

COMMUNICATIONS	
	TELEPHONE OUTLET - CONDUIT (SEE SPECS) C/W CAT 6 CABLE AND RJ11 OUTLET
	COMPUTER OUTLET - CONDUIT (SEE SPECS) C/W CAT 6 CABLE AND RJ45 OUTLET
	VOIP PHONE OUTLET - CONDUIT (SEE SPECS) C/W CAT 6 CABLE AND RJ45 OUTLET
	COMBINATION TELEPHONE AND COMPUTER OUTLET CONDUIT (SEE SPECS) C/W 2x CAT 6 CABLE, 1x RJ45 AND 1x RJ11 OUTLETS
	SPECIAL TELEPHONE OUTLET FOR FAX AND MODEM, CAT 6 CABLE AND RJ11 OUTLET, RUN SEPARATE LINE TO MAIN TERMINAL BOARD
	WIRELESS ACCESS POINT BACKBOX, FACEPLATE, CONDUIT (SEE SPECS) C/W CAT 6 CABLE AND RJ45 OUTLET
	COMBINATION TELEPHONE AND COMPUTER OUTLET FOR MODULAR FURNITURE, 2x CAT 6 CABLE, 1x RJ45 AND 1x RJ11 OUTLETS, FISH CABLEING THROUGH FURNITURE AND TERMINATE AT DESK.
	COMPUTER OUTLET FOR MODULAR FURNITURE, CAT 6 CABLE AND RJ45 OUTLET, FISH CABLEING THROUGH FURNITURE AND TERMINATE AT DESK.
	CABLE TV OUTLET - 3/4" (19mm) CONDUIT C/W RG6 CABLEING AND F CONNECTOR
	CLOCK
	COMMUNICATION DEVICES MOUNTED IN 2 CHANNEL RACEWAY
	COMMUNICATION NOTES: NUMBER BESIDE THE OUTLET DENOTES NUMBER OF OUTLETS

SECURITY, ACCESS CONTROL, CCTV	
	AREA TYPE BREAK GLASS DETECTOR
	SINGLE-PANE TYPE BREAK GLASS DETECTOR
	DOOR CONTACT
	ROLL-UP OR OVERHEAD DOOR CONTACT
	ELECTRONIC KEY PAD
	MOTION DETECTOR
	PHOTO-ELECTRIC BEAM SOURCE
	PHOTO-ELECTRIC BEAM REFLECTOR
	SECURITY SYSTEM ALARM SIGNAL
	VIDEO MONITORING CAMERA
	POWER DOOR PUSH BUTTON OPERATOR
	AUTOMATIC DOOR OPENER
	CARD READER
	ELECTRIC STRIKE
	EMERGENCY PUSH BUTTON
	MAGNETIC LOCK
	MAGNETIC LOCK KEY SWITCH
	OCCUPIED LIGHT CAMDEN LED ANNUNCIATOR CM-AF-500
	PUSH TO RELEASE
	PUSH TO LOCK CAMDEN PUSHBUTTON CM-400/8
	REQUEST TO EXIT
	SCRAMBLE PAD
	HANDS FREE SWITCH CAMDEN SUREWAVE CM-324/3

PUBLIC ADDRESS SYSTEM AND INTERCOM	
	CEILING MOUNTED SPEAKER
	WALL MOUNTED SPEAKER
	MICROPHONE
	INTERCOM
	VOLUME CONTROL

FIRE ALARM	
	PHOTOELECTRIC TYPE SMOKE DETECTOR
	PHOTOELECTRIC TYPE SMOKE DETECTOR WITH A RELAY BASE
	PHOTOELECTRIC TYPE SMOKE ALARM, 120VAC WITH BATTERY BACKUP, INTERCONNECTED AS SHOWN
	PHOTOELECTRIC TYPE DUCT SMOKE DETECTOR
	RATE OF RISE AND 57° C FIXED TEMPERATURE HEAT DETECTOR
	92° C FIXED TEMPERATURE HEAT DETECTOR
	MANUAL PULL STATION
	ELECTRIC SUPERVISED VALVE
	FLOW SWITCH
	PRESSURE SWITCH
	FIRE ALARM SIGNALING APPLIANCE - SINGLE STROKE BELL
	FIRE ALARM SIGNALING APPLIANCE - VIBRATING
	FIRE ALARM SIGNALING APPLIANCE - HORN
	FIRE ALARM SIGNALING APPLIANCE - STROBE
	FIRE ALARM SIGNALING APPLIANCE - COMBINATION HORN AND STROBE
	FIRE ALARM DOOR RELEASE DEVICE
	FIRE ALARM SPEAKER - WALL/COLUMN MOUNT
	FIRE ALARM SPEAKER - CEILING MOUNT
	FIRE FIGHTERS HANDSET
	FIRE ALARM ANNUNCIATOR PANEL
	FIRE ALARM CONTROL PANEL
	CARBON MONOXIDE DETECTOR
	SMOKE OR FIRE DAMPER CONNECT TO FIRE ALARM SYSTEM AND POWER

