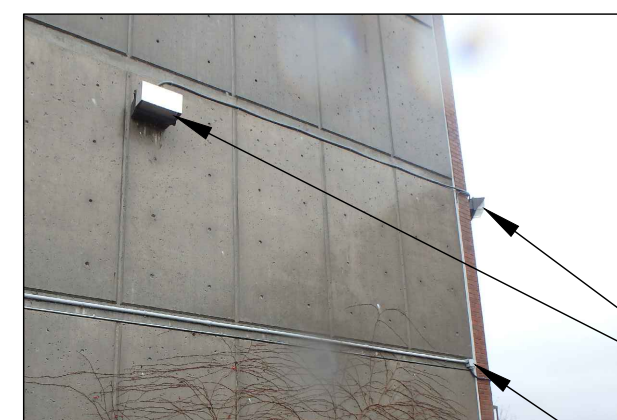
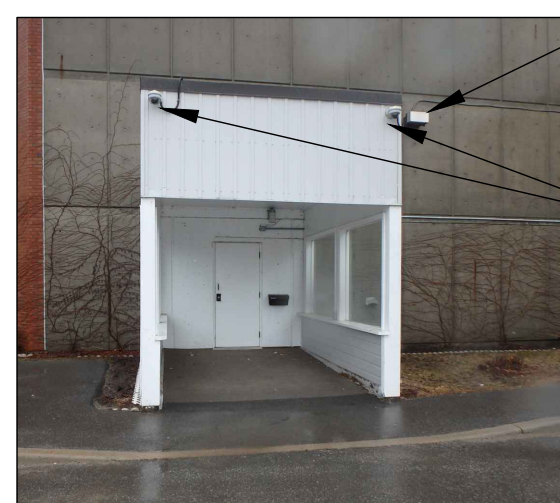


DRAWING NOTES:

- E1 DEMOLISH EXISTING CCTV CAMERAS & CONDUITS. REFER TO CLIENT TO RELOCATE TO ANOTHER LOCATION.
- E2 DEMOLISHED EXISTING LIGHT FIXTURE & CONDUIT. RELOCATE AS SHOWN. EXTEND CONDUIT & WIRING TO NEW LOCATION.



DRAWING NOTES:

- E1 DEMOLISH EXTERIOR LIGHTING FIXTURE AND CONDUITS.
- E2 DEMOLISH JUNCTION BOX AND RECONFIGURE CONDUITS ROUTING.

E1

E2

DRAWING NOTES:

- E1 RECONFIGURE CCTV CAMERA CONDUITS ROUTING.

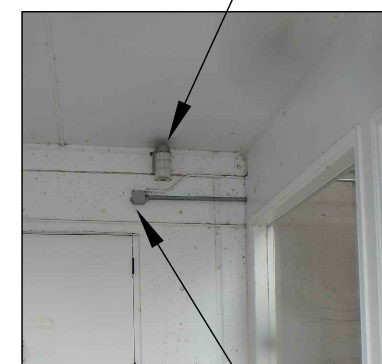
E1

DRAWING NOTES:

- E1 DEMOLISH LIGHTING FIXTURE.
- E2 DEMOLISH JUNCTION BOX AND RECONFIGURE CONDUITS ROUTING.

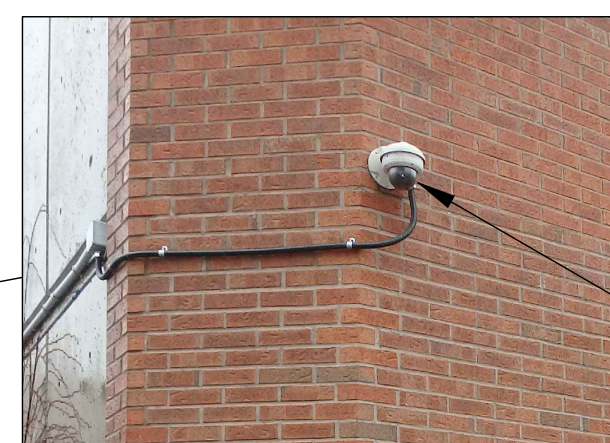
PHASE 1 - EXTERIOR

SCALE: 1:50

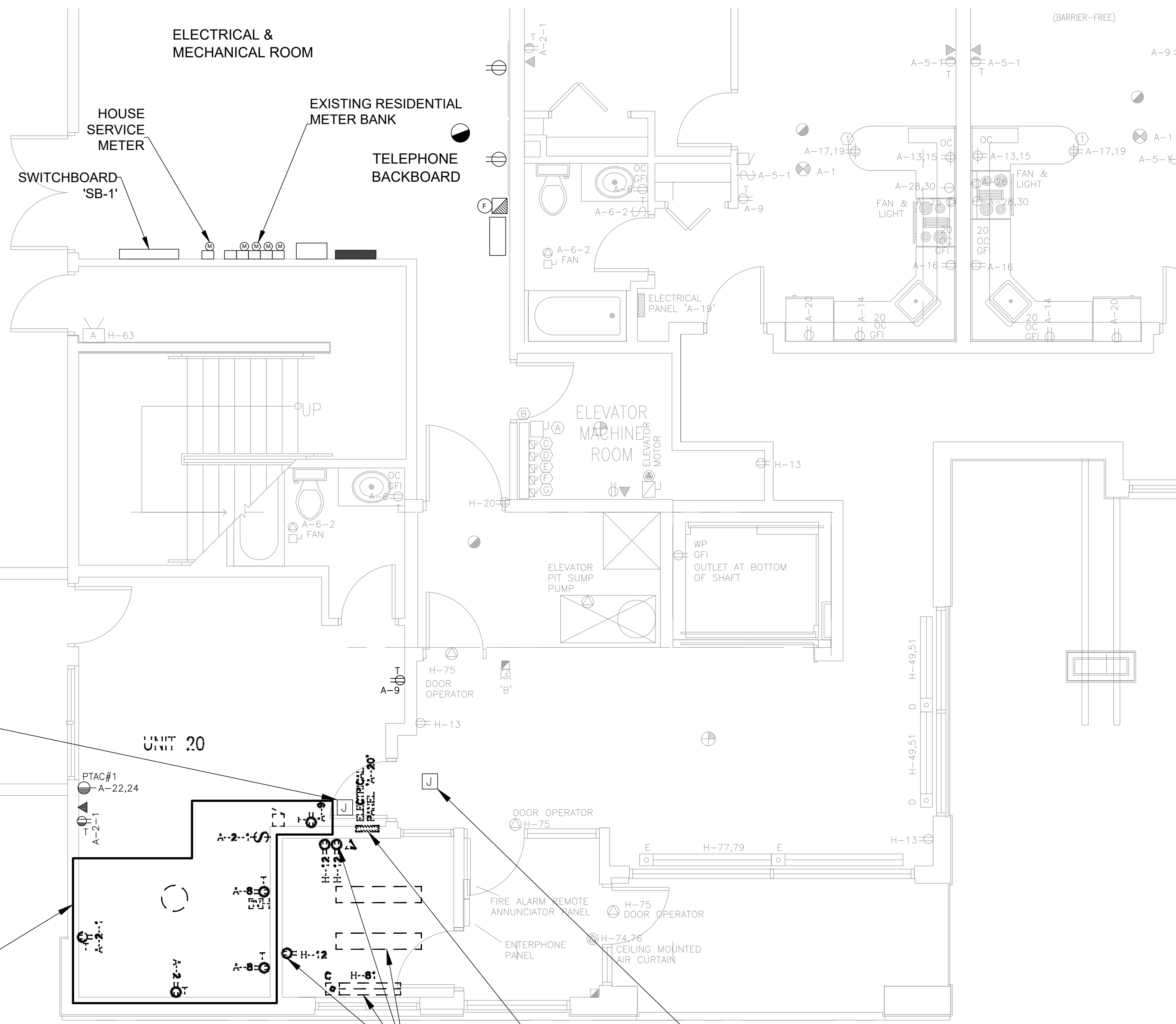


E1

E2



E1



PHASE 2 - PARTIAL FLOOR PLAN

SCALE: 1:50

DRAWING NOTES:

- 1 REMOVE ALL RECEPTACLES, LIGHTING, DATA, AND LIFESAFETY EQUIPMENT FROM INDICATED AREA BACK TO SOURCE.
- 2 UNIT 20 ELECTRICAL PANEL TO BE RELOCATED. DISCONNECT ALL APARTMENT CIRCUITS.
- 3 PROVIDE JUNCTION BOX ABOVE DROP CEILING FOR PANEL 'A-20' FEEDER JUNCTION. FEEDER TO BE EXTENDED FOR TO NEW PANEL LOCATION. SEE DRAWING E-1.
- 4 PROVIDE JUNCTION BOX AND ACCESS PANEL FOR EXTENSION OF UNIT 20 BRANCH CIRCUITS TO NEW PANEL 'A-20' LOCATION. SEE DRAWING E-1.
- 5 REMOVE RECEPTACLES, UNIT HEATS, DATA AND LIGHTING FROM CORRIDOR BACK TO SOURCE.

