LEGEND:

lobby 100 — INDICATES ROOM NAME AND NUMBER. REFER TO ROOM FINISH SCHEDULE. SECTION D14 IN VOLUME #3 OF THE PROJECT MANUAL FOR FINISHES.

1 / A0 — INDICATES BUILDING SECTION REFERENCE SECTION NUMBER / DRAWING WHERE SECTION LOCATED

1 / A0 — INDICATES WALL SECTION REFERENCE SECTION NUMBER / DRAWING WHERE SECTION LOCATED

b / a A0 c — INDICATES ELEVATION REFERENCE ELEVATION NUMBER DRAWING WHERE ELEVATION LOCATED

1 — INDICATES WALL TYPE CONSTRUCTION.

INDICATES CEILING TYPE CONSTRUCTION.

— INDICATES DOOR NUMBER.

VCT / CPT — INDICATES FLOOR FINISH TRANSITION.

0 / D0 — INDICATES DRAWING NUMBER / INDICATES DETAIL BOOK SECTION

CLG FINISH / HEIGHT — INDICATES CEILING FINISH AND CEILING ELEVATION ABOVE FINISHED FLOOR

INDICATES RECESSED LIGHT FIXTURE. REFER TO ELECTRICAL

INDICATES DIFFUSER. REFER TO MECHANICAL.

INDICATES RETURN AIR GRILLE. REFER TO MECHANICAL.

INDICATES ¾ HR FIRE RATING

INDICATES FLOOR DRAIN

INDICATES ¾ HR FIRE RATING

GENERAL NOTES:

1. Read architectural drawings in conjunction with mechanical and electrical drawings.
2. Interior dimensions are taken from o/s face of gypsum wallboard to o/s face of gypsum wallboard unless noted otherwise.
3. Contractor to site verify all dimensions prior to starting work. Report all discrepancies to the consultant for required action.
4. All new and existing penetrations through walls, floors and/or ceilings designated as a fire separation, new or existing, shall be fire stopped and smoke sealed using ULC tested and approved system. Contractor to provide ULC documentation of proposed system prior to installation for review.
5. Existing building to remain occupied and operational during the work. Maintain existing services to ensure other spaces remain operational. take all necessary security and safety precautions to ensure safe access to remaining building areas by existing occupants. Coordinate permitted work hours with building manager. Exit facilities to remain clean and accessible at all times.
6. All existing partitions that are patched or added to are to be taped, sanded & smoke sealed.
7. Fire alarm verification conducted by owner prior to school commencement - contractor to coordinate with owner for access and timing.

DEMOLITION NOTES:

1. Contractor to verify extent of demolition, alteration and removals on site. Drawings indicate intent of extent of existing construction to be removed.
2. All existing areas affected by demolition/alteration are to be made good.
3. Where existing walls do not enclose spaces to be renovated, provide dust-tigh barriers and temporary protection to separate work areas from occupied spaces. abide by all TLDSB policies relating to dust control.
4. Contractor to inform the owner and the architect of areas of disrepair if uncovered during demolition for direction regarding acceptable remedial work.
5. All door hardware being removed is to be handed over to the owner.

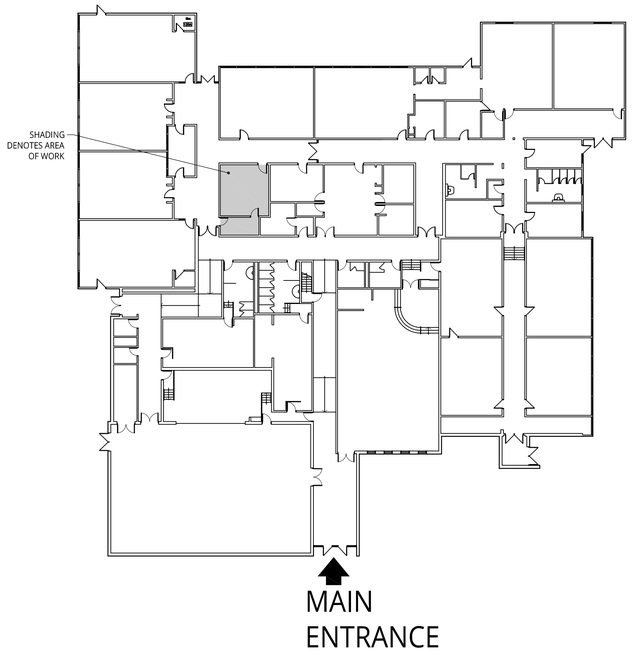
ABBREVIATIONS:

GWB1 GYPSUM WALLBOARD
GWB2 TYPE-X GYPSUM WALLBOARD
GWB3 GYPSUM SHEATHING
A.A.A. ABOVE FINISHED FLOOR
ACT ACOUSTIC CEILING TILE
EX. EXISTING TO REMAIN
PT PAINT
HTD HAND TOWEL DISPENSER
SD SOAP DISPENSER

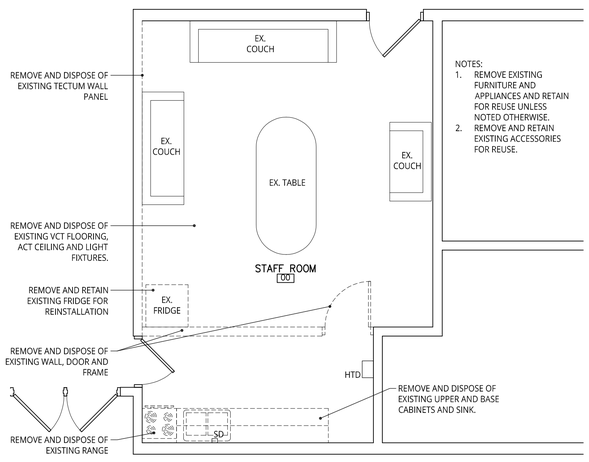
LIST OF DRAWINGS:

COLOUR CHOICES:

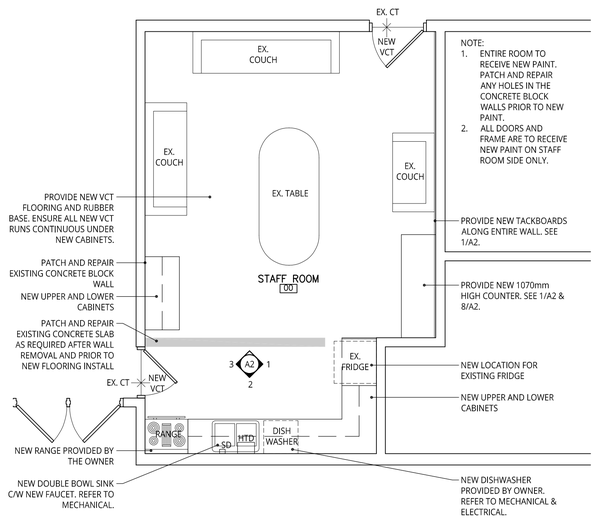
PLASTIC LAMINATE COUNTER TOPS - Black Shalestone 9527 by Formica
WALL PAINT - 2133-70 Tundra by Benjamin Moore
DOOR FRAME PAINT - 2133-20 Black Jack by Benjamin Moore
DOOR PAINT - 2133-40 Dior Gray by Benjamin Moore
FLOORING - 51861 Soft Warm Gray by Armstrong
RUBBER BASE - 63 Burnt Umber B by Johnsonite
BACKSPLASH TILE - SEE SPECIFICATION SECTION 09310



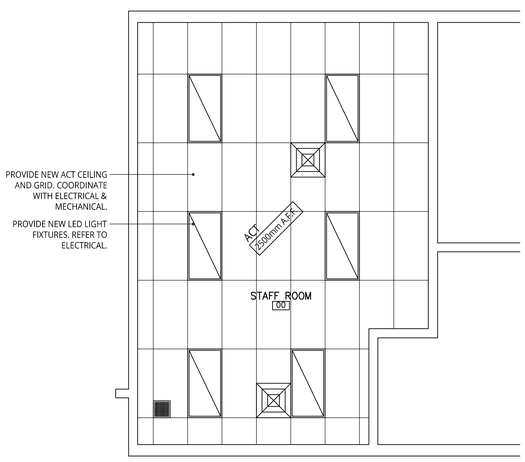
1 / A1 Key Plan
SCALE: 1:300



2 / A1 Demolition Plan
SCALE: 1:50



3 / A1 Proposed Plan
SCALE: 1:50



4 / A1 Reflected Ceiling Plan
SCALE: 1:50

ONTARIO ASSOCIATION OF ARCHITECTS
JASON MICHAEL THOMAS LOWE
LICENCE 8828

PROJECT NORTH:

KEY PLAN:

Trillium Lakelands District School Board
Muskoka Beechgrove Public School

Gravenhurst, ON.

MITCHELL JENSEN ARCHITECTS
Mitchell Jensen Architects
7 John St. Unit #3,
Huntsville, ON. P1H 1H2
705.788.0650

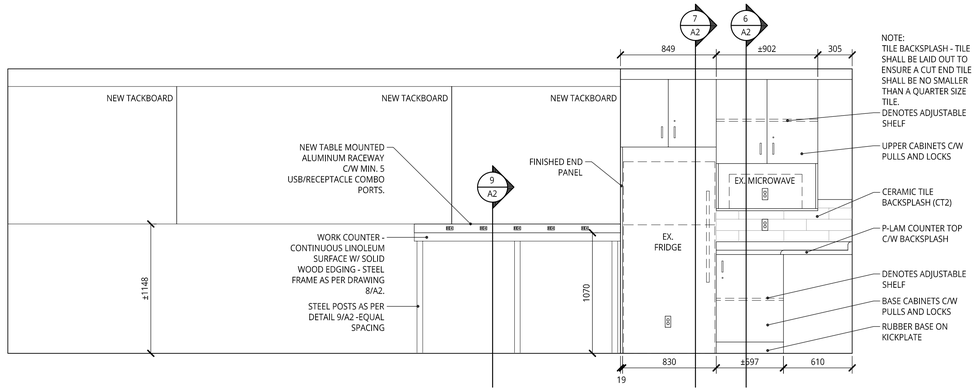
PROJECT NO:	218025
LIBRARY NO:	218025-FP
DRAWN BY:	MK
SCALE:	AS NOTED

NO.	ISSUE	DATE
1	Issued for Review	October 31, 2018
2	Issued for Tender/Permit	November 27, 2018

Legend, Notes, Key Plan, Demolition Plan, Proposed Plan & Reflected Ceiling Plan

DRAWING NO:

A1



1 A2 Interior Elevation
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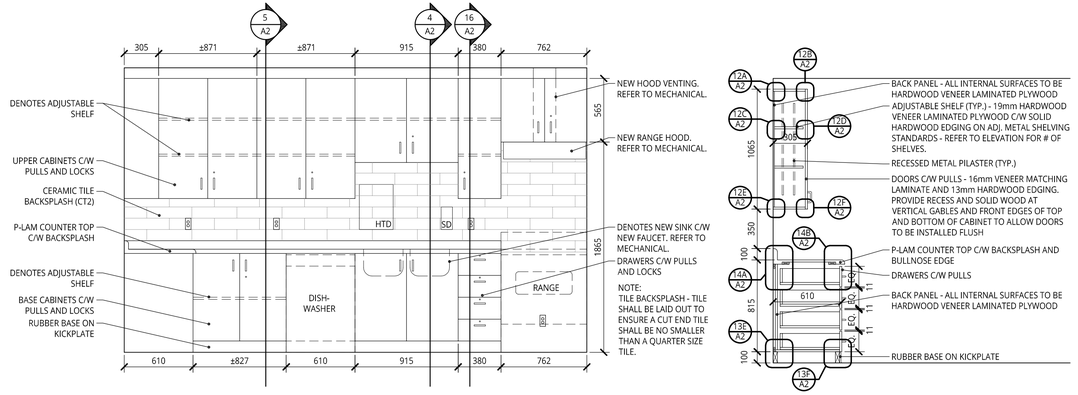
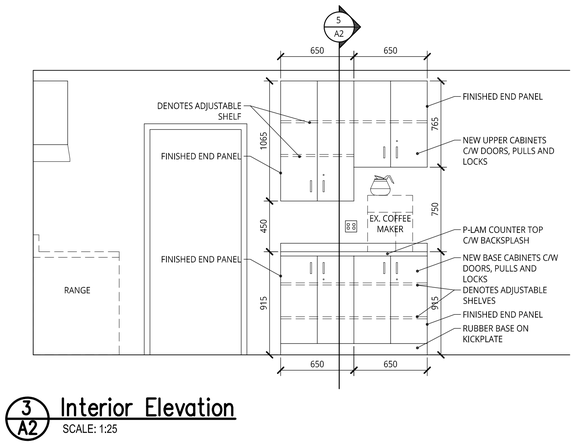


2 A2 Interior Elevation
SCALE: 1:25

16 A2 Section
SCALE: 1:25



3 A2 Interior Elevation
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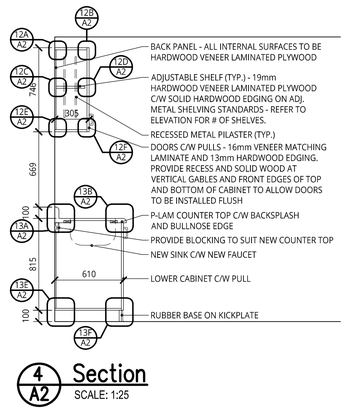
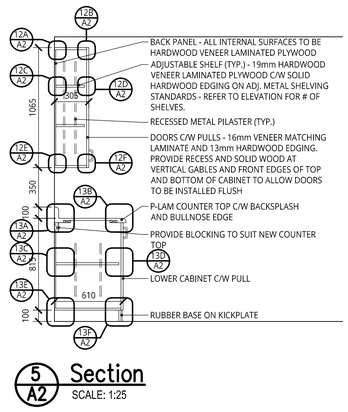
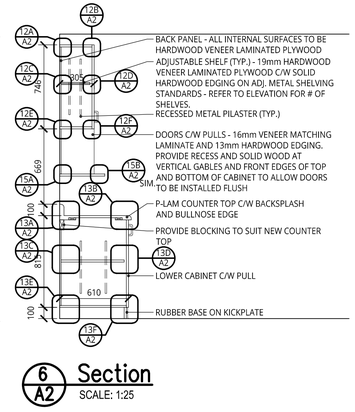


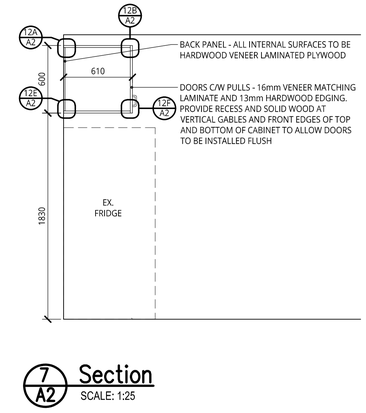
4 A2 Section
SCALE: 1:25



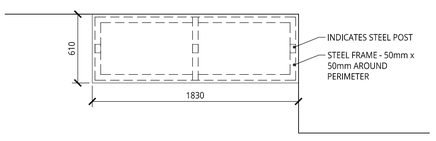
5 A2 Section
SCALE: 1:25



6 A2 Section
SCALE: 1:25



7 A2 Section
SCALE: 1:25



8 A2 Work Counter
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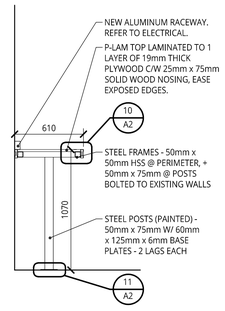

9 A2 Work Counter Section
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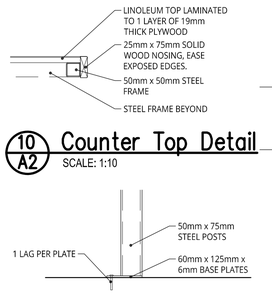
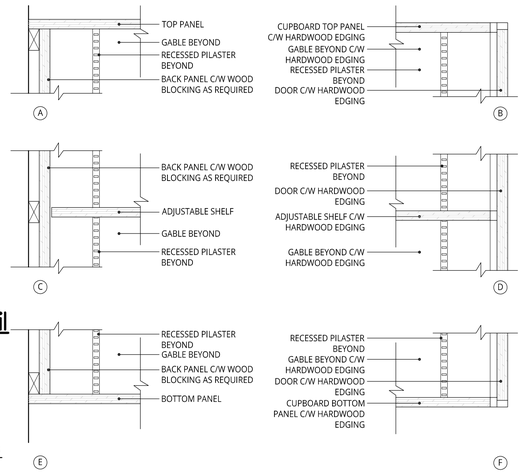
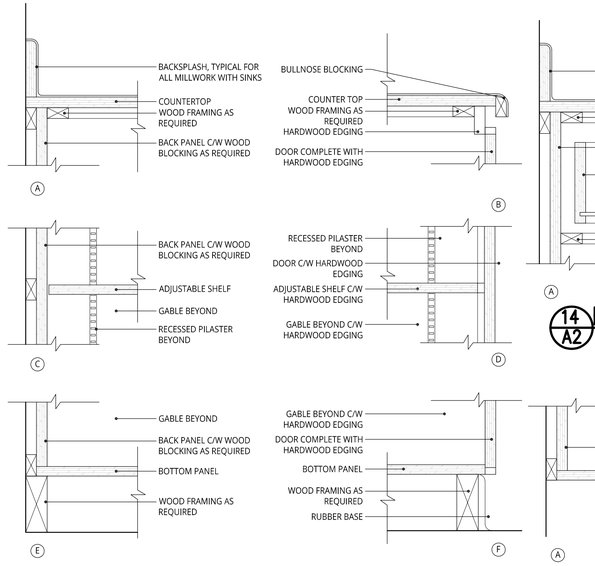


10 A2 Counter Top Detail
SCALE: 1:10

11 A2 Steel Post Detail
SCALE: 1:10



12 A2 Upper Cabinet Details
SCALE: 1:5



13 A2 Base Cabinet Details
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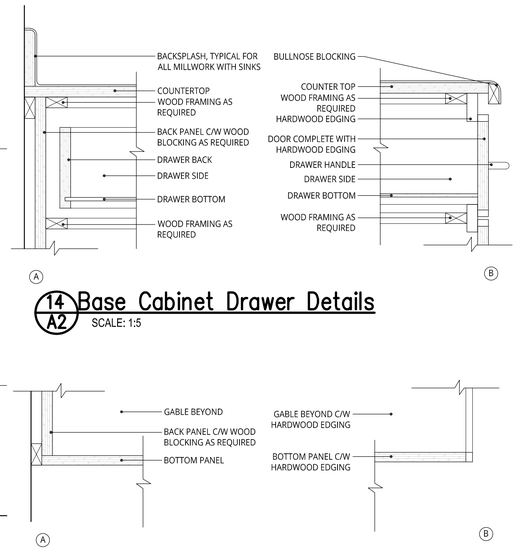


14 A2 Base Cabinet Drawer Details
SCALE: 1:5

15 A2 Upper Cabinet Bottom Shelf Details
SCALE: 1:5

ONTARIO ASSOCIATION OF ARCHITECTS
JASON MICHAEL THOMAS LOWE
LICENCE 8823

PROJECT NORTH:

KEY PLAN:

Trillium Lakelands District School Board

Muskoka Beechgrove Public School

Gravenhurst, ON.