LIGHTING FIXTURES	
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURES, LETTER DENOTES TYPE.
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURES ON AN EMERGENCY OR NIGHT LIGHT CIRCUIT, LETTER DENOTES TYPE.
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURES, LETTER DENOTES TYPE.
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURES ON AN EMERGENCY OR NIGHT LIGHT CIRCUIT, LETTER DENOTES TYPE.
	WALL OR COLUMN MOUNTED LIGHTING FIXTURES, LETTER DENOTES TYPE.
	WALL OR COLUMN MOUNTED LIGHTING FIXTURES ON AN EMERGENCY OR NIGHT LIGHT CIRCUIT, LETTER DENOTES TYPE.
	SURFACE OR SUSPENDED STRIP LIGHTING FIXTURE, LETTER DENOTES TYPE.
	B-1-2 LIGHTING CIRCUITING NOTE, B-PANELBOARD I.D., 1- BRANCH CIRCUIT, 2-LOCAL (SWITCH) CIRCUIT.
	SWITCH, SINGLE-POLE, SINGLE-THROW
	CEILING MOUNTED OCCUPANCY SENSOR, REFER TO SCHEDULE FOR TYPE
	WALL MOUNTED OCCUPANCY SENSOR, REFER TO SCHEDULE FOR TYPE
	TYPICAL SWITCH NOTES, CIRCUITING: B-PANEL BOARD I.D., 1-BRANCH CIRCUIT, 2-LOCAL (SWITCH) CIRCUIT, XX-SUBSCRIPT(S): E-EMERGENCY POWER, D-DIMMING, LV- LOW VOLTAGE WALLSTATION P-PLOT LIGHT, 3-THREE WAY, 4-FOUR WAY, VS-VACANCY SENSOR, WP- WEATHERPROOF

EMERGENCY LIGHTING AND EXIT SIGNS	
	SURFACE MOUNTED EMERGENCY LIGHTING FIXTURE
	RECESSED EMERGENCY LIGHTING FIXTURE
	EXIT/RUNNING MAN PICTOGRAM SIGN
	EMERGENCY LIGHTING FIXTURE AND BATTERY
	EMERGENCY LIGHTING FIXTURE, BATTERY AND EXIT SIGN
	DC - DENOTES A SOURCE OF DC POWER X - DENOTES POWER SOURCE IDENTIFICATION
	DC POWER CIRCUITING NOTE: X - DC POWER SOURCE IDENTIFICATION 2 - BRANCH CIRCUIT

LEGEND	
THIS LEGEND REPRESENTS THE SYMBOLS COMMONLY USED, NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS, SHOULD A SYMBOL BE FOUND ON THE DRAWING AND NOT APPEARING ON THE LEGEND, THE CONTRACTOR SHALL SUBMIT A QUESTION TO HAVE THE SYMBOL CLARIFIED IN AN ADDENDUM PRIOR TO SUBMITTING A BID.	
ABBREVIATIONS	
ZOA	DENOTES 5-20R DEVICE
AC	ABOVE COUNTER
ADO	AUTOMATIC DOOR OPENER
AE	APPROVED EQUAL
AFF	ABOVE FINISHED FLOOR
AN	FIRE ALARM ANNUNCIATOR
BED	RECEPTACLE DEDICATED FOR PATIENT BED
BH	BASEBOARD HEATER
CB	CIRCUIT BREAKER
ER	EXISTING TO BE RELOCATED
EX	EXISTING TO REMAIN
FH	FORCED-AIR HEATER
GFI	EQUIPMENT SO NOTED TO BE SUPPLIED WITH A GROUND FAULT CIRCUIT INTERRUPTER
HKWP	HOUSEKEEPING
JB	JUNCTION BOX
PD	POWER DOOR
R	RELAY WITH AUXILIARY CONTACTS
REL	RELOCATED ITEM IN NEW LOCATION
REM	EXISTING TO BE REMOVED IN ITS ENTIRETY
T	TRANSFORMER
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
W	WALL MOUNT - VERIFY HEIGHT
WP	EQUIPMENT SO NOTED TO BE SUPPLIED WITH THE MANUFACTURER'S WEATHER-PROOFING OPTION(S)

POWER LAYOUT	
	DISCONNECT SWITCH (DS)
	COMBINATION STARTER (CS)
	MAGNETIC STARTER (MG)
	MANUAL STARTER (CS)
	POWER PANEL
	POWER TRANSFORMER
	ELECTRIC HEATING EQUIPMENT
	EQUIPMENT SUPPLIED BY OTHERS REQUIRING ELECTRICAL POWER CONNECTION REFER TO EQUIPMENT SCHEDULE
	EQUIPMENT SUPPLIED BY OTHERS REQUIRING ELECTRICAL POWER CONNECTION REFER TO OWNER EQUIPMENT SCHEDULE
	ALL MODES OF OPERATION OF EQUIPMENT SO NOTED TO BE SHUT DOWN BY THE ALARM CONDITION OF THE FIRE ALARM CONTROL PANEL
	PUSH BUTTON
	PUSH BUTTON STATION
	THERMOSTAT
	TIME CLOCK
	JIFFY POLE
	120V HARDWIRE CONNECTION
	208V, 1Ø HARDWIRE CONNECTION
	208V, 3Ø HARDWIRE CONNECTION
	600V, 3Ø HARDWIRE CONNECTION
	JUNCTION BOX
	HAND DRYER
	FLOOR BOX

