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**Part 1      General**

**1.1          TRAINEES**

- .1      Trainees: personnel selected for operating and maintaining this facility. Includes Property Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2      Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

**1.2          INSTRUCTORS**

- .1      Departmental Representative will provide:
  - .1      Descriptions of systems.
  - .2      Instruction on design philosophy, design criteria, and design intent.
- .2      Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
  - .1      Start-Up, operation, shut-down of equipment, components and systems.
  - .2      Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
  - .3      Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .3      Contractor and equipment manufacturer to provide instruction on:
  - .1      Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

**1.3          TRAINING OBJECTIVES**

- .1      Training to be detailed and duration to ensure:
  - .1      Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
  - .2      Effective on-going inspection, measurements of system performance.
  - .3      Proper preventive maintenance, diagnosis and trouble-shooting.
  - .4      Ability to update documentation.
  - .5      Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

**1.4          TRAINING MATERIALS**

- .1      Instructors to be responsible for content and quality.
- .2      Training materials to include:
  - .1      "As-Built" Contract Documents.
  - .2      Operating Manual.

- .3 Maintenance Manual.
- .4 Management Manual.
- .5 TAB and PV Reports.
- .3 Project Manager, Commissioning Manager and Facility Property Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .5 Supplement training materials:
  - .1 Transparencies for overhead projectors.
  - .2 Multimedia presentations.
  - .3 Manufacturer's training videos.
  - .4 Equipment models.

## **1.5 SCHEDULING**

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours, training sessions to be 4 hours in length.
- .3 Training to be completed prior to acceptance of facility.

## **1.6 RESPONSIBILITIES**

- .1 Be responsible for:
  - .1 Implementation of training activities,
  - .2 Coordination among instructors,
  - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

## **1.7 TRAINING CONTENT**

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
  - .1 Review of facility and occupancy profile.
  - .2 Functional requirements.
  - .3 System philosophy, limitations of systems and emergency procedures.
  - .4 Review of system layout, equipment, components and controls.
  - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.

- .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
  - .7 Maintenance and servicing.
  - .8 Trouble-shooting diagnosis.
  - .9 Inter-Action among systems during integrated operation.
  - .10 Review of O M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

**1.8 VIDEO-BASED TRAINING**

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.
- .2 On-Site training videos:
  - .1 Videotape training sessions for use during future training.
  - .2 To be performed after systems are fully commissioned.
  - .3 Organize into several short modules to permit incorporation of changes.
- .3 Production methods to be professional quality.

**END OF SECTION**