

GENERAL PREMISE

Purpose of Assessment:	Estimate of cable system protection for planning and/or feasibility
Required Result:	Estimate of maximum achievable cable burial depth by plough trenching
Facility/Structure(s):	Submarine fibre-optic cable
Location:	Monterey Bay
Water Depth:	< 900 m
In-Situ Ground Type(s):	Rock, sand and clay
Excavation(s):	Simultaneous trenching and laying using dedicated cable plough

PLOUGH CHARACTERISTICS

Plough Type	SMD manufactured Standard Cable Plough
Mode of Operation	– Simultaneous trenching and laying – Trench backfill with excavated sediment – Finished geometry level with surrounding seabed surface
Side Ramp	Yes
Cutting Disc	Yes
Rock Forearm	No
Plough Weight (submerged)	110 kN
Maximum Tow Force	450 kN
Skid Area	– 2 m² for case of no penetration into seabed surface – increasing contact area with penetration into seabed
Maximum Pre-set Trench Depth	1.1 meters

BURIAL DEPTH ASSESSMENT

General Procedure:	Refer to document titled "Submarine Telecom Cable System" (Fugro ref. FEBV/CDE/APP/061)
Plough share setting	1.0 meter target burial depth
Model for Heel Contact Area	Linear increase in area with plough share penetration depth
Plough-soil Interaction	Limit equilibrium; limit value according to plough share setting
Ground Model	Limit equilibrium; undrained for fine grained soils, drained for coarse grained soils

TOW FORCE ASSESSMENT

General Procedure	Refer to document titled "Submarine Cable System" (Fugro ref. FEBV/CDE/APP/061)
Tow Force Model	– Refer to main text of report – According to Allan (1998) – Limiting tow force according to system specification
Bathymetric Effects	Not considered
Speed	Range 0.2 - 0.4 m/s, monotonic
Speed Effects	Not considered
Tow Line Catenary Effects	Not considered

OPERATIONAL CONSIDERATIONS

Wear of Plough Share	Qualitative assessment
Plough Share Ride-out	- Incorporated in burial depth assessment - Ride-out due to sloping seabed: qualitative assessment
Plough Stability	Qualitative assessment
De-trenching	Qualitative assessment
Post-lay burial	Qualitative assessment

REFERENCES

Allan, P. (1998), "Geotechnical Investigation for Performance Prediction of Submarine Trenching Ploughs, Aspects of Submarine Cables", Int. Conf. Offshore Site Investigation and Foundation Behaviour, SUT1998, pp. 433-446.