WIRING DEVICES	
	SPECIAL RECEPTACLE, REFER TO NOTES OR DESCRIPTION FOR TYPE
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP SIMPLEX UNO.
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP DUPLEX UNO.
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE HALF- SWITCHED RECEPTACLE, 15 AMP DUPLEX CONTROLLED VIA LOCAL SWITCH
	2x 125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP DUPLEX UNO
	125/250 VOLT, 3-POLE, 4-WIRE, STRAIGHT BLADE RECEPTACLE, AMPERAGE AS NOTED
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP DUPLEX UNO ON EMERGENCY OR UPS POWER
	VERTICAL LINE THROUGH ANY RECEPTACLE SYMBOL INDICATES A NON-STANDARD MOUNTING HEIGHT THAT MUST BE FIELD DETERMINED
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP DUPLEX FOR SYSTEMS FURNITURE
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE, 15 AMP DUPLEX FOR SYSTEMS FURNITURE ON EMERGENCY OR UPS POWER
	RECEPTACLES MOUNTED IN 2 CHANNEL RACEWAY
	TYPICAL RECEPTACLE NOTES: CIRCUITING: B-PANELBOARD I.D., 1-BRANCH CIRCUIT, SUBSCRIPT: XX-CURRENT RATING (IF NOTED).

DEMOLITION NOTES	
1. THE CONTRACTOR SHALL ARRANGE TO TOUR THE FACILITY WITH MAINTENANCE STAFF PRIOR TO SUBMITTING A BID ON THE PROJECT.	
2. DURING THE CONTRACTORS SITE TOUR THEY SHALL BECOME FAMILIAR WITH THE EXISTING BUILDING CONSTRUCTION AND THE LOCATIONS OF THE EXISTING COMMUNICATION CLOSETS, LOCAL POWER PANELS, FIRE ALARM AND OTHER SYSTEMS BEING WORKED ON AS PART OF THIS CONTRACT.	
3. THE CONTRACTOR AND MAINTENANCE STAFF SHALL OPEN EXISTING PANELS AND SYSTEMS TO BECOME FAMILIAR WITH THE EXISTING SYSTEMS AND TO DETERMINE THE FULL SCOPE OF WORK REQUIRED TO CARRY OUT THE PROJECT. THE CONTRACTOR SHALL PROVIDE NEW BREAKERS, DATA/VOICE COMPONENTS, FIRE ALARM DEVICES, LIGHTING SYSTEM COMPONENTS, ETC TO FACILITATE A COMPLETE AND FUNCTIONING SYSTEM AT PROJECT COMPLETION.	
4. THE CONTRACTOR SHALL MEASURE OFF ANY DISTANCES NOT INDICATED FOR HOME RUNNING NEW SERVICES (POWER, FIRE ALARM, SECURITY ETC) AND INCLUDE MATERIALS AND LABOUR REQUIRED IN THEIR BID PRICE.	
5. COORDINATE ALL DEMOLITION WITH GENERAL CONTRACTOR. EVERY EFFORT HAS BEEN MADE TO OUTLINE THE DEMOLITION SCOPE OF WORK, HOWEVER THE DEMOLITION DRAWINGS REPRESENT ONLY THE GENERAL LOCATION AND NUMBER OF FITTINGS, FIXTURES, DEVICES, EQUIPMENT ETC. TO ASSIST IN EVALUATING THE DEMOLITION SCOPE OF WORK. DRAWINGS ARE BASED ON PREVIOUS AS-BUILTS OR FIELD EVALUATIONS.	
6. IT IS THE CONTRACTORS RESPONSIBILITY TO VISIT THE SITE DURING THE TENDER PERIOD TO DETERMINE THE EXACT SCOPE OF DEMOLITION WORK, QUANTITIES AND THOROUGHLY UNDERSTAND THE SITE CONDITIONS FOR CARRYING OUT THE SAME. REQUESTS FOR EXTRAS DUE TO FAILURE TO PROPERLY EVALUATE THE CONDITIONS THAT AFFECT DEMOLITION SCOPE OF WORK WILL NOT BE CONSIDERED.	
7. THE CONTRACTOR SHALL SUBMIT QUESTIONS IN WRITING 5 DAYS PRIOR TO TENDER CLOSING TO ALLOW FOR QUESTIONS TO BE FORMALLY ANSWERED IN AN ADDENDUM.	
8. UNLESS EXISTING CIRCUITS NUMBERS ARE INDICATED ON THE DEMOLITION PLANS, ALL CIRCUITS SHOWN ON THE NEW LAYOUTS ARE NEW CIRCUITS. EXCEPTIONS TO THIS INCLUDE CIRCUITS SHOWN ON THE DEMOLITION PLAN AND AGAIN ON THE NEW LAYOUT. THE CIRCUIT SHOWN BOTH TIMES IS EXISTING AND LOCALIZED IN THE AREA OF WORK. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING FOR ALL NEW CIRCUITS: NEW CONDUIT, WIRING, BREAKERS, SUPPORTS, BACKBOXES, FACEPLATES, RECEPTACLES, ETC FOR A COMPLETE SYSTEM.	
9. EXISTING CIRCUITS BEING REUSED WILL BE INDICATED BY A CIRCUIT NUMBER (IE 2415) OR A GENERIC NUMBER (IE CCT7), CCT 7 INDICATES THAT THE LIGHTING OR DEVICE IS TO BE CONNECTED TO 1 OF 7 EXISTING CIRCUITS IN THE AREA THAT HAS BECOME FREE AFTER DEMOLITION. THE CONTRACTOR SHALL BALANCE LOADS AND SHUFFLE BREAKERS AFTER THE PANEL LOADS HAVE BEEN CONNECTED TO EQUALLY LOAD EACH PHASE.	
10. WHERE EXISTING LIGHTING CIRCUITS HAVE BEEN REUSED, CONTRACTOR SHALL VERIFY EXISTING VOLTAGE OF CIRCUITS PRIOR TO SUBMITTING ANY SHOP DRAWINGS OR ORDERING OF FIXTURES, SENSORS, CONTROLS, ETC. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IN FIXTURE VOLTAGE AND EXISTING CIRCUIT VOLTAGE.	

