

MECHANICAL SPECIFICATION

GENERAL PROVISIONS

GENERAL

- These Contractors shall provide a complete and fully operational mechanical/ventilation system.
- These Contractors shall examine the site prior to submitting his quote to familiarize himself with the work involved.
- Any discrepancies and omissions discovered shall be reported to the engineer immediately and prior to tender closing for rectification by addendum.
- Each Contractor shall assume full responsibility for laying out his work and for any damage caused by improper execution of his work. Carry all necessary insurance coverage.

WARRANTY

The Mechanical Contractor as a condition precedent to final payment after completion of this work shall provide the Owner with a written guarantee, warranting all materials, labour and equipment for one (1) full year from date of possession. Provide 6 month maintenance on Common Area equipment and 1 year on Heat/Vent units from the date of Substantial Completion registered with ANHW at no extra cost.

WORK, PRODUCTS AND QUALITY

- Equipment and materials to be new and free from defects and have design characteristics as specified.
- All work and materials shall be installed as shown and in accordance with the National Building Code and all local Codes and Building Regulations.
- All equipment shall be C.S.A. approved.

FEES AND PERMITS

- The Mechanical Contractor will obtain and pay fees for all permits necessary for completion of this project.
- Contractor to furnish all certificates necessary as evidence that the work conforms with standards and requirements of the authorities having jurisdiction.

TESTING

- Test all equipment and materials where required by the specifications or where necessary for filling jurisdiction to demonstrate its proper operation to the Owner.
- Carry out all hydraulic tests prior to covering piping in any way.
 - Test domestic water piping at 700 kPa (100 psi) pressure for a period of two (2) hours with no appreciable pressure drop.
 - Test fire lines at 1400 kPa (200 psi) pressure for a period of two (2) hours with no pressure drop.
 - Test drainage systems with water to produce pressure of 3.0 m (10 Ft.) of water column. Keep system filled with water for 15 min.
 - Test gas piping as required by the authorities having jurisdiction.
- Test low velocity duct work for tightness and leakage. All leaks shall be repaired before the system is balanced.

EXCAVATION AND BACKFILLING

- The Mechanical Contractor shall do all necessary excavation. Backfill with sand or other approved material to a minimum of 300 (12 in.) over all piping or as necessary to protect his work and then compact with a mechanical tamper to 100% Standard Proctor Density. The remainder of the backfill to be done by the Mechanical Contractor complete with compaction. Coordinate elevations and location of gas, water and sewer services and provide 2 meter separation from gas, electrical and telephone service before installing.

CUTTING AND PATCHING

- The Mechanical Contractor shall confer with the General Contractor in regard to this work and shall give locations for all holes for pipes and ducts, etc., and provide sleeves as required to execute mechanical installation. Any missing penetrations will be cored by Mechanical Contractors.
- All mechanical work passing through roof shall be flashed by the Mechanical Contractors. Counterflashing to be done by the Roofing Contractor.

APPROVALS

- Request for approval of equivalent equipment from manufacturers not specified on drawings shall be made in writing seven days prior to tender closing.

SHOP DRAWINGS

- Prior to the fabrication of any materials and equipment, submit a minimum of eight (8) complete sets of shop drawings and data sheets covering all items of mechanical equipment under this contract for review by the Engineer.

ELECTRIC MOTORS AND WIRING

- Supply all mechanical equipment complete with electric motors as required.
- The Electrical Contractor shall be responsible to supply all motor starters and disconnect switches for all motors for this project and install line voltage wiring to starters and from starters to motors, except where prewired in packaged equipment.
- Electric controls connected to mechanical equipment shall be supplied by the Mechanical Contractors and installed by Electrical Contractor.

MAINTENANCE MANUALS

- Furnish four (4) sets of maintenance manuals with information outlined below to the Engineer prior to final inspection for approval.
 - Description of all systems.
 - Description of components of each piece of equipment
 - Description of control system
 - Complete set of shop drawings
 - Detailed maintenance and lubrication schedule
 - Operating and maintenance instructions for major equipment.
 - List of equipment suppliers and manufacturers.
 - Data to be assembled in hard cover binders c/w index.
 - Identify front cover with project name and project location.
 - List contractors and consultants.
 - Provide index and index labels.
 - Provide copies of all warranties c/w expiry date.
- Final handback payment will be released after submission of complete manuals as specified.

