

PARAMESH WALL FOR RESIDENTIAL BUILDING SHATI AL QURUM, MUSCAT, OMAN

REINFORCED SOIL RETAINING WALLS

Product: Terramesh System, ParaLink300, Geotextile.

Project Background:

The proposed "15.002 ZAZV Private Residential Villa" project site was located at Shati Al Qurum, Opp. to Royal Opera House, Muscat, Oman. The project site topography was a sloped terrain with an elevation difference of 10-12m from the design gate level. Hence construction of a Retaining wall was inevitable.

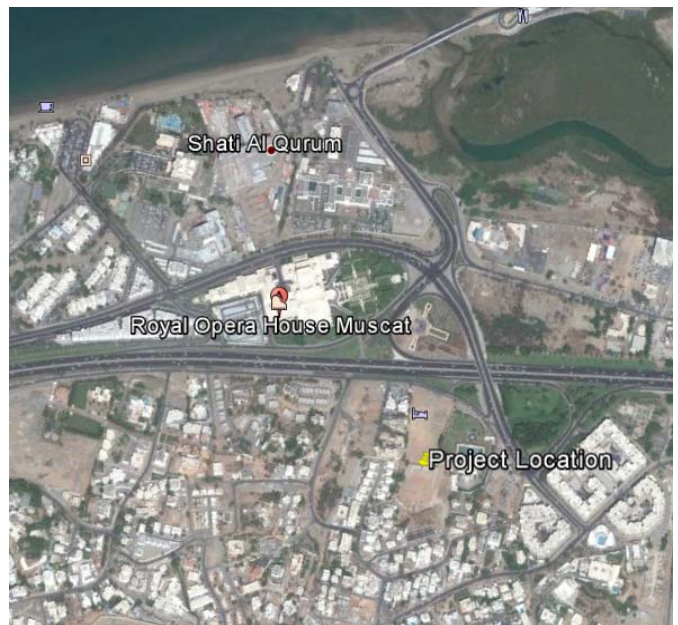
However, the owner of the project wanted an alternative retaining wall solution other than the conventional RC Retaining wall with a reduced cost and have a different aesthetic, environmental friendly appearance. Thus the consultant recommended Maccaferri for a better retaining wall solution which meets the requirements of the project owner.

Solution:

Maccaferri was thus invited by the client & consultant to provide a design, supply and construction supervision solution of the ~10m high retaining wall for the proposed residential building project mentioned above.

Based on the nature of the project, Maccaferri's ParaMesh Retaining wall system was proposed by our design engineers, finding it as the best fit solution for this project. Typically, ParaMesh is a composite soil reinforcement system with different types of soil reinforcement used with the following Maccaferri products:

- **Terramesh System® (TMS)**, a double twisted hexagonal steel wire mesh unit which forms the fascia, with the aesthetics of gabion and with the reassurance of a secondary soil reinforcement to prevent sloughing failure of wall face.
- **ParaLink® (PL)**, a high strength polyester geogrid (Primary Reinforcement)
- **Geotextile (Non Woven)**, is used as separator between the inside face of the Terramesh system (gabion fascia) and the structural fill soil in order to prevent escape of the fine particles from backfill into the gabion fascia voids.



Google Earth Location of Project Site

Client:

Mr. Zayed

Main contractor:

PZ International LLC, Oman

Consultant:

Intec-Tusker

Designer:

Maccaferri Middle East LLC

Products used

TMS (8x10), ParaLink 300™

ParaLink Installation Works:

Start Date: 25-Aug-2016

Completion Date: 08-Sep-2016

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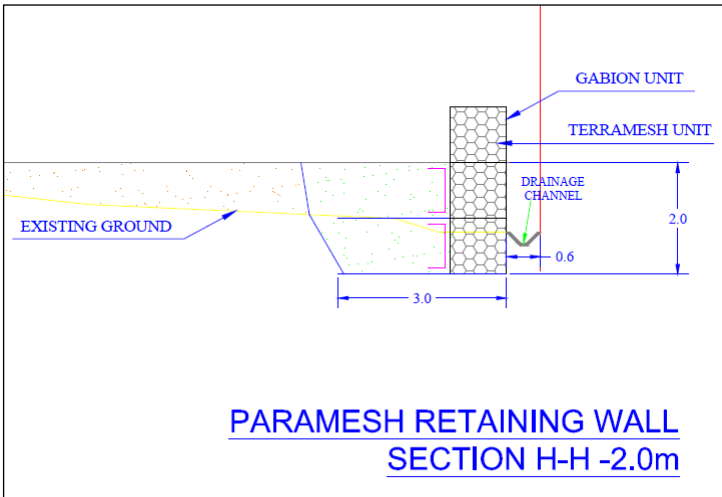
Design Sections:

As per the architectural requirement of the project the retaining wall heights varied from 2m to 10m to reach to the proposed formation level & hence several sections with different wall heights were analysed by our design engineers. All the analyses were done as per BS 8006:2010, using MacStars-W Software.