4

1

5

2

3

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PROJECT NORTH

TTF ENGINEERING

TTF Engineering Unit 205 - 1600 Merivale Road
Ottawa, ON K2G 5J8 Tel. 613-592-1677

PROJECT

Mills Phase Three
411 Country Street
ALMONTE, ONTARIO

DRAWING

ELECTRICAL DEMOLITION - EXTERIOR & EXISTING PHASE 2

DRAWN:	M.E.	DRAWING No.	E-0
APPROVED:	T.V.		
DATE:	DEC 14/17		
SCALE:	AS SHOWN		
SIZE:	ARCH D - 24"X36"		

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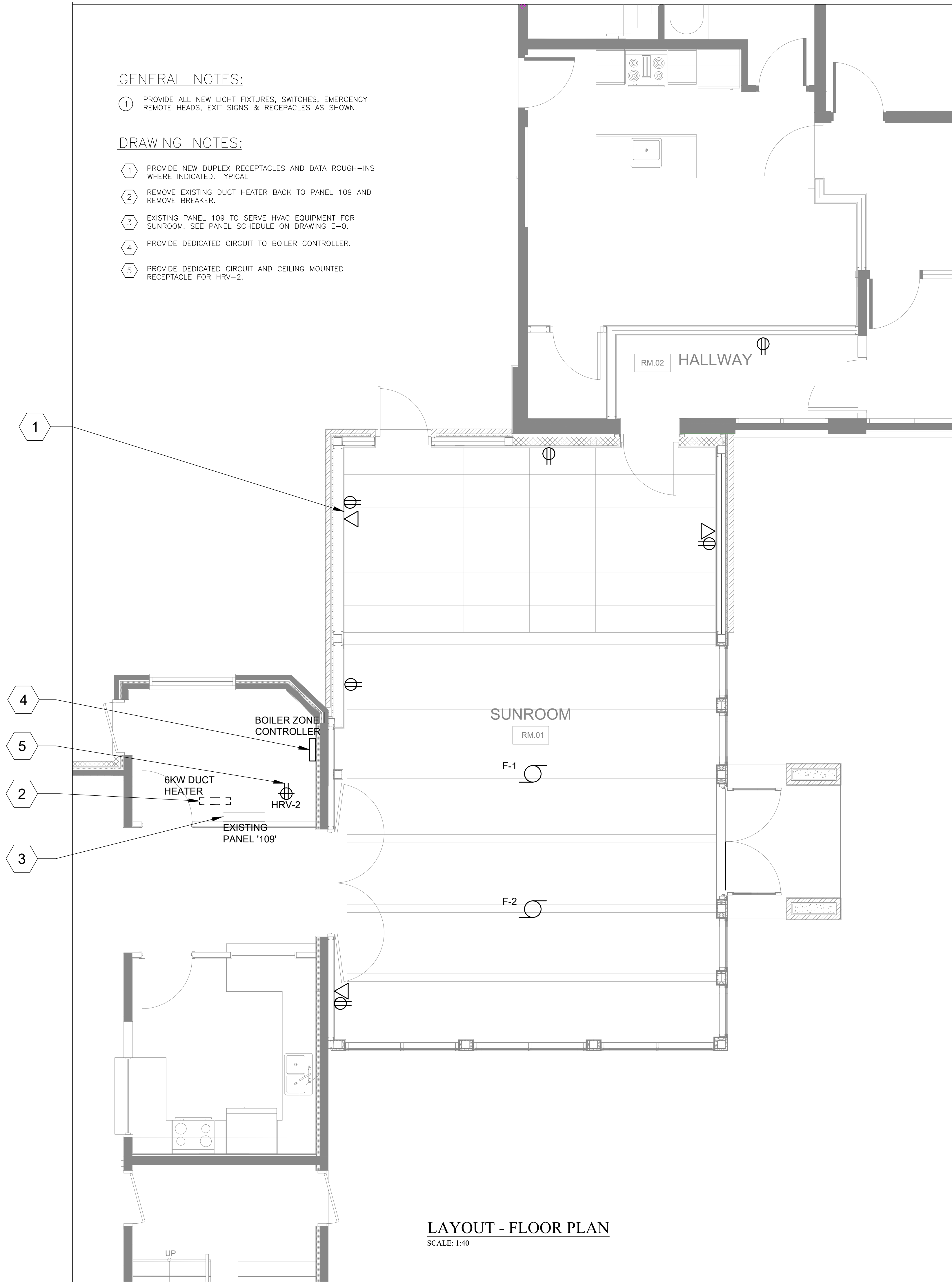
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GENERAL NOTES:

- ① PROVIDE ALL NEW LIGHT FIXTURES, SWITCHES, EMERGENCY REMOTE HEADS, EXIT SIGNS & RECEPTACLES AS SHOWN.

DRAWING NOTES:

- ① PROVIDE NEW DUPLEX RECEPTACLES AND DATA ROUGH-INS WHERE INDICATED, TYPICAL
- ② REMOVE EXISTING DUCT HEATER BACK TO PANEL 109 AND REMOVE BREAKER.
- ③ EXISTING PANEL 109 TO SERVE HVAC EQUIPMENT FOR SUNROOM. SEE PANEL SCHEDULE ON DRAWING E-0.
- ④ PROVIDE DEDICATED CIRCUIT TO BOILER CONTROLLER.
- ⑤ PROVIDE DEDICATED CIRCUIT AND CEILING MOUNTED RECEPTACLE FOR HRV-2.



LAYOUT - FLOOR PLAN
SCALE: 1:40

ELECTRICAL LEGEND			
NEW/RELOCATED	EXISTING	DEMO	DESCRIPTION
⊕	⊕	⊕	125VOLT DUPLEX RECEPTACLE 'GFI' INDICATES GROUND FAULT INTERRUPTER 'S-20R' INDICATES 20AMP RECEPTACLE
⊕	⊕	⊕	125VOLT ABOVE COUNTER DUPLEX RECEPTACLE
▽	▽	▽	TELECOMMUNICATIONS OUTLET C/W 3/4" CONDUIT RISER TO ACCESSIBLE CEILING SPACE H - INDICATES 1" CONDUIT RISER FOR HDMI
▽	▽	▽	TELECOMMUNICATIONS OUTLET ABOVE COUNTER
⌘	⌘	⌘	TOGGLE SWITCH D - INDICATES DIMMER MS - INDICATES INTEGRAL MOTION SENSOR 3W - INDICATES 3 WAY SWITCH
WP	WP	WP	'WP' INDICATES WEATHERPROOF
⊕	⊕	⊕	15AMP 125VOLT QUADRUPEX OUTLET
⊕	⊕	⊕	BASE-FEED TO PREWIRED EQUIPMENT
TV	TV	TV	POWER & DATA OUTLETS WITHIN RECESSED TV WALLBOX (DATA OUTLET WITH 1" CONDUIT RISER)
⊕	⊕	⊕	MOTION DETECTOR (CEILING MOUNTED)
⊕	⊕	⊕	JUNCTION BOX - 6"x6"x4" C/W HINGED COVER
⊕	⊕	⊕	POWER & DATA FLOOR OUTLETS
OP	OP	OP	POWERED DOOR OPERATOR C/W 3/4" EMT FROM OPERATOR TO PUSH PADDLE ON BOTH SIDES OF DOOR INTERCOM ENTRY SYSTEM
⊕	⊕	⊕	POWER POLE TO PREWIRED FURNITURE
⊕	⊕	⊕	SINGLE PHASE MOTOR ##-INDICATES MOTOR LABEL
⊕	⊕	⊕	3 PHASE MOTOR ##-INDICATES MOTOR LABEL
⊕	⊕	⊕	ELECTRICAL DISCONNECT SWITCH
⊕	⊕	⊕	MANUAL MOTOR STARTER (POLES AS REQUIRED; VOLTAGE AS INDICATED)
⊕	⊕	⊕	COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH

THIS IS A COMPREHENSIVE LEGEND - ALL ITEMS SHOWN MAY NOT NECESSARILY APPEAR ON THE DRAWINGS.