FIRE ALARM	
1. ALL NEW FIRE ALARM DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH CAN/ULC 554.	
2. FIRE ALARM DEVICES SHALL BE REVERIFIED IN ACCORDANCE WITH CAN/ULC 5537.	
3. FIRE ALARM GRAPHIC SHALL BE UPDATED IN ALL LOCATIONS TO REFLECT THE UPDATED LAYOUT OF THE FIRE ALARM SYSTEM.	
4. CONNECT ALL ASSOCIATED ALARM, SUPERVISORY ZONE WIRING, AND SIGNAL CIRCUIT WIRING ETC TO FIRE ALARM PANEL.	
5. ALL WIRING TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE ONTARIO ELECTRICAL SAFETY CODE.	
6. WHERE FIRE PROTECTION AND LIFE SAFETY SYSTEMS, AND SYSTEMS WITH FIRE PROTECTION AND LIFE SAFETY FUNCTIONS ARE INTEGRATED WITH EACH OTHER, THE SYSTEMS SHALL BE TESTED AS A WHOLE IN ACCORDANCE WITH CAN/ULC 51001, "INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS", TO VERIFY THAT THE SYSTEMS HAVE BEEN PROPERLY INTEGRATED.	

SEISMIC NOTES	
1. PROVIDE ALL LABOUR AND MATERIALS NECESSARY FOR THE SEISMIC RESTRAINT AND ANCHORAGE FOR ALL ELECTRICAL EQUIPMENT, LIGHT FIXTURES, CONDUITS, RACEWAYS, ETC. TO CONFORM WITH ONTARIO BUILDING CODE (OBC) 4.1.8.17 AND ALL OTHER APPLICABLE REGULATIONS. THE CONTRACTOR SHALL RETAIN AND PAY FOR SPECIALIST SEISMIC ENGINEER TO DESIGN AND INSPECT THE SEISMIC RESTRAINTS OF THE ELECTRICAL SYSTEM COMPONENTS COVERED UNDER DIVISION 26, 27, 28 FOR THIS CONTRACT.	
2. PROVIDE SEISMIC RESTRAINTS INCLUDING BOLTS, SLACK CABLE BRACES AND MISCELLANEOUS FRAMING AND CONNECTIONS. EQUIPMENT MANUFACTURER SHALL BE RESPONSIBLE FOR ENSURING THAT THE EQUIPMENT HAS ADEQUATE STRENGTH FOR SEISMIC RESTRAINTS AND ANCHORAGE OF EQUIPMENT FRAMING. FOR TRANSFORMERS PROVIDE VIBRATION ISOLATORS IN SUCH A WAY THAT VIBRATION ISOLATION IS MAINTAINED TOGETHER WITH SEISMIC RESTRAINT. FOR SUSPENDED EQUIPMENT PROVIDE CABLE OR RIGID BRACES TO RESTRAIN EQUIPMENT AGAINST SEISMIC LOADS. FOR LUMINAIRES SUSPENDED IN ACOUSTIC CEILINGS PROVIDE INDEPENDENT SUPPORT FROM STRUCTURE USING CABLES, WIRES OR CHAINS. WHERE DRILLING OF THE STRUCTURE IS REQUIRED FOR ANCHORAGE, THE DRILLING SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER.	
3. SUBSTANTIAL COMPLETION WILL NOT BE CONSIDERED WITHOUT THE SUBMISSION OF A SIGNED AND SEALED LETTER OF ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW, AS REQUIRED BY THE OBC. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADDITIONAL COMPENSATION ARISING FROM THE DIRECTIONS GIVEN BY THE SEISMIC ENGINEER FOR SEISMIC RESTRAINT AND ANCHORAGE OF THE ELECTRICAL SYSTEMS.	

