



## **WORLD PLUMBING COUNCIL UNITED ASSOCIATION INSTRUCTOR TRAINING PROGRAM SCHOLARSHIP REPORT**



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## Introduction

This report is prepared with the aim of reporting a training done by **Mr. Jean Claude TWAGIRIMANA** who pursued in **Instructor Training Program (ITP)** of United Association (UA). **Instructor Training Program (ITP)** of United Association of Journeymen and Apprentices of Plumbing and pipe Fitting Industry of United States and has taken place in Ann Arbor, Michigan from **Starting Period:** 6<sup>th</sup> August, 2018 to **Ending Period:** 21<sup>st</sup> August, 2018.

## World Plumbing Council

The world plumbing council (WPC) is an international organization that Develops, promotes the image and professional standards of plumbing to the world and motivates the plumbing industry trainings, technologies and training systems between countries. This organization contributes towards the global health and environment or sustainability issues and the values of efficiency water to the community.

## WPC United Association Instructor Training Program (ITP) Scholarship

WPC United Association Instructor Training Program Scholarship is provided to Trainers, Teachers or Instructors of plumbing, fire protection or HVAC from a developing or least developed country who looks to increase their knowledge of training areas and techniques that they have not been exposed to previously and The Instructor Training Program takes place in August each year in Ann Arbor, Michigan, USA. The mission of the UA Education and Training Department is to equip United Association locals with educational resources for developing the skills of their apprentices and journey workers. By thus facilitating the training needs of the membership, it maximizes their employability and prepare them for changes in the industry. UA is also committed to making training opportunities available across North America, allowing members to acquire new skills and remain competitive in the industry regardless of geography. In this way, it is determined to meet the needs of the piping industry and enhance employment opportunities through different ways among them Instructor Training program (ITP) includes.

## **The Winner of WPC United Association Instructor Training Program the scholarship 2017**



My proper photo and Introduction

I am Jean Claude TWAGIRIMANA from Rwanda Instructor of Plumbing with RP-IPRC Musanze; I have done Public works in Advanced Level and Environmental Management and Water Technology of Civil Engineering; I have been teaching in Ecole Technique Saint KIZITO Save since January, 2009 in Public Works up to December, 2010 and then from September 2011 I have been Land officer in Bushoki Sector of Rulindo District until May, 2013 and then from July, 2013 I have been a Plumber in former National University of Rwanda (NUR) which is now University of Rwanda Huye Campus up to May, 2015 where I left in May, 2015 to Musanze Polytechnic Which is now RP IPRC Musanze and I am still working there as Instructor in Plumbing

### **Objectives of ITP**

The **Instructor Training Program** for instructors of journey workers and apprentices is designed to:

- Increase UA instructors' proficiency of instructional techniques and materials.
- Acquaint instructors with the philosophy and principles of education, especially trade, industrial, and technical education.
- Provide learning experiences in the principles and the fundamentals of the applied knowledge subjects.
- Expand the understanding of instructors in the technical aspects of the crafts and convey information to the instructors about the latest developments in this area.

## Classes attended

I have attended two classes

1. Water supply Class
2. Drainage class

### 1. Water supply Class

This class was very interesting because, we have been looking at piping and fitting materials that can be used in water supply system in modern plumbing system

#### Modern plumbing system

Modern plumbing system is supply and distribution system with associated disposal system that consists of fixtures, appliances, supplied with cold and/or or water, drainage, waste ,vent piping including their respective joints, connections, devices, receptacles and appurtenances.

### Water Supply system



Photo of my classmate of water supply class

**A water supply system** is a part of plumbing system that delivers water to plumbing fixtures and appliances installed in or outside the building .It consists of water supply source and infrastructures for the collection, treatment, storage, transmission and distribution of water for use in industrial building, residential, commercial, crop irrigation; as well as for such public needs as fire suppression and other public services.

Most of raw water from different sources does not meet portable water standards, sometimes referred to as drinking water standards and is required to be treated to those standards.

On this topic we have seen that water should be supplied in pipe materials which cannot cause health problems in proper size for water use efficiency with water service back flow protective device to prevent from water deterioration. How to Pressure in the system to avoid pipe bursting according to different plumbing codes (UPC and IPC) either in cold or hot water system.

## Water distribution system

In water supply class, we saw that water can be distributed in three main types of system that can be adopted in villages/towns:

**a) Gravity Fed Distribution** When the ground level of water source/storage is sufficiently raised than the core village/town area, such system can be utilized for distribution. The water in the distribution pipeline flow due to gravity and no pumping is required. Such system is highly reliable and economical.

**b). Pumping System** In such system, water is supplied by continuous pumping. Treated water is directly pumped into the distribution main with constant pressure without intermediate storing. Supply can be affected during power failure and breakdown of pumps. Hence, diesel pumps also in addition to electrical pumps as stand by to be maintained. Such system works only in condition where there is continuous power supply, reliable water source and where intermediate storage system cannot be installed.

**c) Dual/Combination** In such system, both gravity as well pumping systems are used. Such systems are used where there are variations in topography in town/village.

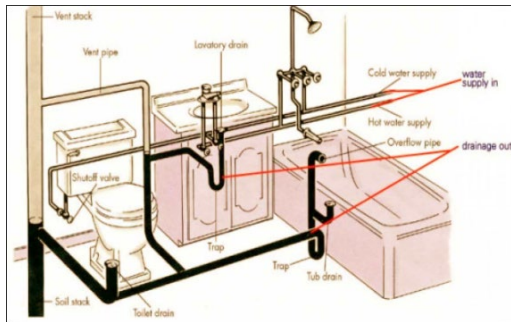
## 2. Drainage Class



Photo of Drainage system class

In this class we have been taught how a proper plumbing drainage system should be by respecting standard from plumbing code by also using proper devices and materials to prevent smells inside the building and some defects such as hydraulic jumps, trap seal losses, back siphonage, ...





