

PART 1 – GENERAL

1.1 EQUIPMENT LIST

- .1 Complete list of equipment and materials to be used on this project and forming part of tender documents by adding manufacturer's name, model number and details of materials, and submit for approval.
- .2 Submit for approval at time of tender within 48 hours within 10 days after award of contract.

1.2 ALTERNATES

- .1 The equipment listed on the project equipment schedules is the "basis of design equipment", the Contactor is permitted to find alternates to this equipment that meet the technical and quality requirements of the project specifications. If there are necessary changes to the building systems to accommodate these alternates, coordinate the changes at no additional cost to the Contract.

1.3 PROTECTION OF OPENINGS

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.
- .2 Seal all ductwork openings with 6 mil plastic to protect it from dirt, dust, and foreign materials during the course of the day's installation. Further ensure that at the end of the day, all open joints are closed off. Tape all plastic with duct tape. Cover and protect all un-installed ductwork before it is installed.

1.4 ALTERATIONS AND REINSTATEMENT

- .1 The existing wall cladding systems and building roofing systems are being removed and renewed for the entire building under this contract. There will be need to disconnect mechanical equipment and reinstate once the new cladding and roofing is installed. Coordinate these activities with other subcontractors.
- .2 Critical equipment may not be able to remain out of service for extended periods of time. The contractor will coordinate outages with CFIA and provide necessary overtime to place equipment back into service as needed.

1.5 PAINTING

- .1 To Section 09 91 00 - Painting.
- .2 Prime and touch up marred finished paintwork to match original.
- .3 Restore to new condition, finishes which have been damaged too extensively to be merely primed and touched up.

1.6 SPECIAL TOOLS

- .1 Provide one (1) set of special tools required to service equipment as recommended by manufacturers and in accordance with Section 01 78 00 – Closeout Submittals.

1.7 DEMONSTRATION AND OPERATING AND MAINTENANCE INSTRUCTIONS

- .1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, troubleshooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2 Where specified elsewhere in Divisions 21, 22 and 23, manufacturers to provide demonstrations and instructions.
- .3 In addition to where training is specified elsewhere in other divisions, factory trained personnel shall provide on-site instruction in operation and maintenance as follows:
 - .1 Ventilation Systems - minimum one (1) hour.
 - .2 Plumbing Systems - minimum one (1) hour. (4) hours.
- .4 Use operation and maintenance manual, as built drawings, audio visual aids, etc. as part of instruction materials.

1.8 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Operation and maintenance manual to be approved by the Departmental Representative, and final copies deposited with, the Departmental Representative before final inspection.
- .3 Operation data to include:
 - .1 Control schematics for each system.
 - .2 Description of each system and its controls.

- .3 Operation instruction for each system and each component.
- .4 Description of actions to be taken in event of equipment failure.
- .4 Maintenance data to include:
 - .1 Servicing, maintenance, operation and troubleshooting instructions for each item of equipment and parts list.
- .5 Performance data to include:
 - .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified elsewhere.
 - .4 Testing, adjusting and balancing reports as specified in Section 23 05 95 - Testing, Adjusting and Balancing.
- .6 Approvals:
 - .1 Submit copies of draft Operation and Maintenance Manual to the Departmental Representative for approval. Submission of individual data will not be accepted unless so directed by Departmental Representative.
 - .2 Make changes as required and resubmit two (2) copies as directed by the Departmental Representative.
- .7 Additional data:
 - .1 Prepare and insert into operation and maintenance manual when need for same becomes apparent during demonstrations and instructions specified above.

1.9 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Shop drawings and product data to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances. eg. access door swing spaces.
 - .3 Installation requirements and procedures.
- .3 Accompany shop drawings and product data with:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify as to current model production.
 - .5 Certification of compliance to applicable codes.

- .4 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures. Identify section and paragraph number.

1.10 CLEANING

- .1 Clean interior and exterior of all systems. Vacuum interior of ductwork and air handling units.

1.11 PROJECT RECORD DRAWINGS

- .1 Site records:
 - .1 The Departmental Representative will provide one (1) set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of the work. Mark all changes as work progresses and as changes occur. This includes changes to existing mechanical systems, control systems and low voltage control wiring.
 - .2 On a weekly basis, transfer information to reproduces, revising reproduces to show all work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection at all times.
- .2 Project Record drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing (TAB), finalize production of as built drawings.
 - .2 Identify each drawing in lower right hand corner in letters at least 12mm high as follows: "Project Record drawings: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (date).
 - .3 Submit to the Departmental Representative for approval and make corrections as directed.
 - .4 TAB to be performed using Project Record drawings.
 - .5 Submit completed reproducible Project Record drawings with Operating and Maintenance Manuals.
- .3 Submit copies of Project Record drawings for inclusion in final TAB report.

1.12 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.13 ELECTRICAL

- .1 Electrical Work to conform to Division 26 including the following:
 - .1 Starters, motor protection and manual control devices are specified

and indicated in Division 26 except where otherwise indicated or specified. Wiring to packaged mechanical equipment is indicated on electrical drawings. Coordinate as required.

- .2 Supplier and installer responsibility is indicated on electrical drawings and related mechanical responsibility as indicated on mechanical equipment schedules on mechanical drawings or in specifications.

1.14 EQUIPMENT SUPPORTS

- .1 Equipment supports supplied by equipment manufacturer specified elsewhere in Divisions 21, 22 and 23.
- .2 Equipment supports not supplied by equipment manufacturer: fabricate from structural grade steel meeting requirements of Section 05 50 00 - Metal Fabrications. Submit structural calculations with shop drawings.

END OF SECTION