ERRATA for

PE Civil*: *Geotechnical Practice Exam

ISBN: 978-1-947801-30-1

Errata posted 10/01/2024

Revisions are shown in red.

Question 2, p. 4:

A department of transportation must remove and replace a 12-ft × 20-ft concrete slab on an interstate facility. To minimize disruption to traffic, the work must be completed during an 8-hour nighttime work shift so the lane can be opened to traffic in the morning. Nighttime temperatures average 50°F. If the minimum required compressive strength is 3,500 psi, the concrete mix most likely consists of:

○ B. sand, Type I cement, water, chemical accelerator

Question 4, p. 5:

Borings are performed using hollow-stem augers with standard penetration tests (SPT). From previous experience near the site, the soils are expected to consist of a mostly medium-dense to dense sand. Which of the following conditions could result in considerably lower SPT blow counts than expected?

○ C. Soft to medium stiff clay layers are encountered over wet sand.

Question 8, p. 8:

Engineering Parameter		In Situ Test Method
Bearing capacity		Borehole slug test
Shear wave velocity		Plate load test
Soil permeability		Pressuremeter test
Soil stratigraphy and estimate of soil type		Seismic cone penetrometer
Stress-strain modulus		Field torvane test
Undrained shear strength		SPT boring

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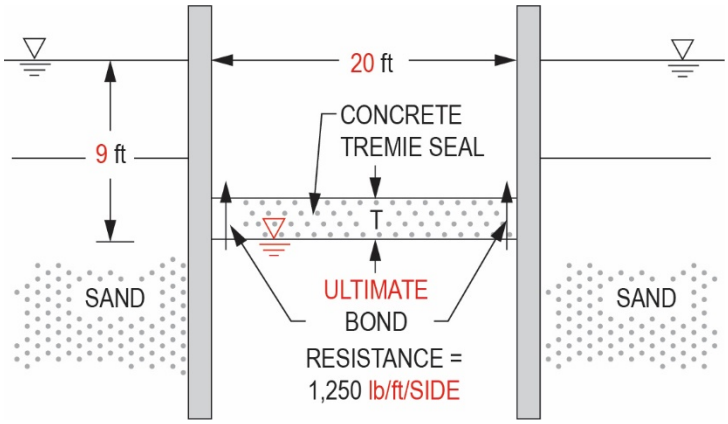
Question 20, p. 15 (Replaced):

A construction site has a slope that is 175 ft long with an inclination of 8%. The contractor needs to cover the slope for the upcoming rainy season to prevent excessive erosion. Which of the following would provide the most cost-effective erosion protection considering the length and inclination of the slope?

- ○ A. Straw tied down with anchoring spread at a mulch rate of 1.5 ton/acre
- ○ B. Wood chips placed at a mulch rate of 7 tons/acre
- ○ C. Crushed rock spread at a rate of 135 tons/acre
- ○ D. Straw tied down with anchoring spread at a mulch rate of 2.0 tons/acre

Question 59, p. 47:

Using the bonding of the concrete to the sheeting and assuming a unit weight of concrete is 150 pcf, the **minimum** thickness (ft) of the tremie slab is _____.



Solution 4, p. 72:

Options A and D increase the pore water pressures and therefore would decrease the SPT values.

Option C, soft to medium stiff clays, would have a lower SPT value relative to medium dense to dense sands.

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Solution 8, p. 74:

Engineering Parameter	In Situ Test Method
Bearing capacity	Plate load test
Shear wave velocity	Seismic cone penetrometer
Soil permeability	Borehole slug test
Soil stratigraphy and estimate of soil type	SPT boring
Stress-strain modulus	Pressuremeter test
Undrained shear strength	Field torvane test

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Solution 9, p. 75:

Subsurface Condition or Purpose of Exploration	Exploration Method
Loose to medium-dense sand with a shallow groundwater table in a high-seismic environment	Mud rotary drilling **or** cone penetrometer testing
Soil layers with significant quantities of cobbles and boulders	Becker Hammer penetration test
Soft to stiff cohesive soils where samples are needed for consolidation and triaxial testing	Hollow-stem auger drilling **or** mud rotary drilling
Evaluation of near-surface stratigraphy and potential location of seismic faults	Test pit exploration
Evaluation of conditions beyond the tip of a proposed deep foundation element to be installed in Karst conditions with potential for dissolution cavities or voids and a water table below the exploration depth	Mud rotary drilling **or** air rotary drilling

Solution 20, p. 79:

Mulch rate of 2.0 tons/acre for straw tied down with anchors will provide erosion protection for slopes up to 200 ft in length. Crushed rock will also work but would not be as cost-effective as straw. The length of the slope is too long for the other straw and wood chip options.

THE CORRECT ANSWER IS: D

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Solution 58, p. 92:

Driving Force

Driving Force

$ka = \tan^2 (45 - \phi/2)$

$\tan^2 (45 - 34/2)$

0.28

$\mathbf{F}_1 = 1/2\ ka\ \gamma\ H^2$

$1/2\ (0.28)\ (125\ \text{lb/ft}^2)(8\ \text{ft})^2$

1,120 lb

$\mathbf{F}_2$ = 0 (consider dead loads only)

$\mathbf{F}_D = \mathbf{F}_1 + \mathbf{F}_2 = 1{,}120\ \text{lb} + 0\ \text{lb}$

Resisting Forces

$$\text{FS} = \frac{\mathbf{F}_R}{\mathbf{F}_D} = \frac{577.4\ L}{1{,}120} = 2.0$$