SPECIFICATION

1. SCOPE OF WORK: PROVIDE ALL MATERIALS, EQUIPMENT & LABOUR REQUIRED TO CONSTRUCT COMPLETE A PROPERLY FUNCTIONING ELECTRICAL SYSTEM FROM POINT OF ELECTRICAL SERVICE THROUGH ALL DISTRIBUTION EQUIPMENT, FEEDERS, PANELBOARDS & BRANCH CIRCUIT WIRING TO ALL OUTLETS, DEVICES, FIXTURES AND EQUIPMENT IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

2. SUBMIT AS BUILT DRAWINGS UPON COMPLETION OF WORK. ELECTRICAL CONTRACTOR SHALL DELIVER TO THE OWNER TWO SETS OF AS BUILT DRAWINGS WHICH SHALL INCLUDE ALL REVISIONS AND ALL SHOP DRAWINGS MARKED IN RED.

3. SUBMIT SHOP DRAWINGS PRIOR TO INSTALLING ANY EQUIPMENT. SUBMIT TO ARCHITECT FOR APPROVAL A MINIMUM OF 6 COPIES OF SHOP DRAWINGS FOR EACH ITEM OF EQUIPMENT WITHIN 30 DAYS OF AWARD OF GENERAL CONTRACT. EQUIPMENT ORDERED OR INSTALLED WITHOUT WRITTEN APPROVAL OF THE ARCHITECT WILL NOT BE ACCEPTED.

4. ELECTRICAL PANELS & SPLITTERS SHALL BE SIZED AS INDICATED ON DRAWINGS WITH TYPE WRITTEN DIRECTORIES AND BE OF ONE COMMON MANUFACTURER. PANELS ETC., TO BE IDENTIFIED WITH LAMICOID NAMEPLATES.

5. WIRING DEVICES (SPECIFICATION GRADE) SHALL BE AS INDICATED ON THE LEGEND & SHALL BE MANUFACTURED BY P & S OR APPROVED EQUAL.

6. OUTLET BOXES SHALL BE 4" OCTAGONAL OR 4" SQUARE. EXTRA LARGE BOXES SHALL BE PROVIDED IN ACCORDANCE WITH OHEPC CODE IN LIEU OF SIZES SPECIFIED WHERE NECESSARY IN ORDER TO PREVENT UNDUE CROWDING OF WIRE. USE CASE NON FERROUS ALLOY OR ALUMINUM BOXES WITH GASKETED BLANK OR SPRING LOADED COVERS FOR ALL EXTERIOR LOCATIONS. RECEPTACLES AND SWITCH BOXES SHALL BE STANDARD 1104 ALL BOXES TO HAVE METAL COVERPLATES EXCEPT FINISHED AREAS WHICH SHALL BE PLASTIC – WHITE FINISH.

7. WIRE & CABLE: ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE DESIGNATED, STRANDED FOR #8 AWG & LARGER. MINIMUM SIZE WIRE SHALL BE #12 AWG FOR LIGHTING AND POWER. INSULATION SHALL BE 600V. BRANCH CIRCUIT RUNS EXCEEDING 75 FT. SHALL BE #10 AWG OR LARGER TO THE FIRST OUTLET. ALL CONNECTIONS TO MOTORS AND EQUIPMENT FROM DISCONNECT SWITCHES SHALL BE COPPER REGARDLESS OF WIRE SIZE.