MITCHELL JENSEN ARCHITECTS
Mitchell Jensen Architects
7 John St., Unit #3,
Huntsville, ON, P1H 1H2
705.788.0650

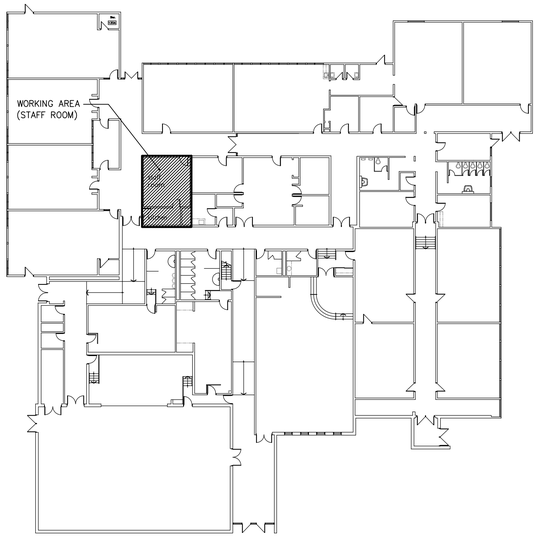
PROJECT NO:	218025
LIBRARY NO:	218025-FP
DRAWN BY:	MK
SCALE:	AS NOTED

NO.	ISSUE	DATE
1	Issued for Review	October 31, 2018
2	Issued for Tender/Permit	November 27, 2018

Elevations, Sections & Details

DRAWING NO:

A2



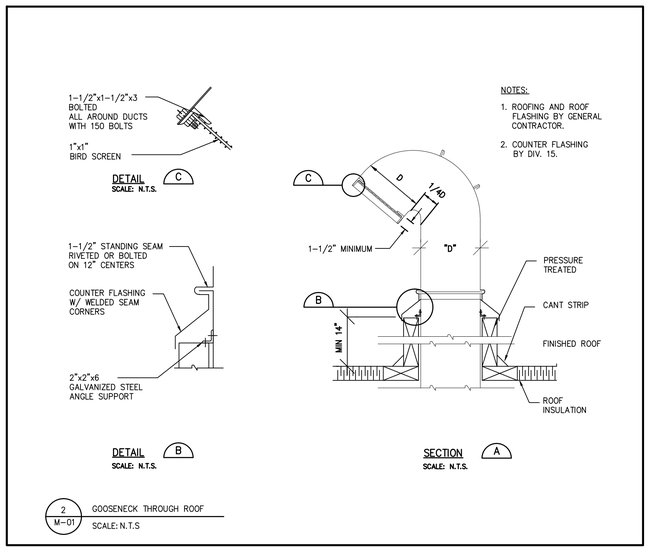
1 / M-01 KEY PLAN
SCALE: N.T.S

PLUMBING FIXTURE SCHEDULE

TYPE	FIXTURE	D.H.W.	D.C.W.	VENT	SANITARY	NOTES
S-1	TWO COMPARTMENT KITCHEN SINK	1/2"	1/2"	1-1/4"	1-1/2"	COUNTER MOUNTED

GRILLE SCHEDULE

REF. LETTER	TYPE	MAKE/MODEL	DAMPER	FINISH	REMARKS
A	SUPPLY AIR SQUARE DIFFUSER	E.H. PRICE MODEL SCD	N	B-12	24"x24" FACE SIZE, NECK SIZE AS SHOWN ON DWG.
B	RETURN AIR GRILLE	E.H. PRICE SERIES 630	N	B-12	ALUMINUM LOUVERED FACE GRILLE, SIZE SHOWN ON DWG.



2 / M-01 GOOSENECK THROUGH ROOF
SCALE: N.T.S

PLUMBING FIXTURE SPECIFICATION

.1 'S-1', DOUBLE BOWL DROP IN SINK - SINGLE HANDLE FAUCET

FRANKE COMMERCIAL #ALBD7506P-1/3 DOUBLE BOWL COUNTERTOP MOUNT SINK, 3 HOLES, 8" (203 MM) CENTER, 845 MM (33-1/4") WIDE X 559 MM (22") LONG X 152 MM (6") HIGH DEEP, SPILLWAY, COUNTER MOUNTED, BACKLEDGE, GRADE 18-10 18 GA. (1.2 MM) TYPE 304 STAINLESS STEEL, SELF-RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTING KIT PROVIDED, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, FACTORY APPLIED RIM SEAL 3-1/2" (89 MM) CRUMB CUP WASTE ASSEMBLY WITH 1-1/2" (38 MM) TAILPIECE.
AMERICAN STANDARD RELIANT+ #4205F15.104MOD SINGLE HANDLE FAUCET, POLISHED CHROME FINISH, TO BE INSTALLED WITH PROVIDED ESCUTCHEON PLATE, WASHERLESS CERAMIC DISC CARTRIDGE, 8.3 LPM (2.2 GPM) REGULATOR, SWING SPOUT, 232 MM (9-1/8") PROJECTION REACH, LEVER HANDLE, DELUXE PULL-OUT SPRAY WITH ADJUSTABLE SPRAY PATTERN AND LOCK & TURN ACTIVATION BUTTON. AMERICAN STANDARD F15 WITH PRESSURE COMPENSATING 5.7 LPM (1.5 GPM), AERATOR OUTLET LAWLER #570-86820, POINT OF USE THERMOSTATIC WATER MIXING VALVE, NICKEL PLATED BRONZE BODY, TEMPERATURE ADJUSTING SPINDLE, 10 MM (3/8") INLETS AND OUTLET FNPT CONNECTIONS, INTEGRAL CHECKS, OFFER TEMPERATURE RANGE BETWEEN 35 °C (95 °F) AND 46 °C (114.8 °F). SET VALVE TEMPERATURE AT 46 °C (114.8 °F). PROVIDE TEE, ADAPTORS AND FLEX. COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TO HOT SIDE OF FAUCET. MCGUIRE #LFH165LKN3 FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, HEAVY DUTY ANGLE STOPS, 10 MM (3/8") I.P.S. INLET X 76 MM (3") LONG RIGID HORIZONTAL NIPPLES, V.P. LOOSE KEYS, ESCUTCHEON AND FLEXIBLE COPPER RISERS. MCGUIRE #8912CB P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SLIP NUT, 38 MM (1-1/2") SIZE, BOX FLANGE AND SEAMLESS TUBULAR WALL BEND.

MECHANICAL DRAWING LIST

DWG. NO.	DRAWING TITLE
M-01	MECHANICAL LEGEND, DRAWING LIST, SCHEDULES, DETAIL, SPECIFICATION AND KEY PLAN
M-02	MECHANICAL PLANS
M-03	MECHANICAL SPECIFICATION

HVAC LEGEND

SYMBOL	DESCRIPTION
	DUCTWORK (DOUBLE LINE)
	DUCTWORK (SINGLE LINE)
	FLEXIBLE DUCT
	CONTROL WIRE
	POSITIVE PRESSURE DUCT UP
	RETURN/EXHAUST DUCT UP
	POSSUPPLY DUCT DOWN
	RETURN/EXHAUST DUCT DOWN
T	THERMOSTAT
TS	TIME SWITCH
DG	DOOR GRILLE
UC	DOOR UNDERCUT
BD	BALANCING DAMPER
FD	FIRE DAMPER
	SQUARE SUPPLY AIR DIFFUSER
	RETURN OR EXHAUST AIR GRILLE
	ROUND SUPPLY AIR DIFFUSER
XX	DENOTE AIR FLOW RATE XX L/S
X Y Z	DIFFUSER/GRILLE TYPE X - TYPE Y - SIZE (MM) Z - AIR VOLUME (L/S)

PLUMBING LEGEND

SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RECIRCULATION (DHWR)
	BURIED SANITARY DRAIN OR IN CEILING SPACE/FLOOR BELOW
	SUSPENDED SANITARY DRAIN
CO	CLEANOUT PLUG
CO	FLOOR CLEANOUT
	VALVE SHUT-OFF
M	WATER METER
	CHECK VALVE
	BALL VALVE
HB	HOSE BIBB
	CAPPED CONNECTION
FD FD	FLOOR DRAIN
	PIPE CUT
	PIPE DOWN
	PIPE UP
	SANITARY ROUGH-IN

ABBREVIATIONS

ABBREV.	DESCRIPTION
DN	DOWN
S/A	SUPPLY AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
F/A	FRESH AIR
CV	CONTROL VALVE
NIC	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR
CTE	CONNECT TO EXISTING
RE	DENOTES EXISTING DEVICE(S) IN RELOCATED POSITION
R	DENOTES EXISTING DEVICE(S) TO BE RELOCATED
D	DENOTES EXISTING DEVICE(S) TO BE REMOVED
EX	DENOTES EXISTING DEVICE(S) TO REMAIN
N	DENOTES PROVIDE NEW DEVICE(S)
1	DENOTES DRAWING REFERENCE NOTES # 1
	EXISTING SERVICES OR EQUIPMENTS TO BE REMOVED
R	EXISTING SERVICES OR EQUIPMENTS TO BE RELOCATED
X / M001	REFER TO DETAIL No. X ON DRAWING No. M001

FIRE PROTECTION

SYMBOL	DESCRIPTION
F.E.	FIRE EXTINGUISHER

LICENSED PROFESSIONAL ENGINEER
M. J. LI
NOV. 26, 2018
18027-C3
PROVINCE OF ONTARIO

PROJECT NORTH:

KEY PLAN:

Trillium Lakelands District School Board
Muskoka Beechgrove Public School
Millwork Replacement

Haliburton, ON.

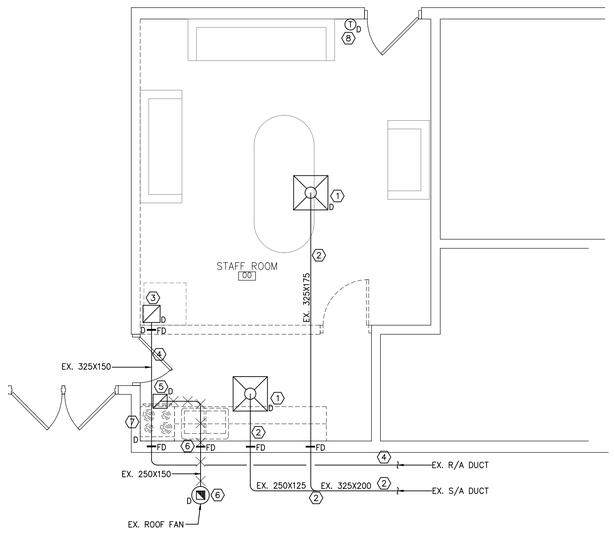
HL ENGINEERING LTD
14721 WOODBINE AVE, STOUFFVILLE, ON
L4A 2G7 905-713-0003 www.hlengineering.ca

PROJECT NO:	18027-C3
LIBRARY NO:	218024-FP
DRAWN BY:	BXL
SCALE:	N.T.S.

NO.	ISSUE	DATE
1	Issued for Review	2018/04/20
2	Issued for Permit & Tender	2018/05/07
3	Issued for Permit & Tender	2018/11/26

MECHANICAL LEGEND, DRAWING LIST, SCHEDULES, DETAIL, SPECIFICATION AND KEY PLAN

DRAWING NO:
M-01



1 M-02 EXISTING HVAC AND FIRE PROTECTION PLAN

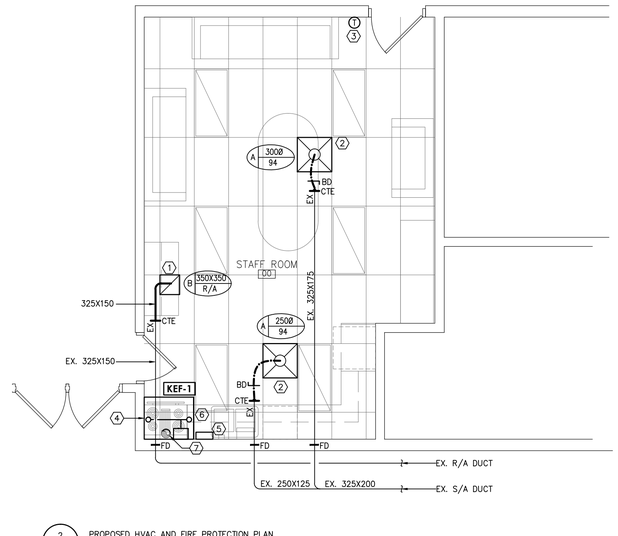
SCALE: 1:50

GENERAL NOTES:

1. ALL EXISTING MECHANICAL SERVICE TO REMAIN UNLESS INDICATED OTHERWISE.

DRAWING NOTES:

1. EXISTING S/A DIFFUSER TO BE REMOVED, MODIFY/EXTEND EXISTING DUCT FOR NEW DIFFUSER.
2. EXISTING S/A DUCT TO REMAIN.
3. EXISTING R/A GRILLE TO BE REMOVED, MODIFY/EXTEND EXISTING DUCT FOR NEW R/A GRILLE.
4. EXISTING R/A DUCT TO REMAIN.
5. EXISTING E/A GRILLE TO BE REMOVED.
6. EXISTING E/A DUCT, FIRE DAMPER AND EXHAUST ROOF FAN TO BE REMOVED.
7. EXISTING RANGE TO BE REPLACED WITH NEW. PROVIDE NEW RANGE HOOD AS PER PROPOSED LAYOUT.
8. EXISTING THERMOSTAT TO BE REPLACED WITH NEW.
9. EXISTING FIRE EXTINGUISHER TO BE REPLACED WITH NEW.



2 M-02 PROPOSED HVAC AND FIRE PROTECTION PLAN

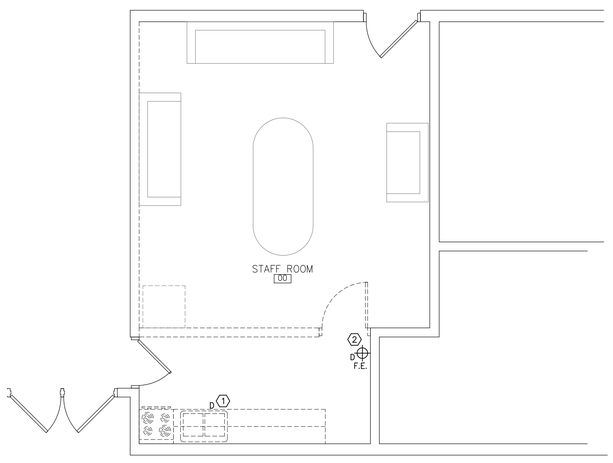
SCALE: 1:50

GENERAL NOTES:

1. COORDINATE ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS OF GRILLES AND DIFFUSERS.
2. THE INSTALLATION OF THE FIRE SUPPRESSION SYSTEM SHALL COMPLY WITH MANUFACTURER SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS.
3. ALL EQUIPMENTS/DUCT SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE NEW R/A GRILLE AND CONNECT NEW 325X150 R/A DUCT FROM EXISTING DUCTWORK, MODIFY/EXTEND EXISTING DUCT WORK TO SUIT NEW R/A GRILLE LOCATION.
2. PROVIDE NEW S/A DIFFUSER AND ASSOCIATED BRANCH PIPE SIZE AS SHOWN, CONNECT TO EXISTING S/A DUCT AND PROVIDE BALANCE DAMPER TO BALANCE AIR FLOW AS SHOWN.
3. PROVIDE NEW THERMOSTAT AND WIRE TO EXISTING. NEW T-STAT SHALL MATCH EXISTING FUNCTION AND CONTROL.
4. PROVIDE NEW KITCHEN HOOD, SIZE 30"X21", MODEL VENT-A-HOOD NPH9-130, C/W WASHABLE FILTER, BUILT IN LIGHTING, FAN SPEED CONTROL, 120V, 2.5A, 225CFM @ 0.3 ESP.
5. PROVIDE FIRE SUPPRESSION SYSTEM CONTROL PANEL AS PER MANUFACTURE SHOP DRAWING AND INSTALLATION REQUIREMENT.
6. PROVIDE FIRE SUPPRESSION SYSTEM FOR KITCHEN HOOD MODEL: GUARDIAN 13848, INSTALL CONTROL PANEL, TANK, NOZZLE, PIPING, SUPPORT AS PER MANUFACTURE SHOP DRAWING AND INSTALLATION REQUIREMENT.
7. PROVIDE 150Ø EXHAUST DUCT THROUGH EXISTING ROOF OPENING, C/W GOOSENECK & WIRE MESH.



3 M-02 EXISTING PLUMBING, DRAINAGE AND FIRE PROTECTION PLAN

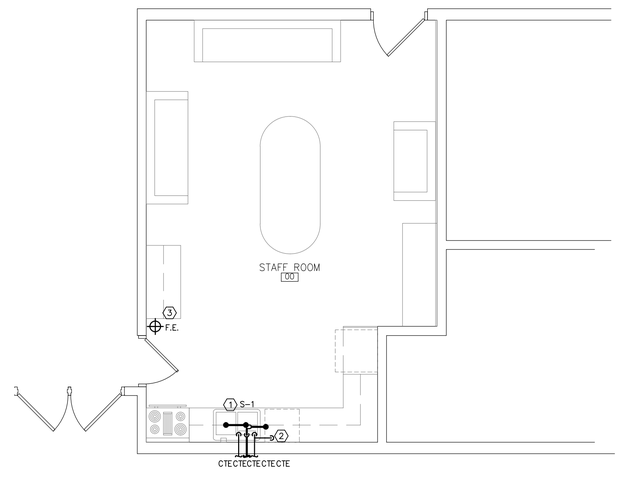
SCALE: 1:50

GENERAL NOTES:

1. ALL EXISTING MECHANICAL SERVICE TO REMAIN UNLESS INDICATED OTHERWISE.

DRAWING NOTES:

1. EXISTING SINK TO BE REMOVED, MODIFY/EXTEND EXISTING PIPING TO BE CONNECT TO NEW SINK.
2. EXISTING FIRE EXTINGUISHER TO BE REMOVED.



