengthened earthwork in its final form, i.e. slope face angle, facing/landscaping details including, where appropriate, topsoil and planting details);
 - Approximate slope face angle = 58 degrees
 - Facing behind anchors = MacMAt R Steel geotextile system underlain by coir matting
 - Seeded topsoil to be packed behind the geotextile
 - All landscaping details & details of facing details, to be confirmed during final design.
- 2) Foundation preparation where appropriate, including any measures to deal with geotechnical risks;
 - N/A
- 3) Materials to be used in construction (description of geosynthetics, soil nails, gabion baskets, imported fill materials etc., including Design Certificates and evidence of CE marking under the Construction Products Directive where appropriate);
 - Facing behind anchors = MacMAt R Steel geotextile system underlain by coir matting
 - Platipus S2 anchors fixing geotextile at crest of embankment
 - Platipus S8 anchors at 1.2m c/c fixing the geotextile within the main body of the embankment
 - S02 ARGs Anchors with 0.4m x 0.1m stainless steel walers at 0.5m c/c fixing the MacMAt geotextile at the bottom of the embankment
 - All details to be confirmed during final design
- 4) Drainage measures (particular drainage control measures to be incorporated);
 - N/A
- 5) Arrangements for highway furniture, buried services and landscaping (relevant details);
 - N/A
- 6) Inspection and maintenance (particular inspection and maintenance requirements [including where appropriate the maintenance of vegetated slope faces] and non-routine inspection and maintenance requirements);
 - Seeded topsoil behind geotextile to be kept moist during the first few months
 - Once the vegetation has established, it will need to be maintained/cut



- 7) Interface with structures (details of interface construction measures with bridges, abutments, retaining walls, buried structures, other SGM, etc.):
 - N/A

H5 Design methods

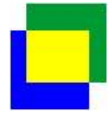
- 1) List of relevant documents;
 - Platipus Conceptual Design, ref: PAL_CP_21_15320_001, dated 9th April 2021
- 2) Limit state design criteria. (Factors to be applied in the design, on both stability of the SGM and on stability of associated slopes);

Table 2.0: Eurocode 7 Partial Factors				
Item			Design Approach 1	
			Combination 1	Combination 2
Actions	Permanent	Favourable	1.00	1.00
		Unfavourable	1.35	1.00
	Variable	Favourable	0.00	0.00
		Unfavourable	1.50	1.30
Material Properties	Coefficient of shearing resistance		1.00	1.25
	Effective Cohesion		1.00	1.25
	Undrained Strength		1.00	1.40
	Unconfined Compressive Strength		1.00	1.40
	Weight Density		1.00	1.00