8. GROUNDING: ALL GROUNDING SHALL BE INCLUDING TO SUIT THE REQUIREMENTS OF THE ONTARIO SAFETY CODE.

9. CONDUIT: ALL WIRING SHALL BE CONTAINED IN METALLIC RACEWAYS USING HOT DIPPED GALVANIZED RIGID STEEL CONDUIT OR ELECTRIC METALLIC TUBING (EMT). USE RIGID STEEL CONDUIT WHERE RUNS ARE EXPOSED TO THE WEATHER STUBBED UP THROUGH FLOOR UNDER OR IN SLABS AND UNDERGROUND. EXTERIOR OR IN SLAB CONDUITS MAY BE PVC SCEPTER. STUB UPS SHALL BE RIGID STEEL. FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR ALL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT USING FITTINGS MADE FOR THIS PRODUCT, AND USING NEOPRENE JACKETED TYPE (SEALTITE) FOR ALL OIL OR MOISTURE RELATED CONDITIONS. ALL CONDUIT TO BE CONCEALED EXCEPT AS NOTED. BX CABLE MAY BE USED FOR FIXTURE DROPS AND IN PARTITIONS ONLY.

10. MOTOR STARTERS: INSTALL AND CONNECT COMPLETE ALL MOTOR STARTERS AND UNMOUNTED MOTORS FURNISHED BY OTHER TRADES OR THE OWNER INCLUDING EQUIPMENT INSTALLED BY OTHERS AND NOT FACTORY PREWIRED. GENERALLY STARTERS WILL BE FURNISHED BY OTHERS EXCEPT AS NOTED. PROVIDE ALL NECESSARY DISCONNECT SWITCHES AS INDICATED ON DRAWINGS OR AS REQUIRED BY OHEPC CODE.

11. LIGHTING FIXTURES & LAMPS: SUPPLY & INSTALL, ADJUST & CLEAN UP ALL FIXTURES, LAMPS & LENSES AS DESCRIBED IN FIXTURE SCHEDULE. PROVIDE ALL AUXILIARY SUPPORTS AS REQUIRED, FIXTURES SHALL BE INDEPENDENTLY SUPPORT FROM STRUCTURE. LAMPS AND LENSES WILL BE SUPPLIED BY THIS CONTRACTOR.

12. TELEPHONE SYSTEMS: EMPTY CONDUIT EMT CONDUIT AS SHOWN ON DRAWINGS SHALL BE PROVIDED FOR THE TELEPHONE SYSTEM C/W OUTLET BOXES & COVERPLATES IN ACCORDANCE TO BELL CANADA REQUIREMENTS.

13. CODES, PERMITS & GUARANTEES: ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND CONTRACTORS SHALL PAY ALL PERMIT FEES. ALL MATERIALS & LABOUR SHALL BE UNCONDITIONALLY GUARANTEED FOR A PERIOD OF ONE YEAR AFTER COMPLETION.

14. FUSES: SUPPLY & INSTALL A COMPLETE SET OF FUSES RATED AS NOTED ON DRAWINGS IN ALL FUSIBLE DEVICES SUPPLIED BY THIS TRADE THROUGHOUT THE JOB:

    A. FUSES GREATER THAN 600A SHALL BE HRC FORM 1 CLASS "L" BUSSMAN TYPE KRP–C HI–CAP TIME DELAY FUSES.
    B. FUSES 600A OR LESS FOR NON–INRUSH CIRCUITS SHALL BE HRC FORM 1 CLASS "J" BUSSMAN TYPE JHC–HI–CAP TIME DELAY FUSE.
    C. ALL OTHER FUSES FOR SEPARATE DISCONNECTS OR PANELS SHALL BE HRC FORM 1 CLASS "J" BUSSMAN TYPE FRN–A (250V) OR FRS–A (600V) FUSETRON DUAL ELEMENT.
    D. FUSES FOR MOTOR LOADS SHALL BE TIME DELAY TYPE.

    NOTE: ALL FUSES SHALL BE BUSSMAN OR APPROVED EQUAL.

15. ELECTRICAL HEATERS: SUPPLY & INSTALL ALL ELECTRICAL HEATERS AS INDICATED ON DRAWINGS C/W BUILT–IN THERMOSTAT OR WALL MOUNTED THERMOSTATS AS INCLUDED. ALL HEATERS SHALL BE AS MANUFACTURED BY STELPRO OR APPROVED EQUAL. REFER TO HEATER SCHEDULE FOR TYPES, WATTAGES, LENGTHS, ETC.

