ELECTRICAL SPECIFICATION

Electrical installation shall be in accordance with the current edition of The Canadian Electrical Code, Provincial, Municipal and other codes, rules and regulations.

The Contract shall include the furnishing of labor, new material, equipment and services necessary and reasonably implied and/or incidental to the complete installation of the electrical Work as shown on the plans and or specified. Supply and install all devices required for the complete approved system, operating to the complete satisfaction of the Contract Administrator.

Prepare and submit to the proper authorities all necessary permits and pay all fees. Provide Contract Administrator a PDF copy of all electrical permits.

Upon completion and before final payment is made, present to Contract Administrator a Certificate of Approval for all electrical Work from the inspection department having jurisdiction.

Electrical Work shall be completed in conformance with, and subject to, all cautionary notes available to the reader including those available on the websites of the manufacturers, consultants and Contract Administrator.

Electrical installation including electrical equipment supplied, installed or connected shall be tested in the presence of the City on completion of the Work.

The Electrical Subcontractor shall visit the site and ascertain that all Work indicated can be carried out without additional cost to the City.

The Electrical Subcontractor shall guarantee the satisfactory operation of all Work and apparatus included and installed under this section of the specification for a period of twelve (12) calendar months after the final acceptance of the complete building.

The Electrical Subcontractor shall be responsible for any damage caused the Owners, the City or their Subcontractors by improperly carrying out this contract.

The Electrical Subcontractor shall carefully examine all drawings and specifications relating to the Work to be certain that the Work under this Contract can be satisfactorily carried out and prior to the submission of his tender, report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the Work of this section or the guarantee of same.

Submit one set of "as-built" prints or PDF documents to the Contract Administrator.

Grounding shall be in accordance with the latest edition of The Canadian Electrical Code.

Panelboards, motor starters, disconnect switches, etc., shall be properly identified by means of engraved lamacoid nameplates.

Supply and install all motor controls unless noted otherwise on the drawings. Refer to Mechanical drawings for exact location of motors and mechanical equipment. Unless otherwise specified and/or shown on the drawings, supply and install the following motor control equipment:
- Manual motor starters.
- Magnetic motor starters which are not part of package equipment. Refer to Mechanical drawings and specifications.
- Pushbutton stations.
- Hand-off-auto selector switches.
- Motor disconnect switches.
- Interlock contacts as required for starters.
- Enclosures.
- Starter heater elements as required for starters.
- Contactors.
- Time clocks, time switches and photoelectric relays.
- Pilot lights for all starters, switches and pushbutton stations.

Mechanical and Electrical Subcontractors are responsible for the mutual coordination of all electrical requirements of mechanical equipment. Coordination is to include the communication of all final electrical nameplate information from the Mechanical Subcontractor to the Electrical Subcontractor, the communication of the detailed control information as well as any ancillary information required for the final systems to operate as intended by the responsible Professional Engineer. The coordination is to occur prior to the ordering of equipment by either trade. No extra compensation will be allowed due to failure to carry out this coordination. Report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the satisfactory completion of Work.

Conduits shall be electric metallic tubing unless otherwise noted on drawings or unless prohibited by regulations. Conduits in direct contact with earth or in concrete shall be rigid PVC. Conduits shall be concealed unless otherwise noted on the drawings. Conduits shall not be exposed in any area where concealed installation, apparatus or work is required without prior written approval.

Outlet, junction and switch boxes shall be galvanized pressed steel of size and type to suit the requirements of each outlet. Outlet boxes shall be accessible.

All wiring shall be in conduit, except that armoured cable may be used in stud partitions and for drops to recessed luminaires (max. 4 luminaires per drop). Armoured cable drops (including any daisy chain) shall not exceed 9m in total length.

Wire and cable shall be copper of standard AWG sizes with 600V (90 Degree C) insulation. Insulation shall be X-Link Polyethylene unless otherwise noted on drawings or prohibited by regulations. Aluminum conductors will not be accepted, unless otherwise indicated. Minimum wire size shall be # 12 AWG.

Panelboards shall be factory-assembled custom made of size, type and arrangement as shown on drawing. Circuit breakers shall be bolt-in, moulded-case, thermal and magnetic trip. Trip values as shown on drawing. Two or three pole breakers shall have common trip units. Mount a typewritten directory behind a plastic shield on the inside of panelboard doors. All distribution equipment to be sprinkler-proof and c/w lockable door. All top entry of conduits or cables must utilize rain-tight wiring methods. Minimum fault rating of circuit breakers shall be 22KA S.C.I.C.

