

Pile Driving Homework Quiz Questions Transcript

In this section there are additional exercises and questions that will help you prepare for the exam. In a classroom environment these exercises may be assigned to you in two days: Homework 1 and Homework respectively. In the computer based training this are offered to you in one session at the end of the class.

Question 1. **True or False**

The scour elevation can normally be found on the bridge hydraulics sheet and in the Pile Data Table.

A. True

B. False

Question 2. **Multiple Choice**

The Required Nominal Bearing Resistance will normally be shown in the Pile Data Table. Where is the Pile Data Table found?

A. The Contractor's Pile Installation Plan

B. The Special Provisions

C. The Standard Specifications

D. The Plans

E. None of the Above

Question 3. **Multiple Choice**

On what type of hammer you may see a jump stick and what can it be used for in FDOT projects?

- A. Air hammer to verify stroke height
- B. Double acting Diesel to control the pressure
- C. Single acting Diesel to verify stroke height
- D. Vibratory hammer to estimate the amount.
- E. Single acting Diesel but cannot be used to verify stroke height**

Question 4. **Fill in the blanks**

What are the three types of Leads? _____

Answer: Fixed, Semi-fixed, Swinging

Question 5. **Multiple Choice**

When using which of the above leads, is a template not required?

- A. Fixed**
- B. Semi-fixed
- C. Swinging

Question 6. **Fill in the blanks**

What are the three basic pile hammer types? _____

Answer: Diesel, Air/Steam & Hydraulic

Question 7

For the situation presented in problem 7, refers to a plumb pile. You have 30 seconds to complete the problem.

[Part A] What is the tip elevation?

PROBLEM 7 (PLUMB PILE)

Furnished Pile Length = **55 ft.**
Reference Elevation = **+ 4.0 ft.**
Cut-off Elevation = **-0.50 ft.**
Preformed Hole Elevation = **-30.0 ft.**

Ground Elevation = **- 15.00 ft.**
Scour Elevation = **- 20.00 ft.**
Pile Length Below
Ref. Elev. = **43.0 ft.**

ANSWER

Ref. Elev.- Length Below Ref. Elev.

TIP ELEVATION:

Tip Elev. = $+4.0 - 43.0$ ft.
= -39.0 ft.

PLEASE SELECT THE **CONTINUE BUTTON.**

[Part B] What is the penetration?

Lowest of 3 Elev. - Tip Elev.

Answer

PENETRATION:

$$\text{Penetration} = -20.00 - (-39.0)$$

$$= 19.0 \text{ ft.}$$

PLEASE SELECT THE **CONTINUE BUTTON**.

[Part C] What is the length driven?

Cut-off Elev.- Tip Elev.

Answer

LENGTH DRIVEN:

$$\text{Length Driven} = -0.50 - (-39.0)$$

$$= 38.50 \text{ ft.}$$

PLEASE SELECT THE **NEXT** button to continue to the next problem.

Question 8

The problem 8 refers to a battered pile. The batter angle is provided as 5 on 2. The correction factor is provided which is 0.928. For the information supplied, please answer the following questions:

[Part A] What is the tip elevation?

PROBLEM 8: BATTERED PILE (5:2)

Furnished Pile Length = 60 ft.	Ground Elev. (Excav.) = -5.72 ft.	Batter = 5:2
Reference Elevation = +8.76 ft.	Scour Elev. = -9.92 ft.	Corr.
Cut-off Elevation = +4.00 ft.	Pile Length Below Ref. Elev. = 57 ft.	Factor = 0.928

PLEASE SELECT THE **CONTINUE** BUTTON.

[Part B] What is the penetration?

[Lowest of 3 Elev. - Tip Elev.] ÷ Corr. Factor

Answer

PENETRATION:

$$\begin{aligned} \text{Penetration} &= [-9.92 - (-44.14)] \div 0.928 \\ &= 34.22 \div 0.928 \\ &= \mathbf{36.88 \text{ ft.}} \end{aligned}$$

PLEASE SELECT THE **CONTINUE** BUTTON.

[Part C] What is the length driven?

[Cut-off Elev. - Tip Elev.] ÷ Corr. Factor

Answer

LENGTH DRIVEN:

$$\begin{aligned} \text{Length Driven} &= [+4.00 - (-44.14)] \div 0.928 \\ &= 48.14 \div 0.928 \\ &= \mathbf{51.88 \text{ ft.}} \end{aligned}$$

HW1.5

PLEASE SELECT THE **NEXT** button to continue to the next problem.

Question 9

The problem 9 is another pile pay length estimates problem. For the information supplied provide the pile length for each pile. Before clicking continue you may want to have pencil and paper ready, and draw a similar table for you to fill out the answers for each piles 1 through 4.

