

DREDGE PUMP CALCULATION







Production and Suitability Study – 2x DOP1815

By: N. Versteeg / J. Kruis

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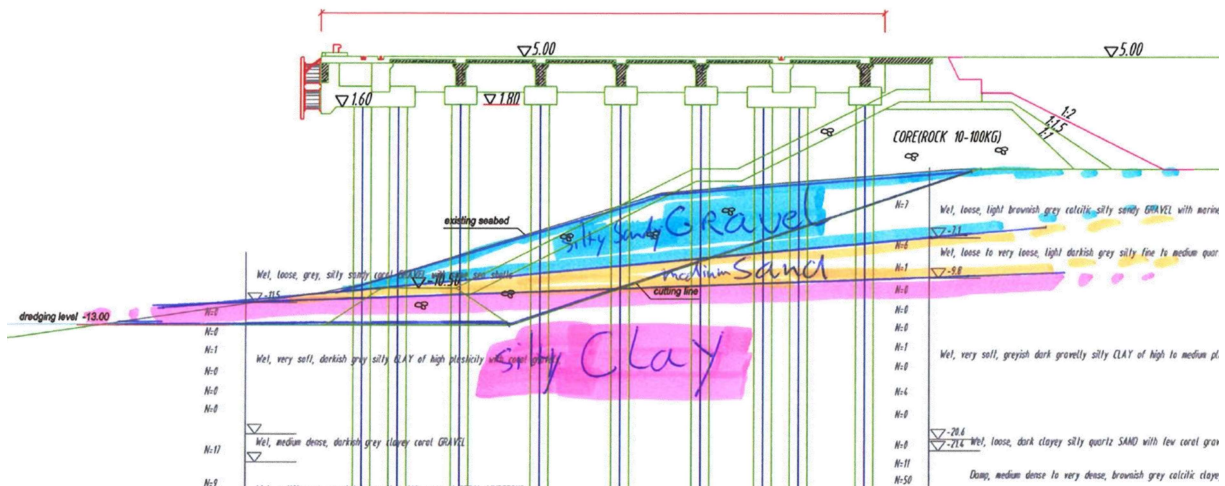
Base Documents

Documents received by email:

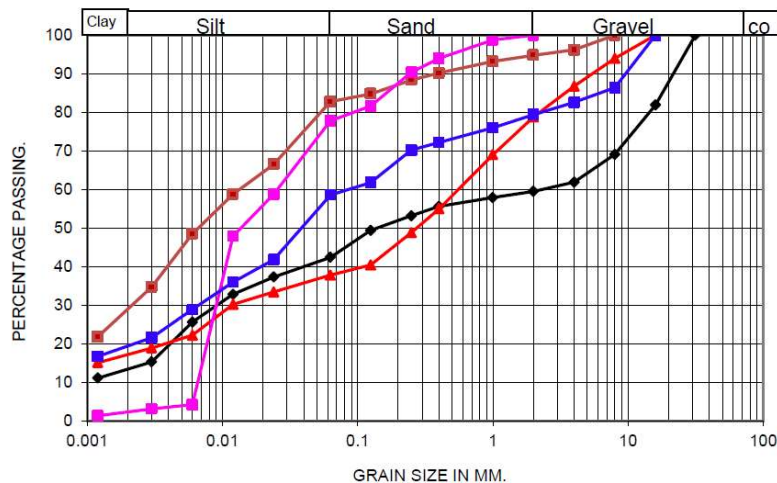
 GENERAL LAYOUT Model (1).pdf	13-11-2017 16:57
 GENERAL LAYOUT Model (1)1.pdf	13-11-2017 16:57
 temporary road section.pdf	13-11-2017 16:57
 typical geotechnical boreholes.pdf	13-11-2017 16:57
 FINAL REPORT-PRIORITY BOREHOLES_CRM BEG MTWARA PORT.PDF	20-11-2017 10:00
 GEOTECH FINAL REPORT-Phase II.PDF	20-11-2017 10:00

Soil information and Situation verkregen door

The soil structure at the worksite is generally given in the overview below:



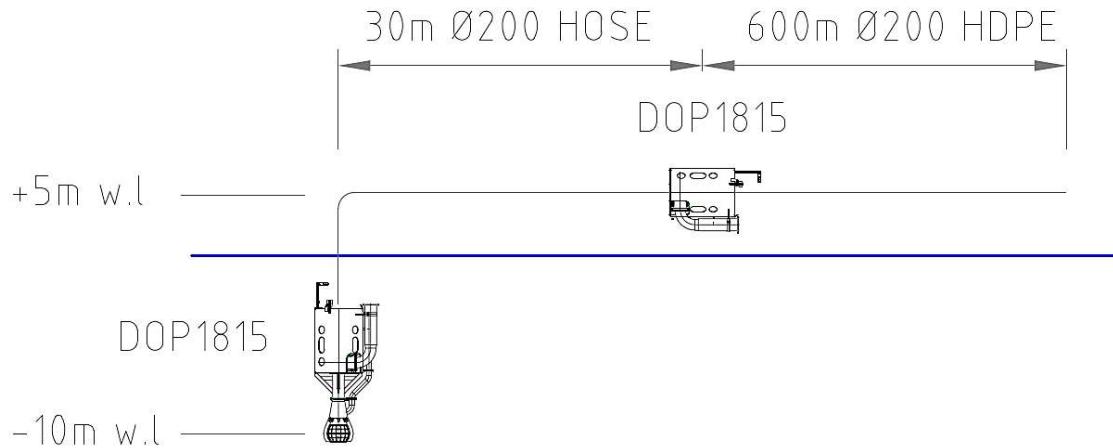
Although the soil samples greatly vary in coarseness and composition we assumed our calculation on borehole nr. 4 as the most representative for the given area.



Although the sieve analysis show a d50 of around 0,3mm, other information like the pictures and general soil descriptions give the impression of the presence of coarser gravel. Therefore a d50 of 1,0mm is chosen as a precaution for possible coarser soil.

Pump setup

Main Pumps: 2x DOP 1815



Production Estimation

For the production estimation a maximum mixture concentration of 15% is used. However this can greatly vary depending on the local soil conditions.



Based on the above setup and assumption an estimated solid production of **65m³/hr** will be achieved.

Control

To be able to control the pumping process during operations successfully the setup must have enough reserve to maintain the velocity and pressure within the discharge line during unexpected and unwanted events. To verify this several control calculations are made:

- 1) Control of discharge line velocity during peak loads (25% mixture density).
- 2) Control of discharge line velocity en discharge pressure when pumping water.
- 3) Control of pump power during peak loads.

For a situation of pumping GRAVEL with a d50 of 1mm the following limits where found:

Situation	Outcome	Remark
Peak Loads		During peak loads velocity in discharge line drops below critical. Advise to use a suppletion valve or reduce discharge line to 500-550m
Pumping Water		
Overdrive	