GENERAL NOTES	
1. THE ELECTRICAL DRAWINGS REPRESENT A PORTION OF THE CONTRACT. THE CONTRACTOR IS TO FAMILIARIZE THEMSELV WITH ALL OF THE DRAWINGS IN THE PACKAGE AS SOME WORK MAY BE SHOWN ON OTHER DRAWINGS IN THE PACKAGE. CONTRACTOR IS TO DETERMINE FULL EXTENT OF PROJECT PRIOR TO SUBMITTING BID.	
2. THE DRAWINGS ARE NOT TO BE SCALED FOR INSTALLATION PURPOSES. ALL MEASUREMENTS ARE TO BE OBTAINED FROM ARCHITECTURAL PLANS, ELEVATIONS, SHOP DRAWINGS OR BE OBTAINED FROM FIELD MEASUREMENTS.	
3. CONTRACTOR IS TO REVIEW ARCHITECTURAL DRAWINGS AND PROVIDE ALL NECESSARY PARTS AND ACCESSORIES AND FIRESTOPPING AS REQUIRED TO CONFORM WITH ARCHITECTURAL FIRE RATINGS.	
4. CONTRACTOR IS TO REMOVE ALL EXISTING DEAD AND ABANDONED CONDUIT AND WIRING BACK TO SOURCE, WHERE NOT POSSIBLE TO REMOVE EXISTING CONDUIT, CONDUIT IS TO BE LEFT BEHIND AND EXISTING WIRE IS TO BE REMOVED AND REPLACED WITH A PULL ROPE.	
5. CONTRACTOR IS TO PROVIDE ELECTRONIC REVIT "AS-BUILT" DRAWINGS IN .RVT AND PDF FORMAT AT THE COMPLETION OF THE PROJECT. VERSION OF REVIT FILES TO BE CONFIRMED WITH PRIME CONSULTANT AND PROVIDED TO MATCH ACCORDINGLY.	
6. UNLESS NOTED OTHERWISE ALL WIRING SHALL BE IN CONDUIT AND CONCEALED IN WALLS AND CEILING SPACES. BX IS PERMITTED IN SPECIAL CIRCUMSTANCES AND SHORT DROPS FROM JUNCTION BOXES TO LIGHT FIXTURES, REFER TO SPECIFICATIONS. CONDUIT RUNS ARE TO BE PARALLEL TO WALL STUDS AND DROP FROM JUNCTION BOXES MOUNTED IN THE CEILING SPACE. HORIZONTAL RUNS IN WALLS WILL ONLY BE ACCEPTED UNDER SPECIAL CIRCUMSTANCES (IE OFFSET TO AVOID STRUCTURAL ABOVE) WITH WRITTEN APPROVAL FROM THE OWNER/CONSULTANT.	
7. ALL DATA/COMM WIRING FROM EACH OUTLET IS TO BE PROVIDED IN MIN. 1" (25mm) CONDUITS FROM OUTLET TO THE SOURCE (BACK AND/OR BOX BLOCK). CONTRACTOR CAN GROUP CABLEING AND INSTALL A LARGER RUN BACK TO THE SOURCE. WHERE CABLE IS PERMITTED TO RUN FREE-AIR, A CONDUIT SHALL BE INSTALLED FROM THE OUTLET INTO AN ACCESSIBLE CEILING SPACE. PROVIDE BUSHINGS AT TOP OF WALL AND TRANSITION TO J-HOOKS (WITHIN ROOM) OR CABLE TRAY (AT CORRIDOR). CABLE IS NOT PERMITTED TO BE LAYING ON CEILING. COMM WIRING SHALL BE IN CONDUIT FOR ALL EXPOSED AREAS. FREE AIR COMM WIRING TRANSITIONING FROM ACCESSIBLE CEILINGS TO EXPOSED CEILINGS SHALL BE IN CONDUIT THROUGHOUT THE EXPOSED AREA. PROVIDE 12" (300mm) STUBS INTO THE EXPOSED AREAS WITH BUSHINGS. CONDUIT SHALL NOT EXCEED 40% FILL.	
8. UNLESS SPECIFICALLY NOTED AS "CABLEING BY OTHERS", THE CONTRACTOR SHALL INCLUDE FOR ALL CABLEING TO DEVICES, OUTLETS, ETC AS SHOWN FOR A COMPLETE AND FUNCTIONING SYSTEM(S).	
9. CONTRACTOR IS TO MAINTAIN POWER AND COMMUNICATION CIRCUITS IN AREAS OUTSIDE OF THE CONSTRUCTION AREA. PROVIDE TEMPORARY CONNECTIONS AS REQUIRED, COORDINATE WITH OWNER.	
10. EQUIPMENT BEING REMOVED AND NOT BEING REUSED REMAIN THE PROPERTY OF THE OWNER AND IS TO BE STORED ON SITE. ANY EQUIPMENT THE OWNER DEEMS NO INTEREST IN IS TO BE DISPOSED OF IN A LAWFUL AND SAFE MANNER BY THIS TRADE.	
11. CONTRACTOR IS TO REFER TO ARCHITECTURAL PLANS AND CEILING LAYOUTS TO VERIFY THAT NO INTERFERENCES EXIST PRIOR TO THE INSTALLATION OF FIXTURES AND DEVICES IN WALLS AND CEILINGS.	

