

APPENDIX D

1. MECHANICAL SYSTEMS NARRATIVE

1.1 CODES AND STANDARDS

- .1 The mechanical work will meet or exceed the minimum requirements of the latest applicable codes, rules and regulations including the following:
 - .1 Manitoba Building Code
 - .2 Manitoba Plumbing Code
 - .3 Manitoba Fire Code
 - .4 Manitoba Energy Code
 - .5 Applicable ASHRAE Standards including 62.1 and 90.1.
 - .6 Manitoba Regulation 132/97 as amended to date.
 - .7 City of Winnipeg – 2010 Accessibility Design Standards

1.2 DESIGN SUMMARY OVERVIEW

- .1 The facility will house sanitary facilities, a common space, a mechanical room, and an office space. The building as a whole requires the existing sanitary drainage, vent, and domestic water piping in their entirety to be replaced. Any existing exhaust and ventilation systems are also to be removed and replaced.
 - .1 Sanitary facilities will be comprised of a minimum of one washroom per sex with a flush valve water closet and lavatory intending to meet the requirements of Manitoba Regulation 132/97. The washrooms are intended to be remodelled to meet the 2010 City of Winnipeg Design Accessibility Standards. A back rest is recommended for barrier free toilet installations in lieu of using a toilet seat cover. To aid in the event of backup from toilets and fixtures, and for cleaning a 100mm floor drain is to be installed in each washroom and a cold water hose bibb below the lavatory is recommended. Each washroom will require exhaust and should be exhausted at a rate of 5.08l/s/m².
 - .2 A common space exists within the central area of the building. It is intended that a new office space be incorporated into this area. It is not intended that the common space or office space be conditioned. The public will be entering this space and in general water will be tracked onto the floor so a central 100mm floor drain is required. A barrier free bi-level non-refrigerated drinking fountain is to be installed in this space. These spaces should be ventilated using an exhaust fan and infiltration at a rate of 2.54l/s/m².
 - .3 The mechanical room will house the wading pool equipment, a small electric domestic hot water tank, and a mop sink. Additional equipment such as backflow prevention equipment will also be housed in this space. A wall hydrant should be provided through the Northern exterior wall of the building from this room. Due to chlorination equipment an RPZ is necessary for premise isolation and a second one for the pool equipment; an eye/face wash will also be required. This space will require ventilation adequate for heat removal of the selected equipment during operational months, and heating to prevent freezing of equipment in the non-operational months. A 100mm floor drain near equipment requiring drainage, backwashing, or having relief discharge must be provided. This room must be sufficiently insulated to allow space heating in the

winter months.

Heating: Heating of the mechanical room is for equipment freeze protection only. Equipment is expected to be drained but filters and other equipment which may not be completely drained may suffer damage from freezing. Provide adequate electric force flow heating to maintain interior temperature at a minimum of 13°C. Provide redundancy such that if any one heater fails the remaining heaters will maintain the minimum temperature.

Heat Removal Equipment: Preliminary loading for pool equipment is approximately 11.5kW and 3.0kW for domestic hot water production. It is expected the equipment in the space will have an overall efficiency of approximately 90% creating an expected cooling load of 1.45kW. Outdoor air conditions can be as high as 32°C and the mechanical space temperature should not exceed 35°C. Gasket sealed dampers and louvers adequately sized for both intake and exhaust will be required and need to be arranged so air travels across the equipment. Alternatively the fan may be designed to have its discharge ducted, directing the discharge air onto the equipment. The intake damper must be controlled and interlock with the intake fan. A room thermostat with manual override is to be provided for operation of the intake fan and control system. The exhaust damper should be of a type which prevents back drafting.

1.3 PLUMBING

.1 Fixtures

.1 Flush valve toilet:

- .1 Bowl: elongated white vitreous china, 4.8lpf, top spud, floor mount, siphon jet flushing action, with 54mm fully glazed trapway. Toilet to be between 400mm and 460mm with toilet seat installed. Standard of Acceptance – Zurn Z5655-BWL
- .2 Toilet Seat: white plastic, elongated open front, with self sustaining stainless steel check hinges. Standard of Acceptance – Zurn Z5955 Series.
- .3 Operator: 4.8lpf manual oscillator handle, diaphragm-type, chrome plated flush valve with angle stop and solid ring pipe support. Standard of Acceptance – Zurn Z6000AV-HET.
- .4 Back Support: 32mm stainless steel tubular back support with 16mm solid plastic laminate backrest. Standard of Acceptance – Frost Products Ltd. #1028 – Toilet Backrest.

.2 Lavatory: All accessories to be concealed within semi-pedestal.