9.The delivered length of each of the piles at End Bent 1 originally was 100 feet and Pile 4 was a driven splice.

*Assume set-checks performed within 1 day. of end of initial drive

** Splice in a new pile section

Bent 1 Pile #	Length of Pile Below Cut-off	Predrill Length	# of Set- Checks*	# of Redrives	Length of Cut-off (ft.)	Length of Splice** (ft.)
1	94.12	20'	1	0	5.88	-
2	89.27	20'	0	0	10.73	-
3	96.77	20'	2	1	3.23	-
4	119.98	20'	2	1	-	20

Answers



Bent 1 Pile #	Length of Pile provided	Predrill Length	Set- Checks*	# of Redrives	Length of Splice** (ft.)	Splice Labor	Driven Splice	Cut-off (ft.)
1	100	0	0	0	0	0	0	0
2	100	0	0	0	0	0	0	0
3	100	0	0	20	0	0	0	0
4	100	0	0	20	20	30	10	0

PAID

100

100

120

180_{HW}

Answer: Pile 1 length is 100 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 2 length is 100 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 3 length is 120 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 4 length is 180 feet.

PLEASE SELECT THE **NEXT** button to continue to the next problem.

Question 10

The problem 10 is another pile pay length estimates problem. For the information supplied provide the pile length for each pile. Before clicking continue you may want to have pencil and paper ready, and draw a similar table for you to fill out the answers for each piles 1 through 4.

10.The delivered length of each of the piles was 80 feet. Pile 3 was a driven splice.

*Assume set-checks performed within 1 day. of end of initial drive

** Splice in a new pile section

Int.Bent 5 Pile #	Length of Pile Below Cut-off	Preform Length	# of Set-Checks*	# of Redrives	Length of Cut-off (ft.)	Length of Splice** (ft.)
1	69.27	25'	0	0	10.73	-
2	76.77	25'	3	1	3.23	-
3	99.98	25'	3	1	-	20
4	74.12	25'	1	0	5.88	-

Answers



PAID
87.5
117.5
177.5
87.5

HW1-7

Int.Bent 5 Pile #	Length of Pile provided	Preform	Set-Checks*	Redrives	Length of Splice** (ft.)	Splice Labor	Driven Splice	Cut-off (ft.)
1	80	7.5	0	0	0	0	0	0
2	80	7.5	10	20	0	0	0	0
3	80	7.5	10	20	20	30	10	0
4	80	7.5	0	0	0	0	0	0

Answer: Pile 1 length is 87.5 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 2 length is 117.5 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 3 length is 117.5 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 4 length is 87.5 feet.

PLEASE SELECT THE **NEXT** button to continue to the next problem.

Question 11. **True or False:**

If a pile reaches 20 blows in less than 1 inch, it is correct to stop the pile without going to the full inch to consider it practical refusal.

- A. True
- B. False

Question 12. **True or False:**

If the saximeter fails in a production pile driven with an open Diesel hammer, the Contractor can continue driving, and the inspector will estimate the stroke based on a formula that correlates blows per minute vs. stroke, or use the jump stick.

- A. True

B. False

Question 13. **True or False:**

The Contractor is normally paid for a preformed pile hole?

A. True

B. False

C.

Question 14. **Multiple Choice**

When is the best time to check the hammer cushion?

A. At lunch when the Contractor is not working.

B. Between piles

C. At the end of the day

D. When the hammer is apart for repair or maintenance

E. None of the above

Question 15. **Multiple Choice**

The Contractor is assembling his capblock and you observe him putting a timber hammer cushion into the capblock. What should you do?

A. Check the Pile Installation Plan to see if it is the right material

B. Inform the Contractor that timber hammer cushions are not permitted by the specifications

C. Ask the Contractor to provide the proper documentation to evaluate the timber hammer cushion

- D. Request the District Geotechnical Engineer to evaluate the change
- E. The Standard Specifications do not address this.

Question 16. **Multiple Choice**

You have just informed the Contractor that he has reached the required blow count and should stop driving. The pile top is three feet above the cut-off elevation. The Contractor wishes to drive the pile to cut-off. What should you do?

- A. This is the Contractor's option, however, he is not paid for the additional driving. Make note in driving log and in daily report.
- B. This is not allowed. If the Contractor continues, leave the site immediately and document to the Project Engineer.
- C. **Advise the Contractor that it is not recommended and that if he continues, any damage to the pile including loss of bearing is his responsibility, continue recording and document.**
- D. This is the Contractor's option. If the Inspector permits additional driving, continue to document and pay the Contractor for the additional drive.
- E. None of the above

Question 17

Compute penetration for the following:

Before clicking continue you may want to have pencil and scratch paper to compute the answer.

