

## PART 1 - GENERAL

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| <u>1.1 REFERENCES</u>                          | .1 | American National Standards Institute/American Society of Heating, Refrigeration and Air-Conditioning Engineers (ANSI/ASHRAE)  |
|  | .1 | ANSI/ASHRAE 52.2-2007, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particulate Size.  |
|  | .2 | ANSI/ASHRAE 127-2007, Method of Testing for Rating Computer and Data Processing Room Unitary Air-Conditioners.   |
|  | .2 | ASTM International   |
|  | .1 | ASTM C 547-11, Specification for Mineral Fiber Pipe Insulation.  |
|  | .3 | Canada Green Building Council (CaGBC)  |
|  | .1 | LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations 2009.   |
|  | .4 | CSA International  |
|  | .1 | CSA B52-05(R2009), Mechanical Refrigeration Code.  |
|  | .2 | CAN/CSA-C656-05(R2010), Performance Standard for Single Package Central Air-Conditioners and Heat Pumps.   |
| <u>1.2 ACTION AND INFORMATIONAL SUBMITTALS</u> | .1 | Submit in accordance with Section 01 33 00 - Submittal Procedures.   |
|  | .2 | Product Data:  |
|  | .1 | Submit manufacturer's instructions, printed product literature and data sheets for air conditioning components and accessories and include product characteristics, performance criteria, physical size, finish and limitations. |
|  | .3 | Shop Drawings:   |
|  | .1 | Submit drawings stamped and signed by professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.   |

1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS  
(Cont'd)

- .3 Shop Drawings: (Cont'd)
  - .2 Indicate on drawings:
    - .1 Major components and accessories including sound power levels of units.
    - .2 Type of refrigerant used.
- .4 Sustainable Design Submittals:
  - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
  - .2 Construction Waste Management:
    - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
    - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.

1.3 CLOSEOUT  
SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for [air conditioning components] for incorporation into manual.

1.4 DELIVERY,  
STORAGE AND  
HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
  - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .3 Storage and Handling Requirements:
    - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
    - .2 Store and protect air conditioning components from nicks, scratches, and blemishes.
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- 1.4 DELIVERY,  
STORAGE AND  
HANDLING  
(Cont'd)
- .3 Storage and Handling Requirements: (Cont'd)
    - .3 Replace defective or damaged materials with new.
  - .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
  - .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
- 1.5 WARRANTY
- .1 For mini-split air conditioning 12 months warranty period is extended to 60 months.
  - .2 Contractor hereby warrants that computer room air conditioning will not spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, in accordance with CCDC 2 General Conditions GC 12.3, but for 5 years.

## PART 2 - PRODUCTS

- 2.1 DESCRIPTION
- .1 Factory engineered and packaged ductless mini-split cooling systems; complete with all options and accessories as indicated and as required for a complete and functional space cooling system.
  - .2 These units are to be used only as an emergency back-up system for VRF System (if out of service for repair or maintenance).
  - .3 Outdoor Condensing Unit: see schedule drawing for capacities and details.
    - .1 Ultra low-ambient cooling down to -40F with field setting and wind baffle.
    - .2 10 years limited parts and warranty.

<u>2.1 DESCRIPTION</u> (Cont'd)	<p>.3 Outdoor Condensing Unit:(Cont'd)</p> <p>.3 Exterior wall mounting. See drawings for mounting details.</p> <p>.4 Weatherproof and corrosion resistant cabinet. Constructed from rust proofed panels with baked enamel finish.</p> <p>.5 Fan-direct drive propeller fan. Motor is inverter driven with permanently lubricated bearings. Horizontal discharge.</p> <p>.6 Outdoor coil shall be non-ferrous construction with corrugated fin tube. Metering device to control refrigerant flow.</p> <p>.7 Unit to be equipped with factory supplied, corrosion resistant wind baffle.</p> <p>.7 Inverter driven compressor with accumulator and reversing valve. Internal thermal overload on compressor.</p> <p>.4 Indoor unit:</p> <p>.1 See scheduled drawings for capacities and details.</p> <p>.2 Wall mounted unit with direct driven evaporator fan with permanent lubricated bearings.</p> <p>.3 Coil to be non-ferrous, aluminum fin on copper tube heat exchanger. All joints to be brazed with silver alloy or phosphocopper.</p>
<u>2.2 REFRIGERANT CHARGE</u>	<p>.1 Charge refrigerant system at factory, seal and test.</p> <p>.2 Holding charge of refrigerant applied at factory.</p>
<u>2.3 CONTROLS</u>	<p>.1 In accordance with manufacturer's recommendations.</p> <p>.2 As indicated on drawings and elsewhere within these specifications. Refer also to Section 23 90 01 - Mechanical Control System.</p>

### PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for air conditioning components installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- 3.2 GENERAL .1 Install as indicated, to manufacturer's recommendations, and to EPS 1/RA/2.
- .2 Manufacturer to certify installation.
- .3 Run drain line from cooling coil condensate drain pan to terminate over nearest floor drain.
- 3.3 EQUIPMENT PREPARATION .1 Provide services of manufacturer's field engineer to set and adjust equipment for operation as specified.
- 3.4 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

- 3.4 CLEANING  
(Cont'd)
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.  
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- 3.5 PROTECTION
- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by computer room air conditioning installation.