4 M-02 PROPOSED PLUMBING, DRAINAGE AND FIRE PROTECTION PLAN

SCALE: 1:50

GENERAL NOTES:

1. ALL SANITARY DRAINAGE BELOW GRADE SHALL BE MINIMUM 75MM UNLESS INDICATED OTHERWISE.
2. ALL FLOOR DRAINS SHALL BE COMPLETE WITH TRAPS AND TRAP PRIMERS.
3. ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER PIPES SHALL BE MINIMUM 20MM UNLESS INDICATED OTHERWISE.
4. PROVIDE COMPLETE VENTING SYSTEM AS PER O.B.C. REQUIREMENT.
5. PROVIDE NEW BALL VALVES TO REPLACE ALL EXISTING GATE VALVES ON DCW & DHW LINES WITHIN SCOPE AREA AND NEARBY. CONTRACTOR TO EXAM SITE CONDITIONS FOR EXACT LOCATION, SIZE AND QUANTITY.
6. ALL EQUIPMENTS/PIPING SHOWN ON THIS DRAWING SHALL BE NEW UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE NEW SINK 'S-1' WITH 12Ø DCW & DHW AND 50Ø SAN. FROM EXISTING. CONTRACTOR TO VERIFY EXACT SIZE, LOCATION AND INVERT ON SITE.
2. PROVIDE NEW DISHWASHER WATER SUPPLY LINES FROM WATER LINE NEARY. CONNECT DISHWASHER DRAIN TO SINK DRAIN PIPE. FOLLOW DISHWASHER MANUFACTURE INSTALLATION REQUIREMENT FOR SIZES, FITTINGS AND CONNECTION.
3. PROVIDE NEW PORTABLE FIRE EXTINGUISHER, MINIMUM 3A40BC RATING, 2.26 KG (5 LBS.) MULTI-PURPOSE DRY CHEMICAL POWDER TYPE, ULC LABELED.

LICENSED PROFESSIONAL ENGINEER
M. J. LI
NOV. 26, 2018
18027-C3
PROVINCE OF ONTARIO

PROJECT NORTH:

KEY PLAN:

Trillium Lakelands District School Board
Muskoka Beechgrove Public School
Millwork Replacement

Haliburton, ON.

HL ENGINEERING LTD
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PROJECT NO:	18027-C3
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SCALE:	1:50

NO.	ISSUE	DATE
1	Issued for Review	2018/04/20
2	Issued for Permit & Tender	2018/05/07
3	Issued for Permit & Tender	2018/11/26

MECHANICAL PLAN

DRAWING NO: M-02

MECHANICAL SPECIFICATION:

1. GENERAL

.1 COMPLY WITH GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, AND ALL DOCUMENTS REFERRED TO THEREIN.

.2 THE DOCUMENTS ARE NOT INTENDED TO DELEGATE FUNCTIONS NOR TO DELEGATE WORK TO ANY TRADE.

.3 THE DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH BASE BUILDING DRAWINGS AND SPECIFICATIONS. DO ALL WORK IN ACCORDANCE WITH THE OWNER GUIDELINES. MAXIMUM CONDITIONS WILL GOVERN.

.4 PRIOR TO SUBMITTING THE TENDER, CAREFULLY EXAMINE AND VERIFY THE SITE AND CONDITIONS OF THE PROPOSED WORK TOGETHER WITH THE WORK BY ALL OTHER TRADES, INCLUDING LOCATIONS AND DIMENSIONS OF ALL EXISTING SERVICES (INCLUDING SERVICES IN CONCEALED SPACE), AND ALLOW FOR ANY RE–ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT, CUTTING AND PATCHING IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND EXISTING PROJECT CONDITIONS ARE COMPLETELY UNDERSTOOD, CONFIRMED AND ACCEPTED BY THE CONTRACTOR.

.5 REPORT TO THE ENGINEER ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.

.6 DRAWINGS ARE DIAGRAMMATIC, SHOW GENERAL PERFORMANCE AND ARRANGEMENT OF WORK, AND DO NOT SHOW STRUCTURAL AND RELATED DETAILS. REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S DRAWINGS. TAKE INFORMATION INVOLVING ACCURATE MEASUREMENT OF BUILDING. MAKE, WITHOUT ADDITIONAL CHARGE, ANY NECESSARY CHANGES OR ADDITIONS TO WORK OR EQUIPMENT LOCATIONS TO ACCOMMODATE STRUCTURAL CONDITIONS. EQUIPMENT LOCATIONS MAY BE ALTERED BY ENGINEER WITHOUT EXTRA CHARGE PROVIDED CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE MAJOR MATERIAL.

.7 PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, LOCAL BY–LAWS, LATEST EDITIONS OF APPLICABLE CODES, STANDARDS, AND REGULATIONS.

.8 APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND GENERAL SALES TAXES.

.9 'SUPPLY' SHALL MEAN FURNISHING TO SITE IN LOCATION REQUIRED OR DIRECTED COMPLETE WITH ACCESSORY PARTS. 'INSTALL' SHALL MEAN SET IN PLACE AND SECURED OR AFFIXED TO BUILDING STRUCTURE AS NOTED OR DIRECTED. 'PROVIDE' SHALL MEAN SUPPLY AND INSTALL AND INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, CONNECTIONS, TESTING AND INSPECTION AS EACH IS DESCRIBED.

.10 PROVIDE WORK IN SUCH A MANNER AS TO LEAVE EACH OF THE SYSTEMS COMPLETE AND IN SATISFACTORY OPERATION CONDITION. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE SATISFACTORY COMPLETION OF ALL WORK BEARING UPON THIS TRADE, INCLUSIVE OF ALL INSTALLATIONS ACCEPTABLE TO ARCHITECT.

.11 ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.

.12 PROVIDE ALL CUTTING, PATCHING, FLASHING WORK AND CLEAN–UP OF FLOORS, WALLS, CEILINGS, ETC.

.13 PROVIDE PROPER SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR REVIEW TO THE ARCHITECT AND ENGINEER IN ACCORDANCE WITH GENERAL REQUIREMENTS. SHOP DRAWINGS SHALL BE REVIEWED, STAMPED, AND CORRECTED BY CONTRACTOR PRIOR TO SUBMISSION.

.14 REVIEW OF SHOP DRAWINGS BY CONSULTANT IS FOR SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT ARCHITECT OR ENGINEER APPROVES DETAIL DESIGN INHERENT IN SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH CONTRACTOR AND SUCH REVIEW SHALL NOT RELIEVE CONTRACTOR OF HIS RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT SITE. FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR CO–ORDINATION OF WORK WITH ALL TRADES.

.15 SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED. THE QUALITY AND PERFORMANCE CHARACTERISTICS OF SUBSTITUTE PRODUCTS SHALL BE EQUAL TO THE SPECIFIED PRODUCTS. IMPLEMENTATION OF SUBSTITUTE PRODUCTS IS SUBJECT TO THE REVIEW OF PROPERLY SUBMITTED SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER. CONTRACTOR TO BE FULLY RESPONSIBLE FOR CAPABILITIES AS WELL AS PHYSICAL FIT OF SUBSTITUTED MATERIALS.

.16 ASSUME RESPONSIBILITY AND PAY FOR ANY ADDITIONAL INSTALLATION COSTS INCURRED BY ALL DIVISIONS RESULTING FROM THE ALTERNATES AND/OR SUBSTITUTIONS. MAKE REVISIONS TO RECORD DRAWINGS INCORPORATING ALL ALTERNATES AND/OR SUBSTITUTIONS AND ALL RELATED CHANGES.

.17 ALL MATERIAL AND EQUIPMENT USED SHALL BE NEW AND OF UNIFORM PATTERN AND CSA APPROVED. WHERE MANUFACTURER IS NOT SPECIFIED, PRODUCTS SHALL BE OF HIGH COMMERCIAL QUALITY. ALL EQUIPMENT, MATERIALS AND ASSOCIATED CONTROLS NOT USED IN THIS CONTRACT SHALL BE RETURNED TO OWNER.

.18 SUPPLY JOB SITE OFFICE, WORKSHOP, TOOLS, SCAFFOLDS AND MATERIAL STORAGE TO COMPLETE THE WORK OF THIS DIVISION. LOCATION OF TEMPORARY BUILDING, USE OF SPACE ON SITE OR WITHIN BUILDING SHALL BE TO LATER DIRECTION.

.19 PROVIDE ALL MISCELLANEOUS METALS AS NECESSARY FOR MECHANICAL WORK.

.20 TEMPORARY OR TRIAL USAGE OF ANY EQUIPMENT OR MATERIALS SHALL NOT BE CONSTRUED AS EVIDENCE OF ACCEPTANCE OF SAME AND NO CLAIM FOR DAMAGE SHALL BE MADE FOR INJURY TO OR BREAKING OF ANY PART OF SUCH WORK WHICH MAY BE SO USED.

.21 PROVIDE A COMPLETE BREAKDOWN OF MATERIALS, EQUIPMENT AND LABOUR WITH EACH ITEM OF EACH SUBMISSION FOR EXTRA OR DELETED WORK.

.22 ADJUST THE LOCATION OF MATERIALS AND/OR EQUIPMENT AS DIRECTED WITHOUT ADJUSTMENT TO CONTRACT PRICE, PROVIDED THAT THE CHANGES ARE REQUESTED BEFORE INSTALLATION AND DO NOT AFFECT QUANTITY OF MATERIALS.

.23 IDENTIFY ALL SYSTEMS AND LABEL ALL EQUIPMENT WITH LAMACOID LABELS. IDENTIFY REMOTE CONTROLS FOR ALL PERTINENT EQUIPMENT INCLUDING ALL ASSOCIATED DISCONNECTS. THE IDENTIFICATION AND LABELS SHALL MEET BASE BUILDING STANDARDS.

.24 PRIOR TO COMPLETION REVIEW/INSPECTION, MECHANICAL CONTRACTOR SHALL SUBMIT A LETTER CONFIRMING THAT ALL MECHANICAL WORK IS COMPLETED AS PER MECHANICAL TENDER DOCUMENT. CONTRACTOR IS RESPONSIBLE FOR THE COST OF THE SECOND COMPLETION REVIEW/INSPECT IF ITS REQUIRED.

.25 PROVIDE THE OWNER WITH A WRITTEN WARRANTY, FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT, FOR A PERIOD OF TWO YEAR COMMENCING AT SUCH TIME AS THE OWNER, OR HIS REPRESENTATIVE, DEEMS THE WORK ACCEPTABLE.

.26 CONTRACTOR SHALL OBTAIN CLEAN SET OF PRINTS FROM CONSULTANT AT START OF CONTRACT WORK AND SHALL KEEP THESE PRINTS UP–TO–DATE AT JOBSITE, ACCURATELY RECORDING ALL CHANGES MADE ON PROJECT AND LOCATING ALL SERVICES, EQUIPMENT, ETC. WHICH MAY HAVE BEEN SHOWN ONLY DIAGRAMMATICALLY ON CONTRACT DOCUMENTS. UPON COMPLETION OF CONTRACT WORK, SUBMIT THREE (3) PRINTS SETS AND ONE (1) CD CONTAINING ACAD FILES OF AS–BUILT DRAWINGS.

.27 ASSEMBLE THREE (3) MANUALS, EACH CONTAINING DATA SHEETS, BROCHURES, OPERATING, MAINTENANCE, RECOMMENDED SPARE PARTS, AND LUBRICATING INSTRUCTIONS AND A COMPLETE SET OF REVIEWED SHOP DRAWINGS AND BIND IN HARD COVER. IDENTIFY COVER "OPERATION AND MAINTENANCE MANUAL". MANUALS SHALL BE SEPARATED WITH DIVIDERS IN LOGICAL SECTIONS AND VOLUMES. PRESENT ONE (1) COPY FOR REVIEW BY CONSULTANT. MAKE ALL CORRECTIONS REQUESTED BY THE CONSULTANT AND RESUBMIT FOR REVIEW.

.28 PROVIDE SLEEVES FOR ALL NEW PIPING THROUGH EXISTING SLAB, BEAMS, SLAB TO SLAB WALL, ETC. WHERE INDICATED AND/OR REQUIRED. OBTAIN BASE BUILDING STRUCTURAL ENGINEER'S APPROVAL PRIOR TO COMMENCEMENT OF WORK.

.29 ALL WALL AND FLOOR OPENINGS SHALL BE PACKED AND SEALED WITH AN APPROVED FIRE RESISTANT INSULATION TO 25 MM (1") FROM END SIDE OF OPENING ON BOTH SIDES OF FLOOR OR WALL. REMAINING PORTION SHALL BE SEALED WITH AN APPROVED FIRE STOP SUBSTANCE EQUAL TO 'DOW CORNING' #3–6548 SILICON RTV FOAM PENETRATION SEALANT. TO CAN4–S115 AND ULC LISTED.

.30 IN ALL AREAS REQUIRING CORE DRILLING THROUGH EXISTING FLOOR SLAB FOR MECHANICAL SERVICES, ETC. ALLOW FOR ALL NECESSARY RADIOGRAPHY TO LOCATE HIDDEN ELECTRICAL SERVICES, STRUCTURAL REINFORCING, ETC., AND INCLUDE ALL COSTS IN TENDER PRICE. CO–ORDINATE THIS WORK WITH LANDLORD AND/OR TENANT CO–ORDINATOR FOR TIME, DURATION AND LOCATIONS REQUIRED, AND ADHERE TO THE LANDLORD'S REQUIREMENTS. SUBMIT CORE DRILLING PLAN TO BASE BUILDING STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.

.31 PROVIDE ALL ACCESS DOORS WHERE SHOWN AND/OR REQUIRED BY SITE CONDITIONS, IN CEILINGS OR WALLS. ACCESS DOORS SHALL BE EQUAL TO MILCOR OR LEHAGE, AND MUST BE COMPATIBLE WITH CEILING/WALL TYPE AND FINISH. INSTALLATION TO COMPLY WITH INTERIOR DESIGNER'S APPROVAL. ACCESS DOORS IN RATED CEILINGS OR WALLS SHALL BE ULC APPROVED FOR THE APPLICATION.

.32 MECHANICAL CONTRACTOR SHALL CO–ORDINATE WITH GENERAL CONTRACTOR FOR SIZE, LOCATION AND INSTALLATION OF ACCESS PANELS IN DRYWALL CEILINGS TO EQUIPMENT WHERE INDICATED ON PLAN AND/OR REQUIRED FOR PROPER SERVICING OF EQUIPMENT. CEILING ACCESS PANELS SHALL BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. FINAL LOCATION TO COMPLY WITH THE INTERIOR DESIGNER'S AND/OR ARCHITECT'S APPROVAL.

.33 FLASH AND COUNTER–FLASH ALL PIPES AND DUCTS PASSING THROUGH ROOFS, OUTSIDE WALLS AND WATERPROOF FLOORS. ENSURE WATERPROOF INSTALLATION.

.34 SUPPLY AND LOCATE ALL BASES, SUPPORTS, SLEEVES, CURBS, ETC. REQUIRED FOR THIS WORK.

.35 SUPPLY PROPER STARTERS WITH OVERLOAD PROTECTION AND DISCONNECT SWITCHES FOR POWERED MECHANICAL EQUIPMENT AND HAND OVER TO ELECTRICAL CONTRACTOR FOR INSTALLATION. THIS DOES NOT INCLUDE ISOLATION SWITCHES, UNLESS STATED SPECIFICALLY.

.36 ALL POWER WIRING BY ELECTRICAL CONTRACTOR, CONTROL AND INTERLOCK WIRING BY MECHANICAL CONTRACTOR. CONTROL WIRING IN RETURN AIR CEILING SPACES SHALL BE FT–6 OR INSTALLED IN CONDUIT.

.37 ALL MATERIALS, INCLUDING BUT NOT LIMITED TO, PIPING, DUCTWORK AND CONDUITS IN CONCEALED SPACE USED AS A PLENUM SHALL HAVE A FLAME–SPREAD RATING NOT MORE THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50.

.38 FIRESTOP AND SMOKE SEAL AROUND MECHANICAL ASSEMBLIES PENETRATING RATED FIRE SEPARATIONS, WITH FIRE AND TEMPERATURE RATINGS SUITABLE FOR ASSEMBLY IN WHICH THEY ARE TO BE INSTALLED.

2. WORK IN EXISTING BUILDING

.1 EXAMINE THE SITE AND LOCAL CONDITIONS PRIOR TO TENDER SUBMISSION. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND SITE CONDITIONS ARE COMPLETELY UNDERSTOOD AND ACCEPTED UNLESS EXCEPTIONS ARE SPECIFICALLY INDICATED IN THE BID FORM.

.2 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, AND WITHIN ONE WEEK OF THE CONTRACT AWARDED, EXAMINE AND VERIFY ON SITE, THE COMPLETE EXISTING MECHANICAL SYSTEM, AND SUBMIT DETAILED EXISTING MECHANICAL SYSTEM DRAWINGS SHOWING COMPLETE AND ACCURATE EXISTING SYSTEM CONDITIONS, LOCATIONS OF ALL DEVICES, EQUIPMENTS, DUCTS AND PIPES OF HVAC, PLUMBING AND SPRINKLER SYSTEMS.

.3 DO NOT ORDER AND/OR FABRICATE MATERIALS (PIPING AND DUCTWORK) PRIOR TO A FULL REVIEW OF THE SITE CONDITIONS AND INTERFERENCES IN THE CEILING SPACE.

.4 CO–ORDINATE WITH OWNER FOR SCHEDULING OF WORKS REQUIRED TO BE DONE BEFORE/AFTER NORMAL OCCUPANCY HOUR, INCLUDING BUT NOT LIMITED TO: DRILLING THROUGH SLAB; POWER SHUTDOWN; INTERFERENCE TO LIFE SAFETY SYSTEM. ALL COST INVOLVED, INCLUDING WORK TO BE DONE BY OWNER, SHALL BE INCLUDED IN TENDER PRICE.

.5 INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION, AND TO COMPLETE THE WORK.

.6 CHECK AND VERIFY ON SITE FOR ROUTING OF NEW DUCTWORK, PIPING AND LOCATION OF NEW EQUIPMENT AND INCLUDE IN TENDER PRICE FOR ANY RELOCATIONS OF EXISTING SERVICES OR ADJUSTMENTS OF NEW SERVICES OR EQUIPMENT AS REQUIRED TO SUIT SITE CONDITIONS. PROVIDE OFFSETS IN PIPING AND DUCTWORK AS REQUIRED TO AVOID INTERFERENCES.

.7 CHECK AND VERIFY LOCATION OF EXISTING MECHANICAL AND ELECTRICAL INTERFERENCES IN CEILING SPACE OF FLOOR BELOW AND/OR BELOW FLOOR SLAB IN ALL AREAS REQUIRING CORE DRILLING AND/OR CUTTING OF FLOOR SLAB ON GRADE AND ENSURE COMPATIBILITY OF AREA BELOW TO THE SATISFACTION OF THE LANDLORD.

.8 X–RAY OR ULTRASOUND OF EXISTING BUILDING FRAMED SLAB WHERE NEW HOLES ARE DRILLED FOR PIPING PENETRATIONS, AND FOR NEW BURIED PIPE LINES.

.9 MAINTAIN THE LIFE SAFETY SYSTEMS IN EXISTING BUILDING IN FULL OPERATION AT ALL TIMES DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

.10 MAINTAIN ALL SYSTEMS IN FULL OPERATION DURING NORMAL OCCUPANCY HOURS, UNLESS OTHERWISE NOTED. MAINTAIN ALL SYSTEMS ADJACENT TO CONSTRUCTION AREA IN FULL OPERATION AT ALL TIME DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

.11 PROTECT WORK OF THIS AND OTHER TRADES, EXISTING FINISHES, SYSTEMS AND SERVICES WHICH MUST REMAIN IN OPERATION. REPLACE AND/OR REINSTALL ANY EXISTING SERVICES WHICH ARE TO REMAIN THAT ARE IMPROPERLY INSTALLED OR MAY CREATE ANY INTERFERENCES WITH NEW CONSTRUCTION.

.12 ALL NOISE GENERATING WORKS THAT DISRUPT THE BUILDING OPERATIONS SHALL BE CARRIED OUT BEFORE/AFTER NORMAL OCCUPANCY HOURS.

3. HEATING, VENTILATION AND AIR CONDITIONING

.1 ALL DUCTWORK AND SUPPORTS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS.

.2 MAKE GOOD ALL EXISTING INSULATION WHEN CONNECTING TO EXISTING SERVICES.

.3 PROVIDE DUCT ACCESS DOORS, MINIMUM 375 MM X 300 MM (15" X 12") SIZE FOR EQUIPMENT SUCH AS COILS (BOTH SIDES OF COIL), FIRE AND/OR SMOKE DAMPERS, CONTROL AND/OR BALANCING DAMPERS, HEAT AND/OR SMOKE DETECTORS, BACKDRAFT DAMPERS, ETC. AS REQUIRED FOR PROPER SERVICING.

.4 PROVIDE FLEXIBLE CONNECTORS BETWEEN ALL FANS AND ADJACENT DUCTWORK CONSISTING OF A PREASSEMBLED UNIT WITH 75 MM (3") LONG GALVANIZED DUCT CONNECTOR AND 150 MM (6") WIDE HEAVY GLASS FIBRE FABRIC WITH ELASTOMER COATING EQUAL TO DURO DYNE 'DUROLON'.

.5 FLEXIBLE DUCTS SHALL BE OF SIZE EQUAL TO DIFFUSER NECK SIZE. USE GEAR CLAMPS FOR SECURING FLEXIBLE DUCTS TO RIGID DUCT CONNECTIONS SUCH AS SPIN_ON FITTINGS, ETC. AND NECKS OF DIFFUSERS AND SEAL AIR TIGHT WITH DUCT TAPE. ROUND FLEXIBLE DUCTS SHALL BE MAXIMUM 3.0 M (10') LONG AND REMAINDER SHALL BE ROUND RIGID SPIRAL DUCT.

.6 KITCHEN EXHAUST DUCTWORK SHALL BE 16 GA. WELDED CARBON STEEL. INSTALLATION, CLEARANCE AND FAN ARRANGEMENT SHALL BE IN ACCORDANCE WITH NFPA 96 AND OBC

.7 FINAL LOCATION OF NEW SUPPLY AIR DIFFUSERS, BOOTS, LIGHT TROFFERS, REGISTERS, RETURN AND EXHAUST AIR GRILLES SHALL BE CO_ORDINATED WITH THE LATEST ARCHITECTURAL REFLECTED CEILING PLANS.

.8 PROVIDE NEW BALANCING DAMPERS FOR ALL NEW DUCT BRANCHES, AND IN ALL LOCATIONS NECESSARY FOR BALANCING THE AIR SYSTEMS, WITH SUITABLE MEANS OF CEILING ACCESS. PROVIDE VOLUME DAMPERS FOR ALL NEW SUPPLY AIR DIFFUSERS AND REGISTERS.

.9 IN PROJECT CONSTRUCTION AREA, REPAIR ALL EXISTING LEAKED OR BROKEN DUCT AND CONNECTION. RE–BRACE AND RE–STIFFEN ALL THE EXISTING DUCTS SO THAT THEY WILL NOT BREATHE, RATTLE, VIBRATE OR SAG. EXISTING FLEXIBLE DUCTS LYING ON SUSPENDED CEILING ARE NOT ACCEPTABLE.

.10 PROVIDE 25 MM (1") THICK INSULATION FOR ALL NEW SUPPLY DUCTWORK, 48.06 KG/M3 (3 LB DENSITY NEOPRENE FACED) FIBERGLASS INSULATION AND ALUMINUM FOIL VAPOUR BARRIER.

.11 WHERE SHOWN, DUCTWORK SHALL BE LINED INTERNALLY WITH 1" (25MM) FACED FLEXIBLE DUCT LINER. SHOWN SIZES ARE CLEAR INSIDE DIMENSIONS. INCREASE DUCT SIZE ACCORDINGLY.WHERE INDICATED SUPPLY AND RETURN DUCTS FROM ROOFTOP UNITS AND INDOOR AIR HANDLERS/HEAT PUMPS SHALL BE PROVIDED WITH SIMILAR ACOUSTIC LINING.

.12 ALL EXTERIOR DUCTWORK SHALL BE INSULATED WITH 2 LAYER OF 2" (50MM) THICK FLEXIBLE ELASTOMERIC INSULATION WITH FACTORY APPLIED COATING. PROVIDE SLOPED EXTRUDED POLYSTYRENE INSULATION SUPPORTED ON TOP OF DUCTWORK TO MAINTAIN SLOPE AT A MINIMUM OF 5%. ALL FLANGES SHALL BE COVERED BY A MINIMUM OF 1/2" (12MM). DUCTWORK IN UNHEATED SPACE SHALL BE INSULATED TO R–12.

.13 EXHAUST DUCTWORK WITHIN 5 FT (1.5 M) OF EXTERIOR WALL OR ROOF, AND ALL OUTSIDE AIR INTAKE DUCTWORK, SHALL BE EXTERNALLY INSULATED WITH 1–1/2" (38MM) THICK FOIL FACES FLEXIBLE FIBREGLASS DUCT INSULATION. APPLY USING RECOMMENDED ADHESIVE AND TAPE ALL JOINTS USING VAPOUR BARRIER TAPE.

.14 PROVIDE '3M' DUCT SEALANT TO SEAL ALL JOINTS AND FITTINGS OF SUPPLY, RETURN AND EXHAUST AIR DUCTS.

.15 PROVIDE ALL CONTROLS, WIRING IN CONDUITS, RELAYS, APPURTENANCES AND CONNECTIONS NECESSARY FOR COMPLETE AND OPERATING SYSTEMS. NEW EQUIPMENT SHALL MATCH EXISTING BASE BUILDING STANDARD UNLESS NOTED OTHERWISE.

.16 FOR RELOCATION OF EXISTING THERMOSTATS, MODIFY (REMOVE, EXTEND AND PROVIDE NEW WHERE NECESSARY) THE EXISTING WIRING (POWER AND CONTROL) IN CONDUITS TO SUITE NEW LAYOUT.

.17 RECALIBRATE EXISTING THERMOSTATS THAT ARE NOTED TO BE RELOCATED. TEST AND COMMISSIONING ALL NEW AND RELOCATED THERMOSTATS AND SUBMIT WRITTEN REPORT TO ENGINEER.

.18 PROVIDE TESTING, BALANCE AND COMMISSIONING OF ALL AIR SYSTEMS. COMMISSIONING SHALL INCLUDE PUTTING INTO SERVICE, ADJUSTING, CALIBRATING AND VERIFYING ALL SYSTEMS, BOTH NEW AND EXISTING. THE WORK SHALL BE PROVIDED BY AN INDEPENDENT COMPANY APPROVED BY THE OWNER.

.19 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, TEST AND VERIFY ON SITE, THE SUPPLY AIR QUANTITY PRESENTLY AVAILABLE FROM MAIN AIR SUPPLY DUCTS, EACH FAN POWERED BOX/FAN COIL/HEAT PUMP, AND EACH SUPPLY AIR DIFFUSER WITHIN THE PROJECT SPACES. SUBMIT THE TEST RESULTS READING REPORT.

.20 MARK THE FINAL BALANCE POSITION ON ALL BALANCING DAMPERS AND ADJUSTABLE AIR TURNING DEVICES AND BALANCE FITTINGS.

.21 PROVIDE AIR BALANCE IN ACCORDANCE TO 10% OF DESIGN REQUIREMENTS, AND TO MEET BASE BUILDING STANDARDS.

.22 SUBMIT AIR SYSTEMS TEST AND BALANCE REPORT.

.23 FOR HEATING, CHILLED AND CONDENSING WATER PIPING, SUPPLY AND INSTALL STANDARD BLACK STEEL SCHEDULE 40 PIPE STRETCH REDUCED CONTINUOUS WELD UP TO AND INCLUDING 100MM(4"), PIPING 50 MM (2") AND SMALLER MAY BE SCREWED WITH CAST IRON MALLEABLE FITTINGS UNLESS NOTED OTHERWISE. BRANCH PIPING TWO SIZES SMALLER THAN THE MAIN MAY BE CUT DIRECTLY INTO MAIN AND WELDED, IN AN APPROVED MANNER. USE LONG RADIUS FORGED WELDING ELBOWS AT ALL TURNS, EQUAL TO TUBE–TURN.

.24 PROVIDE AUTOMATIC AIR VENTS AT ALL HIGH POINTS IN THE WATER PIPING SYSTEM WITH 20 MM X 150 MM (3/4" X 6") LONG COLLECTING CHAMBER EQUAL TO SARCO OR MAID–O–MIST.

.25 COVER ALL CHILLED AND HEATING WATER PIPING INSTALLED INDOORS WITH PREFORMED GLASS FIBRE TYPE FIBERGLASS INSULATION 88.10 KG/M3 (5.5 LB DENSITY) WITH FACTORY APPLIED FIRE RESISTIVE GLASS FIBRE REINFORCED KRAFT PAPER AND ALUMINUM FOIL VAPOUR BARRIER. MINIMAL INSULATION THICKNESS SHALL COMPLY WITH THE LATEST ASHRAE 90.1 REQUIREMENTS. HOLD INSULATION IN PLACE WITH 18 MM (3/4") ALUMINUM BANDS, 450 MM (18") APART. COVER PIPING INSTALLED OUTDOORS WITH 50 MM (2") THICK INSULATION.

.26 ALL FITTINGS, VALVES AND FLANGES CONNECTED TO CHILLED WATER, HEATING WATER AND REFRIGERATION PIPING UP TO 65 MM (2–1/2"), COVER WITH 18.42 KG/M3 (1.5 LB/CU.FT) DENSITY INSULATION, UNDER COMPRESSION TO SAME DENSITY AND THICKNESS AS PIPING INSULATION. VAPOUR SEAL WITH SUITABLE MASTIC AND FINISH WITH GLASS FIBRE REINFORCED KRAFT PAPER AND ALUMINUM FOIL (.002) PASTED DOWN. OVER 65 MM (2–1/2") COVER WITH BLOCK OR SECTIONAL INSULATION COVERED WITH 6 MM (1/4") THICK HARD SETTING CEMENT. FINISH TO MATCH JACKET ON PIPING, VAPOUR SEAL WITH FIBRE TAPE, AND FINISHED WITH A SECOND COAT OF VAPOUR BARRIER MASTIC TROWELLED NEATLY OVER FITTINGS. FINISH ALL STRAINERS TO EXPOSE REMOVABLE HEAD, AND PROVIDE INSULATED GALVANIZED STEEL COVERS. COVER EXPANSION JOINTS WITH 4.882 KG/M2 (24 GAUGE) GALVANIZED METAL SLEEVE. INSULATE OTHER SLEEVE TO THICKNESS SPECIFIED.

.27 RECOVER ALL CHILLED WATER, HEATING WATER WATER AND REFRIGERATION PIPE, FITTINGS, FLANGES AND VALVE INSULATION IN 'EXPOSED' AREAS (MECHANICAL/FAN ROOMS AND AREAS WITHOUT CEILINGS) WITH CLOSE WEAVE, SMOOTH FINISH, 205 GM/SQ.M (6 OZ/SQ.YD) CANVAS. FASTEN CANVAS COVERING TO INSULATION WITH FIRE RESISTIVE LAGGING ADHESIVE. COAT SURFACE OF CANVAS COVER WITH A HEAVY BRUSH COAT OF UNDILUTED LAGGING ADHESIVE. COVER ELBOWS, FITTINGS, FLANGES AND VALVES IN ALL AREAS WITH CANVAS JACKET AS SPECIFIED ABOVE OR WITH PREFORMED FITTING.

.28 PROVIDE ISOLATING GATE VALVES, BALANCING GLOBE VALVES, FLOW CONTROL VALVES, AUTOMATIC CONTROL VALVES, ETC. AS INDICATED ON PLAN AND/OR REQUIRED FOR OPERATING AND SERVICING OF EQUIPMENTS. ALL VALVES SHALL BE SUITABLE FOR THE OPERATION PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. MAKE AND MODEL SHALL BE AS PER BASE BUILDING STANDARD AND SPECIFICATIONS, UNLESS NOTED OTHERWISE. INSTALL ALL VALVES IN AN ACCESSIBLE LOCATION AND ENSURE EASE OF MAINTENANCE AND OPERATION. SIZE CONTROL VALVES FOR A MAXIMUM OF 2 PSI PRESSURE DROP AT DESIGN FLOW.

.29 MAKE GOOD ALL EXISTING INSULATION WHEN CONNECTING TO EXISTING SERVICES.

.30 REFRIGERANT SUCTION LINES SHALL BE INSULATED WITH 3/4" (19MM) THICK ARMAFLEX INSULATION, WITH CEMENTED JOINTS. LIQUID LINES OUTDOOR EXPOSED TO SUNLIGHT SHALL ALSO BE SIMILARLY INSULATED. COVER EXTERIOR INSULATION WITH ALUMINUM JACKETING.

4. PLUMBING & DRAINAGE

.1 ALL WORK SHALL BE EXECUTED BY LICENSED PLUMBERS.

.2 ALL PLUMBING AND DRAINAGE WORK SHALL BE INSTALLED AS REQUIRED BY ONTARIO BUILDING CODE, REVISED TO DATE, AND SHALL MEET THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.

.3 CONTRACT EXTENDS TO 5' (1.5M) OUTSIDE THE BUILDING.

.4 ALL ABOVE GROUND DOMESTIC WATER PIPING SHALL BE TYPE 'L' COPPER WITH CAST BRASS OR WROUGHT COPPER FITTINGS. WHERE PERMITTED BY OBC AND FIRE CODE, UPONOR #PEX–A PLUMBING SYSTEM ARE ALLOWED TO BE USED.

.5 BURIED DOMESTIC WATER PIPING SHALL BE TYPE 'K' COPPER OR CEMENT LINED DUCTTILE IRON, OR PVC (BY UPONOR) APPROVED FOR MUNICIPAL POTABLE WATER.

.6 ABOVE GROUND SANITARY AND STORM DRAINS, 75MM (3") DIA. AND UNDER SHALL BE COPPER DRAINAGE TUBE (DWV), CAST BRASS FITTINGS AND 50/50 SOLDER JOINTS. DRAINS 100MM (4") DIA. AND OVER SHALL BE STANDARD WEIGHT CAST IRON PIPE AND FITTINGS WITH MECHANICAL JOINTS. WHEN PVC IS USED, THE PIPING AND FITTINGS SHALL HAVE THE PHYSICAL, CHEMICAL, AND OTHER PROPERTIES FOR SEWER AND DRAINAGE APPLICATIONS AND SHALL MEET THE QUALITY ASSURANCE TEST REQUIREMENTS OF THIS STANDARD WITH REGARD TO PRESSURE RATING, MATERIAL, WORKMANSHIP, BURST PRESSURE, FLATTENING, IMPACT RESISTANCE, AND EXTRUSION QUALITY. THE PIPING AND FITTINGS SHALL MEET OBC AND FIRE CODE.

.7 ALL BURIED STORM AND SANITARY DRAINAGE PIPING SHALL BE PVC SDR 35 WITH SOLVENT JOINTS. 8" (200MM) AND OVER USE GASKETTED JOINTS.

.8 PROVIDE ISOLATING BALL VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. MAKE AND MODEL SHALL BE AS PER BASE BUILDING STANDARDS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.

.9 FINAL LOCATION OF ALL NEW PLUMBING FIXTURES SHALL BE CO–ORDINATED ON SITE WITH ALL TRADES. REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR EXACT LOCATION OF PLUMBING FIXTURES.

.10 PROVIDE NEW PLUMBING FIXTURES WHERE INDICATED ON PLAN OF MAKE AND MODEL AS SPECIFIED. ALL FIXTURES SHALL BE OF FIRST QUALITY, BEST GRADE OBTAINABLE, CLEANED AND IN PERFECT CONDITION FOR THE TENANT OWNER TAKEOVER. FIXTURES SHALL BE PIPED COMPLETE IN A FIRST CLASS MANNER WITH ALL NECESSARY APPURTENANCES FOR A COMPLETE FIXTURE IN EVERY RESPECT. INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

.11 DISCONNECT AND CAP ALL EXISTING DRAIN, VENT, HOT AND COLD WATER PIPES NOT USED IN THIS CONTRACT AT FLOOR, WALL OR CEILING.

.12 PROVIDE ACCESS DOORS TO ALL PLUMBING EQUIPMENT WHERE INDICATED AND/OR REQUIRED OF SIZE TO SUIT CONVENIENT MAINTENANCE REQUIREMENTS.

.13 CLEANOUTS SHALL BE INSTALLED AS REQUIRED BY CODE AND WHERE SHOWN AND SHALL SUIT FLOORING MATERIAL.

.14 COVER ALL HOT AND COLD WATER AND CONDENSATE DRAIN PIPING WITH 25 MM (1") PRE–MOULDED LOW PRESSURE GLASS FIBRE INSULATION. FOR COLD WATER PIPING USE A VAPOUR BARRIER JACKET ADHERED AT LONGITUDINAL LAPS AND JOINTS. SEAL STRIPS WITH A SUITABLE VAPOUR BARRIER LAP CEMENT. RECOVER ALL INSULATION IN "EXPOSED" AREAS (AREAS WITHOUT CEILINGS) WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.15 COVER ALL FITTINGS, VALVES, WATER METERS AND APPURTENANCES CONNECTED TO HOT AND COLD WATER PIPING AND CONDENSATE DRAIN PIPING WITH 25 MM (1") INSULATION CEMENT OR AEROCOR. SEAL INSULATION FOR COLD WATER FITTINGS WITH A VAPOUR BARRIER ADHESIVE AND REINFORCE WITH GLASS OPEN WEAVE FIBRE TAPE AND FINISH SMOOTH WITH A COAT OF MASTIC. RECOVER FITTINGS AND APPURTENANCES IN "EXPOSED" AREAS (AREAS WITHOUT CEILINGS) WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.16 ALL HORIZONTAL SANITARY AND STORM PIPING AND FITTINGS SHALL BE COVERED WITH 25 MM (1") THICK FIBERGLASS DUAL TEMPERATURE INSULATION, 88.10 KG/M3 (5.5 LB DENSITY), FACTORY APPLIED, FIRE RESISTIVE FIBERGLASS REINFORCED KRAFT PAPER AND ALUMINUM FOIL VAPOUR BARRIER OR EQUAL. RECOVER PIPING IN "EXPOSED" AREAS WITH 250 GM/SQ.M (6 OZ/SQ.YD.) CANVAS.

.17 PROVIDE COMPLETE VENTING SYSTEM AS PER O.B.C. REQUIREMENT.

5. SUBMISSION

.1 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, SUBMIT:
– EXISTING MECHANICAL SYSTEMS DRAWINGS
– EXISTING AIR SYSTEM TEST REPORT

.2 SUBMIT SHOP DRAWINGS:
– PLUMBING FIXTURES
– HVAC SYSTEMS

.3 PRIOR TO COMPLETION INSPECTION/REVIEW, SUBMIT THE FOLLOWS:
– AIR BALANCE REPORT
– PLUMBING SYSTEM LETTER OF CERTIFICATE

.4 COMPLETION SUBMISSIONS:
– AS–BUILT DRAWINGS
– OPERATION MANUALS

6 **MECHANICAL EQUIPMENT SPECIFICATION**

.1 FIRE DAMPER

.1 PROVIDE FIRE DAMPERS THROUGHOUT SUPPLY, RETURN, TRANSFER AND EXHAUST AIR SYSTEMS WHERE SHOWN AND WHERE REQUIRED IN SCOPE AREA. REFER TO ARCHITECTURE DRAWING FOR EXACT FIRE RATING REQUIREMENT.
.2 SUBMIT DRAWINGS SHOWING FIRE DAMPER LOCATIONS TO AUTHORITIES FOR APPROVAL BEFORE WORK IS COMMENCED.
.3 FUSIBLE LINK DAMPERS SHALL BE TYPE B OR TYPE C (AS REQUIRED) WITH CURTAIN BLADE OUT OF AIR STREAM. TYPE A DAMPERS (WITH THE CURTAIN BLADE IN THE AIR STREAM) SHALL BE INSTALLED WHERE SIZE OR LOCATION ARE SUCH THAT TYPE B AND TYPE C CANNOT BE INSTALLED. CONSULTANT SHALL APPROVE TYPE A INSTALLATION
.4 FIRE DAMPERS SHALL MEET OR EXCEED THE FOLLOWING CRITERIA: FIRE DAMPERS SHALL BE MANUFACTURED, TESTED AND LABELED IN ACCORDANCE WITH UL 555 SAFETY STANDARD FOR FIRE DAMPERS – SIXTH EDITION, JUNE 1999, AND SHALL HAVE 1 1/2 HOUR FIRE RESISTANCE RATING. EACH FIRE DAMPER SHALL BEAR A ULC LABEL VERIFYING FIRE RESISTANCE RATING IN ADDITION TO INTENDED MOUNTING POSITION.
.5 FIRE DAMPERS SHALL BE SUITABLY CONSTRUCTED FOR VERTICAL OR HORIZONTAL INSTALLATION AS REQUIRED FOR EACH SPECIFIC LOCATION AND INCLUDE A STEEL SLEEVE OF APPROPRIATE LENGTH/GAUGE AND RETAINING ANGLES, SUPPLIED BY DAMPER MANUFACTURER TO ENSURE PROPER INSTALLATION IN ACCORDANCE WITH DAMPER MANUFACTURER'S INSTRUCTIONS.
.6 CONTRACTOR SHALL PROVIDE AND INSTALL AN ACCESS DOOR AT EACH FIRE DAMPER, OF APPROPRIATE SIZE TO ALLOW FOR INSPECTION, TESTING AND FUSIBLE LINK REPLACEMENT.
.7 FIRE DAMPERS SHALL BE RUSKIN CORP, NAILOR INDUSTRIES INC OR E.H. PRICE TO SUIT RATING OF FIRE SEPARATION.

.2 THERMOSTATS

.1 PROGRAMMABLE ELECTRONIC THERMOSTAT, WHITE
.2 TEMPERATURE RANGE: –10C TO 50C
.3 RESOLUTION AND PRECISION: 0.3C.
.4 24VAC OR 120VAC AND COMPLETE WITH LINE–VOLTAGE, BUILT–IN (OR REMOTE) SWITCHING RELAY TO SUIT CONTROL EQUIPMENT REQUIREMENTS OF VOLTAGE, PHASES, AND WATTAGE
.5 SURFACE WALL MOUNTED AT 1300MM AFF. PROVIDE TEMPER–RESISTANT GUARD AS REQUIRED. DO NOT MOUNT OUTSIDE WALL.
.6 THREE (3) YEARS WARRANTY.

.3 GRILLES AND DIFFUSERS

.1 SUPPLY AND INSTALL ALL GRILLES AND DIFFUSERS AS REQUIRED AND AS SHOWN ON THE DRAWINGS.
.2 DIFFUSERS SHALL BE OF TYPE, PERFORMANCE AND SIZE INDICATED ON THE DRAWINGS.
.3 PROVIDE BAFFLES TO DIRECT AIR AWAY FROM WALLS, COLUMNS OR OTHER OBSTRUCTIONS WITHIN THE RADIUS OF DIFFUSER OPERATION.
.4 FINISH AND COLOUR SHALL BE APPROVED BY ARCH.
.5 ACCEPTABLE MANUFACTURERS: E.H. PRICE, TITUS, NAILOR INDUSTRIES.

.4 KITCHEN HOOD FIRE EXTINGUISHER SYSTEM

.1 PROVIDE A COMPLETE KITCHEN HOOD FIRE EXTINGUISHER SYSTEM FOR RESIDENTIAL TYPE KITCHEN RANGE. THE SYSTEM SHALL BE GUARDIAN #1384–B.
.2 SYSTEM SHALL BE ULC CERTIFIED, AND SHALL INCLUDE THE FOLLOWING:
– EXTINGUISHER KIT
– PIPING KIT
– AUTOMATIC DETECTION KIT
– AUDIBLE ALARM
– MANUAL RELEASE STATION
– ALL NECESSARY ACCESSORIES FOR A COMPLETE SYSTEM
.3 SYSTEM OPERATION
– SYSTEM WILL RELEASE UPON:
  – AUTOMATIC DETECTION KIT DETECTING FIRE
  – MANUAL RELEASE STATION ACTIVATION
– UPON SYSTEM RELEASING, AUDIBLE ALARM WILL SOUND A ALARM, CONTROL PANEL WILL SEND SIGNALS:
  – TO FIRE ALARM CONTROL PANEL FOR ALARM SIGNAL
  – TO POWER SUPPLY CONTACTOR TO SHUT DOWN POWER TO RANGE HOOD
.4 INSTALL SYSTEM TO MANUFACTURE RECOMMENDATION.
.5 RETAIN MANUFACTURE'S TECHNICIAN OR ENGINEER TO DO A INSTALLATION COMPLETION TESTING, AND ISSUING TEST REPORT AND CERTIFICATION OF INSTALLATION.

.5 PORTABLE FIRE EXTINGUISHERS

.1 PORTABLE FIRE EXTINGUISHERS SHALL BE RATED AND IDENTIFIED IN ACCORDANCE WITH CAN/ULC–S508 RATING AND FIRE TESTING OF FIRE EXTINGUISHERS. ALL RATINGS IDENTIFIED BELOW SHALL BE CONSIDERED AS A MINIMUM
.2 PORTABLE FIRE EXTINGUISHERS IN KITCHENS SHALL BE K RATING, 6 L (1.59 USGAL.) WET CHEMICAL TYPE, STAINLESS STEEL, AND ULC LABELLED
.3 EXTINGUISHERS IN NON–FINISHED AREAS NOT ACCESSIBLE TO THE GENERAL PUBLIC SHALL BE MOUNTED ON WALL BRACKETS.
.4 PROVIDE FIRE EXTINGUISHERS AS SHOWN ON THE DRAWINGS.

LICENSED PROFESSIONAL ENGINEER
M. J. LI
NOV. 26, 2018
18027–C3
PROVINCE OF ONTARIO

PROJECT NORTH:

KEY PLAN:

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Muskoka Beechgrove Public School
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Haliburton, ON.

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MECHANICAL SPECIFICATION

DRAWING NO: M–03

ELECTRICAL LEGEND

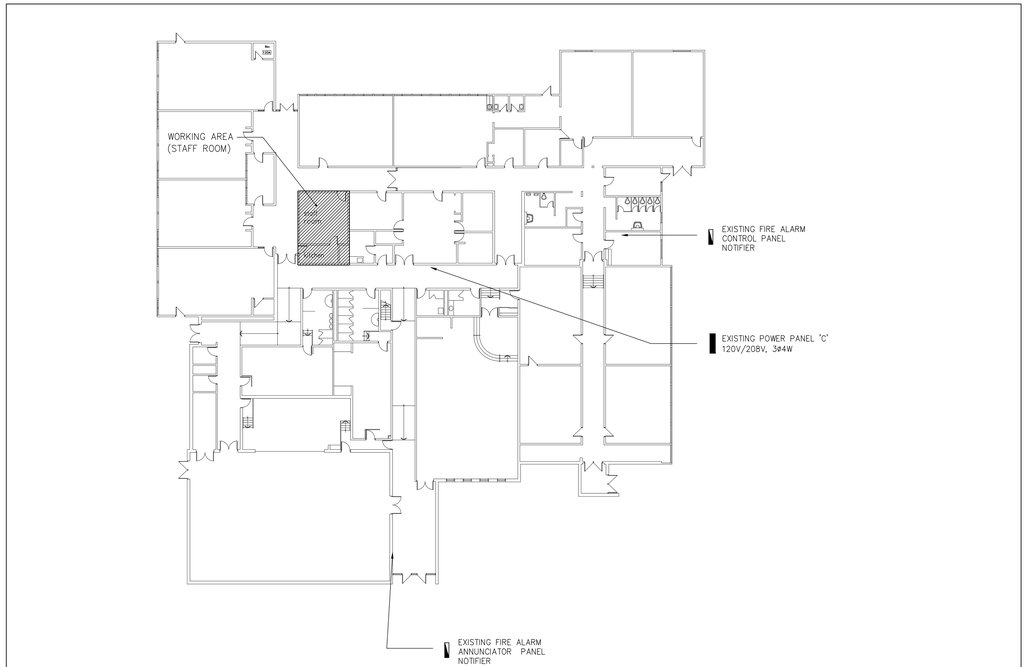
SYMBOL	DESCRIPTION
F1	LED OR FLUORESCENT LUMINAIRES, RECESSED IN CEILING, LETTER DENOTES FIXTURE TYPE PER SCHEDULE
F2	LED OR FLUORESCENT LUMINAIRES, SURFACE MOUNTED ON CEILING, LETTER DENOTES FIXTURE TYPE PER SCHEDULE
$ $3 $4	120V SINGLE POLE TOGGLE SWITCHES, RESPECTIVELY WITH ONE, TWO, OR THREE GANG COVER PLATE, AMPERAGE RATING TO MATCH CIRCUIT BREAKER
$3 $4 $K	120V SINGLE POLE TOGGLE SWITCHES AS ABOVE, '3' DENOTES 3-WAY, '4' DENOTES 4-WAY, 'K' DENOTES KEY OPERATED
$OS	WALL MOUNTED OCCUPANCY SENSOR SWITCH FOR LIGHT
OS	CEILING MOUNTED OCCUPANCY SENSOR FOR LIGHTING CONTROL
	EMERGENCY LIGHTING REMOTE HEADS, CEILING OR WALL MOUNTED, WITH DOUBLE OR SINGLE HEADS RESPECTIVELY
	EMERGENCY LIGHTING BATTERY UNIT
	EMERGENCY LIGHTING BATTERY UNIT C/W INTEGRAL HEADS
	WALL MOUNTED DUPLEX RECEPTACLE, U-GROUND, CSA 5-15R TYPE (15A, 120V) UNLESS OTHERWISE NOTED
	15A, 125V DUPLEX GROUND FAULT INTERRUPTER RECEPTACLE (CSA 5-15R)
	20A, 125V DUPLEX RECEPTACLE (CSA 5-20R), MOUNTED 150mm ABOVE COUNTER
	20A, 125V DUPLEX GROUND FAULT INTERRUPTER RECEPTACLE, MOUNTED 150mm ABOVE COUNTER (CSA 5-20R)
USB	WALL MOUNTED DUPLEX RECEPTACLE, U-GROUND, CSA 5-15R TYPE (15A, 120V) C/W TWO(2) USB OUTLETS.
	50A, 125/250V RANGE RECEPTACLE (CSA 14-50R)
	DIRECT CONNECTION TO EQUIPMENT AS NOTED.
	DIRECT CONNECTION C/W DISCONNECT SWITCH
	SURFACE MOUNTED PANEL.
	RECESSED MOUNTED PANEL.
	FIRE ALARM HEAT DETECTOR, COMBINATION OF FIXED TEMPERATURE 57°C (135°F) AND RATE-OF-RISE 8°C/MIN TYPE, CEILING OR WALL MOUNTED
	FIRE ALARM SMOKE DETECTOR, CEILING OR WALL MOUNTED
	FIRE ALARM CONTROL PANEL OR ANNUNCIATOR PANEL, RECESSED OR SURFACE MOUNTED
P P	CEILING OR WALL RECESSED MOUNTED SINGLE GANG BOX FOR P.A. SPEAKER.
C	CONTACTOR
AFF	ABOVE FINISHED FLOOR
GFI	GROUND FAULT INTERRUPTER
NIC	NOT IN CONTRACT
WP	WEATHER PROOF
EX	DENOTES EXISTING DEVICE(S) TO REMAIN
R	DENOTES EXISTING DEVICE(S) TO BE RELOCATED
D	DENOTES EXISTING DEVICE(S) TO BE REMOVED
RE	DENOTES EXISTING DEVICE(S) IN RELOCATED POSITION
N	DENOTES PROVIDE NEW DEVICE(S)
RR	DENOTES EXISTING DEVICE(S) TO BE REMOVED AND RE-INSTALLED IN SAME LOCATION
RN	DENOTES EXISTING DEVICE(S) TO BE REMOVED AND REPLACED WITH NEW
N-1	(NOTE: PROVIDE NEW DEVICE(S) IF NONE OF THE ABOVE ABBREVIATIONS ARE SHOWN WITH SYMBOL ON DWGS)
2	DENOTES DRAWING REFERENCE NOTES # 2
1 / E02	DENOTES REFER TO DETAIL #1 ON DRAWING #E-02.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LAMP	BALLAST	REMARKS
F1	2' x 4' T-BAR CEILING RECESSED LED FIXTURE, EXTRUDED ALUMINUM HOUSING, C/W ACRYLIC LENS, WHITE FINISH. APPLICATION: STAFF ROOM.	40W LED 4000K 4469 LM	120V LED DRIVER	RAB DESIGN #CPL24 SERIES OR APPROVED EQUAL
E1	EMERGENCY REMOTE UNIT, C/W ONE(1) OR TWO(2) 6W MR16 LED HEADS, CEILING OR SURFACE MOUNTED, WITH A CLEAR POLYCARBONATE UV AND IMPACT RESISTANT LENS, DIE CAST ALUMINUM BACK PLATE, WHITE FINISH, VOLTAGE TO MATCH EXISTING.	2 x 6W		EMERGI-LITE #EF40 SERIES OR APPROVED EQUAL.
E2	EMERGENCY LIGHTING BATTERY UNIT, 1/2HR BATTERY, C/W ONE(1) OR TWO(2) 6W MR16 LED HEADS, WALL MOUNTED, WHITE FINISH, VOLTAGE TO MATCH EXISTING.			EMERGI-LITE #ESL SERIES OR APPROVED EQUAL.

DRAWING LIST

DWG. NO.	DRAWING TITLE
E-01	LEGEND AND SCHEDULES - ELECTRICAL
E-02	FLOOR PLANS - ELECTRICAL
E-03	SPECIFICATIONS & DETAILS - ELECTRICAL



1 / E-01 KEY PLAN - ELECTRICAL
SCALE: N.T.S.

PROJECT NOTES:

ALL WIRES/CONDUITS SHALL BE CONCEALED IN WALLS, OR IN CEILING SPACES, EXCEPT IN ELEC/MECH ROOM.

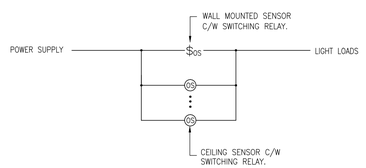
PANEL 'K'

VOLTS: 120Y/240V, 1PH, 3W — FLUSH [X] — [X] LUGS
MAINS: 100A — SURFACE [ ] — [ ] BREAKER

	LOAD DESCRIPTION	BRKR	WATTAGE	CIR	BUS	CIR	WATTAGE	BRKR	LOAD DESCRIPTION
	O/C GFI. RECEPTACLE	20A		1		2		15A	RECEPTACLE - EXHAUST FAN
	O/C GFI. RECEPTACLE	20A		3		4		15A	RECEPTACLE - DISHWASHER
	O/C GFI. RECEPTACLE	20A		5		6		40A	RANGE
	O/C GFI. RECEPTACLE	20A		7		8		2P	3Ø3+GRD-27mmC
	RECEPTACLE - MICROWAVE	20A		9		10		15A	RECEPTACLE - FRIDGE
(*)	KITCHEN SUPPRESSION	15A		11		12		15A	RECEPTACLE
	CONVENIENT RECEPTACLE	15A		13		14			
	O/C RECEPTACLE	20A		15		16			
	O/C RECEPTACLE	20A		17		18			
			-		TOTAL		-		

CONNECTED LOAD: -

(*) C/W LOCK-OFF DEVICES



NOTES:

1. THIS SCHEMATIC IS NOT INTENDED FOR EXACT FIELD INSTALLATION OR WIRING. SCHEMATIC SHOWS DESIGN INTENT OF SYSTEM. WIRING WILL VARY BETWEEN MANUFACTURERS.
2. MANUFACTURER TO PROVIDE SHOP DRAWINGS SHOWING ALL WIRING REQUIRED PRIOR TO ORDERING OF EQUIPMENT

2 / E-01 TYPICAL OCCUPANCY SENSOR CONTROL
SCALE: N.T.S.

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KEY PLAN:

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Muskoka Beechgrove Public School
Millwork Replacement

Haliburton, ON.

