

ELECTRICAL SPECIFICATIONS

ELECTRICAL SCOPE OF WORK

THE SCOPE OF WORK FOR THIS PROJECT IS TO SUPPLY AND INSTALL ALL REQUIRED ELECTRICAL ITEMS FOR A COMPLETE AND OPERATIONAL BUILDING RENOVATION IN ACCORDANCE WITH THE INTENT OF THESE SPECIFICATIONS AND DRAWINGS AND ALL APPLICABLE CODES. THESE ITEMS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

–SUPPLY AND INSTALL WIRING AND CONDUIT TO ALL NEW ROOFTOP MECHANICAL EQUIPMENT. (AMU–1, AHU–1, AHU–2 AND CU–1)

–SUPPLY AND INSTALL WIRING AND CONDUIT TO ROOFTOP WEATHERPROOF CONVENIENCE RECEPTACLE.

–SUPPLY AND INSTALL SEPARATE 25mm CONDUIT FOR CONTROLS TO AMU–1, AHU–1 AND AHU–2. ELECTRICAL CONTRACTOR TO INSTALL CONTROL CONDUITS AND COORDINATE WITH CONTROLS CONTRACTOR.

–SUPPLY AND INSTALL NEW 42 CIRCUIT 240/120V 3 PHASE 4 WIRE PANELBOARD SUITABLE FOR USE AS SERVICE ENTRANCE AND CIRCUIT BREAKERS FOR AMU–1, AHU–1, AHU–2, AND CU–1.

–SUPPLY AND INSTALL NEW 20A SINGLE PHASE GFCI CIRCUIT BREAKER IN PANELBOARD 2A FOR THE WEATHERPROOF ROOFTOP CONVENIENCE RECEPTACLE.

–SUPPLY AND INSTALL NEW SAFETY DISCONNECT SWITCHES FOR AMU–1, AHU–1, AHU–2 AND CU–1.

–PROVIDE LABELLING FOR ALL RECEPTACLES, PANELS AND SWITCHES. LABELLING SHALL BE INDICATED ON "AS–BUILT" DRAWINGS. SWITCHES WHICH CONTROL CONTACTORS AND OTHER AREAS SHALL BE CLEARLY LABELLED TO THE ENGINEERS APPROVAL.

–ALL LAMACOID TYPE LABELS SHALL BE ENGRAVED AND SECURED WITH SCREWS OR RIVETS.

–LOCATION OF CONDUIT RUNS, WIRING SIZES, JUNCTION BOXES, DISCONNECT SWITCHES, PANELBOARD, BREAKER SIZES, ETC SHALL BE INDICATED ON "AS–BUILT" DRAWINGS

–ALL CONFINED SPACES SHALL BE DEFINED AT THE PRETENDER MEETING.

–THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER COORDINATION OF ALL ITEMS WITH OTHER TRADES TO ENSURE THAT ALL ITEMS REQUIRING ELECTRICAL ARE INSTALLED AS REQUIRED.

–CONTRACTOR SHALL DISCONNECT, REMOVE AND DISPOSE OF ALL ASSOCIATED ABANDONED CABLING AND CONDUIT.

–CONTRACTOR SHALL DISCONNECT AND REMOVE ALL ABANDONED EQUIPMENT AND COORDINATE DISPOSAL OF REMOVED EQUIPMENT WITH DEPARTMENTAL REPRESENTATIVE.

–CONTRACTOR SHALL COORDINATE WITH DEPARTMENTAL REPRESENTATIVE FOR ANY POWER SHUTDOWNS.

PRODUCT SPECIFICATIONS

REFER TO SPECIFICATIONS IN TENDER DOCUMENTS FOR ADDITIONAL REQUIREMENTS.

CONDUIT, WIRE AND CONNECTIONS

DRAWINGS ARE SCHEMATIC ONLY. CONDUIT RUNS SHOWN INDICATE POINTS TO BE JOINED. RUNS MAY BE ALTERED BY THE CONTRACTOR TO SUIT ACTUAL FIELD CONDITIONS. ELECTRICAL DRAWINGS ONLY GIVE INDICATION OF OTHER TRADES EQUIPMENT.

A WARNING SIGN SHALL BE PLACED NEAR ALL MOTORS WITH THE FOLLOWING WORDING: "DO NOT SERVICE UNTIL DISCONNECTS ARE LOCKED OFF".

FINAL CONNECTIONS ON ALL EQUIPMENT SHALL BE WITH MIN. 450mm OR MAX. 1 METER LONG FLEX CONDUIT, PROVIDE DISCONNECTS AS PER CODE REQUIREMENTS.