DRAWING LIST	
E000	GENERAL NOTES, LEGENDS AND DRAWING LIST

SENSOR NOTES AND SCHEDULE	
GENERAL NOTES: 1. ALL DEVICES AND SENSORS ARE TO HAVE SHOP DRAWINGS SUBMITTED TO THE CONSULTANT FOR REVIEW AND COMMENT PRIOR TO ORDERING. 2. ALL SENSORS ARE TO BE IN COMPLIANCE WITH NEMA WD 7-2011. ANY SENSORS NOT IN COMPLIANCE WILL BE REJECTED. 3. PROVIDE ALL SENSORS, POWER PACKS AND RELAY UNITS AS REQUIRED FOR A COMPLETE INSTALLATION. PASSIVE INFRARED SENSOR, ULTRASONIC AND MULTI TECHNOLOGY OCCUPANCY SENSORS SHALL BE AS NOTED BELOW (REFER TO PLANS FOR DEVICE LAYOUT). PART NUMBERS SHOWN ARE GENERAL, FOR DEVICE ONLY. 4. THIS CONTRACTOR SHALL ALLOW FOR ON SITE ADJUSTMENTS OF TIME DELAY, AIMING AND SENSITIVITY. 5. FINAL PLACEMENT OF SENSORS SHALL BE CONFIRMED ON SITE WITH ALL PIPING, DUCTWORK, EQUIPMENT, ETC. PRIOR TO ROUGH-IN, TO ENSURE CLEAR VIEW OF THE ENTRANCE DOOR AND THE OVERALL SPACE. THIS CONTRACTOR TO REFER TO AND FOLLOW MANUFACTURERS SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR PLACEMENT LOCATIONS AND SENSOR COVERAGE. 6. CEILING MOUNTED SENSORS SHALL BE AT AT CEILING LEVEL WHERE CEILING EXISTS. WHERE CEILING IS NOT PRESENT SENSORS TO BE MOUNTED AT HEIGHT OF PARTITIONS. WALL/CORNER MOUNTED SENSORS SHALL BE MOUNTED 8'-0" A.F.F. WALL STATION SENSORS SHALL BE AS PER SPECIFICATIONS AND STANDARD SWITCH LOCATIONS. ALL MOUNTING HEIGHTS ARE TO BE CONFIRMED ON SITE AND ADJUSTED ACCORDINGLY TO ENSURE PROPER COVERAGE. 7. APPROVED ALTERNATE BY: WATTSTOPPER, LUTRON, H-MOSS, SENSORSWITCH. SENSORS BEING SUBMITTED AS EQUALS SHALL MEET SPECIFIED CAPABILITIES, COVERAGE(S), SENSITIVITY ADJUSTMENT, TIME DELAYS, ETC. AS OUTLINED ABOVE AND AS PER SPECIFICATIONS. SHALL AN ALTERNATE FAIL TO MEET INTENT OF DESIGN, CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE ADDITIONAL SENSORS AND OR PARTS TO MEET INTEND OF DESIGN AND FUNCTIONALITY. 8. ELECTRICAL CONTRACTOR SHALL ALLOW FOR TRAINING AND EXPLANATION OF CONTROLLED SYSTEMS TO END USER. 9. ELECTRICAL CONTRACTOR TO ENGAGE THIRD PARTY FOR FUNCTIONAL TESTING OF LIGHTING CONTROL DEVICES AND CONTROL SYSTEM AND PROVIDE CERTIFICATE OF ACCEPTANCE TO ENGINEER UPON COMPLETION PRIOR TO OCCUPANCY.	
ITEM	DESCRIPTION
OS-1	WALL MOUNTED, DUAL TECH, SINGLE LEVEL SENSOR IN AREAS AS SHOWN. SENSOR TO BE SET FOR VACANCY MODE FOR MANUAL 'ON' VIA BUILT-IN PUSH BUTTON AND AUTOMATIC 'OFF' AFTER PRESET TIME. 180" COVERAGE PATTERN UP TO 1000 SQ.FEET. COOPER GREENGATE CAT.# QNW-D-100T-MV-N-W OR APPROVED EQUAL
OS-2	WALL MOUNTED, DUAL TECH, SINGLE LEVEL SENSOR IN AREAS AS SHOWN. SENSOR TO BE SET FOR VACANCY MODE FOR MANUAL 'ON' VIA BUILT-IN PUSH BUTTON AND AUTOMATIC 'OFF' AFTER PRESET TIME. 180" COVERAGE PATTERN UP TO 1000 SQ.FEET. COOPER GREENGATE CAT.# QNW-D-100T-MV-N-W OR APPROVED EQUAL