Project Number: MILLS PHASE 3				Date:					
Panel Identification: PANEL 109				Main Breaker: 100					
Location: MECHANICAL ROOM				Supply Volts: 120/208V, 1PH, 3W					
Main Bus Amps: 100				Installation: SURFACE					
DESCRIPTION	WATTS	AMP	CIR	A	B	CIR	AMP	WATTS	DESCRIPTION
COUNTER RCPT	200	20	1			2			MAIN DISCONNECT
STOVE	3000	50	3			4	100		RECEPTACLE HALL
HOOD FAN/MICROWAVE	60	15	7			6	15	200	KITCHEN LGTS
FRIDGE	630	15	9			10	20	200	MECH ROOM RECEPTACLE
COUNTER RCPT	200	20	11			12	25	1315	OU-1
COUNTER RCPT	200	20	13			14	25	1315	HRV-1
OUTDOOR SERVICE RECEPTACLE	200	20	15			16	15	800	AHU-1
BOILER ZONE PUMP CONTROLLER	680	15	17			18	15	333	
HRV-2	610	15	19			20	15	333	
PLUG LOAD	15	21				22	15		HOLD OPEN DEVICE
LIGHTING	15	23				24			
Total Phase A		6.76	kW					<GFI> = Ground fault detector	
Total Phase B		6.62	kW					<k> = Breaker locking device	
				Total Panel Load :		13.38		kW	

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PROJECT

Mills Phase Three
411 Country Street
ALMONTE, ONTARIO

DRAWING

NEW POWER AND DATA LAYOUT - FLOOR PLAN

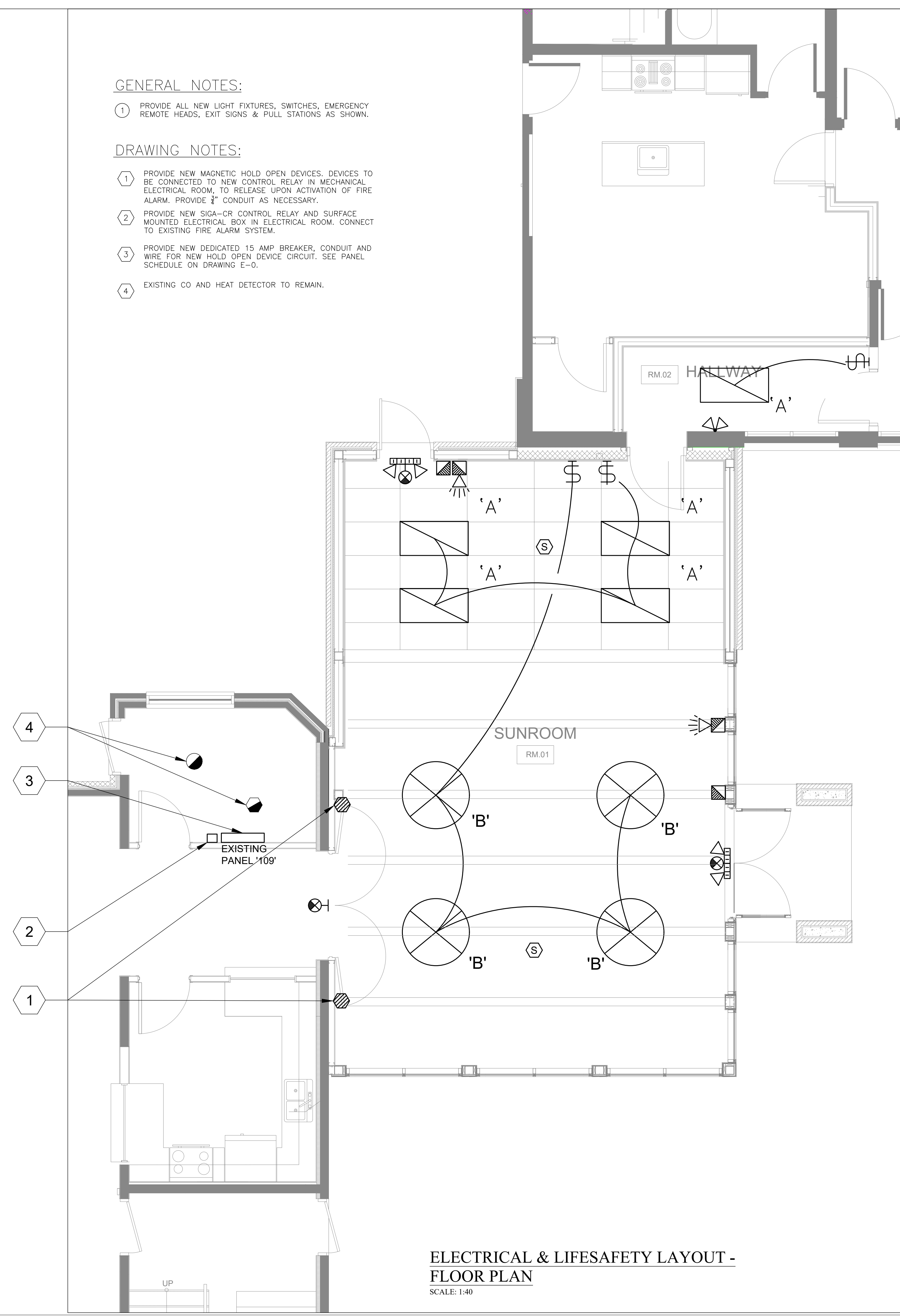
DRAWN:	M.E.	DRAWING No.	E-1
APPROVED:	T.V.		
DATE:	DEC 14/17		
SCALE:	AS SHOWN		
SIZE:	ARCH D - 24"X36"		

GENERAL NOTES:

- ① PROVIDE ALL NEW LIGHT FIXTURES, SWITCHES, EMERGENCY REMOTE HEADS, EXIT SIGNS & PULL STATIONS AS SHOWN.

DRAWING NOTES:

- ① PROVIDE NEW MAGNETIC HOLD OPEN DEVICES, DEVICES TO BE CONNECTED TO NEW CONTROL RELAY IN MECHANICAL ELECTRICAL ROOM, TO RELEASE UPON ACTIVATION OF FIRE ALARM. PROVIDE 3/4" CONDUIT AS NECESSARY.
- ② PROVIDE NEW SIGA-CR CONTROL RELAY AND SURFACE MOUNTED ELECTRICAL BOX IN ELECTRICAL ROOM. CONNECT TO EXISTING FIRE ALARM SYSTEM.
- ③ PROVIDE NEW DEDICATED 15 AMP BREAKER, CONDUIT AND WIRE FOR NEW HOLD OPEN DEVICE CIRCUIT. SEE PANEL SCHEDULE ON DRAWING E-0.
- ④ EXISTING CO AND HEAT DETECTOR TO REMAIN.



NEW/RELOCATED	EXISTING	DEMO	DESCRIPTION
			PULL STATION
			FIRE ALARM MINI-HORN
			FIRE ALARM BELL
			SMOKE DETECTOR
			HEAT DETECTOR
			MAGNETIC DOOR HOLD-OPEN DEVICE
			EXIT LIGHT
			EMERGENCY LIGHTING REMOTE HEADS
			EMERGENCY LIGHTING BATTERY UNIT
			DISCONNECT SWITCH
			'WP' INDICATES WEATHERPROOF
			BASE-FEED TO PREWIRED FURNITURE
			POWER POLE TO PREWIRED FURNITURE
			15AMP 125VOLT DUPLEX RECEPTACLE D - INDICATES DEDICATED
			TELECOMMUNICATIONS OUTLET C/W 3/4" CONDUIT RISER TO ACCESSIBLE CEILING SPACE H - INDICATES 1" CONDUIT RISER FOR HDMI
			ABOVE COUNTER DUPLEX RECEPTACLE / TELECOMMUNICATIONS OUTLETS (SEE ABOVE)
			TOGGLE SWITCH D - INDICATES DIMMER MS - INDICATES INTEGRAL MOTION SENSOR
			15AMP 125VOLT QUADRUPLUX OUTLET (ABOVE COUNTER)
			'GFI' INDICATES GROUND FAULT INTERRUPTER
			POWER & DATA OUTLETS WITHIN RECESSED TV WALLBOX (DATA OUTLET WITH 1" CONDUIT RISER)
			JUNCTION BOX - 6"x6"x4" C/W HINGED COVER
			JUNCTION BOX - 8"x8"x6" C/W HINGED COVER
			MOTION DETECTOR
			SINGLE PHASE MOTOR ##-INDICATES MOTOR LABEL
			POWERED DOOR OPERATOR C/W 3/4" EMT FROM OPERATOR TO PUSH PADDLE ON BOTH SIDES OF DOOR
			ROUGH-IN FOR ALARM KEY PAD 3/4" EMT STUBBED OUT AT CEILING LEVEL
			POWER & DATA FLOOR OUTLETS

SYMBOL	TYPE
	2'X4' LED PANEL-TYPE LIGHT FIXTURE MANUFACTURER: INFALITE MODEL #: INF-P2X4-50-30 INPUT WATTS : 50
	PENDANT LIGHT FIXTURE MODEL #: TBD INPUT WATTS : TBD

ELECTRICAL & LIFESAFETY LAYOUT - FLOOR PLAN
SCALE: 1:40

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Mills Phase Three
411 Country Street
ALMONTE, ONTARIO

DRAWING

NEW ELECTRICAL & LIFESAFETY LAYOUT - FLOOR PLAN

DRAWN: M.E.	DRAWING No.
APPROVED: T.V.	E-2
DATE: DEC 14/17	
SCALE: AS SHOWN	
SIZE: ARCH D - 24"X36"	

GENERAL INSTRUCTIONS

CONDITIONS AND CONTRACT

EXPLOSIVE ACTUATED TOOLS).

- THE OWNERS INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS OF THE DESIGNERS SPECIFICATIONS ARE AN INTEGRAL PART OF THIS CONTRACT AND SHALL BE READ IN CONJUNCTION HERewith. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE DESIGNER, ENGINEER AND OWNER.

- THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.

- IT IS A CONDITION OF THIS CONTRACT, THAT THE CONTRACTOR WILL, IN THE PERFORMANCE OF THE SERVICES FOR THE OWNER AS DESCRIBED IN THIS CONTRACT PERFORM WORK IN ACCORDANCE WITH ONTARIO BUILDING CODE LATEST EDITION, THE ONTARIO HYDRO ELECTRICAL SAFETY CODE, THE SEWAGE SYSTEMS ENVIRONMENTAL PROTECTION ACT ONTARIO, WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS), O REG 844/88, THE ONTARIO GAS UTILIZATION CODE, AND ANY OTHER CODE OF PROVINCIAL OR LOCAL APPLICATION, INCLUDING HOURS OF WORK, RATES OF PAY, JOB SAFETY AND ALL OTHER MATTERS IN WHICH THE MUNICIPAL OR FEDERAL AUTHORITIES HAVE JURISDICTION PROVIDED THAT IN ANY CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

- COMPLY WITH STANDARD FOR BUILDING CONSTRUCTION OPERATIONS, ISSUED BY THE ONTARIO FIRE MARSHALLS OFFICE AND ALL APPLICABLE FIRE SAFETY CODES, LAWS, AND REGULATIONS.

- IT IS INCUMBENT UPON THE CONTRACTOR TO INFORM ITSELF OF ANY SUCH LEGISLATION AND THE CONTRACTOR AGREES THAT IN THE EVENT OF NON-COMPLIANCE WITH THIS LEGISLATION, IT WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY COSTS AND DAMAGES RESULTING FROM SUCH NON-COMPLIANCE.

- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARDS OF GOOD PRACTICE SUCH AS, BUT NOT LIMITED TO, S.M.A.C.N.A AND ASHRAE, MEET OR EXCEED REQUIREMENTS SPECIFIED IN CONTRACT DOCUMENTS, SPECIFIED STANDARDS, CODES AND REFERENCED DOCUMENTS DESCRIBED IN THESE INSTRUCTIONS.

EXAMINATION OF WORK

- THIS PROJECT INVOLVES ELECTRICAL INSTALLATION OF NEW BUILDING, EXAMINE THE SITE AND LOCAL CONDITIONS THE DIFFICULTIES OF CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

INTENT

- IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES THESE DOCUMENTS MAY NOT SHOW OR DESCRIBE EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE INSTALLATION THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOR, MATERIALS, EQUIPMENT, MECHANICAL AND ELECTRICAL, COORDINATE WITH OTHER TRADES IN THE PERFORMANCE OF THE ELECTRICAL WORK AND ALL CONDITIONS THAT WILL EFFECT THAT WORK.

LIABILITY

- THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT HIS WORK AND FOR ANY DAMAGE OR EXTRA COSTS CAUSED TO THE OWNER OR OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK, CARRY ALL NECESSARY INSURANCE COVERAGE, REVIEW ALL DRAWINGS AND SPECIFICATIONS, ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL, COORDINATE WITH OTHER TRADES IN THE PERFORMANCE OF THE ELECTRICAL WORK AND ALL CONDITIONS THAT WILL EFFECT THAT WORK.

PERMITS, CERTIFICATES, FEES, ETC.

- GIVE ALL NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES SO THAT THE WORK SPECIFIED HEREIN MAY BE CARRIED OUT, EXCEPT FOR OCCUPANCY PERMIT WHICH WILL BE OBTAINED BY THE OWNER. AT THE ENGINEER'S REQUEST, FURNISH ANY CERTIFICATES AS EVIDENCE THAT THE WORK IS IN CONFORMITY WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

GUARANTEE

- THE CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE OF HIS WORK AS ESTABLISHED BY THE PROJECT MANAGER AND ENGINEER.

DOCUMENTS REQUIRED

- MAINTAIN AT JOB SITE ONE COPY OF EACH OF THE FOLLOWING DOCUMENTS:
 - DRAWINGS
 - SPECIFICATION
 - ADDENDA
 - CHANGE ORDERS
 - OTHER MODIFICATION TO CONTRACT
 - FIELD TEST REPORTS
 - MANUFACTURERS' INSTALLATION AND APPLICATION INSTRUCTIONS.

PROGRESS BILLING

- CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR THE PROJECT BASED ON THE CONTRACT PRICE AGREED TO FOR THIS PROJECT. CONTEMPLATED CHANGE NOTICES ONCE AUTHORIZED BY THE OWNER WILL BE ADDED TO THE MONTHLY PROGRESS CLAIM.
- CLAIMS FOR PAYMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO THE END OF THE PAY PERIOD TO ALLOW FOR A TIMELY REVIEW BY THE ENGINEER.
- CONTRACTOR SHALL SUBMIT PROGRESS CLAIMS FOR REVIEW AND PAYMENT AUTHORIZATION IN ACCORDANCE WITH THE TERMS OF THE CONTRACT.

AS-BUILT AND RECORD DRAWINGS

- A DRAWING SET SHALL BE KEPT ON SITE TO RECORD THE INFORMATION REFLECTING CHANGES AND INSTALLATION ON A DAILY BASIS DURING CONSTRUCTION. AT THE END OF THE PROJECT ALL INFORMATION FROM THE CONSTRUCTION SET SHALL BE TRANSFERRED ONTO A CLEAN SET AND SENT TO THE ENGINEER FOR THE FINAL REVIEW.
- FAILURE TO KEEP UP TO DATE AS-BUILT DRAWING MAY JEOPARDIZE MONTHLY PROGRESS PAYMENTS. AS-BUILT DRAWING WILL BE REVIEWED AT THE SAME TIME AS MONTHLY PROGRESS PAYMENT INSPECTIONS ARE CONDUCTED.

SHOP DRAWINGS

- BEFORE FABRICATION OR DELIVERY OF ANY MATERIALS OR EQUIPMENT, SUBMIT A MINIMUM OF FOUR (4) COMPLETE SETS OF SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT FURNISHED AND INTENDED FOR INSTALLATION UNDER THIS CONTRACT FOR APPROVAL BY THE ENGINEER.

TEMPORARY AND TRIAL USAGE

- TEMPORARY OR TRIAL USAGE BY THE OWNER OF ANY MACHINERY, APPARATUS, EQUIPMENT OR ANY OTHER WORK OR MATERIALS SUPPLIED UNDER THE CONTRACT BEFORE FINAL WRITTEN ACCEPTANCE BY THE ENGINEER IS NOT TO BE CONSTRUED AS EVIDENCE OF THE ACCEPTANCE OF SAME BY THE OWNER. THE OWNER SHALL HAVE THE PRIVILEGE OF SUCH TEMPORARY OR TRIAL USAGE SOON AS THIS CONTRACTOR CLAIMS THAT SAID WORK IS COMPLETED. ANY DAMAGE CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP THROUGH TEMPORARY OR TRIAL USAGE BY THE OWNER SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
- ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR TEMPORARY HEAT OR OTHERWISE WILL BE COMPLETELY REPAIRED, REPLACED, AND CLEANED TO THE FULL SATISFACTION OF THE OWNER.

EXPLOSIVES ACTUATED FASTENING DEVICES

- DO NOT EMPLOY POWER GUNS USING EXPLOSIVES, UNLESS EXPRESSLY PERMITTED BY THE PROJECT MANAGER, COMPLY WITH REQUIREMENTS OF CSA Z-166 (SAFETY CODE FOR

STORAGE

- THE SECURITY OF THE CONTRACTOR'S EQUIPMENT AND MATERIALS SHALL BE HIS RESPONSIBILITY. CONTRACTOR SHALL LAISE WITH THE BUILDING OPERATOR AS NECESSARY.

SIGNS

- PROVIDE WARNING SIGNS IN LOCATIONS WHERE RENOVATIONS AND ALTERATION WORK IS ADJACENT TO AREAS AFFECTING THE PUBLIC.

EQUIPMENT AND SITE CLEANLINESS

- DUCTS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES, DISCONNECT, CLEAN AND RECONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS, REPAIR WORK DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS.
- THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT TO ENSURE NO DUST INFILTRATION. CLEANING TO BE COMPLETED AT THE END OF EACH SHIFT TO THE SATISFACTION OF THE PROJECT MANAGER.

OPERATING AND MAINTENANCE DATA

- FURNISH THREE (3) SETS OF OPERATING AND MAINTENANCE DATA FOR ALL NEW EQUIPMENT AND SYSTEMS. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH HARD COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER AND CONTRACTOR. SUBMIT ONE COPY TO THE ENGINEER FOR APPROVAL.

MATERIALS

- MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT AND OF BEST QUALITY SPECIFIED, USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC APPLICATION, STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR AND LOW VIBRATION AND LOW OPERATING TEMPERATURE. RETIRED EQUIPMENT WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF THE ENGINEER.

APPROVALS

- THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER. IN WRITING, AS AN ALTERNATE TO THE PRODUCT SPECIFIED. THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY ALL OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.

CUTTING AND PATCHING

- THE CONTRACTOR IS RESPONSIBLE FOR THIS WORK AND SHALL CO-ORDINATE LOCATIONS FOR ALL HOLES FOR PIPES, DUCTS THROUGH FLOORS, WALLS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE INSTALLATION. REVIEW STRUCTURAL WALLS BEFORE CUTTING TO LOCATE EXISTING REBAR AND CONDUITS, AND OBTAIN PROJECT MANAGER'S APPROVAL FOR PROPOSED CUTTING BEFORE PROCEEDING. PROVIDE ILLC APPROVED FIRE STOPPING SYSTEM FOR ALL PENETRATIONS THROUGH RATED ASSEMBLIES.

ACCESS DOORS

- SUPPLY TO THE INSTALLING TRADES, ACCESS DOORS FOR SERVICING EQUIPMENT AND ACCESSORIES OR FOR INSPECTION OF LIFE SAFETY OR OPERATING DEVICES. MATERIAL SHALL BE OF 3mm CORE THICKNESS BONDERSIZED STEEL COMPLETE WITH HEAVY DUTY RESISTANT CONCEALED HINGES, POSITIVE LOCKING AND SELF-OPENING SCREW DRIVER LOCK. FRAME SHALL BE 300 X 300mm MINIMUM AND 800 X 600mm MAXIMUM AS REQUIRED FOR THE TYPE OF ASSOCIATED WALL OR CEILING CONSTRUCTION. ALL DOORS ARE TO BE ACCURATELY LOCATED TO PROVIDE ACCESSIBILITY FOR NEW EQUIPMENT.

LIFTING OPERATIONS

- ALL CRANE OR LIFTING OPERATIONS WILL BE CO-ORDINATED WITH, AND APPROVED BY, THE PROJECT MANAGER.

SHUTDOWNS

- ANY SHUTDOWN THAT MAY BE REQUIRED OF EQUIPMENT AFTER IT HAS BEEN ACCEPTED AS OPERATIONAL, MUST HAVE PRIOR APPROVAL FROM THE PROJECT MANAGER AND ENGINEER. PROVIDE A MINIMUM OF 48 HOURS NOTICE.

MATERIALS REMOVED

- ALL MATERIALS REMOVED DURING DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AND STOCKPILED AS DIRECTED ON SITE. MATERIAL REJECTED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE OWNER.

ELECTRICAL SPECIFICATIONS

MINIMUM STANDARDS

- ELECTRICAL INSTALLATION TO CSA C22-1.2
- LIGHTING FIXTURES TO CSA C22.2 No. 9-96 (2006)
- FIXTURE BALLAST TO CSA C22.2 No. 74-96 (R2005)
- ONTARIO BUILDING CODE-2012
- ONTARIO ELECTRICAL SAFETY CODE-2012

MOUNTING HEIGHTS

- INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
 - LOCAL SWITCHES: 1200mm
 - WALL RECEPTACLES:
 - GENERAL: 400mm
 - ABOVE COUNTERS: 175mm
 - PANEL BOARDS: 1800mm FROM TOP
 - TELECOMMUNICATION OUTLETS: 400mm

IDENTIFICATION

- IDENTIFY WITH LAMACOID NAMEPLATES ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR MENTIONED IN THE SPECIFICATION SUCH AS MOTORS, SWITCHES, STARTERS, PANEL BOARDS, TRANSFORMERS, CONTROLS, AND SPECIAL RECEPTACLES REGARDLESS OF WHETHER OR NOT THE ELECTRICAL EQUIPMENT WAS FURNISHED UNDER THIS SECTION OF THE SPECIFICATION. IDENTIFICATION REVIEWED BY ENGINEER.
- UNLESS OTHERWISE SPECIFIED, NAMEPLATES SHALL BE RIGID LAMACOID, MINIMUM 1.5mm THICK WITH BLACK LETTERS ENGRAVED ON A WHITE BACKGROUND. NAMEPLATES TO BE NEATLY PLACED, AND SQUARE TO SURROUNDING BUILDING OR EQUIPMENT LINES, AND FASTENED IN PLACE WITH MECHANICAL FASTENERS (SCREWS OR POP RIVETS) AS APPROVED BY ENGINEER.
- PROVIDE NEATLY TYPED IDENTIFIED CIRCUIT DIRECTORIES IN A PLASTIC HOLDER ON THE INSIDE DOOR OF NEW PANEL BOARDS, WITH COPY IN MANUAL.
- IDENTIFY ALL PULL AND JUNCTION BOXES, WITH P-TOUCH LABEL IDENTIFICATION, INDICATING SOURCE PANEL AND CIRCUIT NUMBERS.
- IDENTIFY ALL RECEPTACLES AND SWITCHES WITH P-TOUCH LABELS, BLACK LETTERING ON TRANSPARENT TAPE, INDICATING SOURCE PANEL AND CIRCUIT NUMBER. LABELS TO BE LOCATED ON FRONT OF COVERPLATE.

LOCATION OF OUTLETS

- LOCATE OUTLETS AS SHOWN ON DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF OUTLETS POSITIONED FOR COUNTER LAYOUTS.