- .1 Basin: 508mm x 584mm vitreous china 100mm center set wall hung lavatory with overflow and semi-pedestal; with holes for concealed arm carrier. Bowl depth 89mm. Standard of Acceptance – Zurn Z5324-PED.
- .2 Carrier: Floor mount, concealed arm carrier system. Standard of Acceptance – Zurn Z1231
- .3 Faucet: Polished chrome plated slow-close metering faucet with integral brass spout, deck plate, and vandal resistant operator. Approximate 10-

- second cycle time consuming 0.95L per cycle at 550kPa. Standard of Acceptance – Zurn Z86100-XL-CP4.
- .4 Thermostatic Mixing Valve: 3/8" (9.5mm) compression connection, chrome plated, inlet check valves with strainer, and factory set to 40.5°C. Standard of Acceptance – Zurn P6900-TMV-1.
 - .5 Accessories: Grid Strainer, semi-cast P-trap, ceramic quarter turn heavy duty stops, and flexible supplies.
- .3 Mop Sink:
- .1 Basin: 610mmx610mm Molded high density composite basin, PVC drain body and stainless steel dome strainer. Unit to be complete with stainless steel bumper guard, hose and hose bracket, mop hanger, and 20 gauge stainless steel wall protectors to 610mm above basin for entire length. Standard of Acceptance – Zurn Z1996-24.
 - .2 Faucet: wall mounted chrome plated service faucet with vacuum breaker, integral stops, adjustable wall brace, pail hook, indexed hot/cold cross handles, with hose thread spout end. Standard of Acceptance – Zurn Z1996-SF.
 - .4 Hose Bibbs: Brass, full port, two piece ball valve, 19mm (¾") garden hose end, PTFE seats, Standard of Acceptance – Nibco QT56X.
 - .5 Wall Hydrant: Non-freeze, anti-siphon, bronze construction, stainless steel face with operating key. Standard of Acceptance – Zurn Z1310.
 - .6 Eye/Face Wash: To ANSI Z358.1-2009 with manufacturer recommended mixing valve. Standard of Acceptance – Guardian G1750.
- .2 Sanitary Drainage
- .1 Drain, Waste, and Vent Piping and Fittings: PVC DWV, Standard of acceptance – IPEX System 15, or, Royal LRS-25.
 - .2 Vent flashings: Spun aluminum with cap, and EPDM seals. Standard of Acceptance – Thaler Products.
- .3 Domestic Cold Water
- .1 Tubing and Fittings: Type L Copper tube, third party certified using pressure joint solder fittings and ball isolation valves. Insulated to ASHRAE 90.1 requirements.
- .4 Domestic Hot Water
- .1 Tubing and Fittings: Type L Copper tube, third party certified using pressure joint solder fittings and ball isolation valves. Insulated to ASHRAE 90.1 requirements.
 - .2 Hot Water Storage Tank: Wall hung type with drip tray, 3.0kW single element with 114 litre capacity and 46 litre first hour recovery at 56°C rise. Standard of Acceptance – Bradford White LD-WH30L3-1.
 - .3 Circulating Pump: Brass body circulator with ECM motor, with integrated temperature sensor and timer. Standard of Acceptance – Bell & Gossett E³ Series.

1.4 HEATING

- .1 Forced Flow Unit Heaters: Electric unit heaters, ceiling or wall mounted, adjustable louvers, sheathed stainless steel element, fan delay, and built in single pole bulb thermostat. Standard of Acceptance – Dimplex Compact Unit Heater CUH Series.

1.5 VENTILATION

- .1 Heat Removal Systems
 - .1 Mechanical Intake Fan: Interior fan interlocked with intake louver and controlled by thermostat with manual override. Standard of Acceptance – Loren Cook, Greenheck, Penn.
 - .2 Thermostat: Cooling only type
 - .3 Steel Louvers: Powder coated, colour to be selected. Standard of Acceptance – Ventex, Nailor, EH Price
 - .4 Motorized dampers
 - .1 Intake: Sealed gasket, electric actuator interlocked to intake fan.
 - .2 Exhaust: Sealed gasket, back draft type.
- .2 Exhaust Air Systems
 - .1 Bathroom Exhaust Fan: interlocked with lighting or occupancy sensor providing minimum 5.08l/s/m² at 75kPa of static pressure or as necessary to overcome ductwork resistance. Standard of Acceptance – Loren Cook, Greenheck, Penn.
 - .2 Common Space and Office Vent Fan: Interior mounted fan interlocked with lighting or occupancy sensor providing minimum 2.54l/s/m². Standard of Acceptance – Loren Cook, Greenheck, Penn. Provide intake complete with fan interlocked motorized damper, U-trap intake duct, in Common Space sized for exhaust fan make-up.