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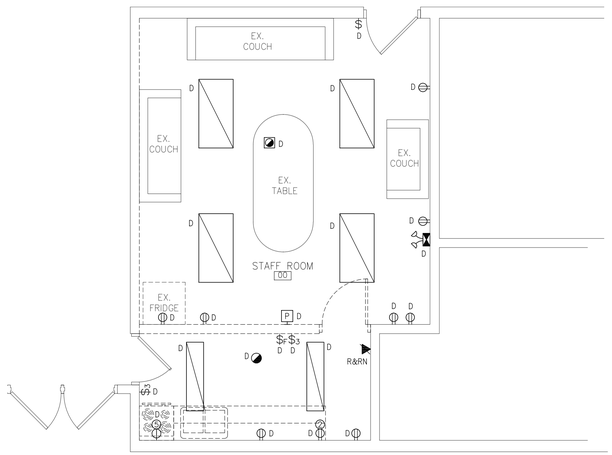
LEGEND AND SCHEDULES - ELECTRICAL

DRAWING NO: E-01

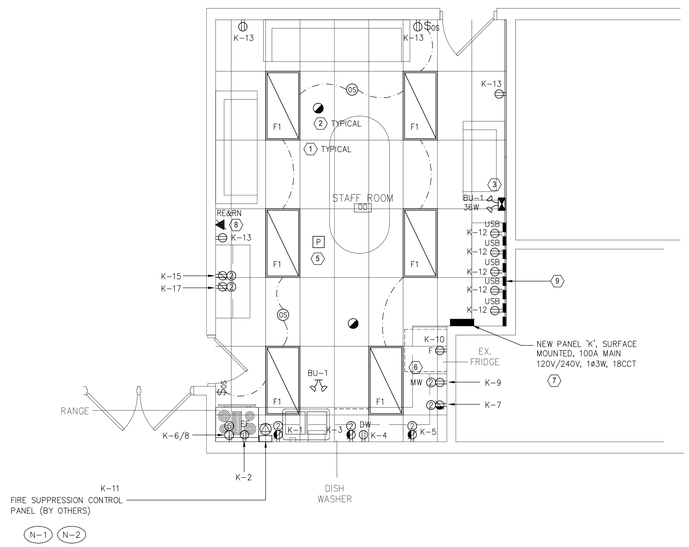


GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, ALL ELECTRICAL DEVICES/EQUIPMENT SHOWN ARE EXISTING TO REMAIN.
2. REGARDLESS SHOWN OR NOT, REMOVE (OR RELOCATE AS REQUIRED) ALL EXISTING ELECTRICAL DEVICES/EQUIPMENT C/W WIRES/CONDUITS AND BOXES AFFECTED BY DEMOLITION OF EXISTING PARTITIONS.
3. EXISTING LIGHTING CIRCUITS OF REMOVED LIGHTS & LIGHTING CONTROL ARE ALLOWED TO BE REUSED.

1 E-02 EXISTING FLOOR PLAN – ELECTRICAL

SCALE: 1:50



GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, ALL ELECTRICAL DEVICES/EQUIPMENT SHOWN ARE NEW.
2. REWIRING ALL EXISTING LIGHTS IN EACH ROOM OR SPACE TO BE CONTROLLED BY NEW OR RELOCATED WALL/CEILING MOUNTED OCCUPANCY SENSORS IN THE ROOM OR SPACE.
3. ALL NEW WIRES SHALL BE INSTALLED IN RECESSED CONDUITS. WIREMOLD SURFACE INSTALLATION IS NOT ACCEPTABLE.
4. ALL WIRING DEVICES TO BE INSTALLED IN RECESSED GANG BOX; SURFACE MOUNTED INSTALLATION IS NOT ACCEPTABLE.

FIRE ALARM SYSTEM NOTES:

(N-1) UPDATE EXISTING FIRE ALARM CONTROL PANEL AND FIRE ALARM ANNUNCIATOR PANELS TO ACCOMMODATE FIRE ALARM SYSTEM EXTENSION: ADDITIONAL ZONES, DEVICES AND MODULES.

PROVIDE ONE (1) ADDITIONAL ALARM ZONE:
– KITCHEN FIRE SUPPRESSION SYSTEM

PROVIDE ONE (1) ADDITIONAL CONTROL ZONE:
– KITCHEN RANGE

(N-2) PROVIDE FIRE ALARM CONNECTIONS TO FIRE SUPPRESSION CONTROL PANEL FOR ONE(1) ALARM ZONE.

NOTES:

(1) ALL NEW LIGHTS TYPE 'F1' TO BE CONNECTED TO EXISTING LIGHTING CIRCUITS IN THIS AREA.

(2) PROVIDE NEW FIRE ALARM HEAT DETECTOR TO MATCH EXISTING, CONNECT TO EXISTING FIRE ALARM INITIATING CIRCUIT IN THIS AREA.

(3) PROVIDE UNSWITCHED HOT CONDUCTOR FROM THE EXISTING STAFF ROOM LIGHTING CIRCUIT TO THE NEW BATTERY UNIT BU-1; EXTEND ALL WIRES/CONDUITS FED FROM THE EXISTING REMOVED EMERGENCY BATTERY TO NEW EMERGENCY BATTERY UNIT LOCATION.

(4) SPARE.

(5) PROVIDE NEW P.A SPEAKER, CONNECT TO EXISTING P.A. SPEAKER CIRCUIT IN THIS AREA. SCOPE OF P.A. SPEAKER SHALL BE UNDER CASH ALLOWANCE.

(6) CONTRACTOR TO CONFIRM EXACT MOUNTING HEIGHT FOR MICROWAVE OVEN RECEPTACLE ON SITE.

(7) THE NEW PANEL 'K' SHALL BE FED FROM THE EXISTING POWER PANEL 'C' IN CORRIDOR; REPLACE THE EXISTING 50A/2P BREAKER FEEDING THE REMOVED STOVE WITH NEW 60A/2P BREAKER TO MATCH EXISTING IN THE EXISTING POWER PANEL 'C'; PROVIDE NEW FEEDER: 3#6+GRD–35mmC FROM THE NEW 60A/2P BREAKER TO NEW PANEL 'K'. CONTRACTOR TO CONFIRM EXACT SIZE AND LOCATION OF THE EXISTING 50A/2P BREAKER ON SITE.

(8) RELOCATE AND REPLACE EXISTING TELEPHONE OUTLET WITH NEW TO MATCH EXISTING TO NEW LOCATION AS SHOWN, PROVIDE 1–3/4"C C/W JUNCTION BOX FROM OUTLET TO CEILING SPACE. PROVIDE NEW CABLES TO MATCH EXISTING FROM THE OUTLET TO NEAREST EXISTING TELECOM RACK/BACKBOARD. SCOPE OF TELECOM OUTLET SHALL BE UNDER CASH ALLOWANCE.

(9) PROVIDE HORIZONTAL SURFACE MOUNTED RACEWAY C/W FIVE(5) DUPLEX USE RECEPTACLES AT TABLE HEIGHT; CONTRACTOR TO VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS AND CONFIRM EXACT MOUNTING HEIGHT ON SITE.

2 E-02 PROPOSED FLOOR PLAN – ELECTRICAL

SCALE: 1:50

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FLOOR PLANS – ELECTRICAL

DRAWING NO: E–02

ELECTRICAL SPECIFICATION:

1. GENERAL

1.1 COMPLY WITH GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, AND ALL DOCUMENTS REFERRED TO THEREIN.

1.2 THE DOCUMENTS ARE NOT INTENDED TO DELEGATE FUNCTIONS NOR TO DELEGATE WORK TO ANY TRADE.

1.3 THE DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH BASE BUILDING DRAWINGS AND SPECIFICATIONS. DO ALL WORK IN ACCORDANCE WITH THE OWNER GUIDELINES. MAXIMUM CONDITIONS WILL GOVERN.

1.4 PRIOR TO SUBMITTING THE TENDER, CAREFULLY EXAMINE AND VERIFY THE SITE AND CONDITIONS OF THE PROPOSED WORK TOGETHER WITH THE WORK OR ALL OTHER TRADES, INCLUDING LOCATIONS AND DIMENSIONS OF ALL EXISTING SERVICES (INCLUDING SERVICES IN CONCEALED SPACE), AND ALLOW FOR ANY RE_ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT, CUTTING AND PATCHING IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND EXISTING PROJECT CONDITIONS ARE COMPLETELY UNDERSTOOD, CONFIRMED AND ACCEPTED BY THE CONTRACTOR.

1.5 REPORT TO THE ENGINEER ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.

1.6 DRAWINGS ARE DIAGRAMMATIC, SHOW GENERAL PERFORMANCE AND ARRANGEMENT OF WORK, AND DO NOT SHOW STRUCTURAL AND RELATED DETAILS. REFER TO ARCHITECTURAL AND/OR INTERIOR DESIGNER'S DRAWINGS. TAKE INFORMATION INVOLVING ACCURATE MEASUREMENT OF BUILDING. MAKE, WITHOUT ADDITIONAL CHARGE, ANY NECESSARY CHANGES OR ADDITIONS TO WORK OR EQUIPMENT LOCATIONS TO ACCOMMODATE STRUCTURAL CONDITIONS. EQUIPMENT LOCATIONS MAY BE ALTERED BY ENGINEER WITHOUT EXTRA CHARGE PROVIDED CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE MAJOR MATERIAL.

1.7 PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, LOCAL BY_LAWS, LATEST EDITIONS OF APPLICABLE CODES, STANDARDS, AND REGULATIONS.

1.8 APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND GENERAL SALES TAXES.

1.9 'SUPPLY' SHALL MEAN FURNISHING TO SITE IN LOCATION REQUIRED OR DIRECTED COMPLETE WITH ACCESSORY PARTS. 'INSTALL' SHALL MEAN SET IN PLACE AND SECURED OR AFFIXED TO BUILDING STRUCTURE AS NOTED OR DIRECTED. 'PROVIDE' SHALL MEAN SUPPLY AND INSTALL AND INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, CONNECTIONS, TESTING AND INSPECTION AS EACH IS DESCRIBED.

1.10 PROVIDE WORK IN SUCH A MANNER AS TO LEAVE EACH OF THE SYSTEMS COMPLETE AND IN SATISFACTORY OPERATION CONDITION. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE SATISFACTORY COMPLETION OF ALL WORK BEARING UPON THIS TRADE, INCLUSIVE OF ALL INSTALLATIONS ACCEPTABLE TO ARCHITECT.

1.11 ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.

1.12 PROVIDE ALL CUTTING, PATCHING, FLASHING WORK AND CLEAN_UP OF FLOORS, WALLS, CEILINGS, ETC. SEAL (FIRE RATED IF NECESSARY) ALL OPENING AND PENETRATION BY THIS DIVISION.

1.13 PROVIDE PROPER SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR REVIEW TO THE ARCHITECT AND ENGINEER IN ACCORDANCE WITH GENERAL REQUIREMENTS. SHOP DRAWINGS SHALL BE REVIEWED, STAMPED, AND CORRECTED BY CONTRACTOR PRIOR TO SUBMISSION.

1.14 REVIEW OF SHOP DRAWINGS BY CONSULTANT IS FOR SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT ARCHITECT OR ENGINEER APPROVES DETAIL DESIGN INHERENT IN SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH CONTRACTOR AND SUCH REVIEW SHALL NOT RELIEVE CONTRACTOR OF HIS RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT SITE. FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR CO-ORDINATION OF WORK WITH ALL TRADES.

1.15 SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED. THE QUALITY AND PERFORMANCE CHARACTERISTICS OF SUBSTITUTE PRODUCTS SHALL BE EQUAL TO THE SPECIFIED PRODUCTS. IMPLEMENTATION OF SUBSTITUTE PRODUCTS IS SUBJECT TO THE REVIEW OF PROPERLY SUBMITTED SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER.

1.16 ASSUME RESPONSIBILITY AND PAY FOR ANY ADDITIONAL INSTALLATION COSTS INCURRED BY ALL DIVISIONS RESULTING FROM THE ALTERNATES AND/OR SUBSTITUTIONS. MAKE REVISIONS TO RECORD DRAWINGS INCORPORATING ALL ALTERNATES AND/OR SUBSTITUTIONS AND ALL RELATED CHANGES.

1.17 TEMPORARY OR TRIAL USAGE OF ANY EQUIPMENT OR MATERIALS SHALL NOT BE CONSTRUED AS EVIDENCE OF ACCEPTANCE OF SAME AND NO CLAIM FOR DAMAGE SHALL BE MADE FOR INJURY TO OR BREAKING OF ANY PART OF SUCH WORK WHICH MAY BE SO USED.

1.18 ALL MATERIAL AND EQUIPMENT USED SHALL BE NEW AND OF UNIFORM PATTERN AND CSA APPROVED. WHERE MANUFACTURER IS NOT SPECIFIED, PRODUCTS SHALL BE OF HIGH COMMERCIAL QUALITY.

1.19 SUPPLY JOB SITE OFFICE, WORKSHOP, TOOLS, SCAFFOLDS AND MATERIAL STORAGE TO COMPLETE THE WORK OF THIS DIVISION. LOCATION OF TEMPORARY BUILDING, USE OF SPACE ON SITE OR WITHIN BUILDING SHALL BE TO LATER DIRECTION.

1.20 PROVIDE A COMPLETE BREAKDOWN OF MATERIALS, EQUIPMENT AND LABOUR WITH EACH ITEM OF EACH SUBMISSION FOR EXTRA OR DELETED WORK.

1.21 TEST, VERIFY AND COMMISSION ALL SYSTEMS INSTALLED. SUBMIT LETTER OF CERTIFICATION STATING THAT THE SYSTEMS HAVE BEEN TESTED. SUBMIT MANUFACTURER'S CERTIFICATION FOR ALL EQUIPMENT PROVIDED STATING THAT THEY HAVE INSPECTED, TESTED AND ARE SATISFIED WITH THE INSTALLATION AND OPERATION. WHERE EXISTING SYSTEM ARE EXTENDED, LETTER SHOULD COVER BOTH EXISTING AND NEW INTERFACED EQUIPMENT AND CONNECTIONS.

1.22 CONTRACTOR SHALL OBTAIN CLEAN SET OF PRINTS FROM CONSULTANT AT START OF CONTRACT WORK AND SHALL KEEP THESE PRINTS UP-TO-DATE AT JOBSITE, ACCURATELY RECORDING ALL CHANGES MADE ON PROJECT AND LOCATING ALL SERVICES, EQUIPMENT, ETC. WHICH MAY HAVE BEEN SHOWN ONLY DIAGRAMMATICALLY ON CONTRACT DOCUMENTS. UPON COMPLETION OF CONTRACT WORK, SUBMIT THREE (3) PRINTS SETS AND ONE (1) CD CONTAINING ACAD FILES OF AS-BUILT DRAWINGS.

1.23 ASSEMBLE THREE (3) MANUALS, EACH CONTAINING DATA SHEETS, BROCHURES, OPERATING, MAINTENANCE, RECOMMENDED SPARE PARTS, AND LUBRICATING INSTRUCTIONS AND A COMPLETE SET OF REVIEWED SHOP DRAWINGS AND BIND IN HARD COVER. IDENTIFY COVER "OPERATION AND MAINTENANCE MANUAL". MANUALS SHALL BE SEPARATED WITH DIVIDERS IN LOGICAL SECTIONS AND VOLUMES. PRESENT ONE (1) COPY FOR REVIEW BY CONSULTANT. MAKE ALL CORRECTIONS REQUESTED BY THE CONSULTANT AND RESUBMIT FOR REVIEW.

1.24 PROVIDE THE OWNER WITH A WRITTEN WARRANTY, FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT, FOR A PERIOD OF TWO YEAR COMMENCING AT SUCH TIME AS THE OWNER, OR HIS REPRESENTATIVE, DEEMS THE WORK ACCEPTABLE.

1.25 IDENTIFY ALL SYSTEMS AND LABEL ALL EQUIPMENT WITH LAMACOID LABELS. IDENTIFY REMOTE CONTROLS FOR ALL PERTINENT EQUIPMENT INCLUDING ALL ASSOCIATED DISCONNECTS. THE IDENTIFICATION AND LABELS SHALL MEET BASE BUILDING STANDARDS.

1.26 PROVIDE ALL MISCELLANEOUS METALS AS NECESSARY FOR MECHANICAL WORK.

1.27 PRIOR TO COMPLETION REVIEW/INSPECTION, ELECTRICAL CONTRACTOR SHALL SUBMIT A LETTER CONFIRMING THAT ALL ELECTRICAL WORK IS COMPLETED AS PER ELECTRICAL TENDER DOCUMENT. CONTRACTOR IS RESPONSIBLE FOR THE COST OF THE SECOND COMPLETION REVIEW/INSPECT IF ITS REQUIRED.

2.0 WORK IN EXISTING BUILDING

2.1 EXAMINE THE SITE AND LOCAL CONDITIONS PRIOR TO TENDER SUBMISSION. SUBMISSION OF A TENDER CONFIRMS THAT THE CONTRACT DOCUMENTS AND SITE CONDITIONS ARE COMPLETELY UNDERSTOOD AND ACCEPTED UNLESS EXCEPTIONS ARE SPECIFICALLY INDICATED IN THE BID FORM.

2.2 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, AND WITHIN ONE WEEK OF THE CONTRACT AWARDED, EXAMINE AND VERIFY ON SITE, THE COMPLETE EXISTING ELECTRICAL SYSTEM, AND SUBMIT DETAILED EXISTING ELECTRICAL SYSTEM DRAWINGS SHOWING COMPLETE AND ACCURATE EXISTING SYSTEM CONDITIONS, LOCATIONS OF ALL DEVICES, EQUIPMENTS, POWER, LIGHTING, FIRE ALARM, DATA/VOICE, P.A. AND SECURITY SYSTEMS.

2.3 MAINTAIN THE LIFE SAFETY SYSTEMS IN EXISTING BUILDING IN FULL OPERATION AT ALL TIMES DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

2.4 MAINTAIN ALL SYSTEMS IN FULL OPERATION DURING NORMAL OCCUPANCY HOURS, UNLESS OTHERWISE NOTED. MAINTAIN ALL SYSTEMS ADJACENT TO CONSTRUCTION AREA IN FULL OPERATION AT ALL TIME DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

2.5 PROTECT WORK OF HIS AND OTHER TRADES, EXISTING FINISHES, SYSTEMS AND SERVICES WHICH MUST REMAIN IN OPERATION. REPLACE AND/OR REINSTALL ANY EXISTING SERVICES WHICH ARE TO REMAIN THAT ARE IMPROPERLY INSTALLED OR MAY CREATE ANY INTERFERENCES WITH NEW CONSTRUCTION.

2.6 ELECTRICAL CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ANY DISRUPTION CAUSED BY HIS FORCES TO OPERATIONAL BUILDING SERVICES. REPAIR ANY SYSTEM DAMAGED DURING THE EXECUTION OF THE WORK INCLUDING DRYWALL AND CEILING TILE WORK. RE-PAINT WALL AND CEILING TO MATCH EXISTING.

2.7 ALL NOISE GENERATING WORKS THAT DISRUPT THE BUILDING OPERATIONS SHALL BE CARRIED OUT BEFORE/AFTER NORMAL OCCUPANCY HOURS.