Wall-mounted flush switches shall be specification grade 15A, 125VAC. White handle, side or back wiring. Mount switches 1200mm above finished floor unless otherwise noted on the drawings.

Duplex receptacles shall be specification grade 15A, 125VAC, parallel slot, U-ground, white, side and back wiring. Mount receptacles 450mm above finished floor or 150mm above counter tops unless otherwise noted on the drawings.

Cover plates for flush-mounted receptacles and switches on concealed conduit system shall be stainless steel.

Telephone raceway system shall be in separate and independent conduit system. Empty conduits shall be complete with a #12 AWG pull wire. Install as shown on drawings. Complete entire installation to local telephone utility requirements and satisfaction.

Mount surface mounted equipment such as panelboards, telephone cabinets and other electrical equipment on fireguard mounting boards, c/w grey enamel finish.

Any cutting and patching in existing walls or floors required for the addition or relocation of electrical equipment shall be the responsibility of the Electrical Subcontractor.

Provide code conforming emergency lighting and exit system. Min. wire size for this system as per manufacturers recommendations. Acceptable manufacturers include: Almlite, Lumacell.

The Electrical Subcontractor shall relocate outlets at no additional charge if requested prior to roughing in. The Electrical Subcontractor shall relocate outlets at no additional charge if requested by the local authority having jurisdiction.

Electrical installation shall in conformance with the barrier free requirements applicable in the latest edition of the National Building Code of Canada.

Where luminaires are recessed into insulated ceilings, the Electrical Subcontractor is responsible for providing luminaires suitable for that use.

Supply and install all indicated electric heaters, standard watt density to be Dimplex or approved equal. Thermostats to be calibrated in degrees Celsius.

Equipment and material shall be installed as specified. Requests for equal status shall be submitted in accordance with B7. Where not covered by B7, request shall be submitted to Contract Administrator 5 Working days prior to tender submission none of these requests will be accepted past the 5 day deadline and only one request will be considered from each supplier (if rejected for any reason, no further substitutes from the same supplier will be reviewed).

Electrical Subcontractor shall submit shop drawings to Contract Administrator for review prior to ordering equipment. At the request of the Contract Administrator, the successful Electrical Subcontractor shall submit a completed C-1 form (form available from Contract Administrator).

Supply and install, wire and connect all luminaires (to be complete with lamps) as indicated. All luminaires exceeding 150V shall be complete with an integral disconnecting means that will simultaneously open all circuit conductors and conductors supplying the ballast(s). All luminaires exceeding 150V shall be marked in a conspicuous, legible, and permanent manner adjacent to the disconnecting means, identifying the specific purpose. Refer to Canadian Electrical Code rule 30-308(4).

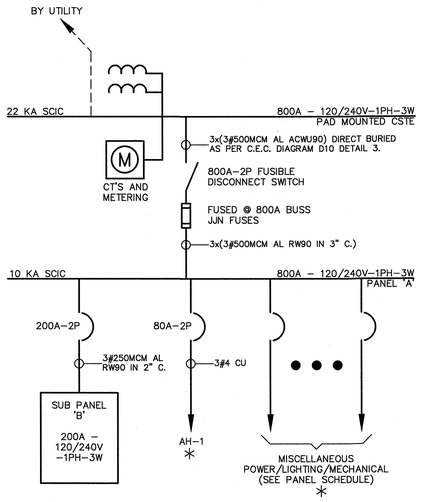
Final connection to all mechanical equipment to be flexible. Obtain and refer to mechanical shop drawings of mechanical equipment for circuit breaker and wire size. Adjust circuit breaker and wire size without additional cost to The City.

All existing and new City equipment is to be wired and connected. Supply and install, wire and connect matching receptacle for portable equipment complete with cord and cap. Refer to equipment name plate rating for electrical characteristics prior to rough-in. All City equipment which is non-portable, shall be directly connected via cab tyre cord matching electrical characteristics as determined by nameplate ratings of equipment. Confirm nameplate characteristics prior to rough-in.

Pay all utility contribution charges for associated power and telephone services. Provide trenching and backfilling as required. Coordinate all requirements with utilities prior to tender close to ensure availability and contribution costs of services.

The Electrical Subcontractor is responsible for the supply & installation of all communication wiring, unless otherwise noted.

The Electrical Subcontractor is responsible for the supply & installation of a complete Johnson Controls card access system to Contract Administrator's satisfaction.

