

Part 1 General

1.1 SUMMARY

.1 Section Includes:

- .1 This Section specifies roles and responsibilities of Commissioning Training.**

1.2 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Property Manager and Technical Specialists as required.**
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.**

1.3 INSTRUCTORS

.1 Consultants will provide:

- .1 Descriptions of systems.**
- .2 Instruction on design philosophy, design criteria, and design intent.**

.2 Contractor and certified factory-trained manufacturer's 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 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.**

1.4 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.

1.5 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 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.

1.6 SCHEDULING

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

1.7 RESPONSIBILITIES

- .1 Contractor will be responsible for:
 - .1 Implementation of training activities.
 - .2 Coordination among instructors.
 - .3 Quality of 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.
- 1.8 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.
- 1.9 VIDEO-BASED TRAINING
 - .1 Manufacturer's videotapes to be used as training tool with Contractor's review and written approval 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 high quality.

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Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION