

# Cone Penetration Testing

Quality data, reliable results, every time.

**Yvo Keulemans**

**Director and Operator**



# CPTS

cone penetration testing services

# Some of the sites CPTS has worked on

- Frankipile's office at Holt Street Eagle Farm
- Frankipile's casting yard, Coopers Plains
- Gold Coast & Hinterland Environmental Council, Currumbin
- Palm Beach, Gold Coast
- Fishermans Island
- Montpelier Road, Bowen Hills.
- Cutters Landing, Newfarm.
- College Road, UQ, Saint Lucia. Three (3) times
- Park Avenue, East Brisbane
- Logan Road, Eightmile Plains
- Cnr Medways St & Fairfield Rd, Rocklea
- Helen Street, Newstead
- Springfield Shopping Centre
- Sickie Ave, Hope Is
- Portside Development, Harbour Rd, Hamilton. (twice)
- PGH Inala
- Hope Island
- Lake Kawana Blvd, Birtinya (twice)
- Mega Centre, Slacks Creek (twice)
- Powerlink, Virginia
- Condong Sugar Mill
- Coles, Logan Rd, Upper Mt Gravatt
- Broadwater NSW
- Robina Sports Stadium
- Airport Drive, Brisbane Airport
- Strathpine Rd, Strathpine
- Edmonstone St, Bowen Hills
- Polaris Centre, Springfield
- The 'Waterfront' site, Newstead
- Blackwood St, Mitchelton
- Hamilton Harbour
- Luggage Pt WWTP



High quality data every time  
It's the only option.

- 1. Regular Equipment Calibration / Checks.**
- 2. Careful Cone Preparation.**
- 3. Testing by an experienced operator.**
- 4. Maintenance of the equipment to ensure proper function.**



# History of CPTS in Queensland

- **1999 Setup operations with a truck mounted CPT rig after 9 years cone penetration testing with Douglas Partners.**
- **2001 Built a crawler/track mounted CPT rig.**
- **2008 Purchased a mini crawler CPT rig from Europe.**
- **2008 Purchased hand portable CPT equipment.**
- **2009 In conjunction with ATV Hire setup two 8\*8 all terrain vehicles for piezocone testing on intertidal mudflats.**
- **2010 Also in conjunction with ATV Hire purchased and set-up an Amphirol for geotechnical testing.**





# Cone Calibration

- **Cones can have 100% accuracy at their nominal working load, typically 50 MPa.**
- **Errors creep in at the lower and upper ranges.**
- **Cones need to be calibrated for the soil strengths being tested, this is most critical in soft soils.**
- **Certificates of calibration should include values for the applied load and the cones response not just a letterhead and signature.**



# Correct Equipment Preparation

- **Maintenance and cleaning of the cone before and after use.**
- **Complete de-airing / saturation of the pore pressure filter element.**
- **No water / moisture in connections.**
- **Do not overload the sensors either vertically or laterally (via excessive inclination).**



# Pore pressure

- **Gaps in between soil particles...**
- **(video clip)**
- **What happens to data if not done properly.**



# Port of Brisbane soft clay

- **Core readings barely registered at 25 metres deep**
- **1% error could be 50% - 70% of strength of material**





# How critical is the data?

- **GAD Mine site**
  - 0 readings on tip at 21 metres below ground level.
- **“How critical is the data?”**



# Good quality CPT data: What to ask for

- **Calibration for specific soil being tested**
- **Cleaning and lubrication of equipment**
- **Filter preparation**
- **Voids: Low readings and high readings**



*I sleep at night knowing  
the data is good.*



**CPTS**

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