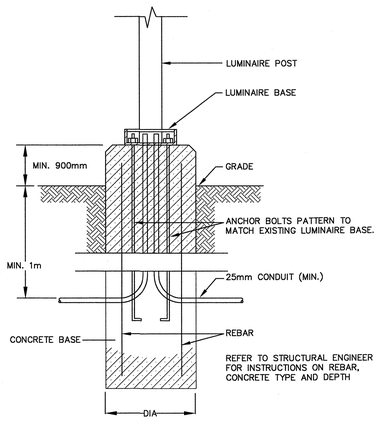


SINGLE LINE DIAGRAM

N.T.S

* SIZE CIRCUIT BREAKER AND WIRING ACCORDING TO THE FINAL NAMEPLATE RATING ON THE EQUIPMENT.

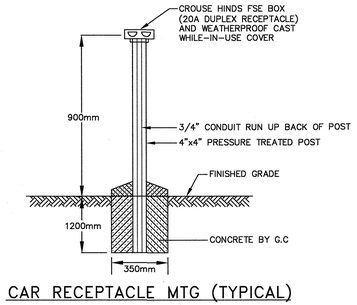
NOTE: 1. DASHED INDICATES EXISTING/BY OTHERS.



LUMINAIRE BASE DETAIL

N.T.S

NOTE: CONCRETE DIMENSIONS AND TYPE TO BE SPECIFIED BY STRUCTURAL ENGINEER AND BASED ON AVAILABLE SOIL CONDITIONS.



CAR RECEPTACLE MTG (TYPICAL)

N.T.S

NOTE:

1. CAR RECEPTACLES ARE TO BE PROGRAMMED TO LIMIT CURRENT DRAW TO BLOCK HEATER ONLY.
2. PROVIDE ADDITIONAL CONTROL PROGRAMMING TO OWNER'S SATISFACTION.

PANEL 'A' — VOLTAGE 120/240V–1PH–3W; MOUNTING SURFACE; MAIN BUS 800A; LOCATION ELEC 105; REMARKS –

DESCRIPTION	BKR	CIRCUIT	CIRCUIT	BKR	DESCRIPTION
PANEL 'B'	200	1	2	60	UH–2
		3	4		
AH–1	80	5	6	60	UH–2
		7	8		
GF RECEPTACLE	15	9	10	150	UH–1
GF RECEPTACLE	15	11	12		
MICROWAVE	20	13	14	150	UH–1
FRIDGE	15	15	16		
MOTORIZED DAMPER	15	17	18	125	RHC–1
RECEPTACLES	15	19	20		
RECEPTACLES	15	21	22	35	PHC–1
ELECTRIC STRIKE	15	23	24		
POWER DOOR OPERATORS	15	25	26	50	HWT–1
FF–6	35	27	28		
		29	30	50	HWT–2
SC T–SLOT RECEPTACLE	20	31	32		
RECEPTACLES	15	33	34	15	HRV–1
SC T–SLOT RECEPTACLE	20	35	36	15	RCP–1
TELEPHONE BACKBOARD	15	37	38	15	EXTERIOR LIGHTING
SECURITY PANEL	15	39	40	15	EXTERIOR LIGHTING
POWER DOOR OPERATOR	15	41	42	15	LIGHTING
HAND DRYER	15	43	44	15	LIGHTING
LOW VOLTAGE TRANSFORMER	15	45	46	–	SPACE
HAND DRYER	15	47	48	–	SPACE
LOW VOLTAGE TRANSFORMER	15	49	50	–	SPACE
GF RECEPTACLE	15	51	52	–	SPACE
RECEPTACLES	15	53	54	–	SPACE
MOTORIZED DAMPERS	15	55	56	–	SPACE
MOTORIZED DAMPERS	15	57	58	–	SPACE
BASEBOARD HEATER	15	59	60	–	SPACE
GF WP T–SLOT RECEPTACLE	20	61	62	–	SPACE
GF WP T–SLOT RECEPTACLE	20	63	64	–	SPACE
SPACE	–	65	66	–	SPACE
SPACE	–	67	68	–	SPACE
SPACE	–	69	70	–	SPACE
SPACE	–	71	72	–	SPACE
SPACE	–	73	74	15	SPARE
SPACE	–	75	76	15	SPARE
SPACE	–	77	78	15	SPARE
SPACE	–	79	80	20	SPARE
SPACE	–	81	82	20	SPARE
SPACE	–	83	84	15	EMERGENCY LTG/EXIT AND NIGHT LTG