- DO NOT INSTALL OUTLETS BACK-TO-BACK IN WALL. ALLOW MINIMUM 150mm HORIZONTAL CLEARANCE BETWEEN BOXES, AND LOCATE IN SEPARATE STUD CAVITIES WHEREVER POSSIBLE.

- CHANGE LOCATION OF OUTLETS AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3 METERS AND INFORMATION IS GIVEN BEFORE INSTALLATION.

ELECTRIC MOTORS AND WIRING

- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY ALL MOTOR STARTERS, EXCEPT ON PRE-WIRED PACKAGED EQUIPMENT. DISCONNECT SWITCHES FOR ALL MOTORS FOR THE PROJECT, AND ALL WIRING TO STARTERS AND MOTORS EXCEPT WHERE SHOWN OR NOTED OTHERWISE. EQUIPMENT REQUIRING CONNECTION TO AN ELECTRICAL POWER SOURCE SHALL BE CSA OR HYDRO APPROVED FOR USE AT LOCATION OF INSTALLATION. THE MECHANICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL LOW VOLTAGE CONTROL WIRING WITHIN 'EMT' CONDUIT FOR A COMPLETE AND OPERATING INSTALLATION UNLESS OTHERWISE SPECIFIED.

INTEGRITY OF FIRE SEPARATIONS

- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE INTEGRITY AND FIRE RATING OF ANY FIRE SEPARATION PENETRATED DURING THE COURSE OF THE SCOPE OF WORK DEFINED HEREIN, THIS INCLUDES, BUT IS NOT LIMITED TO, CONDUIT, RACEWAYS, OTHER ELECTRICAL EQUIPMENT, FASTENERS, ETC.
 - DEFINITIONS:
 - FIRE SEPARATION - CONSTRUCTED ASSEMBLY THAT ACTS AS A BARRIER AGAINST THE SPREAD OF FIRE.
 - FIRE STOPPING - MATERIAL OR COMBINATION OF MATERIALS USED TO RETAIN INTEGRITY OF FIRE-RATED CONSTRUCTION BY MAINTAINING AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAME, SMOKE, WATER, AND HOT GASES THROUGH PENETRATIONS IN FIRE RATED ASSEMBLIES.
 - FIRESTOP TESTED SYSTEMS SHALL BE USED WHEN A FIRE SEPARATION IS PENETRATED BY A COMPONENT OF A MECHANICAL OR ELECTRICAL SYSTEM. FIRESTOPPING PRODUCT SHALL BE CERTIFIED TO CANULC-S115 AND INSTALLED AS PER THE MANUFACTURER'S INSTRUCTIONS. FIRESTOPPING PRODUCTS SHALL MATCH THE FIRE RATING OF THE SEPARATION BEING PENETRATED, AND SHALL BE RATED FOR USE IN THE CONDITIONS AND WITH THE MATERIALS SPECIFIC TO EACH CIRCUMSTANCE.

DEMOLITION

- EXISTING EQUIPMENT SHOWN AS RELOCATED TO BE CLEANED AND MADE OPERATIONAL BY THIS CONTRACTOR PRIOR TO ITS RELOCATION.
- ALL ELECTRICAL EQUIPMENT REMOVED AND NOT SLATED FOR REUSE TO BE TURNED OVER TO THE BUILDING OWNER AT A DESIGNATED STORAGE SPACE ON SITE. ALL EQUIPMENT NOT WANTED BY THE OWNER TO BE REMOVED FROM SITE BY THIS CONTRACTOR.
- ALL ELECTRICAL EQUIPMENT, ELECTRICAL PANEL, BOXES CONDUIT AND WIRING INDICATED TO BE REMOVED SHALL BE REMOVED. INTERRUPTS POWER TO EQUIPMENT INDICATED AS EXISTING TO REMAIN, TO HAVE HOME RUNS REINSTATED TO SUCH EQUIPMENT.
- WIRING TO BE COPPER, RW90 XLPE, STRANDED FOR CONDUCTORS #6 AND LARGER, INSTALL BRADY LABEL MAKING SLEEVES AT EACH END, UNLESS OTHERWISE NOTED ON DRAWINGS. WIRING TO BE COLOR CODED AS PER CODE. MINIMUM WIRE SIZE TO BE No. 12 AWG FOR POWER AND LIGHTING.
- LEAVE ADEQUATE LENGTHS OF WIRE IN JUNCTION BOXES FOR CONNECTIONS TO EQUIPMENT.
- AC90 WIRING IN HOLLOW WALLS AND CEILING SPACE ONLY.
- RUN A GREEN INSULATED GROUND WIRE SIZED AS PER CODE IN ALL CONDUIT RUNS. DO NOT RELY ON CONDUIT AS GROUND.

CONDUITS

- EACH LENGTH OF CONDUIT TO BE NEW AND BEAR CSA STAMP OF APPROVAL.
- ALL CONDUITS RUN ABOVE THE SUSPENDED CEILING TO BE 'EMT'.
- PROVIDE NYLON PULLROPS IN ALL EMPTY CONDUIT RUNS.
- RUN CONDUITS IN STRAIGHT HORIZONTAL AND VERTICAL LINES FOR ALL EXPOSED CONDUIT INSTALLATIONS.
- EXPOSED CONDUITS IN SPRINKLERED AREAS TO USE WATERTIGHT CONNECTORS AND COUPLING STANDARD SET SERIES. COUPLING CAN BE USED IN AREAS NOT EXPOSED TO SPRINKLERS SUCH AS ABOVE SUSPENDED CEILINGS.
- CONDUITS RUN IN CONCRETE ON SLAB ON GRADE MUST BE APPROVED BY STRUCTURAL ENGINEER. CONDUITS WITH OUTSIDE DIAMETERS LARGER THAN 25% OF SLAB MUST BE INSTALLED BELOW SLAB. FOR SLABS 6" OR LESS, ALL CONDUITS SHOULD BE INSTALLED BELOW.

OUTLET BOXES

- ELECTRO-GALVANIZED STEEL, COATING EQUAL TO THAT TO THE CONDUIT.
- MINIMUM 37 mm DEEP 100 mm SQUARE OR OCTAGONAL AS REQUIRED.
- EQUIP WITH PLASTER RINGS DEEP ENOUGH FOR WALL FINISH MATERIAL TO FIT OVER THE BOX AND WITHIN 6 mm OF THE COVER OPENING.

PULL BOXES

- PROVIDE PULL BOXES WHERE RUNS EXCEED 30 METERS IN LENGTH AND HAVE MORE THAN 2-90° BENDS.

WIRING DEVICES

- RECEPTACLES:
 - DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A 'U' GROUND WITH FOLLOWING WITH THE FOLLOWING FEATURES:
 - RECEPTACLES OF SPECIFICATION GRADE.
 - SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING, SIDE WIRING.
 - BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
 - EIGHT (8) BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
 - DOUBLE WIPE CONTACTS AND REWIRED GROUNDING CONTACTS.
- SWITCHES:
 - TO CSA C22.2 NO. 111-40 (R2005)
 - 15A, 347 VOLT SINGLE POLE, 3 WAY SWITCHES, AS INDICATED.
 - MANUALLY OPERATED GENERAL PURPOSE AC SWITCHES WITH THE FOLLOWING FEATURES:
 - TERMINAL HOLES APPROVED FOR NO. 10 AWG WIRE.
 - SILVER ALLOY CONTACTS.
 - UREA OR MELAMINE MOLDING FOR PARTS SUBJECT TO CARBON TRACKING
 - SUITABLE FOR BACK AND SIDE WIRING.
 - IVORY TOGGLE.
 - TOGGLE OPERATED LOCKING FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY OF MOTOR LOADS.
 - SWITCHES OF ONE MANUFACTURER THROUGH OUT.
- ISOLATED GROUND RECEPTACLES:
 - DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A, ISOLATED GROUND, WITH THE FOLLOWING FEATURES:
 - ORANGE UREA MOULDED HOUSING.
 - SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING.
 - BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
 - EIGHT BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
 - DOUBLE WIPE CONTACTS AND REWIRED GROUNDING CONTACTS.
 - RUN ADDITIONAL GREEN ISOLATED GROUND WIRE PER CIRCUIT FROM PANEL TO EACH WIRING.
- SERVICE POLES:
 - 75mm SQUARE STEEL SERVICE POLES FINISHED IN SATIN ALUMINUM CW TWO(2) 125 VOLT DUPLEX RECEPTACLES PREWIRED TO A WIRING COMPARTMENT AT HEAD OF

- SERVICE POLE AND ADJUSTABLE FOOT FOR FASTENING TO FLOOR SLAB
- LUAL CHANNEL POLES FOR COMMUNICATION CABLES AND POWER, LENGTH 3 METERS FOR T-BAR CEILING APPLICATION.
- CONTRACTOR TO BE REQUIRED TO CUT AND MODIFY POLE HEIGHTS TO ENABLE APPLICATIONS WHERE MECHANICAL DUCTWORK DOES NOT PERMIT STANDARD POLE HEIGHTS TO BE USED.