EMERGENCY LIGHTING FIXTURE SCHEDULE	
1. CONTRACTOR IS TO INCLUDE FOR ALL ACCESSORIES AS REQUIRED FOR A FULL AND COMPLETE INSTALLATION. PARTS NUMBERS SHOWN ARE GENERALLY FOR FIXTURE ONLY. REFER TO ARCHITECTURAL CEILING SCHEDULE FOR CEILING TYPES. 2. INSTALLATION OF EMERGENCY LIGHTING AND UNIT EQUIPMENT SHALL BE ACCORDING TO MANUFACTURERS RECOMMENDATIONS AND ACCORDING TO CODE REQUIREMENTS. 3. EMERGENCY BATTERIES SHALL BE SIZED TO MAINTAIN CONNECTED LOAD FOR MINIMUM 1/2 HOUR. 4. FOR ALL EXIT SIGNS REFER TO FLOOR PLANS FOR SINGLE OR DOUBLE FACE, CEILING RECESSED OR WALL MOUNTED. 5. ALL EMERGENCY LIGHTING AND EQUIPMENT ARE TO HAVE SHOP DRAWINGS SUBMITTED TO THE CONSULTANT PRIOR TO ORDERING FOR APPROVAL. CONTRACTOR MUST INCLUDE SHOP DRAWINGS FOR ALL LAMPS BEING INSTALLED WITH FIXTURES. 6. EQUIPMENT BEING SUBMITTED AS AN APPROVED EQUAL ARE TO BE SUBMITTED TO THE CONSULTANT FOR APPROVAL NO LESS THAN 5 BUSINESS DAYS BEFORE CLOSING. SUBMITTALS SHALL BE CLEARLY LABELLED AND INCLUDE COMPLETE FIXTURE CUTS STATING INCLUDED OPTIONS AND ACCESSORIES. SUBMITTALS NOT MEETING THIS CRITERIA WILL BE REJECTED. 7. THE CONTRACTOR SHALL INCLUDE FOR TWO (2) SPARE EXIT SIGNS TO BE INSTALLED AS DIRECTED BY OWNER/ENGINEER/BUILDING OFFICIAL. UNUSED SPARE SIGNS SHALL BE TURNED OVER TO OWNER IF NOT REQUIRED. 8. PRIOR TO THE INSTALLATION OF EXIT SIGNS, THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO ENSURE THE EXIT SIGN(S) IS NOT OBSTRUCTED (IE BLOCKED BY BULKHEADS, LIGHTS, DUCTS, ETC). THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND REQUEST INSTRUCTION TO COMPLETE THE INSTALLATION SHOULD AN OBSTRUCTION BE PRESENT. THE SIGN IS TO BE CLEARLY VISIBLE FROM A DISTANCE.	
ITEM	DESCRIPTION
EXIT SIGN	SELF-POWERED EMERGENCY RUNNING MAN EXIT SIGN C/W DIRECTIONAL PICTOGRAMS FOR ON-SITE DIRECTION SELECTION. 1-1.5W LED 120VAC, 12VDC. REFER TO FLOOR PLANS FOR SINGLE OR DOUBLE FACE, CEILING RECESSED OR WALL MOUNT. AIMLITE RPALW SERIES RPALW-x-M-WHT-BAT STANPRO RMWL SERIES RMXLWVH-IB LUMACELL LA SERIES LAXWS SURFACE MOUNTED BATTERY UNIT C/W TWIN HEADS AS INDICATED. MOUNTED AT 12" BELOW CEILING OR 10'-0" A.F.F. 2-3W LED PAR18 (2-6W MR16LED), 120VAC, 12VDC. UNIT TO BE C/W AUTO-TEST AND BATTERY DISCONNECT. AIMLITE EBST SERIES EBST-12-250-2SM3WLJ-WHT-ATD-BTD STANPRO SL SERIES SLC-12-250-2H3WLJ-WH-AT-BD LUMACELL RG5 SERIES RG125-250-2LD10-AT-LD OR APPROVED EQUAL REMOTE EMERGENCY SINGLE AND DOUBLE HEAD AS INDICATED ON PLANS. 3W LED PAR18 (6W MR16LED), 12VDC. AIMLITE RMSM1-6-12-3WLJ-WHT & RMSM2-6-12-3WLJ-WHT STANPRO N-1-6-12-3WLJ-WHT & N-2-6-12-3WLJ-WHT LUMACELL MQM1LD10 & MQM2LD10 OR APPROVED EQUAL
EMERG. BATTERY UNIT C/W EMERG. HEADS	
EMERG. REMOTE HEADS	
COMBO. EXIT/ EMERG. LIGHTS	RUNNING MAN EXIT SIGN C/W PICTOGRAMS FOR ON-SITE DIRECTION SELECTION AS INDICATED AND TWIN HEADS. 1-1.5W LED, 3W LED PAR18 (6W-MR16LED), 120VAC. REFER TO FLOOR PLANS FOR SINGLE OR DOUBLE FACE, CEILING RECESSED OR WALL MOUNT. UNIT TO BE SELF-POWERED & C/W AUTO-TEST. AIMLITE CAT.# CARPW1250-x-M-2SM3LJ-WHT-ATD-BTD STANPRO CAT.# PRWL1050-x-2N3LJ-WH-AT-BD LUMACELL CAT.# LAC-x-W-1250-2LD10-AT OR APPROVED EQUAL

