



Certification Boulevard

Roy Pelletier



Test Your Knowledge of Distribution & Collection

True or False

1. The natural slope of a pipe is called the "angle of repose."
2. When a flap gate is mounted in a pipe, the flow will be allowed to travel in both directions.
3. Oxidizing chemicals like ammonia and sulfuric acid are used to counteract the corrosion caused by hydrogen sulfide in collection systems and pumping stations.
4. Waste leaking out of a collection system pipe, and into the environment, is called infiltration.

Multiple Choice

5. Given the following data, how many cubic yards of backfill will be required to fill a trench?
 - 6.75 feet wide
 - 125 feet long
 - 8.5 feet deep

a. 7,172 yd³ b. 959 yd³
c. 36 yd³ d. 266 yd³
6. What type of machine is used to construct collection system pipelines when they are too deep for trench excavations?

a. Pig b. TV device
c. Boring machine d. Backhoe machine
7. Which type of sewer system contains both sanitary wastewater and stormwater?

a. Domestic wastewater system
b. Combined sewer system
c. Separate collection system
d. Sewer system evaluation survey
8. Given the following data, how long will it take for wastewater to flood a wet well if the wet well is empty and the pumping station fails?

- 450 feet of 10-inch force main pipe is entering the wet well.
 - The wet well diameter is 10 feet.
 - The bottom elevation of the wet well is 78.5 feet.
 - The top elevation of the wet well is 89.4 feet.
 - The flow entering the wet well at 75 cfm.
- a. 2.1 hours b. 11.4 minutes
c. 9.35 minutes d. 1.4 hours
9. What is the minimum velocity in a sanitary sewer pipeline necessary to prevent settling of solids and debris?

a. 1 fps b. 0.5 fps
c. 2 fps d. 2 fpm
 10. Given the following data, what is the capacity of this wet well?
 - The flow entering is 155 gpm.
 - The duration and frequency of the flow is four minutes every 10 minutes.
 - The detention time is 1.2 hours.

a. 169,280 gals b. 0.08928 mg
c. 4,464 gals d. 0.0744 mg

ANSWERS ON PAGE 66

SEND US YOUR QUESTIONS FOR CERTIFICATION BOULEVARD

Do you have a question or an exercise you would like to feature in "Certification Boulevard?" We'll be glad to publish it. Just send your question (with the answer) or your exercise (with the solution) to:

Roy A. Pelletier
Assistant Division Manager
City of Orlando Public Works Department
Environmental Services Wastewater Division
5100 L.B. McLeod Road • Orlando, Florida 32811
roy.pelletier@cityoforlando.net
Telephone 407-246-2213

There is no limit to the number of questions or exercises you may submit. Please include your name, city, and organization or company so we can give you credit.

Continued on page 60

Certification Boulevard Answer Key

From page 52



True or False

1. **True**

2. **False**

A flap gate allows flow to travel in only one direction.

3. **False**

The most common oxidizing chemicals to minimize corrosion caused by hydrogen sulfide are chlorine and hydrogen peroxide.

4. **False**

This is known as "Exfiltration."

Multiple Choice

5. **d. 266 yd³**

*6.75 feet wide x 125 feet long x 8.5 feet deep
÷ 27 cubic feet per cubic yard*

6. **c. Boring Machine**

7. **b. Combined sewer system**

8. **b. 11.4 minutes**

Detention Time, minutes

= Wet Well Capacity, ft³ ÷ Flow, cfm

= (0.785 x d²) x (89.4 ft - 78.5 ft) ÷ 75 cfm

= 78.5 ft² x 10.9 ft ÷ 75 cfm

= 855.65 ft³ ÷ 75 cfm

= 11.4 minutes

9. **c. 2 fps**

10. **c. 4,464 gals**

Volume, mg

= Q, mgd ÷ 24 hrs/day x D.T., hrs

Q = 24 mins/hr x 24 hrs/day

= 576 mins/day x 155 gpm

= 89,280 gpd

= 0.08928 mgd ÷ 24 hrs/day x 1.2 hrs

= 0.004464 mg x 1,000,000

= 4,464 gals