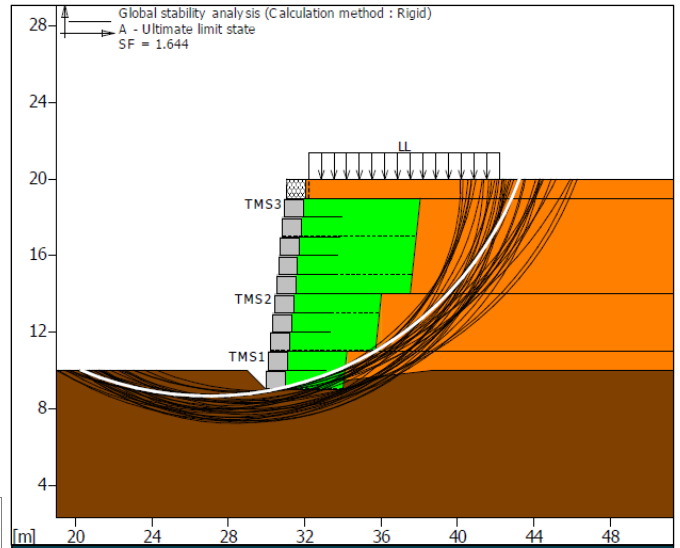
A surcharge load of 36KPa above the proposed ParaMesh wall and a seismic horizontal coefficient of $0.98m/s^2$ was also considered in the design. The primary reinforcement used was PL300®.

The foundation ground was a competent strata (rock), hence a trapezoidal design section with the primary reinforcement length at the base was considered as 0.4H, 0.55H at the middle and 0.7H at the top. Different soil layers modeled in the design analyses is given below along with their properties:

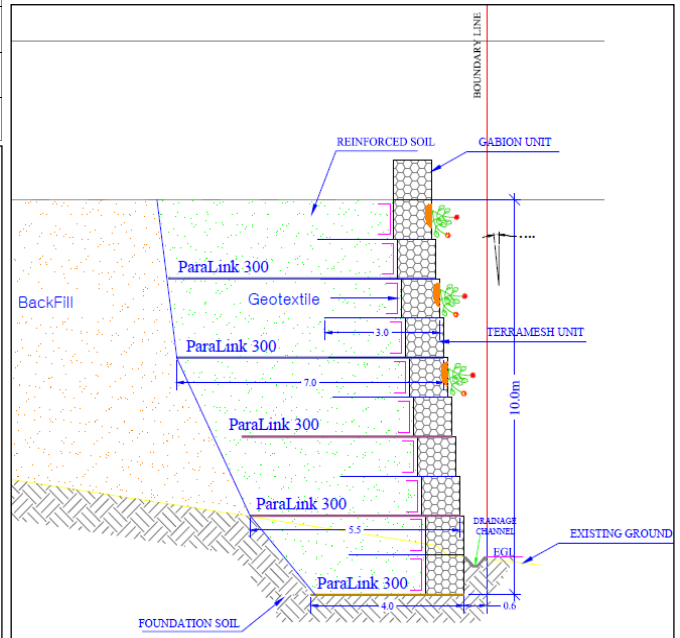
Soil Properties	Foundation Soil / Rock	Reinforced Soil	Retained Backfill
Unit Wt. (kN/m ³)	20	19	19
Friction Angle (deg)	35	35	35
Cohesion (kN/m ²)	10	0	0
Poisson's ratio	0.3	0.3	0.3



Cross Section of 2m High ParaMesh Wall



Typical Design Section (Eg:10m Height, Global Stability)



Cross Section of 10m High ParaMesh Wall



ParaMesh Wall Under Construction



ParaMesh Wall (East Side) - After Construction



ParaMesh Wall (NorthSide) - After Construction

Maccaferri Middle East LLC

PO Box: 502594
Tel: +971 4 3608958
Email: info@ae.maccaferri.com
www.Maccaferri.com/ae

Officine Maccaferri S.p.A. Global Headquarters

Via JF Kennedy 10, 40069 Zola Predosa (BO) - Italy
T: (+39) 051 6436000 F: (+39) 051 236507
E: comes@maccaferri.com
www.Maccaferri.com