OPERATING INSTRUCTIONS

- Arrange and pay for the service of fully qualified personnel, including manufacturer's representatives to instruct the Owner in the operation and preventive maintenance of each piece of equipment and system supplied and installed. Allow (4) four hours of instruction time.

SUPPORTS, ANCHORS AND SLEEVES

- Install supports of strength and rigidity to suit loading without unduly stressing building. Locate supports in equipment to prevent undue stress in piping and equipment.
- Provide chrome plated floor, ceiling and wall escutcheons as required for all piping in finished areas.

IDENTIFICATION

- The Mechanical Contractors shall supply and permanently install lamacodes to provide identification of all installed equipment like boilers, HVAC units, exhaust fans and their switches.
- All valves and switches shall be tagged or labeled c/w framed directory, wall mounted in Mechanical Room.

RECORD DRAWINGS

- The Mechanical Contractors shall keep on site extra set of prints and specifications on which all changes and deviations from the original design shall be recorded daily.
- The Mechanical Contractor shall turn over to the Owner "Record" set of drawings at the completion of construction.

EQUIPMENT AND MATERIALS CLEAR-UP

- Piping, fixtures, ducts and equipment shall be thoroughly cleaned of dirt, grease, adhesive labels and foreign materials.

BALANCING

- Balancing of all ventilation and hydronic systems shall be done by independent qualified Balancing Contractor approved by the Engineer when all equipment is operating under full load and to the satisfaction of the Owner and the Engineer. This contractor shall allow sufficient funds to change the pulleys on motors or fans to properly balance the system at the lowest fan RPM.
- Balancing Contractor shall balance all air outlets and equipment volumes to within 5% of designed values.
- Balancing Contractor shall submit for review five (5) copies of the report containing the following:
 - system return air volumes, suction and discharge air - pressure, RPM and amps of all supply and exhaust fans.
 - supply and return air volumes of all grilles and diffusers.
 - sketch layout of duct systems showing details of balance.

GAS

- Mechanical Contractor shall install 2 psi pressure gas service from gas meter to all gas fired equipment and appliances c/w aluminum paint coating on pipe where exposed to outdoors.

- Lines concealed shall be brazed seamless copper K or L, or welded steel for 2" or larger. Install PRV valves for all equipment and risers in Parkade.
- Provide gas lines to all Fireplaces in wall complete with cut-off valves at fireplace connection and hook-up to all Fireplaces. In cases where fireplace is not installed, gas line shall be terminated and capped-off in wall recessed box c/w cover.
- Install gas outlets for barbecues on balconies. Barbecue outlets shall be no closer than 36" (900 mm) to patio door and mode of fixed, solid piping with 20" of outlet.
- Gas meter space 8FLD x 8FLW x 7FLH (for over 6,000 CFH)
- All gas piping, fittings and workmanship shall be in accordance with C.S.A. Standard B-149 Installation Code.

WEEPING TILE

- Connections for 6" dia. weeping tile shall be provided to a sump, connected to storm sewer system c/w accessible back water valve and clean out.

PLUMBING RISERS AND EXHAUST DUCTS

- All plumbing risers and exhaust ducts from bathroom fans, range hoods and cloth dryers shall run in designated insulated walls. Installation of piping and duct work in "PARTY WALLS" or "CORRIDOR WALLS" is not acceptable.

