Republic of Rwanda
Ministry of Education

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RTB | RWANDA TVET BOARD

PUBLIC WORK RESOURCES

PWOPR301

DESCRIBE PUBLIC WORK RESOURCES

Competence

RQF Level: 3

Learning Hours: 30

Credits: 3

Sector: Construction and Building Services

Trade: Public Works

Module Type: General

Curriculum: CBSPWO3001- TVET Certificate III in Public Works

Issue Date: May 2022

Purpose statement	This module describes the skills, knowledge and attitudes required to describe the construction materials. It is intended for learners who have successfully completed ordinary level and pursuing level 3 in Public Works or applying for recognition of prior learning or other related qualifications. At the end of this module, learners will be able to Describe tools, equipment and facilities required for public works, Identify team composition for public works. Qualified learners deemed competent to this competency shall have ability to take responsibility for the carrying out of a range of defined activities in Public Works under non- directive supervision.					
Leaning assumed to be in place	N/A					
Delivery modality	**Training delivery**		**100%**	**Assessment**		**Total 100%**
	Theoretical content		80%	Formative assessment	80%	100%
	Practical work:		20%		20%	
	• Group project and presentation	50%				
	• Individual project /Work	50%				

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria	
1. Describe the construction materials used in public works	**1.1.**	The construction materials are properly identified to be used in public works
	1.2.	Binding materials are clearly described based on their properties.
	1.3.	In situ concrete product is properly described based on its properties.
	1.4.	Fabricated construction materials are effectively described based on their properties.
	1.5.	Synthetic construction materials are properly described based on their properties.
2. Describe tools, equipment and facilities required for public works	**2.1.**	Tools are properly classified based on their uses in public works.
	2.2.	Equipment are properly classified based on their uses in public works.
	2.3.	Tools and equipment maintenance methods are clearly described for each kind of tool/ equipment to be maintained.
	2.4.	Required facilities are effectively identified to perform public works.
3. **Identify team composition for public works**	**3.1.**	Identify team composition for public works
	3.2.	Required attitudes are effectively identified for public works according

		to work complexity.
	3.3.	Site Organization structure is adequately illustrated according to project specifications

Course content

Learning outcomes	**At the end of the module the learner will be able to:** 1. **Describe the construction materials used in public works** 2. **Describe tools, equipment and facilities required for public works** 3. **Identify team composition for public works**
Learning outcome 1: **Describe the construction materials used in public works**	**Learning hours: 10**

Indicative content

(Based on the performance criteria and the extent of the learning outcome: *What, Up to, and How):*

- **Description of natural construction materials** (Refer to RS EAS 54; RS 310; RS 107; RS 261; RS 262; RS ARS 1305; RS 435; RS EAS 23; RS ISO 12465)
  - ✓ Natural construction materials use
  - ✓ Soil description
  - ✓ Types and properties of Aggregates
  - ✓ Properties of stones in line with their uses
  - ✓ Properties of water according to its use as a construction material.
  - ✓ Effects of water in construction
- **Description of binding materials** (Refer to RS 395-2; RS 426-1; RS EAS 18-1; RS 425)
  - ✓ Description of cement
  - ✓ Description of lime
  - ✓ Bitumen description
- **Description of in situ concrete product** (Refer to RS ISO 1920-2; RS ISO 1920-3; RS ISO 1920-4; RS 144; RS 260; RS 266; RS 265)
  - ✓ Concrete composition
  - ✓ Concrete properties
  - ✓ Concrete Production steps
  - ✓ Concrete curing methods
- **Description of fabricated construction materials**
  - ✓ Manufacturing of bricks
  - ✓ Timber Identification
  - ✓ Types of fabricated concrete products
  - ✓ Identification of metals
- **Description of synthetic construction materials.**
  - ✓ Glasses description
  - ✓ Plastics material description
  - ✓ Identification of Paints

✓ Geo-synthetics ✓ Plywood ✓ Use of Fuel ✓ Use of Super glue ✓ Use of Grease	
Resources required for the learning outcome	
Equipment	**Flipchart stand, Computer, projector**
Materials	**Flipchart, papers, chalk, pen**
Tools	**Video, Chalkboard**
Facilitation techniques	• Lectures • Demonstration and simulation • Individual and group work • Practical exercise • Individualized • Trainer guided • Group discussion
Formative assessment methods	• Written assessment • Oral presentation • Performance assessment • Product based assessment • Project based assessment