16. ELECTRICAL SERVICES IN FIRE SEPARATIONS AND FIRE RATED ASSEMBLIES SHALL CONFORM TO SUBSECTION 3.1.7 OF THE ONTARIO BUILDING CODE. ALL OPENINGS WITHIN FIRE WALLS AND SLAB SEPARATION SHALL BE SEALED WITH FIRESTOP MATERIAL.

17. CONTRACTOR SHALL RUN ALL WIRING FOR FIRE ALARM SYSTEM IN 3/4"C & SHALL WIRE TO SUIT BUILDING SYSTEM INSTALLER'S RECOMMENDATIONS. TERMINATE WIRING TO SUIT BUILDING SYSTEM INSTALLER, FINAL TERMINATIONS & VERIFICATION BY BUILDING SYSTEM INSTALLER.

18. ALL ELECTRICAL EQUIPMENT TO BE CUTLER–HAMMER OR APPROVED EQUAL.

19. PROVIDE ULC LISTED FIRESTOP SYSTEMS FOR ALL PENETRATIONS THROUGH FIRE RATED SEPARATIONS.

PANEL SCHEDULE '2A'

VOLTS: 120/208V 3ø 4W — FEED:
MAIN: 225 AMPS — LOCATION: WAREHOUSE — MOUNTING: SURFACE

DESCRIPTION	WATTAGE ØA	WATTAGE ØB	WATTAGE ØC	Cct. No.	BREAKER	BREAKER	Cct. No.	WATTAGE ØA	WATTAGE ØB	WATTAGE ØC	DESCRIPTION
POWER FOR TIME CLOCK	300			1	15A 1P	15A 1P	2	500			DOOR OPERATORS
UNIT HEATERS		500		3	15A 1P	15A 1P	4		500		RECEPTACLES
UNIT HEATERS			500	5	15A 1P	15A 1P	6			500	RECEPTACLES
HWT–1 (1.5 KW)	1500			7	20A 1P	15A 1P	8	500			GENERAL RECEPTACLES
DOOR RECEPTACLES		500		9	15A 1P	15A 1P	10		500		COUTER RECEPTACLE
WAREHOUSE RECEPTACLES			500	11	15A 1P	15A 1P	12			500	W/R RECEPTACLES
EXHAUST FANS	500			13	15A 1P	15A 1P	14	500			CONTROL TRANSFORMER
SPARE				15	15A 1P	15A 1P	16		500		TELEPHONE RECEPTACLE
SPARE				17	15A 1P	15A 1P	18			500	TELEPHONE RECEPTACLE
SPARE				19	15A 1P		20				SPACE ONLY
SPARE				21	15A 1P		22				SPACE ONLY
SPARE				23	15A 1P		24				SPACE ONLY
SPARE				25	15A 1P		26				SPACE ONLY
SPARE				27	15A 1P		28				SPACE ONLY
SPARE				29	15A 1P		30				SPACE ONLY
SPARE				31	15A 1P		32				SPACE ONLY
SPARE				33	15A 1P		34				SPACE ONLY
SPARE				35	15A 1P		36				SPACE ONLY
FU–1 & CD–1	500			37	15A 3P		38				SPACE ONLY
		500		39			40				SPACE ONLY
			500	41			42				SPACE ONLY
TOTALS	2800	1500	1500					1500	1500	1500	

øA = 4300
øB = 3000
øC = 3000

TOTAL POWER = 10.3 KW

NOTE:

PANEL SCHEDULE '6A'