PANEL BOARDS

- TO CSA C22.2 No. 29-M1989 (R2004)
- TO CSA C22.2 No. 5.1-M91(R2001)
- 347/600 VOLT, 3Ø, 4W PANELS RATED 22,000A SYMMETRICAL INTERRUPTING CAPACITY, AMPERAGE RATING AS INDICATED.
- 120/208 VOLT, 3 PHASE, 4 WIRE PANEL BOARD RATED 10,000A (SYMMETRICAL) INTERRUPTING CAPACITY. AMPERAGE RATING AS INDICATED.
- ALUMINUM BUS WITH ALUMINUM NEUTRAL OF SAME AMPERE RATING AS MAINS.
- MAINS, SUITABLE FOR BOLT ON BREAKERS.
- TRIM AND DOOR FINISH: BAKED GREY ENAMEL WITH TWO(2) KEYS FOR DOOR LOCK
- PANEL BOARD MAINS, NUMBER OF CIRCUITS AND NUMBER OF BRANCH BREAKERS AS INDICATED.
- PANEL BOARD TO BE RATED AS SPRINKLER-PROOF.

CIRCUIT BREAKERS

- PROVIDE CIRCUIT BREAKERS IN PANEL BOARD AS INDICATED.
- BRANCH CIRCUIT BREAKERS QUICK MAKE, QUICK BREAK, AMBIENT COMPENSATED, COMMON TRIP ON ALL MULTIPOLE BREAKERS, TRIP INDICATING CLEARLY SHOWN BY BREAKER HANDLE TAKING POSITION MIDWAY BETWEEN ON AND OFF.

TELEPHONE AND DATA

- COMPLETE EMPTY RACEWAYS SYSTEM CONSISTS OF OUTLET BOXES, CONDUITS, PULL BOXES, 12mm 'EMT' RISERS BETWEEN OUTLET BOXES AND CEILING PLENUM BY DIVISION 16. EXACT LOCATION TO BE DETERMINED ON SITE.
- DOUBLE GANG DEEP OUTLET BOX COMPLETE WITH SINGLE GANG PLASTER RING
- PULL WIRE: POLYPROPYLENE TYPE.
- COVERPLATES INSTALLED BY OTHERS.
- PROVIDE SLEEVES AS INDICATED BETWEEN FLOORS AND WALLS AS INDICATED. SEAL OPENINGS IN SLEEVES WITH FIRE STOP MATERIAL. AFTER CABLES HAVE BEEN INSTALLED.
- CABLING, TERMINATIONS AND HEAD END EQUIPMENT BY SYSTEM CONTRACTOR, UNDER CONTRACT BY OWNER.

COVER PLATES

- POLISHED STAINLESS STEEL COVER PLATES, THICKNESS 1.0mm FOR WIRING DEVICES TO BE MOUNTED IN A FLUSH MOUNTED BOX.
- INSTALL COVER PLATES ONLY AFTER PAINTING AND OTHER WORK IS FINISHED.
- INSTALL SUITABLE COMMON COVER PLATES WHERE WIRING DEVICES ARE GROUPED.
- COVER PLATES FOR WIRING DEVICES. COMMUNICATION OUTLET COVERLETS PROVIDED BY SYSTEM CONTRACTOR.
- COVER PLATES FROM ONE MANUFACTURER THROUGHOUT PROJECT.

MANUAL MOTOR STARTER

- SINGLE PHASE MANUAL MOTOR STARTER IN CSA 1 ENCLOSURE C/W SINGLE OVERLOAD HEATER ELEMENT AND PLOT LIGHT.
- MANUAL MOTOR STARTER RATINGS TO MATCH MOTOR CHARACTERISTICS.

DISCONNECT SWITCH

- DISCONNECT SWITCH TO BE RATED HORSEPOWER AND BE EQUIPPED WITH PROVISIONS FOR THREE(3) LOCKING DEVICES AND TO BE CEMA 1 UNLESS OTHERWISE INDICATED. AMPERAGE AS INDICATED ON THE DRAWINGS AND MOUNTED 1500mm ABOVE FINISHED FLOOR TO CENTRELINE OF HANDLE.
- UNFUSED OR FUSED AS INDICATED.
- PROVIDE RAIN-TIGHT CEMA 3R DISCONNECT SWITCHES WHERE INDICATED.
- DISCONNECT SWITCHES FOR MOTOR ISOLATION TO BE MOUNTED AT MOTOR.

FUSES

- FUSE TYPE REFERENCE J1, HAS BEEN ADAPTED FOR USE IN THIS SPECIFICATION.
- FUSES: PRODUCT OF ONE MANUFACTURER.
- HRCl-J FUSES (FORMERLY CLASS J).
- TYPE J1, TIME DELAY, CAPABLE OF CARRYING 500% OF ITS RATED CURRENT FOR 10 SECOND MINIMUM.
- INSTALL FUSES IN MOUNTING DEVICES IMMEDIATELY BEFORE ENERGIZING CIRCUIT.

TRANSFORMERS

- THE TRANSFORMER DESCRIBED HEREIN IS SPECIFICALLY DESIGNED TO ADDRESS HARMONIC PROBLEMS AND MUST MEET THE FOLLOWING REQUIREMENTS.
 - COMPLETE REMOVAL OF THE 3RD HARMONIC TRIPLES AND OTHER ZERO SEQUENCE HARMONIC CURRENTS WITHIN THE SECONDARY WINDINGS.
 - PRIMARY-SECONDARY PHASE SHIFT TO ACHIEVE CANCELLATION OF 5th, 7th, 17th, 19th... HARMONIC CURRENTS ON THE PRIMARY SIDE BUS WITH OTHER SOURCES.
 - REDUCE CURRENT IMBALANCE OF FUNDAMENTAL FREQUENCY CURRENT ON PRIMARY SIDE OF THE TRANSFORMER.
 - HARMONIC CANCELLATION SHALL BE ACHIEVED BY ELECTROMAGNETIC MEANS ONLY TO CAPACITORS OR ELECTRONIC CIRCUITRY IS PERMITTED.
- ELECTRICAL CHARACTERISTICS:
 - 3 PHASE, 600 VOLT INPUT, 120/208 VOLT OUTPUT, 60Hz, kVA RATINGS AS INDICATED ON SINGLE LINE DIAGRAM.
 - VOLTAGE TAPS: STANDARD.
 - PRIMARY SECONDARY PHASE-SHIFT FOR 5th AND 7th HARMONICS: 0 DEGREES AND 180 DEGREES, AS REQUIRED.
 - POSITIVE AND NEGATIVE SEQUENCE IMPEDANCE AT 60Hz: 3.0%.
 - CREST FACTOR SUITABILITY: 4.5.
 - CAPABILITY TO DELIVER FULL NAMEPLATE kVA TO LOADS OF Kc FACTOR UP TO 30.
 - NEUTRAL CONNECTION SHALL BE RATED AT TWICE THE CAPACITY OF THE SECONDARY PHASE CURRENT.
- GENERAL CHARACTERISTICS:
 - THREE PHASE COMMON CORE CONSTRUCTION.
 - CONVECTION AIR COOLED, EEMAC 3R SPRINKLER-PROOF ENCLOSURE, REMOVABLE FRONT COVER.
 - COPPER WINDINGS.
 - INSULATION: CLASS 'H', 150°C TEMPERATURE RISE.
 - BASIC IMPULSE LEVEL (BIL): 30kV.
 - TYPE ANN.
 - SOUND LEVEL: MAX 45db AT 5 FEET.
 - VOLTAGE CLASS: 1.2W.
 - MAGNETIC FIELD AT 1.5 FEET: MAXIMUM 0.1 GAUSS.