Scour El=-20 ft
Existing mudline (ground) elevation= -5 ft
Preformed Hole elevation= -30 ft
Tip elevation at the end of driving= -55
Cut-off elevation= + 5.0 ft

Answer

$$\text{Penetration} = -20 - (-55) = 35 \text{ ft}$$

Question 18

The problem 18 refers to a plumb pile. For the information supplied, please answer the following questions: You have **30 seconds** to complete the problem.

[Part A] What is the tip elevation?

PROBLEM 18 (PLUMB PILE)

Furnished Pile Length = **55 ft.**
Reference Elevation = **+ 37.50 ft.**
Cut-off Elevation = **+41.50 ft.**

Ground Elevation = **+33.00 ft.**
Scour Elevation = **- None ft.**
Pile Length Below
Ref. Elev. = **39.0 ft.**

Ref. Elev.- Length Below Ref. Elev.

Answer

TIP ELEVATION:
Tip Elev. = +37.50 – 39.0 ft.
= -1.50 ft.

PLEASE SELECT THE **CONTINUE BUTTON**.

[Part B] What is the penetration?

Lowest of 3 Elev. - Tip Elev.

Answer

PENETRATION:

$$\text{Penetration} = -+33.00 - (-1.50)$$

$$= 34.5 \text{ ft.}$$

PLEASE SELECT THE **CONTINUE BUTTON**.

[Part C] What is the length driven?

Cut-off Elev.- Tip Elev.

Answer

LENGTH DRIVEN:

$$\text{Length Driven} = +41.5 - (-1.50)$$

$$= 43.00 \text{ ft.}$$

The problem 19 refers to a battered pile. The batter angle is provided as 5 on 1. The correction factor is provided which is 0.981. For the information supplied, please answer the following questions:

[Part A] What is the tip elevation?

PROBLEM 19: BATTERED PILE (5:2)

Furnished Pile Length = **60 ft.** Ground Elev. (Excav.) = **+10.00 ft.** Batter = 5:1
Reference Elevation = **+7.00 ft.** Scour Elev. = **+1.50 ft.** Corr.
Cut-off Elevation = **+10.00 ft.** Pile Length Below Factor = **0.981**
Ref. Elev. = **47.5 ft.**

Answer

Ref. Elev. - [Length Below Ref. Elev. X Corr. Factor]

TIP ELEVATION:
Tip Elev. = $+7.00 - [47.5 \times .981]$
 $= +7.00 - 46.60$
= -39.60

PLEASE SELECT THE **CONTINUE BUTTON.**

[Part B] What is the penetration?

Answer

[Lowest of 3 Elev. - Tip Elev.] ÷ Corr. Factor

PENETRATION:
Penetration = $[+1.50 - (-39.60)] \div 0.981$
 $= 41.10 \div 0.981$
= 41.90 ft.

PLEASE SELECT THE **CONTINUE BUTTON.**

[Part C] What is the length driven?

Answer

[Cut-off Elev. - Tip Elev.] ÷ Corr. Factor

LENGTH DRIVEN:
Length Driven = $[+10.00 - (-39.60)] \div 0.981$
 $= 49.60 \div 0.981$
= 50.56 ft.

HW2-14

PLEASE SELECT THE **NEXT** button to continue to the next question.

The problem 20 is another pile pay length estimates problem. For the information supplied provide the pile length for each pile. **Before clicking continue you may want to have pencil and paper ready**, and draw a similar table for you to fill out the answers for each piles 1 through 3.

20. The delivered length of each of the concrete piles at End Bent 1 originally was 80 feet and Pile 3 was a non-driven splice.

*Assume first all set-checks performed within 1 day of end of initial drive

** Splice in a new pile section

Answers

Bent 1 Pile #	Length of Pile Below Cut-off	Predrill Length	# of Set-Checks*	# of Redrives	Length of Cut-off (ft.)	Length of Splice** (ft.)
1	74.12	15'	3	0	5.88	-
2	69.27	15'	1	2	10.73	-
3	99.98	15'	4	1	-	10

Bent 1 Pile #	Length of Pile provided	Predrill Length	Set-Checks*	# of Redrives	Length of Splice** (ft.)	Splice Labor	Driven Splice	Cut-off (ft.)
1	80	0	10	0	0	0	0	0
2	80	0	0	40	0	0	0	0
3	80	0	20	20	10	30	0	-

PAID

90

120

160

Answer: Pile 1 length is 90 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 2 length is 120 feet.

PLEASE SELECT THE **CONTINUE BUTTON**.

Answer: Pile 3 length is 160 feet.

PLEASE SELECT THE **NEXT** button to continue to the next problem.

END OF HOMEWORK! Thanks for your time!