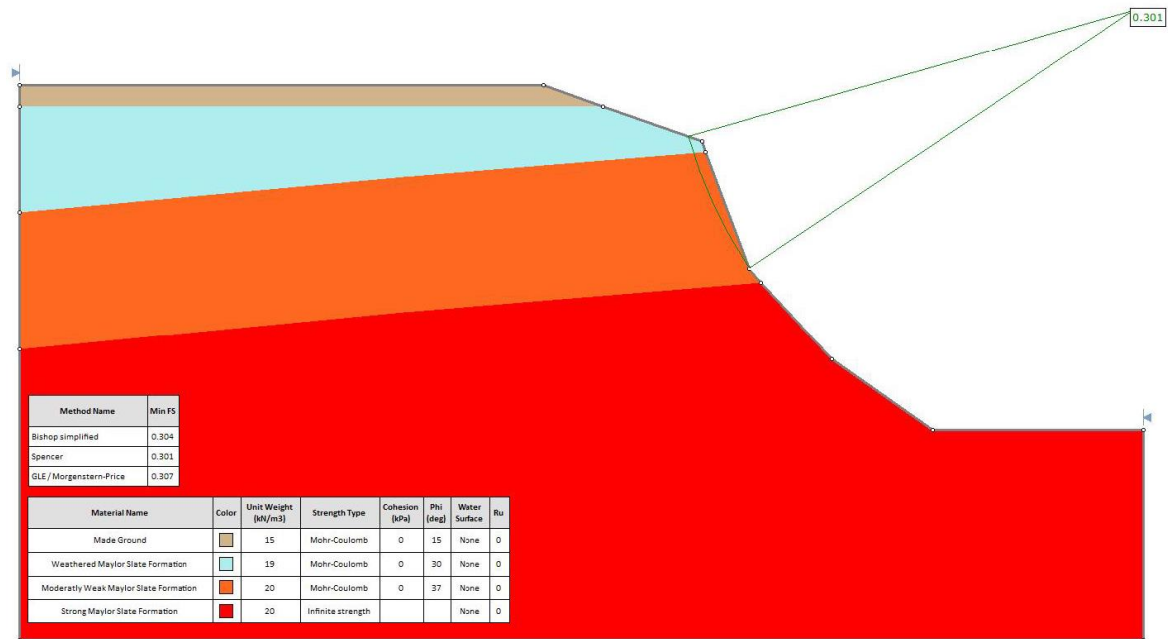
- 3) Serviceability design criteria (any total/differential settlement or other movement criteria adopted by the designer, including any imposed by employer's requirements);
 - N/A
- 4) Relevant parameters for soils and materials (schedule of relevant main parameters for the soils and other materials to be used in construction);

Table 3.0: Adopted Soil Parameters for Preliminary Slope Stability Assessment								
Stratum	Characteristic Values				Design Approach 1 - Combination 1		Design Approach 1 - Combination 2	
	Unit Weight (kN/m ³)		Angle of Shearing Resistance (°)	Effective Cohesion (kPa)	Angle of Shearing Resistance (°)	Effective Cohesion (kPa)	Angle of Shearing Resistance (°)	Effective Cohesion (kPa)
	γ_{dry}	γ_{sat}	ϕ	c'	ϕ	c'	ϕ	c'
Made Ground	15	n/a	15	0	15	0	12.09	0
Weathered Mylor Slate Formation (MRSL)	19	n/a	30	0	30	0	24.79	0
Moderately Weak Mylor Slate Formation (MRSL)	20	n/a	37	0	37	0	31.08	0
Mylor Slate Formation (MRSL)	20	n/a	Infinite	Infinite	Infinite	Infinite	Infinite	Infinite

- 5) Design groundwater conditions (statement of worst case, or range of conditions to be used in design);
 - N/A
- 6) Live loadings (confirmation of live loadings to be assumed in design);
 - Surcharge applied at top of slope = min 10kN/m²



- 7) Description/diagram of idealised soil/structure model to be used in analysis (provide a section of the SGM strengthened earthwork to illustrate the design method and associated main design assumptions);

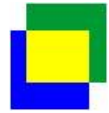


- 8) Precautions against chemical attack to materials (measures to accommodate ground or material conditions);
- Stainless steel waler plates to Platipus S02 ARGS Anchors
 - Stainless steel tendons to anchors
 - Aluminium bronze anchor plates
 - Maccaferri Macmat® R geomat, which is made from a three-dimensional matrix of UV stabilized, non-degradable synthetic fibres
- 9) Proposed Departures from DMRB design documents:
- N/A

H6 Checking

Designer to indicate the independent checking procedures where employed:

- Design to be checked in house by the appointed designer of the final scheme & also by Platipus



H7 Signature format for SGMF:

The above design and construction proposals are submitted for review.

Geotechnical team leader, design team and, where relevant, also by the Contractor's agent or contracts director

On behalf of:

Geotechnical Certificate ref. no.:

Countersignature by Overseeing Organisation

This SGMF is:

(a) received*

(b) received with comments as follows:*

(c) returned marked 'comments' as follows:*

(*delete as necessary)

Signed and dated by OOGA

Note: 'Received' = Submission accompanying certificate accepted