PLUMBING

GENERAL

- Provide complete domestic water, drainage and vent piping serving all plumbing fixtures. All underground water and sewer piping shall extend beyond building exterior wall and be connected to existing lines unless shown on the drawings otherwise. Include cost of all utilities service charges. Ensure that sewer services are run with sufficient slope for drainage and adequate cover to avoid freezing. Include backwater valve on sewer services and double check valve assembly on water service line.
- Install PRV valve in case water pressure is in excess of 90 psi. Provide space 7 Ft. x 4.5 Ft. for 4" dia. water meter.
- Sterilize water services 40 mm (1 1/2") or greater with chlorine and provide detailed written records. Flush system and have bacteriological tests completed at the University of Alberta laboratory.
- Provide manufactured shock absorbers Ancon Model SG or air chambers to prevent water hammer, install on all hot and cold water supplies to each fixture or group of fixtures. Air chambers shall be minimum 20 mm dia. (3/4 in.) and 450 mm (18") long.
- Install oversized clamps and 1/2" "Armaflex" rubber insulation, 3" long around each plumbing drainage stack and each domestic water pipe at each support point through wooden structure.
- Provide vacuum breakers on lines serving equipment or fixtures where contamination of domestic water may occur.
- Install Watts Series 900 backflow preventer or approved equal on all potable water where backflow and cross connection may occur.
- Install automatic trap seal primers Ancon MS-810 c/w integral vacuum breaker for floor drains as required by Plumbing Code or as directed by Plumbing Inspector.
- Provide all valves as shown on the drawings or as required by the authorities having jurisdiction. Install isolation valves at water meter, hot water tanks, each exterior hose bib, all connections to equipment and in all branches fixtures or groups of fixtures.
- Each suite shall have shut-off valves at hot and cold water manifold in storage room for each unit. Use quick opening, solid ball, full port valves M.A. Stewart B3 for water and gas.
- Install isolation valves in Parkade and Crown Space for all take offs to plumbing and gas risers.
- Plumbing fixtures shall be as specified on this drawing or approved equal.
- Domestic hot water recirculation system shall be installed at the third floor ceiling as shown c/w balancing valves behind ceiling mounted access panels. The main recirculation line would run back to Mechanical Room. Parkade area would also have a recirculation line for unit heaters and forced flow heaters c/w balancing valves.

PIPE AND FITTINGS

- All piping shall meet the requirements of the Provincial Plumbing Code and National Building Code. PVC or ABS piping is not permitted above grade in or through a fire separation.
- Domestic water above grade: Type K or Type L, hard copper, lead free solder joints, wrought copper or bronze fittings.
- Install lpx alternate piping, only if approved by the Owner. From manifolds to plumbing fixtures - polyethylene piping. Domestic water, below grade: Type K soft copper, flared joints; over 50 mm (2"), cast iron pipe, cast iron fittings, mechanical joints.
- Waste and vent piping above ground: Type DWV or hard drawn drainage tube, cast brass fittings, 50/50 solder joints.
- All plumbing stacks shall be cast iron soil pipe and fittings complete with mechanical joints.
- Waste and vent piping below grade: 152 mm (6") and under cast iron pipe, cast iron fittings, mechanical joints.
- PVC and ABS piping acceptable.
- Storm drainage above and below grade: PVC and ABS piping; also acceptable cast iron piping, mechanical joints.
- Supply and install fire stopping as required around all piping penetrating fire separations or as required by Authorities.

VALVES

- Valves on hot, cold and recirculating water piping shall be as follows:
 - Gate Valves - 51 mm (2") and smaller: Red & White 207A.
 - Globe Valves - 51 mm (2-1/2") and larger: Red & White 421A.
 - Globe Valves - 63 mm (2-1/2") and smaller: Red & White 212.
 - Globe Valves - 83 mm (3-1/2") and larger: Red & White 400A.
 - Check Valves - 51 mm (2") and smaller: Red & White 237.
 - Check Valves - 63 mm (2-1/2") and larger: Red & White 435A.
 - Ball Valves - 6 mm (1/4") thru 51 mm (2"); 1/2 & White 5044A.

PLUMBING FIXTURES SCHEDULE

WATER CLOSET WC-1

- Western Aris LoPro 822 with tank and complete with white seat and isolating valve with hand wheel on water supply.
- Seat: Five ply solid white plastic, closed front with cover, Oleonite 40.

LAVATORY L-1

- Western Redondo 172 oval china basins with Delta 540-WFLPUP single lever faucet complete with pop-up drain, chrome plated.

KITCHEN SINK SK-1

- Western Waterfall 221 stainless steel, double compartment sink c/w single lever, chrome plated faucet - Delta 135-50TIP. Provide all sinks with dishwasher connections. Rough-in water line and drain hook-up.