2.8 CO-ORDINATE WITH OWNER FOR SCHEDULING OF WORKS REQUIRED TO BE DONE BEFORE/AFTER NORMAL OCCUPANCY HOUR, INCLUDING BUT NOT LIMIT TO: DRILLING THROUGH SLAB; POWER SHUTDOWN; INTERFERENCE TO LIFE SAFETY SYSTEM. ALL COST INVOLVED, INCLUDING WORK TO BE DONE BY OWNER, SHALL BE INCLUDED IN TENDER PRICE.

2.9 WHERE EXISTING TO BE REMOVED AS REQUIRED, AND/OR AS SHOWN, DISCONNECT AND REMOVE MATERIALS AND EQUIPMENT, DISCONNECT AND REMOVE FEEDERS/CIRCUITS, CONDUITS BACK TO PANELS. MAKE SAFE CIRCUIT AND UPDATE PANEL DIRECTORIES. PROVIDE BLANK STAINLESS STEEL COVER PLATE FOR ALL LEFT OVER HOLE ON THE WALL IN FINISHED AREA.

2.10 ANY EXISTING ELECTRICAL CONDUITS/WIRING TO REMAIN IN CEILING SPACE INTERFERING WITH NEW INSTALLATION, SHALL BE RAISED OR RE-MOUNTED.

2.11 ALL NEW CONDUIT INSTALLATIONS IN CEILING SHALL BE FASTENED TIGHT TO THE CEILING STRUCTURE OR ROD SUSPENDED AT HIGH LEVEL TO THE UNDERSIDE OF THE CEILING SLAB.

2.12 MAKE SAFE ALL CIRCUITS TO BE CUT OFF. CAP-OFF ALL REDUNDANT CONDUITS.

2.13 MAINTAIN CONTINUITY OF EXISTING SERVICES FOR OTHER CIRCUITS/DEVICES SERVING AREAS OUTSIDE THE CONSTRUCTION AREA. PROVIDE ADDITIONAL WIRING/CONDUITS/BOXES ETC. TO SUIT EXISTING SERVICES TO BE MAINTAINED AND ALSO IMPLEMENT NEW WORK AS DETAILED.

2.14 CHECK AND INSPECT EXISTING DISTRIBUTION EQUIPMENT TO BE RE-USED (I.E., PANEL BREAKERS, DISCONNECT SWITCHES, ETC.) FOR ABNORMAL THERMO-GRAPHIC SCAN UNDER ACTUAL LOADS IN OPERATION AND SUBMIT SCAN RESULTS INDICATING PROBLEMS HAVE BEEN CORRECTED.

2.15 VERIFY OPERATION AND RE-USE THE DEVICES TO BE RELOCATED. DO NOT USE UNSAFE OR DAMAGED DEVICES. REPLACE BURNED OUT LAMPS AND BALLASTS.

2.16 REMOVE AND DISPOSE OFF-SITE, ALL MATERIALS REMOVED, ABANDONED, AND NOT TO REMAIN, DESIGNATED FOR SALVAGE, OR BE RE-USED IN AN APPROPRIATE MANNER ACCEPTABLE TO LOCAL AUTHORITIES HAVING JURISDICTION, SPECIFICALLY EQUIPMENT AND MATERIALS CONSIDERED HAZARDOUS TO THE ENVIRONMENT, UNLESS OTHERWISE NOTED TO BE TURNED OVER TO THE OWNER.

2.17 PROTECT ALL REMOVED EQUIPMENT TO BE TURNED OVER TO OWNER FROM DAMAGE. REPLACE DAMAGED EQUIPMENT AT NO COST TO THE OWNER.

2.18 NO EQUIPMENT MAY BE BURNED ON SITE OR SOLD ON SITE.

2.19 REMOVE ALL DUST, DIRT, AND OTHER FOREIGN MATTER FROM INTERNAL SURFACES OF ENCLOSED ELECTRICAL APPARATUS AND EQUIPMENT REMOVE ALL TEMPORARY PROTECTIVE COVERINGS AND COATINGS, AND TEMPORARY LABELS. CLEAN, REPAIR, LUBRICATE, AND ADJUST ALL MECHANISMS AND MOVEABLE PARTS OF APPARATUS AND EQUIPMENT LEAVING IT NEW CONDITION AND OPERATION PROPERLY.

2.20 WHERE EXISTING TELECOMMUNICATION OUTLETS TO BE REMOVED AS REQUIRED, AND/OR AS SHOWN, DISCONNECT AND REMOVE ALL MATERIALS AND EQUIPMENT, INCLUDING OUTLET BOXES, JACKETS, COVER PLATES, CONDUITS AND CABLES BACK TO TELECOMMUNICATION CLOSET. PROVIDE BLANK STAINLESS STEEL COVER PLATE.

2.21 X-RAY OR ULTRASOUND OF EXISTING BUILDING FRAMED SLAB WHERE NEW HOLES ARE DRILLED FOR NEW PENETRATIONS, AND FOR NEW BURIED LINES.

3.0 INSTALLATION

3.1 SCHEDULE AND COORDINATE ALL WORK WITH OTHER TRADES BEFORE INSTALLATION OF EQUIPMENT TO AVOID CONFLICT DURING OR AFTER INSTALLATION.

3.2 ALL SERVICES PENETRATING THE FLOOR SLAB SHALL BE IN CONDUIT UNLESS SPECIFIED OTHER WISE. ALL EXISTING OR NEW PENETRATIONS THROUGH FLOOR SLAB AND FIRE RATED WALL, FOR CONDUITS OR SERVICES SHALL BE SEALED WITH AN APPROVED NON-SHRINK, WATERPROOF AND FIREPROOF SEALANT AND APPROVED BY DESIGN CONSULTANT, AND OWNER PRIOR TO DRILLING. FLOOR SLABS SHALL BE X-RAYED, CONTRACTOR MUST REPAIR ANY DAMAGED SERVICES. INCLUDE ALL PREMIUM TIME CHARGES.

3.3 ALL WIRING, DEVICES, LUMINARIES AND EQUIPMENT SHALL BE NEW AND CSA APPROVED UNLESS OTHERWISE NOTED. EQUIPMENT OF SAME TYPE SHALL BE OF SAME MANUFACTURER.

3.4 ALL WIRING SHALL BE COLOUR CODED SOLID COPPER MINIMUM #12 AWG (T90 NYLON 90° RATED PVC INSULATED) FOR RUNS UP TO 100 FEET AND #10 AWG FOR RUNS OVER 100 FEET UNLESS NOTED OTHERWISE. WIRE SHALL BE RUN CONCEALED IN CONDUIT. SUPPORT ALL CONDUIT FROM STRUCTURE. DO NOT SUPPORT FROM CEILING HANGERS. PROVIDE STEEL SET-SCREW FITTINGS. AC-90 MAY BE USED FOR DOWNDROPS FROM OUTLET TO LUMINARIES AND IN PARTITIONS UNLESS PROHIBITED BY CODE OR OTHERWISE NOTED. AS-90 SHALL BE RUN MAXIMUM 10 FEET IN CEILING SPACE. ALL AC-90 CABLE AND CONDUIT SHALL BE SUPPORTED AS HIGH AS POSSIBLE ABOVE CEILING TO ALLOW REMOVAL OF ALL CEILING TILES, LUMINARIES, ETC. CABLES ARE NOT PERMITTED TO REST ON SUSPENDED CEILING. RWU COPPER CONDUCTOR IN CONDUIT FOR OUT DOOR APPLICATION. NO SURFACE WIRES/CONDUITS ARE ALLOWED IN FINISHED AREA.

3.5 PROVIDE A SUITABLE INDEPENDENTLY SUPPORTED, AND APPROVED OUTLET BOX FOR EACH LUMINAIRE, SWITCH, RECEPTACLE, OR OTHER DEVICE. OUTLET BOX SHALL BE COMPLETE WITH COVER PLATE. WHERE OUTLETS ARE SHOWN GROUPED TOGETHER, POWER, TELEPHONE, SIGNAL, ETC., THEY SHALL BE MOUNTED IN A COMMON OUTLET BOX WITH SUITABLE BARRIERS BETWEEN POWER AND SIGNAL SECTIONS. PROVIDE COMMON COVER PLATES OVER ALL DEVICES, UNLESS SPECIFIED OTHERWISE. OUTLETS AND RECEPTACLES MOUNTED ON ADJOINING PARTITIONS SHALL NOT BE MOUNTED BACK TO BACK. STAGGER SLIGHTLY TO PREVENT SOUND TRANSFER.

3.6 ELECTRICAL CONTRACTOR SHALL VERIFY AVAILABLE SPARES AND SPACES IN PANELS AND SHALL PROVIDE NECESSARY MODIFICATION TO EACH PANEL. CIRCUITING SHOWN FROM PANEL IS FOR INFORMATION PURPOSES ONLY. BALANCE ALL PANEL PHASES TO LESS THEN 10% UNBALANCED LOAD.

3.7 PROVIDE GROUND TO THE ELECTRICAL SAFETY CODE REQUIREMENTS. PROVIDE A SEPARATE GROUNDING (BONDING) CONDUCTOR IN ALL ELECTRICAL CONDUITS.

3.8 PANELBOARDS AND SPLITTERS SHALL HAVE TINPLATED COPPER MAINS, BOLT-ON BREAKER, AND SHALL BE OF THE CHARACTERISTIC AS NOTED ON THE DRAWINGS. PROVIDE THREE (3) 27MM EMPTY CONDUITS FROM FLUSH MOUNTED PANELBOARDS AND CAP ENDS IN ACCESSIBLE LOCATIONS IN CEILING SPACE FOR FUTURE WIRING. PROVIDE AN ISOLATED GROUND BAR WITH GROUND JUMPER TO PANEL TUB WHERE SPECIFIED. MANUFACTURER OF PANELBOARDS SHALL BE EQUAL TO EXISTING BUILDING STANDARD. AFTER COMPLETION OF WIRING, PROVIDE NEW TYPED DIRECTORY SHOWING A CLEAR DESCRIPTION OF EACH CIRCUIT BEING CONTROLLED FROM PANEL AND PLACE IN METAL FRAME INSIDE DOOR.

3.9 ALL DIMENSIONS ARE TO CENTER OF OUTLETS OR GROUP OF OUTLETS AS APPLICABLE.

3.10 PROVIDE LAMACOID NAMEPLATES FOR ALL NEW AND EXISTING TRANSFORMERS AND PANELBOARDS DETAILING NAME AND SOURCE OF FEED.

3.11 IDENTIFY ALL EQUIPMENT TO MATCH BASE BUILDING IDENTIFICATION STANDARD. OTHERWISE USE COLOR CODING AS DEFINED IN CSA STANDARD.

3.12 ADJUST THE LOCATION OF DEVICES AND/OR EQUIPMENT (UP TO 10FT IN ANY DIRECTION) AS DIRECTED BY THE DESIGNER AND ENGINEER WITHOUT ADJUSTMENT TO CONTRACTOR PRICE, PROVIDED THAT THE CHANGES ARE REQUESTED BEFORE INSTALLATION.

3.13 TEST NEW AND EXISTING INTERFACED SYSTEMS TO ENSURE PROPER OPERATION AND CORRECT ALL DEFICIENCIES.

3.14 PROVIDE IDENTIFIED OR TAGGED FISH WIRES IN ALL EMPTY CONDUITS AND BOXES FOR WIRING BY OTHER TRADES.

3.15 INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS (CENTRE OF DEVICE) ABOVE FINISHED FLOOR UNLESS INDICATED OTHERWISE.

- .1 WALL SWITCHES: 1100MM.
- .2 WALL RECEPTACLES, TELEPHONE, TV AND DATA OUTLETS:
  - .1 GENERAL: 350 MM.
  - .2 ABOVE TOP OF CONTINUOUS BASEBOARD HEATER: 250 MM.
  - .3 ABOVE TOP OF COUNTERS OR COUNTER SPLASH BACKS: 250 MM.
- .3 PANEL BOARDS: TOP OF PANEL AT 1980 MM AFF.
- .4 WALL MOUNTED INTERPHONE OUTLETS: 1100MM.

3.16 CABLES/WIRES LOCATED IN PLENUM CEILING OR FLOOR SPACES SHALL MEET ONTARIO BUILDING CODE REQUIREMENTS:

- .1 TOTALLY ENCLOSED IN NON-COMBUSTIBLE CONDUIT OR RACEWAY OR
- .2 METAL ARMOURED CABLES
- .3 FT6 RATED AS REQUIRED

4.0 LIGHTING

4.1 ALL LED FLUORESCENT LUMINARIES SHALL BE INDEPENDENTLY SUPPORTED FROM BUILDING STRUCTURE BY MEANS OF CHAINS SECURED TO BOTH ENDS OF LUMINARIES. DROP CEILING SUPPORT LIGHTS IS NOT ACCEPTABLE.

4.2 REVISE EXISTING LIGHTING CIRCUITS TO ACCOMMODATE NEW LIGHTING LAYOUTS. INCLUDING WORK OF WIRES IN CONDUITS. CHECK LOAD ON EACH CIRCUIT TO AVOID OVER LOADING.

4.3 EXISTING LOW VOLTAGE LIGHTING CONTROL SYSTEM TO REMAIN. DO NOT MODIFY THE BASE BUILDING LIGHTING ZONES. CHECK LOAD ON EACH CIRCUIT TO AVOID OVER LOADING.

4.4 WHERE FIXTURE TO BE RELOCATED, REMOVED, OR NEW FIXTURE TO BE INSTALLED INCLUDE COST OF MODIFICATIONS OF CEILING TILE TO ACCOMMODATE NEW LIGHTING SYSTEM.

5.0 EMERGENCY LIGHTING

5.1 REMOTE HEADS

- .1 SINGLE OR DOUBLE CAST ALUMINUM HEAD(S), COMPLETE WITH MOUNTING PLATES, 300 DEGREE HORIZONTAL AND 80 DEGREE VERTICAL MINIMUM ADJUSTMENT.
- .2 LAMPS: MR16 LED, 6W OR AS SHOWN.
- .3 INPUT: 12VDC OR AS SHOWN.
- .4 MOUNTING: CEILING OR WALL AS SHOWN.
- .5 FINISH: WHITE PAINTED.
- .6 PROVIDE WHITE METAL WIRE GUARD AS REQUIRED.

5.2 BATTERY UNIT

- .1 SUPPLY VOLTAGE: AS INDICATED ON THE ELECTRICAL DRAWINGS.
- .2 OUTPUT VOLTAGE: 12V DC OR AS SHOWN.
- .3 OPERATING TIME: 1/2 HOUR MINIMUM.
- .4 BATTERY: SEALED, MAINTENANCE FREE, LONG-TIME LEAD WITH RATED LIFE OF TEN (10) YEARS.
- .5 CHARGER: SOLID STATE, MULTI-RATE, VOLTAGE/CURRENT REGULATED, INVERSE TEMPERATURE COMPENSATED, SHORT CIRCUIT PROTECTED WITH REGULATED OUTPUT OF PLUS OR MINUS 0.01V FOR PLUS OR MINUS 10% INPUT VARIATIONS CAPABLE OF RESTORING A DISCHARGED BATTERY TO THE FULLY-CHARGED STATE WITHIN TWENTY-FOUR (24) HOURS, AND SWITCHED TO A FLOAT CHARGE WHEN NOT IN FULL CHARGE MODE.
- .6 SOLID STATE TRANSFER CIRCUIT.
- .7 LOW VOLTAGE DISCONNECT: SOLID STATE, MODULAR, OPERATES AT 80% BATTERY OUTPUT VOLTAGE.
- .8 SIGNAL LIGHTS: SOLID STATE, FOR "AC POWER ON" AND 'HIGH CHARGE'.
- .9 LAMP HEADS: INTEGRAL ON UNIT AND REMOTE, 345° HORIZONTAL AND 180° VERTICAL ADJUSTMENT, WHITE PAINTED CAST ALUMINUM HEAD. LAMP TYPE: WIDE BEAM FLAT MR16 LED, 2-6W, UNLESS NOTED OTHERWISE.
- .10 CABINET: SUITABLE FOR DIRECT OR SHELF MOUNTING TO WALL AND COMPLETE WITH KNOCKOUTS FOR CONDUITS. REMOVABLE OR HINGED FRONT PANEL FOR EASY ACCESS TO BATTERIES.
- .11 FINISH: STANDARD FACTORY FINISH.
- .12 AUXILIARY EQUIPMENT:
- .13 ADVANCED DIAGNOSTIC PRINTED CIRCUIT BOARD WITH AUTO SELF TEST AND TIME DELAY.
- .14 TEST SWITCH AND LED TROUBLE INDICATOR.
- .15 BATTERY DISCONNECT DEVICE.
- .16 AC INPUT AND DC OUTPUT TERMINAL BLOCKS INSIDE CABINET.
- .17 MOUNTING SHELF.
- .18 TRANSIENT VOLTAGE SURGE SUPPRESSOR ON THE SUPPLY SIDE OF POWER TO THE UNIT.

5.3 ALL EMERGENCY LIGHTING DEVICES SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE FOLLOWING:
- .1 CSA-C22.2 NO. 141, UNIT EQUIPMENT FOR EMERGENCY LIGHTING.

6.0 FIRE ALARM SYSTEM

6.1 EXTEND AND ALTER THE EXISTING FIRE ALARM SYSTEM AS SHOWN, AS SPECIFIED AND AS OTHERWISE REQUIRED. NEW FIRE ALARM DEVICES SHALL MATCH EXISTING.

6.2 INSTALL WIRING IN ACCORDANCE WITH RECOMMENDATIONS OF MANUFACTURER. WIRING SHALL BE NO. 14 AWG, 600V, SOLID COPPER, ONE RED AND ONE BLACK.

6.3 THE MANUFACTURER OF THE FIRE ALARM SYSTEM SHALL MAKE A COMPLETE INSPECTION, TESTING AND VERIFICATION OF ALL COMPONENTS INSTALLED OR RELATED FOR THE SYSTEM IN ACCORDANCE WITH LATEST EDITION OF STANDARDS CAN/ULC-S536 AND CAN/ULC-S537.

