

ENGINEERING / SURVEY

Objective:

This session provides information on how to read engineering/construction plans and the techniques and principles of surveying. Possible career fields will be demonstrated. (12 hours)

I What are Plans?

- A. Scale
- B. Layout of drawings
- C. Line weights and line formatting
- D. Elevations
- E. Plans
- F. X-sections
- G. Details

II Basis Survey

- A. Equipment – level, rod, tape, plumb-bob, scale
- B. Principles of basic surveying
 - 1. Elevations from a benchmark, and relative elevations
 - 2. Location
- C. Staking/marking
- D. Note taking/data collection
- E. Public relations

III Field Demo

- A. Levels
 - 1. Elevations
 - 2. Benchmarks
- B. Simple Location Using Tapes
 - 1. Swinging
- C. Typical Types of Survey Data Collection
 - 1. Manholes, catch basins
 - 2. Water facilities – meters, valves
 - 3. Curb cuts
- D. Construction Stake Out

IV Review

- A. Questions and Answers
- B. Written Test

Surveying Quiz

Name _____

Date _____

Circle the correct answers

1. When Leveling, How do you find the height of your instrument
 - a. Back sight off of a benchmark
 - b. Front sight off of a turning point
 - c. Back sight off of an unknown point
 - d. It is printed next to the serial number on the level

2. Who is typically in charge of a survey party's activities while in the field?
 - a. Instrument Operator
 - b. Rodman
 - c. Party Chief
 - d. Licensed Land Surveyor

3. Who is legally responsible for the accuracy of the information collected by a survey party?
 - a. Instrument Operator
 - b. Rodman
 - c. Party Chief
 - d. Licensed Land Surveyor

4. Which of the following is NOT a duty for a surveyor?
 - a. Research property records
 - b. Establish grades for a new pipeline
 - c. Design the slope of a storm drain pipe
 - d. Check the accuracy of a property line

5. What type of elevation control point should you most likely NOT trust?
 - a. Railroad spike in a telephone pole
 - b. Wooden hub stake set yesterday by a survey party
 - c. Concrete Property Monument
 - d. Square cut in concrete on a bridge

6. If your "pace number is 2.5, how many paces will it take to travel 50 feet?
 - a. 10 paces
 - b. 15 paces
 - c. 20 paces
 - d. 50 paces

Surveying Quiz (answer sheet)

