

Quality in Ground Investigations - A Middle East Perspective

Andrew Slate

Gulf Laboratories Co. WLL



7th November 2012, 14:15

- Perceptions and reality
- Challenges to quality in the Middle East
- What leads to poor quality ground investigations?
 - Planning stage
 - Execution stage
- Consequences of low quality
- How can we obtain good quality GIs?
- The next decade in Qatar
- Conclusion

Perceptions and Reality

- View from outside the region...poor quality is the norm
- Reality is that there is a wide range of quality available. (High quality ground investigation work, e.g. to EC7 can be found!)

Challenges in the Middle East Region

- Countries in the Middle East are very different (geologically, culturally, bureaucratically, etc)
- Standards....BS, ASTM, EC7 and local standards may be adopted for projects, but none are compulsory.
- Consultant supervision often conducted from outside the country. Lack of in-country geotechnical expertise
- GI contractors and consultants staff generally represent a wide range of nationalities
 - Potential for miscommunication / misunderstandings
 - Cultural clashes
 - Quite common for even a simple small GI to have 8 or 9 different nationalities involved

Misunderstanding!



Challenges to quality in the Middle East region

- Market is generally very price driven – souk-style negotiation
- Climatic conditions
- Overmanning drilling rigs
 - UK, Europe – 1 driller, 1 second man
 - Middle East – 1 driller + 2 or more helpers

What leads to Poor Quality GIs?

PLANNING STAGE

- Financial constraints – insufficient budgets allocated.
- Inappropriate scoping of investigation
 - Lack of specific local knowledge of ground conditions
 - Scoping by non-geotechnical personnel
 - Compromise due to insufficient budget being allocated
- Lack of flexibility in GI scope
- Rushed bidding process
- Unrealistic time schedules
- Decision-making from outside the country
- Selection of GI contractor solely on price

Above factors are solely under the control of the Client and Consulting Engineer, but severely affect the GI Contractor abilities to provide the quality that is desired

What leads to Poor Quality GIs?

EXECUTION STAGE

- Poorly trained or untrained drilling crews, engineers, geologists and operators
- Communication difficulties / language
- Poor equipment maintenance
- Lack of on-site supervision by GI contractor staff
- Lack of investment by owners of GI contractors

All under the control of the GI Contractor

Consequences of Low Quality

- Acceptance of low quality makes NO financial sense – all parties suffer

Client	Higher project risks and therefore accept overdesign to mitigate = higher build costs
Consultants	Higher level of site supervision required Lack of confidence in data. Need to overdesign.
GI Contractor	Low margins = less opportunity for re-investment in new equipment and consequently business growth Reliance on old plant / equip., perpetuates low quality output – becomes a vicious circle!

Good Quality GIs - Client responsibilities

- Sufficient budget should be allocated. Understand the real value of a quality GI
- Appropriate selection of GI contractor based on quality rather than solely on price.
- Ground investigations scoped up by qualified geotechnical personnel following current good practice. Encouraging that EC7 is now being adopted, e.g. Doha Metro
- GIs scoped by geotechnical personnel having good local geological knowledge of the country, or in collaboration with local GI Contractors.
- Scope should remain flexible - so unforeseen findings can be adequately investigated.
- Adequate on-site supervision by qualified personnel. Decision making needs to be made on site, not remotely.

Good Quality GIs – Contractor responsibilities

- Adequate on-site supervision by qualified, trained personnel
- Good communication skills. Training requirements
- Drilling crews with experience of ground conditions where investigation is carried out. Is accreditation the way forward?
- Invest in new plant, equipment and techniques
- Plan preventive maintenance of rigs and equipment
- Use Quality Management Systems

The next decade in Qatar

- Qatar is about to enter a period of unprecedented construction activity – starting in the first half of 2013.
- Huge pressure on geotechnical resources within the country, therefore there will be a need for well planned recruitment, training and procurement of additional plant and equipment
- Potential for quality compromises is high as resources are stretched
- It is in all parties interest that quality is maintained
- Good news is that things are improving...
 - Ashghal Quality Dept. have adopted a pro-active approach in improving laboratory testing standards
 - Eurocode 7 is beginning to appear in GI specifications

Conclusion

- Nobody benefits from Low Quality GIs
- Driving up standards will yield financial benefits for all.
- The Middle East region has its own set of quality challenges in addition to common global factors.
- Key opportunity to improve quality is at the Planning Stage. Clients and consultants are therefore in a critical position to drive this.
- GI Contractors will struggle to maintain the high quality desired if the Planning Stage is “got wrong”
- The scale and extent of projects planned in Qatar is huge and will present many resource challenges. The adoption of EC7 on the Doha Metro projects is a good clear sign of the way forward.

Professor Littlejohn's 1991 quote...

“You pay for a site investigation whether you have one or not” still holds true today.

However it is not just about paying for “a site investigation ” it is the quality of that investigation which is important.