BATHTUB B-1

- Hytec model 6032/6033 Bathcove tub/shower complete with Delta 1343C-TP trim tub/shower single lever with pressure balanced valve. R1300-UNIP rough-in, 4141-TP shower head, T1303-TP valve, 2003-TP diverter. Provide line cleaned on top overflow where trap is not "direct waste". Coordinate 12" x 12" x 3/16" screw on smooth plywood board will access for each trap by General Contractor who will provide 150 mm plumbing walls for sewer stacks and R12 batt insulation right under tubs.

SHOWER SH-1

- Vanco 6034ED L/R shower, Delta 1323C-TP trim, single lever with pressure balanced valve.

SHOWER SH-2

- Hytec 3620 shower, Delta 1323C-TP trim, single lever with pressure balanced valve.

FLOOR DRAINS

- Finish floor without membrane - Ancon model FD-200
- Finish floor with membrane - Ancon model FD-100
- Provide funnel floor drain in Mechanical Room.
- Parkade Floor Drains - 12"x12" Ancon FD460-AF with heavy duty iron grate.

FLOOR CLEANOUTS

- Finish floor without membrane - Ancon CO-200-R-0

HOSE BIBS

- Interior Hose Bib cold water: Ancon HY-330-VB.
- Exterior Hose Bib: Ancon HY-1420-VB.
- All hose bibs shall be 20 mm dia. (3/4") and installed at 700 mm (28") above floor or final grade. Install shut-off valves on all supply lines to outside hose bibs in Parkade. (Tagged)

WASHING MACHINE AND DRYER

- Washing machine and dryer rough-in shall be provided in each suite as per Architectural drawings. Provide "DART" laundry Motee connector console recessed in 14"x12" wall opening, 40" from floor on right side of unit.
- 20 GPM at 15 ft. head, 1/4 HP, submersible c/w float switch (pump down range 7 to 10"), and 10 Ft. cord. Install pump secured by stainless steel chain and connected via 1 1/2" dia. discharge line to storm sewer, 115/1/60.
- PUMP P-5 TO P-7 Weeping Tile sump pump - MAYERS S25 20 GPM at 15 ft. head, 1/4 HP, submersible c/w float switch (pump down range 7 to 10"), and 10 Ft. cord. Install pump secured by stainless steel chain and connected via 1 1/2" dia. discharge line to storm sewer, 115/1/60.

PUMP P-8 AND P-9

- Elevator Shaft floor drain sump pump - MAYERS S25, 20 GPM at 15 ft. head, 1/4 HP, submersible c/w float switch (pump down range 7 to 10"), and 10 Ft. cord. Install pump secured by stainless steel chain and connected via 1 1/2" dia. discharge line to sanitary sewer, 115/1/60.

FIRE PROTECTION

- Fire Extinguishers - Mechanical Contractor shall provide and install portable fire extinguishers as per plan ABC-5 (2A-10BC rating) c/w recessed fire extinguisher cabinet (for 8" dia.) for Corridors, Corridors, mounted at 5 ft. above floor, to the top of cabinet. Install surface mounted ABC-10 (10lb., 4A-60BC rating) for Mechanical Room, ABC-5 (3A-10BC) for Electrical Rooms and ABC-10 (10lb CO2) for Parkade.
- Sprinklers - Mechanical Contractor shall contract a qualified Sprinkler Contractor who shall provide a complete NFPA-13 and NFPA-13R wet sprinkler system c/w approved engineering drawings for the Building. System shall have an approved double check valve assembly, a sprinkler tree c/w control valves, main drain piped to floor drain and siamese connection c/w ball drip valve located min. 10 ft. and maximum 50 ft. from the Main floor. Final sprinkler head type and locations shall be verified by the Owner.
 - All Parkade, Mechanical Rooms, Elevator Equipment Rooms and Elevator Vestibules shall be NFPA-13 with standard sprinklers.
 - Provide antiretro loop as required for freeze protection near Parkade overhead door and 4-TI Floor Corridors. Provide reduced pressure backflow preventer on antiretro loop. Reduced pressure backflow preventer shall be c/w drain funnel piped down to within 8" of Parkade floor. High temperature heads shall be installed above all hot equipment such as boilers, unit heaters, etc. Parkade vestibules shall have dry sidewall heads for freeze protection.
 - Sprinkler System for residential part of the building shall be designed to NFPA-13R with standard sprinkler heads.
- Install Standpipe System c/w standpipe valves and cabinets for all Stairs, as required by Code (by Sprinkler Contractor).
- Supply and install fire stopping as required around all piping penetrating fire separations or as required by Authorities.