VOLTS: 347/600V 3ø 4W — FEED:
MAIN: 225 AMPS — LOCATION: WAREHOUSE — MOUNTING: SURFACE

	DESCRIPTION	WATTAGE ØA	WATTAGE ØB	WATTAGE ØC	Cct. No.	BREAKER	BREAKER	Cct. No.	WATTAGE ØA	WATTAGE ØB	WATTAGE ØC	DESCRIPTION
	EXIT & EMERGENCY LIGHTS	500			1	15A 1P	15A 1P	2	2000			2KW F/F HEATER
	NIGHT LIGHTS		500		3	15A 1P	15A 1P	4		2800		WAREHOUSE LIGHTING
*	SITE LIGHTING			1200	5	15A 1P	15A 1P	6			700	OFFICE LIGHTING
*	SITE LIGHTING	1200			7	15A 1P		8				SPACE ONLY
*	EXTERIOR LIGHTING		800		9	15A 1P		10				SPACE ONLY
	SPARE				11	15A 1P		12				SPACE ONLY
	SPARE				13	15A 1P		14				SPACE ONLY
	SPARE				15	15A 1P		16				SPACE ONLY
	SPARE				17	15A 1P		18				SPACE ONLY
	SPARE				19	15A 1P		20				SPACE ONLY
	SPARE				21	15A 1P		22				SPACE ONLY
	SPARE				23	15A 1P		24				SPACE ONLY
	SPARE				25	15A 1P		26				SPACE ONLY
	SPARE				27	15A 1P		28				SPACE ONLY
	SPARE				29	15A 1P		30				SPACE ONLY
	SPARE				31	15A 1P		32				SPACE ONLY
	SPARE				33	15A 1P		34				SPACE ONLY
	SPARE				35	15A 1P		36				SPACE ONLY
	O/H DOORS	1000			37	15A 3P	40A 3P	38	10000			
			1000		39			40		10000		SUB–FEED TO PANEL '2A'
				1000	41			42			10000	
	TOTALS	2700	2300	2200					12000	12800	10700	

