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Oakhurst Dairy – New Milk Cooler**SECTION 01820 - DEMONSTRATION AND TRAINING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
1. Demonstration of operation of systems, subsystems, and equipment.
  2. Training in operation and maintenance of systems, subsystems, and equipment.
  3. Demonstration and training videotapes.
- B. Related Sections include the following:
1. Division 1 Section "Allowances" for administrative and procedural requirements for demonstration and training allowances.
  2. Division 1 Section "Project Management and Coordination" for requirements for preinstruction conferences.
  3. Divisions 2 through 16 Sections for specific requirements for demonstration and training for products in those Sections.
- C. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up.

**1.3 SUBMITTALS**

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
1. At completion of training, submit one complete training manual(s) for Owner's use.
- B. Demonstration and Training Videotapes: Submit two copies within seven days of end of each training module.
1. Identification: On each copy, provide an applied label with the following information:
    - a) Name of Project.
    - b) Name and address of photographer.
    - c) Name of Architect.
    - d) Name of Contractor.
    - e) Date videotape was recorded.
    - f) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

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**Oakhurst Dairy – New Milk Cooler**

2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding videotape. Include name of Project and date of videotape on each page.

**1.4 QUALITY ASSURANCE**

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Photographer Qualifications: A professional photographer who is experienced photographing construction projects.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  1. Inspect and discuss locations and other facilities required for instruction.
  2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  3. Review required content of instruction.
  4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

**1.5 COORDINATION**

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

**PART 2 - PRODUCTS****2.1 INSTRUCTION PROGRAM**

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
  1. Motorized doors, including powered overhead doors, cold storage sliding doors.
  2. Equipment, including **loading dock equipment**.

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Oakhurst Dairy – New Milk Cooler

3. Fire-protection systems, including **fire alarm and fire-extinguishing systems**.
  4. HVAC and refrigeration systems, including **air-handling equipment, air distribution systems, and, terminal equipment and devices**.
  5. HVAC and refrigeration instrumentation and controls.
  6. Electrical service and distribution, including **transformers, switchboards, and panelboards**.
  7. Lighting equipment and controls.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a) System, subsystem, and equipment descriptions.
    - b) Performance and design criteria if Contractor is delegated design responsibility.
    - c) Operating standards.
    - d) Regulatory requirements.
    - e) Equipment function.
    - f) Operating characteristics.
    - g) Limiting conditions.
    - h) Performance curves.
  2. Documentation: Review the following items in detail:
    - a) Emergency manuals.
    - b) Operations manuals.
    - c) Maintenance manuals.
    - d) Project Record Documents.
    - e) Identification systems.
    - f) Warranties and bonds.
    - g) Maintenance service agreements and similar continuing commitments.
  3. Emergencies: Include the following, as applicable:
    - a) Instructions on meaning of warnings, trouble indications, and error messages.
    - b) Instructions on stopping.
    - c) Shutdown instructions for each type of emergency.
    - d) Operating instructions for conditions outside of normal operating limits.
    - e) Sequences for electric or electronic systems.
    - f) Special operating instructions and procedures.
  4. Operations: Include the following, as applicable:
    - a) Startup procedures.
    - b) Equipment or system break-in procedures.
    - c) Routine and normal operating instructions.
    - d) Regulation and control procedures.
    - e) Control sequences.

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**Oakhurst Dairy – New Milk Cooler**

- f) Safety procedures.
  - g) Instructions on stopping.
  - h) Normal shutdown instructions.
  - i) Operating procedures for emergencies.
  - j) Operating procedures for system, subsystem, or equipment failure.
  - k) Seasonal and weekend operating instructions.
  - l) Required sequences for electric or electronic systems.
  - m) Special operating instructions and procedures.
5. Adjustments: Include the following:
- a) Alignments.
  - b) Checking adjustments.
  - c) Noise and vibration adjustments.
  - d) Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a) Diagnostic instructions.
  - b) Test and inspection procedures.
7. Maintenance: Include the following:
- a) Inspection procedures.
  - b) Types of cleaning agents to be used and methods of cleaning.
  - c) List of cleaning agents and methods of cleaning detrimental to product.
  - d) Procedures for routine cleaning
  - e) Procedures for preventive maintenance.
  - f) Procedures for routine maintenance.
  - g) Instruction on use of special tools.
8. Repairs: Include the following:
- a) Diagnosis instructions.
  - b) Repair instructions.
  - c) Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d) Instructions for identifying parts and components.
  - e) Review of spare parts needed for operation and maintenance.

**PART 3 - EXECUTION****3.1 PREPARATION**

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

**3.2 INSTRUCTION**

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

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**Oakhurst Dairy – New Milk Cooler**

- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner through the project coordinator, with at seven days' advance notice.
- D. Cleanup: Collect used and leftover educational materials and . Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

**3.3 DEMONSTRATION AND TRAINING VIDEOTAPES**

- A. General: Engage a qualified commercial photographer to record demonstration and training videotapes. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
  - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Videotape Format: Provide high-quality VHS color videotape in full-size cassettes.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.
- D. Delete two paragraphs below if not required. Requirements may be more extensive than necessary for many projects. If Owner requires original videotape to be unmodified, retain first option in first paragraph below. Revise to suit Project.
- E. Narration: Describe scenes on videotape by **audio narration by microphone while** videotape is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- F. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

END OF SECTION 01820