CARBON MONOXIDE DETECTORS

- Provide DEL model QM-1002, located as per plans (1 for every 10 000 square feet) mounted 5 Ft. above floor. Detectors shall engage MU-2 and the interlocked exhaust fan EF-3 at 50 ppm carbon monoxide. 100 ppm CO shall sound the alarm. Provide remote sensors QM-1800 for CO. Provide written certified calibration after startup.
- Detector will be c/w warning lights and sound alarm and will be wired to start exhaust fan above safe gas concentration, as described in Contract Section.

RAMP SNOW MELTING SYSTEM

- Provide minimum 160 BTU/sq.ft. surface heating capacity. Install underlaid 5/8" dia. tubing at 9" spacing within concrete extending to 6' outside of top of the ramp. Tie tubing with 125" concrete cover to reinforcing steel which shall protect piping from cracks. General Contractor shall install min. 1.5" rebar R7 under slab. Tubing shall be cross linked Polyethylene c/w oxygen barrier and guaranteed to withstand glycol temperature of 93 deg.C. Pipes shall have 1/2" sleeves at expansion joints and where leaving the slab. No single zone to be longer than 170 Ft. isolate each circuit with supply and return shutoff valves located indoors near ramp.
- Loops for a total length of 1360 feet. Glycol supply 110 deg.F. to ramp. Provide glycol supply line thermometer.
- System shall consist of 50% ethylene glycol solution suitable for -40 deg F. with rust inhibitor, charging feeder, expansion tank, boiler, mixing valve, moisture detector Tekmar #890/091 installed in ramp tire track and #0661 c/w Tekmar control 867.
- TK-4 - Expansion Tank Extrol 109-P, 8" dia. x 11" high, c/w float vent, air purged, automatic fill valve and tank.
- P-10 Ramp heating injection pump Grundfos UP26-64F/V5 variable speed, 1/2 HP, 115/1/60, 10 GPM at FT.
- P-11 Ramp heating pump Grundfos UP26-64F, 1/2 HP, 115/1/60, 12 GPM at 25 FT.
- Selection of pumps P-10 and P-11 to be confirmed with ramp heating system supplier.
- Provide 1 1/4" boiler hot water supply and return line.
- Axiom MF200 glycol system feeder c/w 6.6 gal storage tank, gauges, pressure pump and controls to provide automatic glycol feed.
- Power supply 115/1/60.
- HE-1 heat exchanger Secessol LB31-40X.

DOMESTIC HOT WATER HEATING

- Domestic water piping shall be Cross Linked Polyethylene: 1/2" dia. and 3/4" dia. for distribution lines between headers and all plumbing fixtures. All risers and mains in Parkade shall be copper piping, lead free joints. As alternate lpx water piping may be used (only if accepted by the Owner) and would require fire to be installed at all penetrations through fire rated walls or ceilings.
- Valves: Red & White ball valves for isolation and balancing.
- Water piping shall be flushed for 2 hours and pressure tested.
- Mechanical room piping shall be supported with clevis hangers to prevent excessive stress on boilers and circulating pumps installed within 1500 mm (5 ft.) of the floor for easy access. All piping shall be mounted on hangers c/w rubber shock absorbers, perforated strapping is not acceptable.
- Provide piping expansion compensation by means of expansion loops and offsetting of pipes.
- Branch take-offs off heating pipes shall be off the top half of mains. Trim all structure min. 1/4" away from heating pipes to avoid future binding and noises.
- Provide in-suite insulating valves behind access cover at each distribution manifold for hot and cold water supply.