Learning outcome 2: Describe tools, equipment and facilities required for public works	**Learning hours: 10**
Indicative content	
Based on the performance criteria and the extent of the learning outcome: *What, Up to, and How:* • **Classification of tools** ✓ Cutting tools ✓ Setting out tools ✓ Mixing tools • **Classification of equipment.** ✓ Cutting equipment ✓ Setting out equipment ✓ Mixing equipment • **Classification of tools and equipment maintenance methods**	

- ✓ Types of grease
- ✓ Methods of applying grease
- ✓ Steps for manual application of grease

- **To identify the required facilities**
  - ✓ Infrastructures
  - ✓ Electricity
  - ✓ Internet
  - ✓ Water
  - ✓ Finance
  - ✓ Time
  - ✓ Site office

Resources required for the indicative content	
Equipment	**Flipchart stand, Computer, projector**
Materials	**Flipchart, papers, chalk, pen**
Tools	**Video, Chalkboard**
Facilitation techniques	• Lectures • Demonstration and simulation • Individual and group work • Practical exercise • Individualized • Trainer guided • Group discussion
Formative assessment methods	• Written assessment • Oral presentation • Performance assessment • Product based assessment • Project based assessment

Learning outcome 3: Identify team composition for public works	**Learning hours: 10**
Indicative content	

(Based on the performance criteria and the extent of the learning outcome: *What, Up to, and How):*

- **Identification of required qualifications.**
  - ✓ Education back ground
  - ✓ Certifications
  - ✓ Public Works Director Skills & Competencies
- **Identification of required attitudes.**
  - ✓ Attitudes that are important in workplaces
- **Illustration of site Organization structure.**
  - ✓ Organizational chart layout

Resources required for the indicative content	
Equipment	**Flipchart stand, Computer, projector**
Materials	**Flipchart, papers, chalk, pen**
Tools	**Video, Chalkboard**
Facilitation techniques	• Lectures • Demonstration and simulation • Individual and group work • Practical exercise • Individualized • Trainer guided • Group discussion
Formative assessment methods	• Written assessment, Oral presentation, Performance assessment, Product based assessment, Project based assessment

References:

1. Kumar, A. & Shukla1, Shivam, S. (2017). A concept of using local materials in road construction. International Research Journal of Engineering and Technology
2. Muhoro, M. (2020). Types of road construction materials. A quick overview of popular road building materials.
3. Electrical4U, (2018). Physical Properties of Engineering Materials.
4. Government of the People's Republic of Bangladesh Ministry of Communications Roads and Highways Department construction practices and procedures manual, may 2001
5. American Society for Testing Materials (ASTM)
6. Gordon R Keller, PE, GE. Low Volume Roads Engineering Best Practices
7. Yoder, E.J.; Witczak, M.M. 1975. Principles of pavement design. 2d ed. New York: John Wiley & Sons. 711p. (ISBN 0-471-97780-2) (A classic text on fundamentals of pavement design.)
8. RS 426-1: Masonry Cement — Part 1: Composition, Conformity criteria and Specifications;
9. RS EAS 18-1: Cements — Part 1: Composition, specification and conformity criteria for common cements;
10. RS 144: Cement blocks and Bricks — Specification,
11. RS EAS 54: Burnt building bricks — Specifications;
12. RS 310: Burnt clay paving units — Specification;
13. RS 107: Building sands — Specifications;
14. RS 395-2: Bitumen and bitumen binders — Part 2: Specification for paving grade bitumen;
15. RS 260: Concrete roofing tiles — Specification;
16. RS 261: Granite products — Specification;
17. RS 262: Precast concrete kerbs, edgings and channels — Specification;
18. RS 265: Precast reinforced concrete pipe culvert — Specification;
19. RS 266: Concrete building blocks — Specification;
20. RS 425: Fly ash used in concrete and Cement — Specifications;
21. RS ARS 1305: Guidelines for rammed earth structures;
22. RS ISO 1920-2: Testing concrete — Part 2: Properties of fresh concrete;
23. RS ISO 1920-3: Testing concrete — Part 3: Making and curing test specimens;
24. RS ISO 1920-4: Testing of concrete — Part 4: Strength of hardened concrete; RS 435: Timber in joinery — General requirements,
25. RS EAS 23: Timber — Dimensions for coniferous sawn timber (cypress and pine) — Sizes of sawn and planed timber — Specification;
26. RS ISO 12465: Plywood — Specifications