Drainage is a term used to refer to the removal of wastewater by natural or artificial means. the natural means is the

process by which precipitation that falls on open areas flows from that area to a low area. Artificial means is the drainage that is induced by means other than that caused by nature which is normally refers to the effort of human to create the means by which wastewater will flow to the lowest level.

Plumbing Drainage system is normally is considered as a single system that conveys all wastewater from a building to a proper means of disposal.

**During this class, we focused also on the factors affecting the drainage system:**

Types of pipe materials used to convey wastes which must be suitable for intended installation requirement

1. System designers based on each system's application parameters including:
  - ✓ Types of waste carried
  - ✓ Types of fluids flow
  - ✓ Type of the building
  - ✓ Below or above ground system installation
2. Standards and safety guideline that are developed to guide manufacturers

### **Definition of standards**

Standards are sets of technical definitions, instructions, rules and guidelines or characteristics created to provide reliable and similar results to ensure piping materials that are manufactured uniformly.

### **Plumbing codes**

Plumbing codes regulate the installation of plumbing systems including drainage and water supply systems, they guide design professionals and installer in proper selection of materials and proper installation of the systems. From this class of drainage, we have seen different pipe materials and fitting based on which plumbing codes that is being used such as UPC and IPC codes. I have been very interested to know the role of plumbing code and standards in plumbing and I hope with that and my new idea of forming a plumbing association in my home country, I saw its importance in plumbing for future development in our training.

### **• Drainage pipe materials**

- ✓ Cast iron for plumbing waste lines.
- ✓ PVCs
- ✓ Galvanized malleable iron
- ✓ Copper and copper alloy
- ✓ Vitrified clay
- ✓ PE

- ✓ Stainless steel.
- ✓ ABS pipes
- ✓ Glass piping

- **Drainage Fittings**

- ✓ Hub less cast-iron fittings
- ✓ Cast iron hub fittings
- ✓ Copper solder joint pressure fittings
- ✓ ABS fittings
- ✓ Plastic DWV Fittings
- ✓ Cleanout fittings,...

### **Traps and Fixture Connection**

In Drainage class, we have seen traps used in this system according to UPC and ICP Plumbing codes. Generally, there two types of water trap seal:

Integral trap,

External trap.

Integral trap is a trap in which water seal is a part of the fixture's structure whereas an internal trap water seal is not a part of fixtures structure.

**Eg:** integral trap: Trap from a WC

External trap: Bottle trap

Types of External trap

Full S-TRAP

¾" S- TRAP

BAG TRAP

BELL TRAP

MECHANICALLY SEALED TRAP

RUNNING TRAP

DRUM TRAP

P-TRAPINTERNAL PARTION TRAP

Many things have been covered in DWV systems which are very important to me as an instructor of plumbing in a developing country. I went back with a drainage book which is now in our library where everyone can go and read the same backflow prevention and UPC plumbing code.

### **United Association training centers and Job sites visits**

Local 5 job and training center visits.

Local 449 training center.

Local 3training center visits

Local 208 training center visits



Local 27 training Center and Jobsites.

From all of these local training centers, plumbing prefabrication workshops and Jobsites visit, I have been using and seeing their equipment, tools and materials in very good equipped Labs, workshops and very good didactic equipment for trainees.

From these training center visits; I have been able to use their tools and equipment as you can find them from Photos:



**Maryland plumbing prefabrication workshop**



**Local 27 training center and job site**



**Local 5 training Center**



**Pittsburg job site**





**Maryland prefab workshop**



**Soldering process in Welding class during ITP**



## **Outcomes from IPT, UA training centers and job site visits**

- Methods that other instructors apply in their training for example Black board method
- Technologies that instructors from UA use to make innovations and attract employers to hire their trainee/students
- How to encourage students to increase their employability in plumbing industry
- Advanced plumbing laboratories, classes and workshop which implied me to improve my teaching methodology in my home country
- New plumbing equipment from UA portable workshop (Workshop Trucks)
- New trades related to plumbing that can be taught in my home country to create other job opportunities in our plumbing industry
- Modern installation of plumbing systems in United States
- From this scholarship back to the home country, I started organizing my colleagues Instructor and local plumbers forming a union and I hope with that idea, we will make changes in our home country why not in the whole continent.

## **Conclusion**

The ITP training, Local training center and different jobsite visits were one of the most interesting and productive experiences in my life. Through this training I have gained new insight and more comprehensive understanding about methods and methodology of teaching the water supply and drainage systems as well as modern plumbing technologies from UA training centers for plumbing system installation. I have also experienced the direct involvement with plumbing related professionals and interaction with training colleagues/trainers who were from plumbing sector where my decision was to go to my home country home to exchange that experience in order to make modern and professional plumbing for promoting job opportunities in plumbing industry. My visit to UA training centers was indeed a great learning experience as this will definitely help me to upgrade our plumbing standards in my training institution.

## **Recommendations**

ITP of United Association (UA) is a very good program where Instructors get updated on new technologies and training systems but to attend it as a scholarship winner from a developing country it is very good but it shall be better if after finding a winner of the scholarship, you allow him/her to come one month before ITP starts to attend one of UA training center to get training UA Labs to have more hands on skills just to help promoting plumbing industry in her/him home country.