DOMESTIC WATER HEATER / BOILER B-1 AND B-2

- RBI Series 8800, model 2000 with input/1476 MBH High Alt. output, 82% efficiency, 109 GPM at 2.6 Ft. P.D., 55" W x 42" D x 63" H, one 22" vent, 3" pipe connections, 1400 lbs weight. Boilers shall be min. two stage c/w indoor/outdoor Tekmar controller, outdoor sensor and indoor weather shield. Both circulating pumps will operate. The boiler controller will maintain 140 deg. F. storage tanks water temperature (120 deg. F. at outdoor temperature above 50 deg. F.). All valves and piping as required for domestic hot water system.

DOMESTIC WATER STORAGE TANKS TK-1 TO TK-3

- STATE PA-120-ODRT, 119 GAL vertical tanks, insulated and jacketed.
- PUMPS P-1 AND P-2 Boiler B-1 and B-2 pumps, GRUNDFOS, UP550-240, 110 GPM at 28 ft. head, 2.0 HP each, 2" dia., 69 lb, all bronze, all internal components as required for domestic hot water system, 208/3/60. Each pump sized at 50% of total flow.

PUMPS P-3 AND P-4

- Domestic water circulating pumps, ARMSTRONG, 4380, 3x3x10, 150 GPM at 65 ft. head, 5.0 HP each, 3" dia., 265 lb, all bronze, 1800 RPM, all components as required for domestic hot water system, 208/3/60. Each pump sized at 100% of total flow. Both pumps will be c/w Variable Frequency Drives operated by pressure controller installed in domestic hot water supply line to maintain min. 30 psig pressure in the system. One pump will run at the time as selected by VFD.
- VFD shall be programmable drive with auto/on/off switch, disconnect switch, pressure sensors and monitoring capability.

FF-1 TO FF-6 FORCED FLOW ENTRANCE AND STAIRS HEATERS

- Forced flow heater, Rosemex H-508, 56 MBH output at 140 deg. F. water, 1/15 HP fan motor, 1050 RPM, 300 CFM, 38" L x 26" W x 9" D. Semi-recessed, all copper tubes and fittings, suitable for domestic hot water. Integral thermostat shall cycle the fan.

UH-1 UNIT HEATER, PARKADE ENTRANCE

- Unit heater, Rosemex H-98, 56 MBH output at 140 deg. F. water, 1/4 HP fan motor, 1100 RPM, 2400 CFM, copper tubes and headers. Space thermostat will cycle the fan, 115/1/60.

UH-2 TO UH-5 PARKADE UNIT HEATERS

- Unit heater, Rosemex H-508, 56 MBH output at 140 deg. F. water, 1/6 HP fan motor, 820 RPM, 1685 CFM, copper tubes and headers. Space thermostat will cycle the fan, 115/1/60.

HEATING / VENTILATION

- Ductwork shall be galvanized steel and lock forming quality. All ductwork shall be constructed broed, connected, jointed and installed in accordance with the latest issue of ASHRAE Guide and Duct Construction Standards issued by SMACNA, NFPA 90 and BOK, Provincial Code and local regulations. Install all supply, return and exhaust ducts complete with grilles and diffusers as shown on the drawings.
- Fire Dampers and Fire Stop flaps shall be ULC labeled. Install where shown and/or required by authorities having jurisdiction. Provide access for servicing and inspection. Fire Dampers shall be Type "B", with damper blades fully closed of the air stream, seal with Dow Corning RTV silicone foam.
- Balancing dampers shall be installed in all branches as required.
- All equipment shall be as specified on this drawing or approved equal.
- Door hold-open releases - "Simplex" FM-998 shall be provided and installed by Electrical Contractor.
- Door Undercuts - 20 min. rated doors may be undercut a full 1/4" on the bottom, plus 1/8" other sides for air transfer of 60 CFM. Assure no rugs restrict.
- Provide Drier Vents (as required) around ducts passing through fire separations and ceilings.
- All ductwork shall be galvanized steel: 26 gauge up to 12" wide or 8" dia.; 24 gauge for 13" to 30" wide or 9" to 30" dia. and all fittings to meet or exceed the above.
- Provide flex connections, 1/4" Duromex Conflex PCV coated polyester at inlets and outlets of all makeup air units.
- Smoke Detectors - by Electrical Contractor, mounted in makeup air main supply ducts shall stop supply fan and signal fire panel when actuated.
- Combustion Air Duct shall terminate with eskimo trap and baffle to diffuse cold air and protect water lines.
- Supply and install fire stopping (as required) around all ducts penetrating fire separations or as required by Authorities.
- All roof mounted exhaust duct outlets shall be c/w goose-necks terminated min. 12" above roof level.