øA = 14700
øB = 15100
øC = 12900

TOTAL POWER = 42.7 KW

NOTE:
* TO BE CONTROLLED BY TIME CLOCK

LEGEND OF SYMBOLS

- CEILING MOUNTED FLUORESCENT FIXTURE. INSCRIBED LETTER DENOTES TYPE AS PER SCHEDULE.
- CEILING OR WALL MOUNTED INCANDESCENT OR H.I.D. FIXTURE. INSCRIBED LETTER DENOTES TYPE AS PER SCHEDULE.
- AS ABOVE BUT ON NIGHT LIGHT CIRCUIT.
- CEILING OR WALL MOUNTED EXIT STENCIL FACE LIGHT FIXTURE, LED SERIES, SHADED AREA DENOTES REQUIRED FACE. STANPRO–TLA OR EQUAL. CONNECTED TO NORMAL POWER AND 12V DC EMERGENCY POWER. (GREEN RUNNING MAN)
- WALL MOUNTED EXIT LIGHT SIMILAR TO ABOVE EXCEPT C/W SELF–CONTAINED 6V DC EMERGENCY BATTERY PACK AND 2–12W QUARTZ LAMPHEADS STANPRO–TLA OR EQUAL. (GREEN RUNNING MAN)
- EMERGENCY LIGHTING UNIT 12VOLT DC SEE DRAWINGS FOR WATTAGE, STANPRO–TLA OR EQUAL.
- SINGLE OR DOUBLE REMOTE EMERGENCY LAMPHEADS WALL MOUNTED MICRO QUARTZ 12V DC LAMPS,SEE DRAWINGS FOR WATTAGE WATTAGE INDICATED REPRESENT WATTAGE FOR EACH HEAD
- 15A 120V DUPLEX U–GROUND RECEPTACLE C/W MATCHING COVERPLATE. MH 12" AFF (20A DENOTES 20A RATING) (I/G DENOTES ISOLATED GROUND). RECEPTACLE TO BE ORANGE IN COLOUR.
- SAME AS ABOVE EXCEPT MH 3'–6" AFF OR 6" ABOVE COUNTER.
- 15A 120V SPLIT CIRCUIT DUPLEX U–GROUND RECEPTACLE C/W MATCHING COVERPLATE. MOUNTING HEIGHT 3'–6" AFF OR 6" ABOVE COUNTER.
- 50A – 250V 3P – 4W GROUNDED SINGLE RECEPTACLE WALL MOUNTED (HUBBELL #8450 EEMAC 15–50R) 42" A.F.F.
- FLUSH FLOOR MOUNTED RECEPTACLE
- SINGLE POLE 3–WAY OR 4–WAY TOGGLE SWITCH C/W MATCHING COVERPLATE MH 3'–4" AFF.
- MOTION SENSOR SWITCH #CMR PDT 9 C/W MATCHING COVERPLATE MH 3'–4" AFF.
- LUTRON SLIDE TYPE DIMMER TO BE RATED FOR 1600W C/W MATCHING COVERPLATE MH 3'–4" AFF.
- TELEPHONE OUTLET – WALL MOUNTED (PROVIDE 3/4" C FROM EACH OUTLET TO CEILING SPACE.
- WALL MOUNTED TEL./DATA OUTLET, 12" A.F.F. EXTEND 3/4"C UP TO CEILING SPACE (F–INDICATES FLUSH FLOOR MOUNTED)
- TV — TV OUTLET – WALL MOUNTED (PROVIDE 3/4" C FROM EACH OUTLET TO CEILING SPACE.
- 120V MOTOR OR POWER OUTLET AS INDICATED ON DRAWINGS.
- 208V 1 PHASE MOTOR OR POWER OUTLET AS INDICATED ON DRAWINGS.
- 208V 3 PHASE MOTOR OR POWER OUTLET AS INDICATED ON DRAWINGS.
- 600V 3 PHASE MOTOR OR POWER OUTLET AS INDICATED ON DRAWINGS.
- DISCONNECT SWITCH SIZED AS INDICATED ON DRAWINGS OR TO SUIT.
- JB — JUNCTION BOX CEILING MOUNTED C/W CIRCUIT AS NOTED FOR FUTURE POWER CONNECTIONS OR AS NOTED ON DRAWINGS.
- STARTER SUPPLIED BY MECHANICAL CONTRACTOR BUT INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
- ELECTRIC BASEBOARD HEATER C/W BUILT–IN THERMOSTAT UNLESS INDICATED OTHERWISE. STELPRO. WATTAGE & VOLTAGE OF UNITS AS INDICATED ON DRAWINGS.
- ELECTRIC FORCE FLOW HEATER C/W BUILT–IN THERMOSTAT TAMPERPROOF. STELPRO. WATTAGE & VOLTAGE OF UNITS AS INDICATED ON DRAWINGS.
- WP — DENOTES "WEATHERPROOF"
- LINE VOLTAGE THERMOSTAT SUPPLIED BY MECHANICAL CONTRACTOR WIRED & INSTALLED BY ELECTRICAL CONTRACTOR.
- EMERGENCY STROBE/HORN "EMERGENCY CALL" EDWARDS CAT. #CFA–6536–G5
- PUSHBUTTON LABELLED LABELLED "ALERT" 3'–4" A.F.F. EDWARDS CAT. #CFA–7613 (24V PROVIDE CONTROL TRANSFORMER)

The contractor shall check all dimensions and other data from the job and report any discrepancies to the architects before proceeding. Do not scale drawing.

NO.	REVISIONS	DATE
1	ISSUED FOR PERMITS	2016-02-29
2	ISSUED FOR TENDER	2016-05-11

Owner
S. ACTON HOLDINGS LTD.

Drawing Title
ELECTRICAL DETAILS

Project Title
NEW WAREHOUSE

1340 HEINE COURT — BURLINGTON

LICENSED PROFESSIONAL ENGINEER
C.A.BLUM
4209607
FEB. 29/16
PROVINCE OF ONTARIO

N
CONSTRUCTION
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Approved	Checked	Drawn By
	J.P.	K.B.
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