

# Certification Exam

TPP-Construction Process Management Course

*Based on what you have learned in TPP Construction Process Management Course, answer the following questions No.1-5.*

*Notes:*

- > Multiple Choice : Choose the best word or phrase from among the given choices. Then, write down the number on the Answer Sheet A.*
- > Calculation: Make calculations and write down the correct values on the Answer Sheet A.*
- > Final task: Make calculations and illustrate a chart on the Answer Sheet B.*

## 1. Outline of Construction Management

*Choose the best word or phrase from the choices to fill out the sentence about construction management, and write the number on the Answer Sheet A.*

Construction management usually covers the management of (A: ), (B: ), (C: ), human power, equipment and material, work facility, (D: ) and others. In road construction work, (E: ), (F: ) and (G: ) are particularly important.

Works shall be carried out according to (H: ), and when there is (I: ) during the work, it is important to (J: ) and (K: ) as soon as possible. For this reason, process control is necessary.

For quality control in road construction, it takes (L: ) to find faulty points and fix them after work completion, which significantly impedes (M: ).

*Choose from the options below (write the number on your answer sheet):*

1: safety, 2: work management, 3: process control, 4: a delay in progress, 5: quality control,  
6: accelerate the work, 7: works, 8: construction process, 9: quality,  
10: considerable work capacity, 11: investigate its cause, 12: work progress, 13: the progress chart

# Certification Exam

TPP-Construction Process Management Course

## 2. Facility Machinery

*Choose the best word or phrase from the choices to fill out the sentence about facility machinery, and write the number on the Answer Sheet A.*

Due to the nature of the work, (A: ), (B: ), and (C: ) has (D: ) on the success or failure of the work, and the leader should make the most effective use of (E: ) based on the operation.

The work environment, work scale, and (F: ) are taken into consideration, and careful preparation, including (G: ) and formulation of (H: ).

Provide timely and appropriate (I: ) to ensure the (J: ) completion of the work.

*Choose from the options below (write the number on your answer sheet):*

1: supervision and guidance, 2: characteristics of machinery, 3: a direct and significant impact, 4: the machine's capabilities, 5: plans, 6: cost estimates, 7: selection of machines to be used, 8: work procedures, 9: safe and reliable

*Choose the best word or phrase from the choices to fill out the sentence about mechanical execution, and write the number on the Answer Sheet A.*

- a. It can reduce (K: ) and complete the work quickly.
- b. It can maintain the (L: ) of work and improve (M: ).
- c. It can improve (N: ) by partially using human-powered construction.
- d. It is significantly affected by (O: ), terrain, and (P: ).
- e. Work efficiency varies significantly depending on (Q: ) used and their combination guidelines.
- f. It is greatly influenced by (R: ), (S: ) and (T: ).

*Choose from the options below (write the number on your answer sheet):*

1: uniformity, 2: the quality of construction, 3: work capability, 4: the skills of the operator, 5: weather, 6: labor, 7: soil properties, 8: the types of machines, 9: maintenance, 10: supply

# Certification Exam

TPP-Construction Process Management Course

## 3. Earthwork

Choose the best word or phrase from the choices to fill out the sentence about volume change of soil, and write the number on the Answer Sheet A.

When it is in the natural ground (natural state), when it is (A: ), and when it is (B: ) after being loosened, soil has a different (C: ).

For the three states of volume of soil, the soil volume in the natural ground is called (D: ), the volume of loosened soil is called (E: ) and soil volume after compaction is called (F: ).

Choose from the options below (write the number on your answer sheet):

1: kiritsubo, 2: compacted, 3: agetsubo, 4: loosened, 5: volume, 6: shimetsubo

Answer the following questions on bulking factors of soil.

The value of soil conversion factor “F” is shown below.

Q sought Reference q	Soil volume in the natural ground	Loosened soil volume	Compacted soil volume
Soil volume in the natural ground (Kiritsubo)	1	L	C
Loosened soil volume (Agetsubo)	1/L	1	C/L
Compacted soil volume (Shimetsubo)	1/C	L/C	1

G: Calculate the volume of loosened soil required to build an embankment of 100 m<sup>3</sup> (Answer in cubic meters.)

<Bulking factor: L=1.25, C=0.9>

*\*Write the answer on [G] of your answer sheet (Round up to the nearest whole number)*

# Certification Exam

TPP-Construction Process Management Course

**H:** Calculate the volume of loosened soil required to build a slope with the scale of 16500m<sup>3</sup> (Answer in cubic meters.)

<Bulking factor: L=1.3, C=0.9>

*\*Write the correct number on [H] of your answer sheet (Round up to the nearest whole number)*

**I:** Calculate the extension of the fill (width:10m, height:1.2m) that can be created with the soil of 6500m<sup>2</sup> of Agetsubo? (Answer in meters.)

<Bulking factor: L=1.43, C=0.93>

*\*Write the correct number on [I] of your answer sheet (Round up to the nearest whole number)*

**J:** Calculate the total number of dump trucks used to transport 7,800 m<sup>3</sup> of soil from a borrow pit (natural ground) using 2.54-meter dump trucks.