- FULL LOAD EFFICIENCY AT 170°C 87
- MAGNETIZING INRUSH CURRENT: MAXIMUM 10 TIMES FULL LOAD RATING.
- TAPS: 2 x +2.5%, 2 x -2% (2FCBN, 2FCBN)
- CONTRACTOR TO BE REQUIRED TO CUT AND MODIFY POLE HEIGHTS TO ENABLE APPLICATIONS WHERE MECHANICAL DUCTWORK DOES NOT PERMIT STANDARD POLE HEIGHTS TO BE USED.
- ANTI-VIBRATION PADS SHALL BE USED BETWEEN CORE AND ENCLOSURE.

LIGHTING

- FLUORESCENT LAMPS: T8, 32W, 2950 INTIAL LUMENS, 4100°K, CRI 80 MIN.
- FLUORESCENT HIGH FREQUENCY ELECTRONIC BALLAST: 0BM CERTIFIED, CSA APPROVED.
 - RATING: 347 VOLT OR 120 VOLTS AS INDICATED, 60Hz, FOR USE WITH ONE(1) OR TWO(2) 32 WATT, 430 MA, T8 LAMPS.
 - TOTALLY ENCASED AND DESIGNED FOR 40°C AMBIENT TEMPERATURE.
 - POWER FACTOR: MINIMUM 95%.
 - INTEGRATED ELECTRONIC CIRCUITRY BALLAST CONNECTED FOR PARALLEL OPERATION OF LAMPS.
 - SOUND RATING: A.
 - HARMONIC DISTORTION LESS THAN 10%.
 - THERMAL PROTECTION: AUTO RESET.
 - LUMINAIRE: TO LIGHTING FIXTURE SCHEDULE.
- WIRING:
 - FOR NEW FLUORESCENT TROFFER LUMINARIES IN OFFICES. CONNECT LUMINARIES TO SWITCHED LIGHTING CIRCUITS. VOLTAGES AS INDICATED.
 - CONNECT FLUORESCENT LUMINARIES IN WAREHOUSE RACKING AREA. CONNECT TO 347 VOLT CIRCUITS AS SHOWN ON DRAWINGS.
 - CONNECT NIGHT LIGHT FIXTURES TO UNSWITCHED FLUORESCENT CIRCUITS.
 - CONNECT EXTERIOR FLOOD LIGHTING TO TIME CLOCK CONTROLLED CIRCUITS.
- SUPPORTS:
 - SUPPORT ALL NEW LUMINARIES MOUNTED IN CEILING GRID INDEPENDENTLY OF EXISTING CEILING GRID BY CHAINS IN ACCORDANCE WITH LOCAL INSPECTION REQUIREMENTS.

EXIT LIGHTS AND EMERGENCY BATTERY UNITS

- EXIT LIGHTS:
 - EXIT SIGNAGE TO NRCAN/CSA C860-01 REGULATIONS.
 - COMMERCIAL GRADE, THERMOPLASTIC EXIT SIGN, SNAP TOGETHER DESIGN.
 - LED TYPE AC INPUT 120 TO 347 VOLT WITH A 12 VDC SECONDARY.
 - LIFE EXPECTANCY OF THE LEDS TO BE 25 YEARS.
 - GREEN COLOURED PICTOGRAM
 - FACE PLATE TO REMAIN CAPTIVE FOR RELAMPING.
 - UNIVERSAL MOUNTING.
 - ARROW RIGHT, LEFT, BOTH DIRECTIONS AS SHOWN ON DRAWINGS.
 - CEILING OR WALL MOUNTING CANOPY AND MOUNTING PLATE FOR INSTALLATION ON 100mm OCTAGONAL JUNCTION BOX.
 - INSTALL EXIT LIGHTS IN ACCORDANCE TO REQUIREMENTS OF OBC-2012
 - STANDARD FIXTURES TO DEDICATED EXIT LIGHT CIRCUITS AS INDICATED.
 - 12.11 CONCORD OF ACCEPTANCE: LUMACCELL LP3W.
- COMBINATION SELF POWER EXIT AND EMERGENCY BATTERY UNIT:
 - INCANDESCENT EMERGENCY LIGHTING UNIT, SELF CONTAINED EMERGENCY LIGHTING UNIT WITH 2RECHARGEABLE STORAGE BATTERIES, CHARGER, AND LAMPS. BATTERY: 12VOLT, NICKEL CADMIUM TYPE, WITH HALF (1/2) HOUR CAPACITY TO SUPPLY THE CONNECTED LAMP LOAD.
 - CHARGER: DUAL-RATE CHARGER, CAPABLE OF MAINTAINING THE BATTERY IN A FULL CHARGE STATE DURING NORMAL CONDITIONS, AND CAPABLE OF RECHARGING DISCHARGED BATTERY TO FULL CHARGED WITHIN TWELVE (12) HOURS.
 - LAMPS: LED 8W WATT MINIMUM, SEALED BEAM TYPE IN WHITE STEEL HOUSING.
 - REMOTE HEADS: MATCH LAMPS ON UNIT.
 - REMOTE HEADS: MATCH LAMPS ON UNIT.
 - INDICATORS: LAMPS INDICATE AT ON, RECHARGING. TEST SWITCH: TRANSFER UNIT FROM NORMAL SUPPLY TO BATTERY SUPPLY.
 - ELECTRICAL CONNECTION: 6 FT CORD WITH TYPE 5-15P CAPACITY UNIT AC VOLTAGE: 120V VOLT.
 - UNIVERSAL MOUNTING.
 - GREEN COLOURED PICTOGRAM
 - FACE PLATE TO REMAIN CAPTIVE FOR RELAMPING.
 - ARROW RIGHT, LEFT, BOTH DIRECTIONS AS SHOWN ON DRAWINGS.
 - INSTALL COMBINATION UNITS AT LOCATIONS SHOWN ON DRAWING.
 - CONNECT COMBINATION UNITS TO DEDICATED CIRCUITS AS INDICATED.
 - STANDARD OF ACCEPTANCE: LUMACCELL LSC1250WMM12
- EMERGENCY BATTERY UNITS:
 - STEEL CONSTRUCTION BATTERY UNIT WITH OR WITHOUT EMERGENCY LIGHTING HEADS. 120W AC INPUT - 12V DC OUTPUT.
 - 10 YEAR LIFE EXPECTANCY.
 - CORROSION RESISTANT UNDERCOATING, STANDARD COLOUR WHITE.
 - REMOVABLE FRONT PANEL ALLOWING UNITS TO BE MOUNTED AT CEILING HEIGHT.
 - SOLID STATE PULSE-TYPE CHARGE LIMITED, TEMPERATURE COMPENSATED SHORT CIRCUIT PROOF AND REVERSE-POLARITY PROTECTED.
 - SEALED DUST-PROOF TRANSFER RELAY, TEST SWITCH AND LED INDICATOR LIGHTS.
 - LONG-LIFE, MAINTENANCE-FREE LEAD ACID BATTERY.
 - STANDARD 120/208V AC INPUT VOLTAGE WITH LINE CORD KIT.
 - CSA Z2.2 No. 141 CERTIFIED.
 - REMOTE OR UNIT MOUNTED HEADS 6W LED. DOUBLE HEADS AT LOCATION SHOWN ON DRAWINGS.
 - STANDARD OF ACCEPTANCE: LUMACCELL RGS 12 X 12.

EMERGENCY CALL SYSTEM

- PROVIDE EMERGENCY CALL SYSTEM CONSISTING OF THE FOLLOWING:
 - PUSH BUTTON STATION
 - HORN/STROBE TRANSFORMER
- HORN/STROBE TO BE INSTALLED AT LOCATION SHOWN ON DRAWING. REFER TO INTERIOR DESIGN DRAWINGS FOR ELEVATION DETAILS.

SPECIFIED PRODUCT: CAMDEN CX-MEC 10 OR EQUIVALENT. ALTERNATIVE PRODUCTS WILL BE ACCEPTED.

DIMMERS AND SWITCHES

- LEVITON RENOIR II ARCHITECTURAL WALLBOX DIMMERS
 - RENOIR II 0-10V