PANEL 'B' — VOLTAGE 120/240V–1PH–3W; MOUNTING SURFACE; MAIN BUS 200A; LOCATION EQUIPMENT SHOP 114; REMARKS C/W LOCKABLE DOOR

DESCRIPTION	BKR	CIRCUIT	CIRCUIT	BKR	DESCRIPTION
WP GF RECEPTACLES	15	1	2	**	PRESSURE WASHER (WP)
WP GF RECEPTACLES	15	3	4		
WP GF RECEPTACLES	15	5	6	***	AIR COMPRESSOR
WP GF RECEPTACLES	15	7	8		
WP GF RECEPTACLES	15	9	10	20	EF–1
OVERHEAD DOOR OPERATOR	*	11	12	15	EXTERIOR LIGHTING
OVERHEAD DOOR OPERATOR	*	13	14	15	LIGHTING
OVERHEAD DOOR OPERATOR	*	15	16	–	SPACE
SC T–SLOT RECEPTACLE	20	17	18	–	SPACE
SC RECEPTACLE	15	19	20	–	SPACE
SC RECEPTACLE	15	21	22	–	SPACE
GF SC RECEPTACLE	15	23	24	–	SPACE
GAS DETECTION SYSTEM	15	25	26	–	SPACE
MOTORIZED DAMPER	15	27	28	–	SPACE
SC RECEPTACLE	15	29	30	–	SPACE
SC RECEPTACLE	15	31	32	15	SPARE
SC RECEPTACLE	15	33	34	15	SPARE
SC RECEPTACLE	15	35	36	15	SPARE
SC RECEPTACLE	15	37	38	20	SPARE
BASEBOARD HEATER	15	39	40	20	SPARE
POWER DOOR OPERATOR	15	41	42	20	EMERGENCY LTG/EXIT AND NIGHT LTG

* COORDINATE EXACT REQUIREMENTS WITH OVERHEAD DOOR SUPPLIER PRIOR TO ORDERING. SIZE CIRCUIT BREAKER AND WIRING ACCORDINGLY.
** COORDINATE EXACT REQUIREMENTS OF OWNER SUPPLIED PRESSURE WASHER PRIOR TO ORDERING. SIZE CIRCUIT BREAKER AND WIRING ACCORDINGLY.
*** COORDINATE EXACT REQUIREMENTS OF OWNER SUPPLIED AIR COMPRESSOR PRIOR TO ORDERING. SIZE CIRCUIT BREAKER AND WIRING ACCORDINGLY.

