1. GENERAL

1.1 SCOPE

.1 Demonstration of equipment and systems operations.
.2 Instruction seminars for Owner's personnel.

1.2 QUALITY ASSURANCE

.1 Work specified shall be performed by the contractor.

2. PRODUCTS

.1 Not applicable.

3. EXECUTION

3.1 GENERAL

.1 Contractor shall arrange for presentation and demonstration of mechanical equipment and systems by appropriate specialists and shall ensure that required manufacturer's representatives are in attendance.
.2 Coordinate demonstration and instruction agenda and schedule with the Owner and Engineer.
.3 Coordinate demonstration and instruction agenda and schedule for work performed outside the contract with the owner and engineer.
.4 Provide personnel when necessary to ensure proper detailed training is provided for all mechanical systems.

3.2 DEMONSTRATIONS

.1 Demonstrate specific starting and stopping and general maintenance requirements for each major piece of equipment. Ensure all labeling and identification is completed.
.2 Demonstrate the following systems, in the form of instruction seminars and contractor-guided tour of the facility.

- Hydronic Heating Systems
- Hydronic Cooling Systems
- Air Systems
- Fire Protection Systems
Plumbing Systems
Control Systems
Chemical Treatment Systems
Medical Gas Systems
Steam Systems
Balancing

.3 Demonstrate the following pieces of equipment.

- Hot Water Boilers
- Steam Boilers
- Chiller
- Fans/Air Handling Unit
- Unitary Air Conditioners
- Terminal Air Units
- Domestic Water Heater
- Pumps
- Heat Exchangers
- Medical Equipment, Air and Vacuum
- Water Softeners

.4 Refer to mechanical system agenda schedules in section 3.3 identifying the proposed sequence of demonstrations. Sequence of demonstration shall correspond to full system starting. Submit for review by Engineer one month prior to demonstration. Maintain a copy of the agenda in the commissioning manual.

.5 Answer all questions raised by Owner at demonstrations; if unable to satisfactorily answer questions immediately, provide written response within three (3) days.

.6 Provide sign off sheets for each session. Sign off sheets to have attendees, date, subject, presentation by and comments. Attach the sign off sheets to the agenda and insert in the commissioning manual after each session. Submit a copy to the engineer.
3.3 MECHANICAL SYSTEMS AGENDA

Mechanical Systems Agenda

Topic: Heating System

Day: 1 Start Time: 8:00 am
Meeting Place: _________________

Approximate Duration: 7.5 hours

Agenda: .1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: _________________

Lunch Break: 12:00 to 1:00

Agenda: .3 1:00 pm - Site Walkthrough
.4 4:00 pm - Final Questions and Sign-off Log Sheet

Personnel to be in Attendance:
♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

Presentation Format:

Classroom:

Introduction
♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers
♦ Review of system installations by the Mech. Contractors using record drawings

Site Tour:

.1 Mechanical Contractor to outline location of main piping runs, isolation valves, service access points.
.2 Review service procedures for heating boiler and circulation pumps.
.3 Terminal hot water heating units to be reviewed for service and operation.
   Gas Fired equipment to be reviewed and dismantled as required to demonstrate servicing and operation.
.4 Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
Mechanical Systems Agenda

Topic: Cooling System

Day: 2  Start Time: 8:00 am
Meeting Place: __________________________

Approximate Duration: 7.5 hours

Agenda:
.1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: ________________

Lunch Break: 12:00 to 1:00

Agenda:
.3 1:00 pm - Site Walkthrough
.4 4:00 pm - Final Questions and Sign-off Log Sheet

Personnel to be in Attendance:
♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

Presentation Format:

Classroom:

Introduction
♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers
♦ Review of system installations by the Mech. Contractors using record drawings

Site Tour:

.1 Mechanical Contractor to outline location of main piping runs, isolation valves, service access points.
.2 Review service procedures for Chiller and circulation pumps.
.3 Coils, expansion tanks and accessories to be reviewed for service and operation. Equipment to be reviewed and dismantled as required to demonstrate servicing.
.4 Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
Mechanical Systems Agenda

Topic: Plumbing System
Day: 3  Start Time: 8:00 am
Meeting Place:_________________

Approximate Duration: 7.5 hours

Agenda:
.1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: _______________

Lunch Break: 12:00 to 1:00

Agenda:
.3 1:00 pm - Site Walkthrough
.4 4:00 pm - Final Questions and Sign-off Log Sheet

Personnel to be in Attendance:
♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

Presentation Format:
Classroom:

Introduction
♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers
♦ Review of system installations by the Mech. Contractors using record drawings