ALL WIRE AND CABLE UNLESS SPECIFIED OTHERWISE SHALL BE COPPER, 98% CONDUCTIVITY, COLOUR CODED, NEW AND MARKED AS PER CODE REQUIREMENTS AND INSTALLED IN RACEWAYS. WIRES SHALL BE RATED MINIMUM 600V TYPE RW90–XLPE.

ALL WIRING SHALL BE SIZED AS PER CODE MINIMUM ALLOWABLE WIRE SIZE IS #12 AWG. CONDUCTORS #8 AND LARGER TO BE STRANDED. ALL WIRES INSTALLED IN CONDUIT SHALL BE PULLED IN AT THE SAME TIME. ONLY APPROVED PULLING LUBRICANT SHALL BE USED. COLOUR CODE CONDUCTORS WITH DIFFERENT COLOURS FOR EACH PHASE, NEUTRAL, GROUND AND BOND WIRES AS REQUIRED BY CODE.

ALL GROUND WIRES IN CONDUITS SHALL BE INSULATED.

PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR ALL 120 VOLT CIRCUITS.

CONDUITS SHALL NOT HAVE MORE THAN ONE VOLTAGE LEVEL OF WIRING RUNNING WITHIN THEM UNLESS THE INSULATION RATING FOR ALL CONDUCTORS IS EQUAL TO OR GREATER THAN THE HIGHEST VOLTAGE PRESENT WITHIN THE CONDUIT. MINIMUM CONDUIT SIZE SHALL BE 21mm, SEPARATE CONDUITS TO BE PROVIDED FOR EACH OF THE FOLLOWING; POWER, CONTROL, MONITORING AND DATA. INSTALL A SEPARATE GROUND CONDUCTOR WITHIN EACH CONDUIT RUN.

MAXIMUM VOLTAGE DROP SHALL BE AS PER CODE REQUIREMENTS.

ALL WIRE CONNECTIONS TO BE SECURELY FASTENED BY MEANS OF APPROVED CONNECTORS.

ALL NON–CURRENT CARRYING METAL PARTS SHALL BE GROUNDED AND/OR BONDED IN ACCORDANCE WITH THE CODE.

OPENINGS IN ALL ELECTRICAL METAL BOXES SHALL BE PUNCHED OR CUT. BURNING OF HOLES IS NOT PERMITTED.

INSTALL ALL CONDUITS, ETC. TO ACCOUNT FOR EXPANSION AND INSTALL APPROVED EXPANSION JOINTS WHERE REQUIRED.

RACEWAYS SHALL BE EMT WITH WATER TIGHT STEEL FITTINGS IN MECHANICAL, ELECTRICAL AND SERVICE ROOMS, OR AS OTHERWISE SHOWN ON THE DRAWINGS.

ALL CONDUITS MUST BE SECURELY FASTENED WITH APPROVED CLIPS AND SCREWS.

EXPOSED CONDUITS SHALL NOT BE ACCEPTED IN MAIN LIVING AREAS. EXPOSED CONDUITS ARE ACCEPTABLE IN MAIN ELECTRICAL, MECHANICAL ROOMS AND IN ATTIC SERVICE EXCESS SPACE FOR MECHANICAL AND ELECTRICAL.

PROVIDE OUTLET BOXES FOR CONNECTING TO DEVICES AND EQUIPMENT AS REQUIRED OR AS INDICATED ON DRAWINGS. LOCATIONS OF OUTLETS MAY BE CHANGED UP TO 5 METERS WITHOUT EXTRA CHARGE PROVIDED THAT INSTRUCTIONS FOR CHANGE ARE ISSUED BEFORE INSTALLATION OF THE OUTLET.

ALL CONDUIT, CONDUCTORS, WIRES, ETC. TO BE LABELLED IN INDELIBLE INK AT PANEL AND JUNCTION BOXES INDICATING DEVICE FED, PANEL NAME AND CIRCUIT NUMBER.

RECEPTACLES

SINGLE RECEPTACLES, DUPLEX RECEPTACLES, CSA TYPE 5–20R, 125 V, 20A, U GROUND, SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING.

–ALL ENCLOSURES AND COVERPLATES SHALL BE WEATHERPROOF WITH LABELS FOR CIRCUITING.

–COVERPLATE – INTERMATIC WP3100C OR EQUIVALENT

–ACCEPTABLE MANUFACTURER: MATCH EXISTING

DO NOT SCALE DRAWINGS

0	ISSUED FOR CONSTRUCTION	13/05/29
Revision/	Description/Description	Date/Date

Client/client

PUBLIC WORKS
AND GOVERNMENT SERVICES
CANADA

100-167 LOMBARD AVENUE
WINNIPEG MB R3C 2Z1

Project title/Titre du projet
**REPLACEMENT OF AIR HANDLING UNITS
OSBORNE CORRECTIONAL COMMUNITY CENTRE
1048 MAIN STREET, WINNIPEG, MB**

Approved by/Approuvé par

Designed by/Concept par
DAK

Drawn by/Dessiné par
GCN

PWSSC Project Manager/Administrateur de Projets TPSSC
TIM LODGE

PWSSC, Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'Ingénierie, TPSSC

Client/client

Drawing title/Titre du dessin

ELECTRICAL

ELECTRICAL SCOPE OF WORK,
SPECIFICATIONS, MOTOR SCHEDULE,
AND PANEL SCHEDULES

Project No./No. du projet R.058521.001	Sheet/Fauille E04 OF 04	Revision no./ La Révision no. 0
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MOTOR SCHEDULE									
MOTOR		STARTER				FEEDER		REMARKS	
NO.	DESCRIPTION	KW	HP	VOLTS/Ø	FLA	TYPE	CONFIG	ACCESSORIES	PROTECTION
AHU–1	AIR HANDLING UNIT	---	3.0	240,3	9.6	FVNR	SEP	1 G HOA	CB 40
AHU–2	AIR HANDLING UNIT	---	1.5	240,3	6.0	FVNR	SEP	1 G HOA	CB 25
AMU–1	AIR MAKE–UP UNIT	---	1.0	240,3	4.2	FVNR	SEP	1 G HOA	CB 20
P–1	HEATING CIRC PUMP	---	2.0	240,1	---	FVNR	SEP	1 G HOA	CB 30
P–2	HEATING CIRC PUMP	---	2.0	240,1	---	FVNR	SEP	1 G HOA	CB 30
P–3	DOMESTIC HOT WATER RECIRC PUMP	---	0.5	240,1	---	FVNR	SEP	1 G HOA	CB 15
P–4	EXCESS PRESSURE PUMP	---	.33	120,1	---	MNR	SEP	1 A O–F	---
F/F–1	HOT WATER FORCE FLOW	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
F/F–2	HOT WATER FORCE FLOW	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
F/F–3	HOT WATER FORCE FLOW	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
F/F–4	HOT WATER FORCE FLOW	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
EF–1	EXH. FAN–MAIN FLOOR	---	0.26	120,1	---	FVNR	SEP	1 G HOA	CB 15
EF–2	EXH. FAN–BASEMENT	---	0.19	120,1	---	FVNR	SEP	1 G HOA	CB 15
EF–3	EXH. FAN–1st & 2nd FLOOR	---	0.5	120,1	---	FVNR	SEP	1 G HOA	CB 15
EF–4	EXH. FAN–ELECT. ROOM	---	0.08	120,1	---	MNR	SEP	1 A O–F	---
EF–5	DRYER BOOSTER FAN	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
EF–6	DRYER BOOSTER FAN	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
EF–7	RANGE HOOD EXH. FAN	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
EF–8	DRYER BOOSTER FAN	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
B–1	BOILER	---	---	120,1	---	---	---	---	---
UH–1	UNIT HEATER	---	FRACT.	120,1	---	MNR	SEP	1 A O–F	---
CU–1	CONDENSER	---	200.0	240,3	47.7	---	---	---	---
NOTES:									
1. MOTORS ARE SUPPLIED AND INSTALLED BY DIVISION 15. ELECTRICAL CONNECTIONS MADE BY DIVISION 16.									
2. REFER TO MECHANICAL DRAWINGS FOR THERMOSTAT LOCATIONS.									
3. WIRE AND CONNECT 120V SUPPLY TO CONTROL TRANSFORMERS FOR BASEBOARD RADIATION CONTROLS. (ONE CONTROL TRANSFORMER PER FLOOR)									
ABBREVIATIONS:									
STARTER TYPE		STARTER CONFIGURATION				STARTER ACCESSORIES		PROTECTION TYPE	
C = COMBINATION (PROTECTION INTEGRAL WITH STARTER)		MCC = INCORPORATED INTO MOTOR CONTROL CENTRE				PLOT LIGHT		NF = NON–FUSED SWITCH	
OPS = GENERAL PURPOSE SWITCH		CCC = INCORPORATED INTO GROUPED CONTROL CENTRE				O = GREEN		F = FUSED SWITCH	
MNR = MANUAL NON–REVERSING		SEP = STAND–ALONE ENCLOSURE				R = RED		O–F = ON–OFF SELECTOR SWITCH	
MANR = MANUAL REVERSING						A = AMBER		A–M = AUTO–MANUAL SELECTOR SWITCH	
FVNR = FULL VOLTAGE NON–REVERSING								L–R = LOCAL REMOTE SELECTOR SWITCH	
FVR = FULL VOLTAGE REVERSING								PB = PUSH BUTTON ON – PUSH BUTTON OFF	
RVPR = REDUCED VOLTAGE PRIMARY RESISTANCE									
RVAT = REDUCED VOLTAGE AUTO–TRANSFORMER									
RVSD = REDUCED VOLTAGE STAR–DELTA									
RVWV = REDUCED VOLTAGE PART WINDING									

