

Design Engineer's Tender Query Response(s) (TQR)

Form No.: 97918-QAF-019

Page 1


Tender #: STPA2008S-23 STPA RFI #: No. 7



Tender ID: TP6 Part B S/S DE TQR #: 7

To – Contract Mgr.: Jerome MacNeil, TP6 Part B Contract Manager

From: Ian Shrimpton

Date Issued: February 9, 2009

Subject: 

Query/Clarification: Question submitted to the Agency 


Question 1 & 2: Section 02 51 19, Part 1.3 References, makes note of the ASTM Standards used for testing solidified and stabilized materials. The referenced standards in question are as follows:

- .2 ASTM D1633-00 (2007) Compressive Strength of Molded Soil –_Cement Cylinders
- .3 ASTM D5084-03 Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

Can you clarify which Test method is to be used for either standard? For example in the Tar Pond Pilot Scale Work Plans and Bench Scale testing refer to ASTM D1633 - Method B and ASTM D5084-03 - Method C.

Response Question 1: In ASTM standard D_1633, a cylindrical sample is loaded axially under controlled-stress condition, and the stress recorded at sample failure is taken as the unconfined compressive strength (UCS). Two cylinder height-to-diameter (aspect) ratios can be used: 1.15 (Method A) and 2.0 (Method B). The required method is Method B.

Method A is performed on samples created in a compaction (Proctor) mold, so specimen creation is very simple and can be performed with readily available equipment. However, due to the low aspect ratio, and resulting complicated stress conditions, the test method provides only a relative measure of the UCS rather than an accurate determination of UCS (Method A will typically overestimate strength). As Method B provides a value that better reflects the actual UCS, this method has been selected as the requirement for this work.

Response Question 2: Similar to the previous response, for ASTM D5084-03, there are six alternate methods, or hydraulic systems, that may be used to measure the hydraulic conductivity. These hydraulic systems are as follows:

Design Engineer's Tender Query Response(s) (TQR)

Form No.: 97918-QAF-019

Page 2

Method A—Constant Head

Method B—Falling Head, constant tailwater elevation

Method C—Falling Head, rising tailwater elevation

Method D—Constant Rate of Flow

Method E—Constant Volume-Constant Head (by mercury)

Method F—Constant Volume-Falling Head (by mercury), rising tailwater elevation

Any of these test methods may be utilized on all specimen types (undisturbed, reconstituted, remolded, compacted, etc.) that have a hydraulic conductivity less than about 1×10^{-6} m/s (1×10^{-4} cm/s) as long as the system flow is ten times greater empty than with a specimen in the permeameter (or for constant rate of flow testing, that the system head loss without a specimen is less than 0.1 times the head loss when a specimen is present).

The test method specified is a function of the testing apparatus used by the selected laboratory. The various methods yield essentially the same results. Method C was used for the Bench Scale and Pilot Scale testing because of the equipment used by the selected laboratory. For TP6B, the method used is up to the Contractor's discretion dependent upon their laboratory. The standards of the method have to be followed rigidly to show that the performance requirements are met.

Question 3: In addition to the above, the UCS performance criteria noted in Section 02 51 19, 1.8 Performance Requirements, .2 relating to 28 day is listed as 0.17 MPA or 25 PSI. This value is 50% less than the performance criteria noted in the pilot testing and bench scale testing. Please confirm.

Response: It is confirmed that the UCS for TP6B as per the specification is correctly stated as 0.17 MPa (25 PSI). The higher USC of 0.34 MPa (50 PSI) was used in the Pilot Scale testing as an extension of the Bench Scale testing as required by NSE.

Does this query/clarification warrant an Addendum?

Yes No

Approved by Design Lead

Ian Shrimpton

2009 02 09

Date: Y/M/D