Site Tour:
.1 Mechanical Contractor to outline location of main piping runs, isolation valves, service access points.
.2 Review service procedures for domestic hot water system and circulation pumps.
Review one of each type of plumbing fixture.
.3 Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
**Mechanical Systems Agenda**

**Topic:** Fire Protection System

**Day:** 4  **Start Time:** 8:00 am

Meeting Place: ______________________

**Approximate Duration:** 4 hours

**Agenda:**

.1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: ________________
.3 Site Walkthrough
.4 Final Questions and Sign-off Log Sheet

**Personnel to be in Attendance:**

♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

**Presentation Format:**

**Classroom:**

**Introduction**

♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers
♦ Review of system installations by the Mech. Contractors using record drawings

**Site Tour:**

.1 Mechanical Contractor to outline location of main piping runs, isolation valves, service access points.
.2 Review service procedures for all equipment.
.3 Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
Mechanical Systems Agenda

Topic: Air System

Day: 5 Start Time: 8:00 am
Meeting Place: 

Approximate Duration: 7.5 hours

Agenda:
.1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: 

Lunch Break: 12:00 to 1:00

Agenda:
.3 1:00 pm - Site Walkthrough
.4 4:00 pm - Final Questions and Sign-off Log Sheet

Personnel to be in Attendance:
♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

Presentation Format:

Classroom:

Introduction
♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers
♦ Review of system installations by the Mech. Contractors using record drawings

Site Tour:

.1 Mechanical Contractor to outline location of main duct runs, isolation valves, service access points.
.2 Review service procedures for air handling units.
.3 Terminal units to be reviewed for service and operation
.4 Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
Mechanical Systems Agenda

Topic: Testing and Balancing

Day: 6  Start Time: 8:00 am

Meeting Place: __________________________

Approximate Duration: 4 hours

Agenda:
.1 8:00 am - Classroom Presentation
.2 Contractor / Supplier: __________
.3 Site Walkthrough
.4 Final Questions and Sign-off Log Sheet

Personnel to be in Attendance:
♦ Mechanical Contractor and Sub-Contractors
♦ Balancing and Testing Agent
♦ Maintenance staff

Presentation Format:

Classroom:

Introduction

♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Balancing Agent, Sub-Contractors and Suppliers
♦ Review of system installations by the Balancing Agent using record drawings

Site Tour:

.1 Testing and Balancing agent will outline balancing procedures used and do’s and don’t’s about balancing to
.2 Outline location of main duct runs, balancing valves, service access points.
.3 Review service procedures for balancing devices.
.4 Demonstrate method of adjusting and locking balancing devices and instruments used for balancing.


**Mechanical Systems Agenda**

**Topic:** Chemical Treatment

**Day:** 7  **Start Time:** 8:00 am

**Meeting Place:**

**Approximate Duration:** 4 hours

**Agenda:**

1. 8:00 am - Classroom Presentation
2. Contractor / Supplier: ________________
3. Site Walkthrough
4. Final Questions and Sign-off Log Sheet

**Personnel to be in Attendance:**

♦ Mechanical Contractor and Sub-Contractors
♦ Chemical Treatment Agent
♦ Maintenance staff

**Presentation Format:**

**Classroom:**

**Introduction**

♦ Pass out hand outs of system description
♦ Reference to equipment operation brochures as required.
♦ Detailed system overview by Chemical Treatment Agent, Sub-Contractors and Suppliers
♦ Review of system installations by the Chemical Treatment Agent using record drawings

**Site Tour:**

1. Demonstrate procedures for treating all systems requiring chemical treatment.
2. Outline location of main duct runs, balancing valves, service access points.
3. Dismantle equipment as required to demonstrate maintenance and operational procedures.
4. Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.
**Mechanical Systems Agenda**

**Topic:** Steam System

**Day:** 8  **Start Time:** 8:00 am  
Meeting Place: _______________  
**Approximate Duration:** 4 hours

**Agenda:**

1. 8:00 am - Classroom Presentation
2. Contractor / Supplier: _______________
3. Site Walkthrough
4. Final Questions and Sign-off Log Sheet

**Personnel to be in Attendance:**

♦ Mechanical Contractor and Sub-Contractors (as required)
♦ Maintenance staff

**Presentation Format:**

**Classroom:**

**Introduction**

♦ Pass out hand outs of system description  
♦ Reference to equipment operation brochures as required.  
♦ Detailed system overview by Mechanical Contractor, Sub-Contractors and Suppliers  
♦ Review of system installations by the Mech. Contractors using record drawings

**Site Tour:**

1. Mechanical Contractor to outline location of main piping runs, isolation valves, service access points.
2. Review service procedures for boiler and pumps.
3. Terminal units to be reviewed for service and operation.
4. Provide written instructions on how to start and stop all equipment and demonstrate using instructions during tour.

**END OF SECTION**