HEATING AND VENTILATING EQUIPMENT SCHEDULES

GRILLES

- S-1 - Suite Fan Coil Systems Residential supply grilles Hart & Cooley 411, 4"x10", ceiling mounted c/w balancing damper. Colour by Owner.
- S-2 - Corridor Pressurization Supply grilles E.H. Price 520D/F/L/A/B12 white, double deflection, steel, c/w balancing damper. Colour by Owner.
- E-1 - Return Grille E.H. Price C/80/B12
- T-1 - Transfer Grille E.H. Price 535/F/L/A/B12 45 deg. deflection, two required, one each side of wall.

LOUVRES

- Airlock K6776 Extruded Aluminum c/w 1/2" bird screen, Factory baked enamel finish, conform colour by Owner.

MU-1 PARKADE MAKE-UP AIR UNIT

- MU-2 Engineered Air HE-251 direct fired make-up air unit c/w 1" disposable filters, electric ignition, ball bearing blower mounts with spring isolators, auto reset low limit, disconnect switch and discharge control stat set at 60 deg. F. Hi Alt. input 3,025 MBH, 25,000 CFM at 1.5" ESP, 20 HP motor, 208/3/60.
- Provide contacts for Fire Alarm shut-down, interlock with fan EF-3 and EF-4 with 24 hours timer. Unit must fit in 1 parking space.
- Provide remote control panel in Mechanical Room c/w Summer/Winter switch and contacts for Fire Alarm shut-down.

MU-2 AND MU-3 CORRIDORS MAKE-UP AIR UNITS

- MU-2 and MU-3 Engineered Air DJ-60, indirect fired make-up air unit c/w stainless steel heat exchanger, 1" disposable filters, electric ignition, ball bearing blower mounts with spring isolators, auto reset low limit, disconnect switch and adjustable duct stat to control discharge air temperature set at 70 deg. F. Hi Alt. input 450 MBH, 3,200 CFM at 1.5" ESP, 1,500 lbs., 3.0 HP motor, 208/3/60. Roof mounted units will be c/w 7.5 ton cooling coils to provide space cooling in summer. Supply air temperature will be controlled by adjustable duct stat set at 65 deg. F. The unit heating section will be locked out when unit is operating in cooling mode. Remote, roof mounted condensing unit c/w refrigeration piping will be installed on isolation mounts with rubber pads (see Architectural drawings), to be supplied and installed by Mechanical Contractor. CU-1 and CU-2 condensing units shall be Carrier 36AK500-501, semi-hermetic compressor, 90 MBH cooling capacity, 208/3/60 cover supply, 600 lbs. Provide remote control panel in Mechanical Room c/w Summer/Winter switch, temperature dial and contacts for Fire Alarm shut-down.

FANS

- EF-1 Kitchen Exhaust fan, Natune Economy LL6130WHC, white, 75 W. bulb, (confirm 30" width and colour on site before ordering) 150 CFM, 115/1/60, 93 Watts, 2 speed.
- EF-2 Bathroom exhaust fan, Broan 650, 50 CFM, 3 Sones, 115/1/60, 3" dia. duct, 8" x 4" deep. All Bathroom exhaust fans shall be ceiling mounted and outdoor weather shield. Floor Bathrooms shall be wall mounted and complete with fire damper in exhaust duct.
- EF-3 AND EF-4 Penn BHM36, 12,500 CFM at 0.25" ESP, 582 RPM, 2.0 HP, 208/3/60. Parkade exhaust fan EF-3 and EF-4 shall be interlocked with make-up air unit MU-1 and shall be c/w motorized discharge dampers.

EF-5 TO EF-9

- Stair and Elevator Vestibules Supply air fans, c/w S/A grilles, Penn Z6H-TDA, 157 CFM at 0.25" ESP, 108 Watts, 115/1/60. EF-5 to EF-9 will supply unheated fresh air through fire dampers from intake air louvers. Exhaust fan shall be energized by relay from Fire Alarm Panel during fire mode, when MU-