Name _____ Date _____

Circle the correct answers

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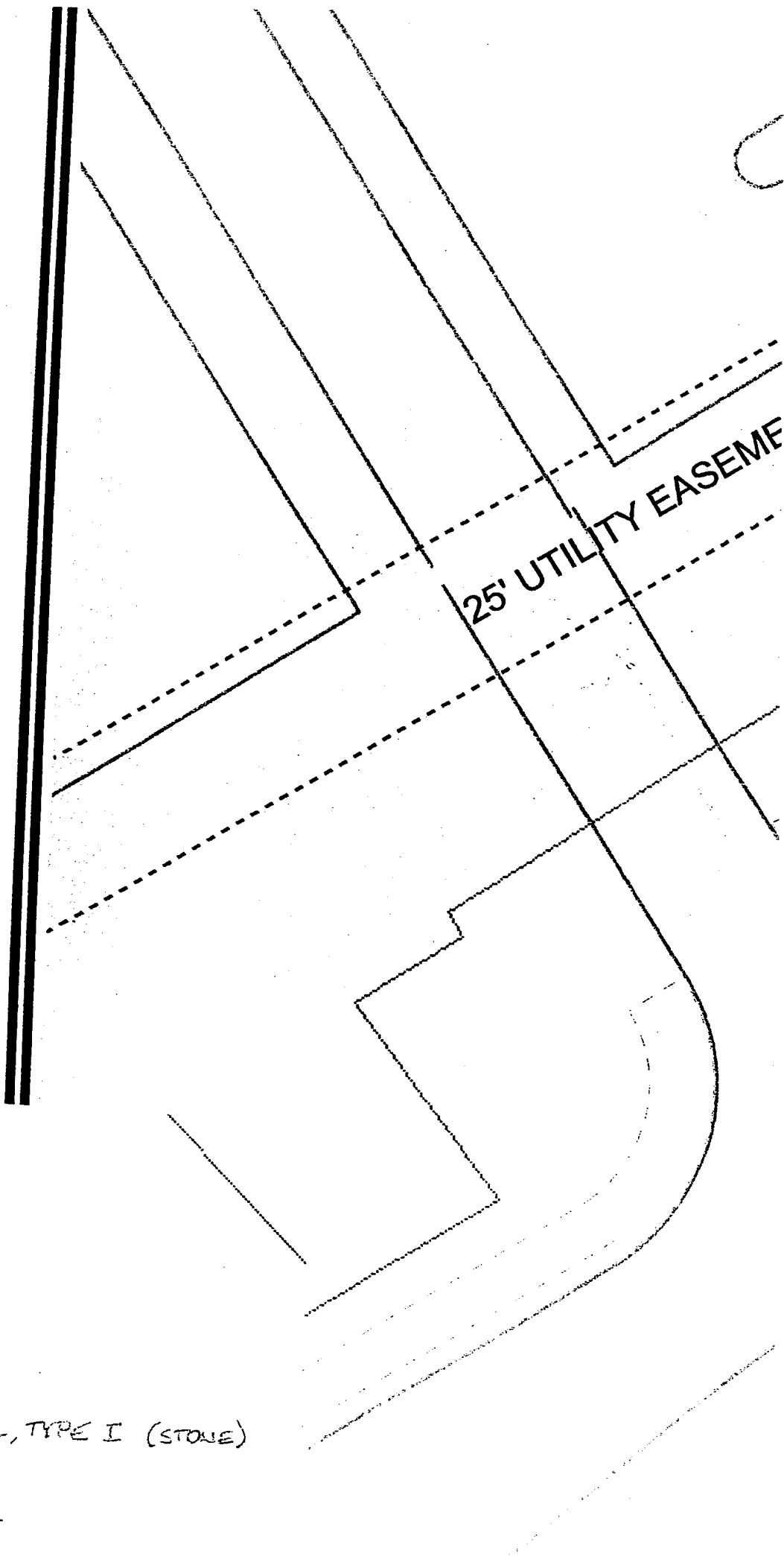
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Written Quiz- Surveying

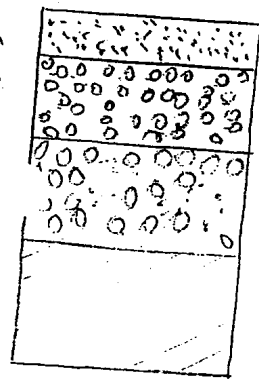
Circle the correct answer

1. Who is typically in charge of a survey party's activities while in the field?
Instrument Operator Party Chief
Rodman Licensed Land Surveyor
2. Who is legally responsible for the accuracy of the information collected by a survey party?
Instrument Operator Party Chief
Rodman Licensed Land Surveyor
3. If your "pace number is 2.5, how many paces will it take to travel 50 feet?
10 paces 20 paces
15 paces 50 paces
4. Name and explain the responsibilities of a member on a survey team?
5. Name and explain the responsibilities of a member on the public works engineering team?
6. What is GIS?
Global Information Services
Global Instrument Surveying
Geographic Information Systems
Geological Instrument Services
7. If a run of pipe is 25.7'. Which column of data points is more precise?
25.9' 27.1'
24.9' 24.5'
25.25' 26.5'
26.1' 24.9'
8. You have a pipe run of 18"-RCP 100' in length with a 2'.00 invert difference. What is the slope?
.02%
20%
2%
.2%
9. On the attached plan what are the two highlighted lengths?
72', 35'
68', 30'
10. What is the Finished Floor Elev. Of the room?



25' UTILITY EASEMENT

PAVEMENT DESIGN



- 2" - SM-9.5A
- 8" - BM-25.0A
- 10" - BASE MATERIAL, TYPE I (STONE)
- 12" - SELECT FILL

ROSEMONT RD

VT

LIMITS OF CONSTRUCTION

DAM NECK RD

PROPOSED
CS-6

6" WHITE
THERMOPLASTIC LINE

ONLY