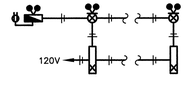
PE

TC

SYMBOL SCHEDULE

- B1–a — Linear luminaire, 'B1–a' denotes panel circuit # and switch.
- N/L — Night light luminaire.
- Ceiling mounted luminaire.
- A — Wall mounted luminaire. 'A' denotes type.
- Post light.
- Single pole switch.
- OC — Single pole switch c/w occupancy sensor control. Auto on/off unless otherwise indicated. Sensorswitch.
- D — Dimmer switch c/w separate neutral. Wattage and type to match circuit.
- OC — Ceiling mounted occupancy sensor. 'W' indicates wall mounted. Auto on/off unless otherwise indicated. Sensorswitch. Electrical Contractor to adjust quantity, location & mounting for optimal performance to suit room layout.
- TC — Astronomical digital time clock by electrical contractor. Tork DGLC200a series.
- PE — Photocell by electrical contractor.
- Duplex receptacle.
- 4 — Quadplex receptacle.
- Duplex receptacle mounted above counter level. (See architectural elevations.)
- SC — Duplex receptacle on separate circuit. Provide lamacoid label indicating "SC".
- M — 20A T–slot receptacle for microwave mounted above counter. Verify location before installation.
- WP — Duplex receptacle weather proof.
- IPLC — Crouse Hinds FSE box c/w IPLC unit (duplex receptacle) and weatherproof cast while–in–use cover. Program to limit current draw to block heater only. Provide additional programming to owner's satisfaction.
- GF — Ground fault duplex receptacle.
- 20A T–slot duplex receptacle.
- Special outlet to match owners equipment. Confirm voltage, amperage, poles and configuration prior to installation.
- Combination voice/data outlet c/w jacks and cover plate and two(2) Cat6 UTP plenum rated cables back to Electrical Room 105 (without splice). Provide j–hooks as required to support cabling, unless otherwise noted. '2' indicates number of cables. Terminate both ends and provide test report. Patch panels and LAN rack by E.C. LAN rack to be Hammond RB–SW12 wall mounted rack and provide all mounting hardware, fans and outlet strips as required.
- Fireguard backboard c/w power supply and #6 AWG green ground wire to building ground and c/w one(1) 4" entrance conduit as required by the telephone utility and one(1) 3" entrance conduit as required by the CATV utility.
- Motor. Refer to mechanical for exact location. For roof mounted equipment, supply and install wire and connect a separate circuit GFI receptacle in accordance with C.E.C. rule 26–708 and 26–710.
- Fusible disconnect switch to suit application. By electrical contractor.
- M — Motorized damper control wiring by mechanical contractor, 120V power supply by electrical contractor.
- Junction box.
- HD — Electric hand dryer by electrical contractor. Recessed, high flow. Model: Toto Clean Dry – HDR101#WH (120V–1PH, 3.3A)
- FF–4K — Electric force flow heater c/w built in thermostat unless otherwise indicated. 'FF–4' denotes type. '4K' denotes wattage. See heating schedule for details.
- C 1000 — Electric heater, "C" denotes type, see electric heating schedule. "1000" denotes watts. ● denotes heater c/w built in thermostat. ○ denotes heater controlled by remote thermostat. Provide low voltage relays if required. Refer to mechanical for details.
- UH–1 — Electric unit heater c/w built in thermostat unless otherwise indicated. 'UH–1' denotes type. See heating schedule for details.
- Emergency battery bank c/w two(2) 6W (540 lumen) LED heads. 12V, backup battery capacity to suit. Lumacell.
- LED Emergency double head fixture c/w two(2) 6W (540 lumen) LED heads. Wire to battery bank. Lumacell.
- LED pictogram exit sign. Provide AC and DC power supply. Refer to emergency lighting riser diagram for details. Lumacell.
- Combination LED pictogram exit sign/emergency double head fixture c/w two(2) 6W (540 lumen) LED lamps and integral battery backup (minimum 30 minutes). Lumacell.
- K — Security system keypad supplied by city of Winnipeg installed by E.C. – Bosch B930.
- A — Security system arming station reader supplied by city of Winnipeg, installed by E.C.
- C — Security system card access reader. HID multiclass SE RP40 (920PTNNEK00000) card reader or HID RP15 (910PTNNEK00000) (for slim mullion mount ONLY).
- FS — Electric strike. TBD by door hardware installer.
- A — Security system door contact. GE or equivalent. 1" sealed recessed unit. GRI 4700–A c/w GRI 6444–1 resistor pack.
- M — Security system Dual Tech motion detector supplied by city of Winnipeg installed by E.C. – Bosch ISC–CDL1–W15G.
- Security system horn/strobe supplied by city of Winnipeg installed by E.C. – Amseco SSX–52SB.

Note: 'E' indicates existing to remain.
'R' indicates existing electrical device relocated to new location indicated.
'WP' indicates electrical device to be weather proof



EMERGENCY LIGHTING AND SIGNAGE

N.T.S.

1. CONDUCTORS SIZED TO MANUFACTURERS RECOMMENDATIONS. MAXIMUM 5% VOLTAGE DROP.
2. WIRE AND CONNECT DC TO ALL COMPONENTS.
3. PROVIDE 30 MINUTE CAPACITY UNDER FULL LOAD.
4. INTERLOCK WITH NORMAL LIGHTING CIRCUIT TO ACTIVATE EMERGENCY LIGHTING UPON LOSS OF NORMAL LIGHTING IN THE AREA, FOR EACH EMERGENCY LIGHTING HEAD. PROVIDE ZONE SENSING RELAYS AS REQUIRED.

APEGM
Certificate of Authorization
Nova 3 Engineering Ltd.
No. 962 Date: 2021.11.01

NO.	DATE	REVISION / ISSUANCE
3		
2		
1		
0	2021.11.01	- Issued for Construction

Seal

PROVINCE OF MANITOBA — D. P. ZILINSKI — 2021.11.01 — REGISTERED ENGINEER

Architect

Engineer

NOVA 3 ENGINEERING LTD.
PROFESSIONAL ENGINEERS
201–120 FORT STREET TEL.: (204) 943–6142
WINNIPEG, MANITOBA R3C 1C7 FAX.: (204) 942–1276
WWW.NOVA3.CA JN.: 41–070

Project

ST. VITAL PARK MAINTENANCE FACILITY

190 RIVER ROAD

Sheet Title

ELECTRICAL - SPECIFICATIONS

Project No. 20105

Date 2021.11.01

Sheet **E1.0**