<Bulking factor: L=1.3, C=0.93>

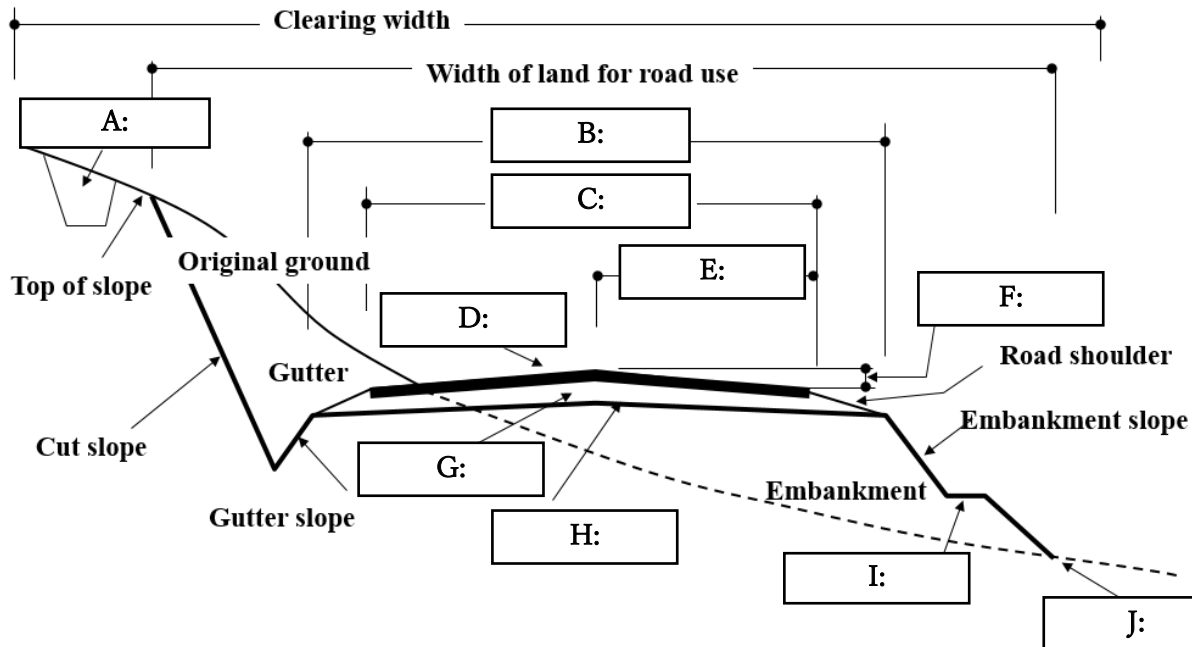
*\*Write the correct number on [J] of your answer sheet (Round up to the nearest whole number).*

# Certification Exam

TPP-Construction Process Management Course

## 4. Drainage Work

Choose the best word or phrase from the choices to fill out the sentence about structure and function of roads, and write the number on the Answer Sheet A.



Choose from the options below (write the number on the Answer Sheet A):

- 1: Surface course, 2: Road width, 3: Lane, 4: Crown, 5: Slope toe,  
6: Roadway width, 7: Base course, 8: Berm, 9: Cut-off trench, 10: Subgrade

Choose the best word or phrase from the choices to fill out the sentence about the structure of roads, and write the number on the Answer Sheet A.

The structure of roads consists of subgrade, (K: ), (L: ), road shoulder and (M: ). Depending on the situation, some of them, such as base course may be omitted

Choose from the options below (write the number on the Answer Sheet A):

- 1: drainage system, 2: base course, 3: surface course

# Certification Exam

TPP-Construction Process Management Course

## 5. Work Planning

Basic procedure for preparing a work cost estimation chart

Procedure	Action
Step 1	Analyze the work and classify it into work items and details, and arrange them in order of implementation.
Step 2	Summarize ( <b>A:</b> ) for each work item (detail).
Step 3	Calculate ( <b>B:</b> ) for each work item (detail).
Step 4	Calculate ( <b>C:</b> ) for required each work item (detail).
Step 5	Calculate ( <b>D:</b> ) for each work item (detail).

**Choose from the options below (write the number on the Answer Sheet A):**

(\*Tips : Also look as the chart in the next question and find out what steps are needed in sequence.)

- 1: required work volume, 2: the unit work volume, 3: required work capacity,  
4: the operating procedure

**Complete the work cost estimation chart. (For each answer, round down the decimals)**

[Assumption] Daily work time: 7 hours

Conversion factor: Large-size bulldozer: 80 man-day,

Middle-size bulldozer: 60 man-day,

Hydraulic Excavator: 60 man-day

Work item	Work detail	Required work volume	Machinery to be used	Unit work volume	Required work capacity	Man-hour (machinery)
Earthwork	Cut soil	2,000m <sup>3</sup>	Medium-size bulldozer	25m <sup>3</sup> /h	<u>E:</u> (Machine-hour)	<u>H:</u> (Man-hour)
	Filled soil	1,500m <sup>3</sup>	Large-size bulldozer	30m <sup>3</sup> /h	<u>F:</u> (Machine-hour)	<u>I:</u> (Man-hour)
	Formation of slope	3,000m <sup>2</sup>	Hydraulic excavator	80m <sup>2</sup> /h	<u>G:</u> (Machine-hour)	<u>J:</u> (Man-hour)

# *Certification Exam*

*TPP-Construction Process Management Course*

## **6. Work Plan (Final Task)**

*Complete the construction process chart on the Answer Sheet (B)*