

Process Piping 4 Syllabus

Reverse Osmosis System Installation, UV Sterilizer System Installation, Principles of Aeration Basin & Pump Placement & Installation

Time: 40 hours

Maximum Class Size: 12

Prerequisites: Process Piping 1, Process Piping 2

Recommended Courses: Fall Protection, Hoisting & Rigging and Signal Person

Course Description: This course is designed to introduce skills needed to install various types of mechanical equipment. The water industry is constantly changing to meet demands. Understanding the uses and functions of a variety of water industry systems is a huge advantage for the CCL. This course will help them understand the components, uses and workings of Reverse Osmosis systems, UV Sterilizer Systems, Aeration Basin, and pump placement techniques. Ample time will be given in reading and analyzing Blue Prints, applying the information and actually fabricating parts of or entire systems.

Goals/Objectives/Student Learning Outcomes:

- Describe and demonstrate the use of all PPE required for scope of work.
- Describe layout using blueprints.
- Describe the basic components and principles of an isometric drawing; including vertical, horizontal and angled lines.
- Demonstrate correct gluing techniques for various types of PVC piping.
- Describe the purpose of Ultraviolet (U.V.) Sterilization system.
- Describe the purpose of an aeration basin.
- Describe the purpose of a Reverse Osmosis Water Filtration System.
- Fabricate a Reverse Osmosis System using an isometric drawing.
- Demonstrate how to install a pump and connect piping.
- Demonstrate how to shoot elevations.

Standards

OSHA Standards 29CFR

- 1910.106 Flammable and Combustible Liquids
- 1910.146 Permit Required Confined Space
- 1910.147 Isolation Procedures: Lock Out Tag Out
- 1926.350 Compressed Air
- 1926.1101 Cranes and Derricks

Process Piping 4 Syllabus

Reverse Osmosis System Installation, UV Sterilizer System Installation, Principles of Aeration Basin & Pump Placement & Installation

- 1926.503 Fall Protection
- 1926.702 Requirements for Equipment & Tools
- 1926.1117 Vinyl Chloride
- 1926.1418-1428: Signal Person Qualification Requirements
- ANSI A10.42: Rigging Qualifications and Responsibilities
- Cal/OSHA Subchapter 7:
 - Group 2 Article 7 Safe Practices Pipe Lines
 - Group 6 Article 47 Machine and Machine Parts
 - Group 20 Article 146 Piping, Valves, Fittings

Classroom Rules and Procedures

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

Textbooks/Readings/Materials:

- Full list of tools and materials is at the back of Tab 3
- Fall Protection: LIUNA PG/IG
- Mechanical Pipe Math Quiz
- Process Piping 4 Exit Exam
- Process Piping 4 Hands-On Performance Evaluation
- Symbols Explanation Blue Print
- Reverse Osmosis Diagram Handout
- Concentrate Re-circulate Handout
- Reverse Osmosis Filters Diagram Handout
- Reverse Osmosis Field Drawing for Hands-on Fabrication
- Isometric Single Line Pipe drawing (2 pages) Handout
- Topographic View Master Drawing for concrete class
- Elevation View Field Drawing for Hands-On Fabrication
- UV Sterilizer Isometric View Field Drawing for Fabrication

Process Piping 4 Syllabus

Reverse Osmosis System Installation, UV Sterilizer System Installation, Principles of Aeration Basin & Pump Placement & Installation

Tools/Equipment/Other Materials:

- 1-Field level or laser1-4' level
- 1-2' level
- 1 Center Finder
- 2 sets Two Hole pins
- 1-Plumb Bob
- 2-2" Framing Squares
- 1-Chalk Box

Tools/Equipment/Other Materials continued:

- 1-Dry String line
- 1-Rotohammer & bits
- 1-Air Compressor or hand blower
- Assorted sizes of bottle brushes
- Wooden dunnage or cribbing
- End or combination wrenches
- Socket set
- 2-Curved bars for moving equipment around into place (Burke Bars)
- 1-Generator
- 1-Extension cord
- Pipe wrenches
- Adjustable wrenches
- 1-Skill saw
- 1-Hydro pump
- 1-Garden hose
- 2-Chain falls
- 4-Eye bolts
- Hand Pipe threading tools (Dies, Heads and Handles)
- Pin wrenches
- Pipe Vices
- V-Heak Jacks
- Chop Saw
- 10 calculators

Process Piping 4 Syllabus

Reverse Osmosis System Installation, UV Sterilizer System Installation, Principles of Aeration Basin & Pump Placement & Installation

Personal Protective Equipment

- 12 pairs of gloves
- 12 pairs of Safety Glasses
- 20 pairs of Ear plugs
- 12 hard hats

Course Requirements

To receive credit for the course, participants must:

- Be present for full forty hours
- Participate in all classroom exercises
- Pass a written exam
- Pass a hands-on exam

Course Policies

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

Assessment and Grading

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

Safety

Failure to maintain and use PPE may result in dismissal from the course.