6.4 SUBMIT THE TEST AND VERIFICATION REPORT AND CERTIFICATE TO THE CAN/ULC STANDARD.

7.0 WIRING DEVICES

7.1 RECEPTACLES
- .1 WHITE PREMIUM SPECIFICATION GRADE, UREA MOULDED HOUSING.
- .2 SUITABLE FOR NO. 10 AWG FOR BACK AND SIDE WIRING
- .3 BREAK OFF LINKS FOR USE AS SPLIT RECEPTACLES
- .4 EIGHT BACK WIRED ENTRANCES, FOUR SIDE WIRING SCREWS
- .5 TRIPLE WIPE CONTACTS AND RIVETED GROUNDING CONTACTS
- .6 IMPACT-RESISTANT NYLON FACE
- .7 U-GROUND
- .8 GFCI RECEPTACLES SHALL MEET UL 943 REQUIREMENTS AND BE COMPLETE WITH TEST AND RESET BUTTONS, AND LED INDICATION LIGHT
- .9 DUPLEX RECEPTACLE, 15 AMP, 120 VOLT, 1 PHASE, 2 POLE, 3 WIRE, HUBBELL, BR15WHI (CSA 5-15R)
- .10 DUPLEX RECEPTACLE, 20 AMP, 120 VOLT, 1 PHASE, 2 POLE, 3 WIRE, HUBBELL, BR20WHI (CSA 5-20RA)
- .11 GFCI DUPLEX RECEPTACLE, 20 AMP, 120 VOLT, 1 PHASE, 2 POLE, 3 WIRE, HUBBELL, GF20STW (CSA 5 20RA)
- .12 SINGLE 50 AMP, 120/208 VOLT AND 120/240 VOLT, 2 PHASES, 3 POLE, 4 WIRE, HUBBELL, HBL9450A (CSA 14-50R)
- .13 TEMPER-RESISTANT DUPLEX RECEPTACLE, 15 AMP, 120 VOLT, 1 PHASE, 2 POLE, 3 WIRE, HUBBELL, BR15WHITR (CSA5-15R)
- .14 USB CHARGER RECEPTACLE, HUBBELL USB15X2W. TAMPER-RESISTANT DECORATOR DUPLEX RECEPTACLE, 15A, 120 VOLT, 1 PHASE, 2 POLE, 3 WIRE (CSA5-15R). TWO USB PORTS 3.8 AMP, 5V DC, TYPE A, CLASS 2.0. GREEN LED INDICATOR TO SHOW USB POWER AVAILABLE. COMPATIBLE WITH USB 1.1/2.0/3.0 DEVICES, INCLUDING APPLE PRODUCTS.
- .15 PROVIDE LABELS ON ALL RECEPTACLE COVER PLATES WITH CIRCUIT NUMBER. LABELS SHALL BE CLEAR ADHESIVE RIBBON (LABEL MAKER) WITH BLACK TYPE.

7.2 COVER PLATES
- .1 STAINLESS STEEL TYPE 302, COMPLETE WITH MATCHING SCREW OR SNAP ON TYPE
- .2 WEATHERPROOF COVERS SHALL BE WHILE-IN-USE TYPE POLYCARBONATE BODY, COVER AND PLATES, CONFORMING TO NEMA3R. HUBBELL # WP826MP
- .3 SHEET METAL COVER PLATES FOR WIRING DEVICES MOUNTED IN SURFACE-MOUNTED FS OR FD TYPE CONDUIT BOXES
- .4 WEATHERPROOF SPRING-LOADED CAST ALUMINUM COVER PLATES COMPLETE WITH GASKETS FOR SINGLE RECEPTACLES OR SWITCHES
- .5 WATER-TIGHT HINGED COVER SUITABLE FOR FLOOR BOX FOR GANGED RECEPTACLES, DATA/TELEPHONE OUTLETS, FINISH TO THE APPROVAL OF THE CONSULTANT

7.3 OCCUPANCY SENSORS
- .1 WALL SENSOR SWITCHES
  - .1 ADAPTIVE TECHNOLOGY FOR TIME DELAY
  - .2 NO MINIMUM LOAD REQUIREMENT
  - .3 180° COVERAGE UP TO 900 SQUARE FEET
  - .4 DUAL TECHNOLOGY, ULTRASONIC AND PASSIVE INFRARED
  - .5 MANUAL OVERRIDE FOR BOTH ON AND OFF
  - .6 COMPATIBLE WITH ALL ELECTRONIC/MAGNETIC BALLAST AND INCANDESCENT LAMP
  - .7 BUILT-IN PHOTOCELL
  - .8 120VAC OR 347VAC TO SUIT APPLICATION, 800W, DUAL SWITCHING CIRCUITS TO SUIT APPLICATION
  - .9 INSTALLED IN RECESSED SINGLE GANG BOX, WHITE FINISH AND COVER PLATE SHALL MATCH WALL LIGHTING SWITCH
  - .10 WATT STOPPER #DW-100 SERIES
- .2 CEILING SENSORS
  - .1 ADAPTIVE TECHNOLOGY FOR TIME DELAY
  - .2 COMPLETE WITH 120VAC (OR 347VAC TO SUIT APPLICATION) POWER SUPPLY AND SWITCHING RELAY, DUAL SWITCHING RELAY CIRCUITS TO SUIT APPLICATION
  - .3 DUAL TECHNOLOGY, ULTRASONIC AND PASSIVE INFRARED
  - .4 360° COVERAGE UP TO 2000 SQUARE FEET
  - .5 COMPATIBLE WITH ALL ELECTRONIC/MAGNETIC BALLAST AND INCANDESCENT LAMP
  - .6 WATT STOPPER #DT-300 SERIES

8.0 PANELBOARDS

8.1 PANELBOARDS RATED 120/208 VOLT AC SHALL HAVE SHORT-CIRCUIT RATING AS SHOWN ON THE DRAWINGS, BUT NOT LESS THAN 14 KA RMS SYMMETRICAL.

8.2 PANELBOARDS SHALL BE LABELED WITH THE SHORT-CIRCUIT RATING.

8.3 WHERE SERIES RATINGS ARE APPLIED, PROVIDE THE LABELS IN ACCORDANCE WITH THE REQUIREMENTS OF ELECTRICAL SAFETY CODE. THE LABELS SHALL STATE THE FOLLOWING, AT A MINIMUM:
- .1 SIZE AND TYPE OF UPSTREAM DEVICES;
- .2 BRANCH DEVICES THAT CAN BE USED;
- .3 SHORT-CIRCUIT RATING.

8.4 INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED DEVICES.

8.5 ENCLOSURE:
- .1 INDOOR DRY LOCATIONS: CSA TYPE 1.
- .2 INDOOR SPRINKLER LOCATIONS: CSA TYPE 2.

8.6 PROVIDE DOORS WITH CONCEALED HINGES, COMBINED LOCKS AND LATCHES FOR ALL PANELBOARDS EXCEPT FUSIBLE DISCONNECT SWITCH TYPE DISTRIBUTION PANELBOARDS.

8.7 TWO (2) KEYS FOR EACH PANELBOARD AND KEY ALL PANELBOARDS ALIKE.

8.8 INTERIOR TRIM SHALL BE DEAD-FRONT CONSTRUCTION TO SHIELD USERS FROM ENERGIZED PARTS.

8.9 MAIN BUS SHALL BE TIN FINISHED HIGH QUALITY COPPER AND EXTEND THE FULL LENGTH OF THE PANEL. GROUND BUS SHALL BE SIZED TO ACCOMMODATE BRANCH CIRCUIT GROUNDING CONDUCTORS. 200% NEUTRAL AS REQUIRED.

8.10 SEQUENCE PHASE BUSSING WITH ODD NUMBERED SECTIONS ON THE LEFT AND EVEN ON THE RIGHT, WITH EACH SECTION IDENTIFIED BY PERMANENT NUMBER IDENTIFICATION AS TO CIRCUIT NUMBER AND PHASE.

8.11 PROVIDE BOLT-ON TYPE CIRCUIT BREAKERS AND/OR DISCONNECT SWITCH UNITS.

8.12 MEANS OF LOCKING OFF SHALL MEET CSA REQUIREMENTS OF ELEVATOR POWER SUPPLIES

8.13 MINIMUM CIRCUITS SHALL BE 42, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.

8.14 TRIMS AND DOORS SHALL BE PAINTED ANSI 61 GREY. FACTORY APPLIED PAINT FINISH ON ALL EXTERIOR SURFACES.

8.15 ALL REQUIRED LUGS.

8.16 CONNECTORS FOR FUTURE BREAKERS AND SWITCHES. DRILL AND TAP BUS WORK.

8.17 CUSTOM BUILT PANELBOARD ASSEMBLIES:
- .1 CONTACTORS AND/OR RELAYS AS INDICATED
- .2 SPECIAL GROUND BUSES AS INDICATED
- .3 CONNECTORS FOR FUTURE BRANCH DEVICES AS INDICATED

8.19 CIRCUIT BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK TYPE, FOR MANUAL AND AUTOMATIC OPERATION, WITH OVER CENTRE TOGGLE HANDLE. THE HANDLE SHALL RESIDE IN A POSITION BETWEEN "ON" AND "OFF".

8.20 CIRCUIT BREAKERS SHALL HAVE THERMAL AND MAGNETIC TRIP MECHANISM, TO PROVIDE INVERSE TIME CURRENT TRIPPING AND INSTANTANEOUS TRIPPING, TRIP-FREE AND TRIP INDICATING. CIRCUIT BREAKERS RATED AT 125A AND LARGER SHALL HAVE THERMAL AND ADJUSTABLE MAGNETIC TRIP MECHANISM.

8.21 MULTI-POLE BREAKERS SHALL BE COMMON TRIP TYPE AND HAVE A COMMON HANDLE. TIE HANDLES ARE NOT ACCEPTABLE.

8.22 CLEARLY MARKED WITH THEIR RATED AMPACITY AND RESPECTIVE TRIP RATING AND VISIBLE WITHOUT REMOVING BOLTED COVERS.

8.23 PROVIDE HANDLE LOCKING DEVICES ON ALL BRANCH CIRCUIT BREAKERS CONTROLLING COMMUNICATION EQUIPMENT, KITCHEN FIRE SUPPRESSION PANEL AND OTHER LIFE SAFETY EQUIPMENT.

8.24 IDENTIFY CIRCUITS CONTROLLED BY EACH BREAKER ON DIRECTORY CARDS PROVIDED WITH PANELS. DIRECTORIES SHALL BE TYPED AND MOUNTED IN METAL FRAME WITH CLEAR PLASTIC COVER.

9.0 SURFACE METAL RACEWAY

9.1 THE SURFACE ALUMINUM RACEWAY SYSTEMS SHALL CONSIST OF SURFACE ALUMINUM RACEWAY, APPROPRIATE FITTINGS AND DEVICE BRACKETS TO COMPLETE INSTALLATION.

9.2 THE RACEWAY IS TO BE UTILIZED IN DRY INTERIOR LOCATIONS ONLY IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE.

9.3 SUBMIT DRAWINGS FOR APPROVAL SHOWING THE COMPLETE LAYOUT OF ALL PRODUCTS THAT MAKE UP THE COMPLETE SYSTEM FOR EACH FLOOR PRIOR TO INSTALLATION WITH RACEWAY LENGTHS, DEVICE TYPE (POWER), LOCATIONS AND CIRCUITS IDENTIFIED, COMPLETE WITH DATA SHEETS AND SAMPLES.

9.4 THE SURFACE RACEWAY SYSTEM SPECIFIED HEREIN FOR BRANCH CIRCUIT WIRING SHALL BE WIREMOLD AL3300 SERIES, OR EQUALED BY HUBBELL. THE RACEWAY SHALL BE ALUMINUM, TWO-PIECE DESIGN WITH A BASE AND A SNAP-ON COVER. FINISH SHALL BE SATIN ANODIZED ALUMINUM FINISH, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.

9.5 COMPLETE WITH POWER RECEPTACLES AS REQUIRED.

9.6 RECEPTACLE PLATES SHALL BE WIREMOLD AL3346 SERIES, OR EQUALED BY HUBBELL.

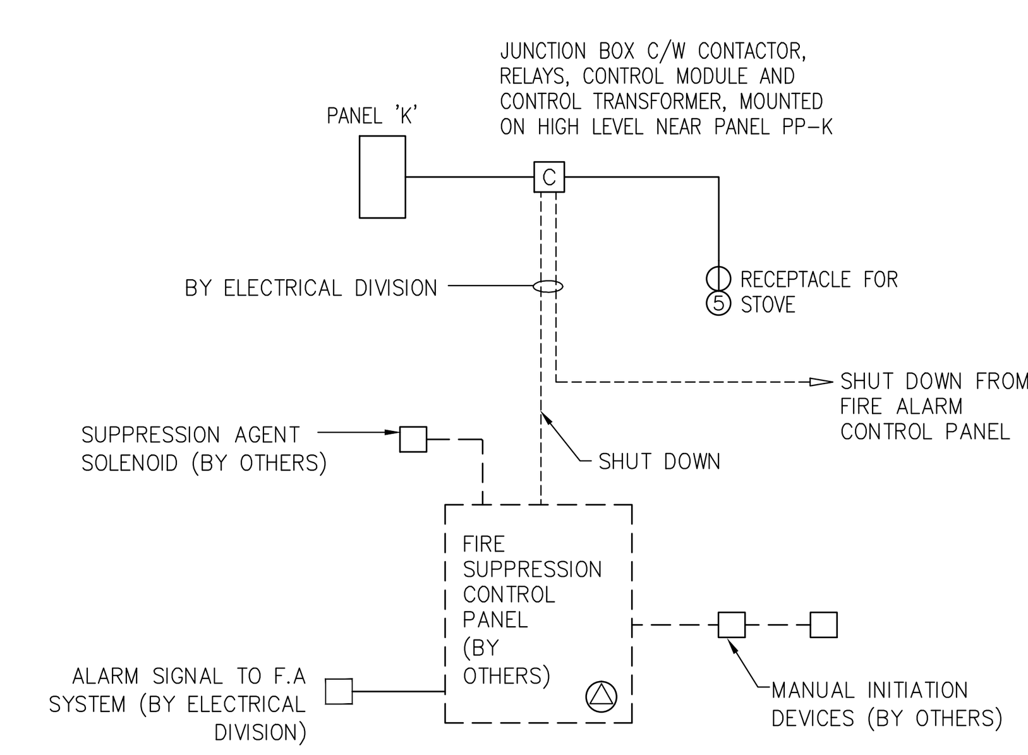
10.0 SUBMISSION

10.1 PRIOR TO COMMENCEMENT OF THE CONTRACT WORK, SUBMIT:
- .1 REVIEW EXISTING SYSTEMS AND EXISTING DRAWINGS TO CONFIRM CONDITIONS.

10.2 SUBMIT SHOP DRAWINGS:
- .1 LIGHTING FIXTURES;
- .2 WIRING DEVICES;
- .3 POWER SYSTEM OUTLET BOXES AND WHIPS.

10.3 PRIOR TO COMPLETION INSPECTION/REVIEW, SUBMIT THE FOLLOWS:
- .1 ESA CERTIFICATE;
- .2 FIRE ALARM TEST REPORT AND CERTIFICATE;
- .3 LETTER FROM ELECTRICAL CONTRACTOR CONFIRMING ALL REQUIRED WORK IS COMPLETED.

10.4 COMPLETION SUBMISSIONS:
- .1 AS-BUILT DRAWINGS;
- .2 OPERATION MANUALS



KITCHEN & SERVERY NOTES:

1. CONFIRM EXACT POWER REQUIREMENTS FOR ALL KITCHEN EQUIPMENT WITH KITCHEN SUPPLIER PRIOR ROUGH-IN.
2. FOR EXACT LOCATIONS AND MOUNTING HEIGHTS, REFER TO KITCHEN EQUIPMENT DRAWINGS AND SPECIFICATIONS.
3. CO-ORDINATE WITH SUCCESSFUL KITCHEN EQUIPMENT CONTRACTOR.
4. PROVIDE DISCONNECT SWITCHES (INDOOR OR OUTDOOR TYPE) AS REQUIRED. CO-ORDINATE WITH KITCHEN EQUIPMENT SUPPLIER.
5. WIRE SYSTEM IN ACCORDANCE WITH SUPPLIERS INSTRUCTIONS.
6. CONNECT TO BUILDING FIRE ALARM VIA AUXILIARY CONTACTS. REFER TO FIRE ALARM SCHEDULE FOR ZONING.
7. ALL EQUIPMENT AND WIRING SHOWN ON THIS DETAIL SHALL BE BY ELECTRICAL DIVISION, UNLESS OTHERWISE NOTED.

1 / E-03 DETAIL OF FIRE SUPPRESSION SYSTEM – MAIN KITCHEN

SCALE: N.T.S.

LICENSED PROFESSIONAL ENGINEER
M. J. LI
NOV. 26, 2018
18027-C3
PROVINCE OF ONTARIO

PROJECT NORTH:

KEY PLAN:

Trillium Lakelands District School Board
Muskoka Beechgrove Public School
Millwork Replacement

Haliburton, ON.

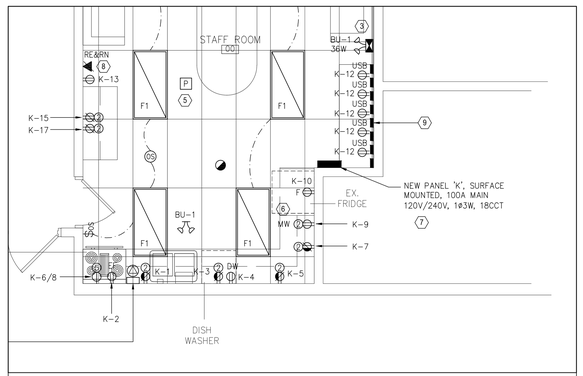
HL ENGINEERING LTD
14721 WOODBINE AVE, STOUFFVILLE, ON
L4A 2G7 905-713-0003 www.hlengineering.ca

PROJECT NO:	18027-C3
LIBRARY NO:	218024-FP
DRAWN BY:	LS
SCALE:	AS NOTED

NO.	ISSUE	DATE
1	Issued for Review	2018/04/20
2	Issued for Permit & Tender	2018/05/07
3	Issued for Permit & Tender	2018/11/26

SPECIFICATIONS & DETAILS – ELECTRICAL

DRAWING NO: E-03



NOTES:

(6) CONTRACTOR TO CONFIRM EXACT MOUNTING HEIGHT FOR MICROWAVE OVEN RECEPTACLE ON SITE.

(7) THE NEW PANEL 'K' SHALL BE FED FROM THE EXISTING POWER PANEL 'C' IN CORRIDOR; REPLACE THE EXISTING 50A/2P BREAKER FEEDING THE REMOVED STOVE WITH NEW 60A/2P BREAKER TO MATCH EXISTING IN THE EXISTING POWER PANEL 'C'; PROVIDE NEW FEEDER: 3#6+GRD-35mmC FROM THE NEW 60A/2P BREAKER TO NEW PANEL 'K'. CONTRACTOR TO CONFIRM EXACT SIZE AND LOCATION OF THE EXISTING 50A/2P BREAKER ON SITE.

2 / E-02 PROPOSED FLOOR PLAN – ELECTRICAL

SCALE: 1:50

HL ENGINEERING LTD
14721 WOODBINE AVE, STOUFFVILLE, ON
L4A 2G7 905-713-0003 www.hlengineering.ca

PROJECT	PROJECT #	SCALE	ISSUE
Muskoka Beechgrove Public School Millwork Replacement Haliburton, ON.	18027-C3	N.T.S. DRAWN LS	ADD-E01
DRAWING	DRAWING #	CHECKED MJL	SKETCH
FLOOR PLANS – ELECTRICAL	E-02	DATE JUN 07, 2018	SKE-01