SUPPLY: 240V 1Ø 3W MAINS AMPACITY: 100 INCOMING: <input type="checkbox"/> BREAKER <input checked="" type="checkbox"/> LUGS MAIN BREAKER REQUIRED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO MAIN BREAKER AMPS: BUS MATERIAL: <input checked="" type="checkbox"/> COPPER <input type="checkbox"/> ALUMINUM BUS AND BREAKER RATING: 10kA	NAME PLATE: PANEL ' 2A '	LOCATION: SECOND FLOOR, RM 2–01 MOUNTING: <input type="checkbox"/> SURFACE <input checked="" type="checkbox"/> FLUSH MANUFACTURER: MODEL NO: BREAKER: <input type="checkbox"/> PLUG–IN <input checked="" type="checkbox"/> BOLT–ON SPD: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO SERVICE ENTRANCE RATED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
REV/CCT	VA P BKR L1 L2 BKR P VA	CCT/REV
B 1 RECEPT. 2–02	500 1 15	2 B
B 3 RECEPT. 2–02, 2–03	500 1 15	4 B
B 5 RECEPT. 2–06, 2–07	500 1 15	6 B
B 7 RECEPT. 2–06, 2–08, 2–09	500 1 15	8 B
B 9 RECEPT. 2–10, 2–11, 2–12	500 1 15	10 B
B 11 RECEPT. 2–11, 2–12, 2–13	500 1 15	12 B
B 13 RECEPT. 2–01, 2–19, 2–20, 2–21, 2–22	500 1 15	14 B
B 15 RECEPT. 2–22, 2–23	500 1 15	16 B
B 17 SPARE	500 1 15	18 B
B 19 SPARE	— 1 15	20 B
B 21 LTG. 2–02, 2–03, 2–23	1000 1 15	22 B
B 23 LTG. 2–04, 2–05, 2–06, 2–07, 2–08	1000 1 15	24 B
B 25 LTG. 2–18, 2–19, 2–20, 2–21, 2–22	1000 1 15	26 B
B 27 LTG. 2–01	1000 1 15	28 B
B 29 SPARE	— 1 15	30 B
B 31 SPARE	— 1 15	32 B
B 33 SPARE	— 1 15	34 B
B 35 SPARE	— 1 15	36 B
B 37 SPARE	— 1 —	38 B
B 39 SPARE	— 1 —	40 B
B 41 SPARE	— 1 —	42 B
LOAD 'L1' 8,500		LOAD 'L2' 6,000

SUPPLY: 240V 1Ø 3W MAINS AMPACITY: 100 INCOMING: <input checked="" type="checkbox"/> BREAKER <input type="checkbox"/> LUGS MAIN BREAKER REQUIRED: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO MAIN BREAKER AMPS: 100 BUS MATERIAL: <input checked="" type="checkbox"/> COPPER <input type="checkbox"/> ALUMINUM BUS AND BREAKER RATING: 10kA	NAME PLATE: PANEL ' BB '	LOCATION: BASEMENT RM B–05 MOUNTING: <input checked="" type="checkbox"/> SURFACE <input type="checkbox"/> FLUSH MANUFACTURER: MODEL NO: BREAKER: <input type="checkbox"/> PLUG–IN <input checked="" type="checkbox"/> BOLT–ON SPD: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO SERVICE ENTRANCE RATED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
REV/CCT	VA P BKR L1 L2 BKR P VA	CCT/REV
B 1 P–1	3000 2 30	2 B
B 5 P–3	3000 2 20	6 B
B 9 EF–5, EF–6, EF–8	300 1 15	8 B
B 11 FF–1, FF–4	200 1 15	10 B
B 13 UH–1	100 1 15	12 B
B 15 SPARE	— 2 40	14 B
B 17 SPARE	— 25 2	16 B
B 19 SPARE	— 15 1	18 B
B 21 SPARE	— 2 20	20 B
B 23 P–4	250 1 15	22 B
B 25 SPARE	— 1 15	24 B
B 27 SPARE	— 1 15	26 B
B 29 SPARE	— 1 15	28 B
B 31 SPARE	— 1 15	30 B
B 33 SPARE	— 1 —	32 B
B 35 SPARE	— 1 —	34 B
B 37 SPARE	— 1 —	36 B
B 39 SPARE	— 1 —	38 B
B 41 SPARE	— 1 —	40 B
LOAD 'L1' 5,800		LOAD 'L2' 5,430