LIGHTING FIXTURE NOTES				
GENERAL NOTES: 1. CONTRACTOR IS TO INCLUDE FOR ALL ACCESSORIES AS REQUIRED FOR A FULL AND COMPLETE INSTALLATION. PARTS NUMBERS SHOWN ARE GENERALLY FOR FIXTURE ONLY. REFER TO ARCHITECTURAL CEILING SCHEDULE FOR CEILING TYPES AND PROVIDE REQUIRED ACCESSORIES (IE DRYWALL FLANGE KIT, ETC). DISCREPANCIES BETWEEN THE DESCRIPTION AND PART NUMBER SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO SUBMITTING A BID. 2. THE CONTRACTOR IS TO ALLOW FOR NORMAL DELIVERY ON FIXTURES (6-8 WEEKS FROM ACCEPTANCE OF SHOP DRAWINGS). FIXTURES FROM A QUICK SHIP PROGRAM WILL BE NOTED WHERE APPLICABLE. CONTRACTOR IS TO SUBMIT SHOP DRAWINGS FOR FIXTURES AS SOON AS POSSIBLE TO AVOID DELAY OF THE PROJECT. ALTERNATES WILL NOT BE ACCEPTED TO EXPEDITE A SCHEDULE. 3. PENDANT AND LINEAR FIXTURES SHOWN AS END TO END ARE TO BE ORDERED AS CONTINUOUS RUN FIXTURES UNLESS SPECIFICALLY NOTED OTHERWISE. FIXTURES ARE GENERALLY LISTED AS A MODULE TO CLARIFY THE BALLAST AND LAMP REQUIRED FOR EACH MODULE. 4. CONTRACTOR SHALL SUPPLY TO OWNER AND/OR CONSULTANT ANY DOCUMENTATION AS REQUIRED FOR OWNER TO APPLY FOR ENERGY INCENTIVES INCLUDING BUT NOT LIMITED TO BILLS OF SALE, ETC. 5. CONTRACTOR SHALL VERIFY AND INCLUDE FOR MULTIPLE BALLASTS REQUIRED FOR MULTIPLE SWITCHING. 6. ALL FIXTURES ARE TO HAVE SHOP DRAWINGS SUBMITTED TO THE CONSULTANT PRIOR TO ORDERING FOR GENERAL REVIEW. CONTRACTOR MUST INCLUDE SHOP DRAWINGS FOR ALL LAMPS BEING INSTALLED WITH FIXTURES. 7. ALL FIXTURES TO BE 4100K. 8. DIMMERS SHALL BE COMPATIBLE WITH LIGHT FIXTURE AND BE CAPABLE OF 0-100% OPERATION. ELV DIMMERS TO BE PROVIDED FOR ELECTRONIC OR LED FIXTURES. DIMMER SHALL BE BY LUTRON OR APPROVED EQUAL. 9. FIXTURES BEING SUBMITTED AS AN APPROVED EQUAL ARE TO BE SUBMITTED TO THE CONSULTANT FOR APPROVAL NO LESS THAN 5 BUSINESS DAYS BEFORE CLOSING. SUBMITTALS SHALL BE CLEARLY LABELLED AND INCLUDE COMPLETE FIXTURE CUTS STATING INCLUDED OPTIONS, ACCESSORIES AND FIXTURE EFFICIENCY. SUBMITTALS NOT MEETING THIS CRITERIA WILL BE REJECTED. IES FILES FOR FIXTURES MUST HAVE AN IES LAB CERTIFICATION.				
ITEM	DESCRIPTION	MODEL #	LUMENS / COLOUR	VOLTAGE /WATTAGE
A	4' (1219mm) CHAIN SUSPENDED LED STRIP LIGHT STYLE LIGHT FIXTURE. DIE FORMED COLD ROLLED STEEL CONSTRUCTION. WIDE DISTRIBUTION LENS. 0-10V DIMMING DRIVER STANDARD.	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: CLX L48 7000LM SEF WDL WD MVOLT GZ10 40K 80CRI WH OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: CLX L48 5000LM SEF FLD MVOLT GZ10 40K 80CRI WH OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZL10 L48 5000LM FST MVOLT 35K 80CRI WH OR SIMILAR	NOMINAL 7,000 LUMENS / 4100K	120 V / 46 W
B	4' (1219mm) SURFACE MOUNTED LED STRIP LIGHT STYLE LIGHT FIXTURE. DIE FORMED COLD ROLLED STEEL CONSTRUCTION. FLAT DIFFUSE DISTRIBUTION LENS. 0-10V DIMMING DRIVER STANDARD.	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: CLX L48 5000LM SEF FLD MVOLT GZ10 40K 80CRI WH OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZL10 L48 5000LM FST MVOLT 35K 80CRI WH OR SIMILAR	NOMINAL 5,000 LUMENS / 4100K	120 V / 32 W
C	4' (1219mm) SURFACE MOUNTED LED STRIP LIGHT STYLE LIGHT FIXTURE. DIE FORMED COLD ROLLED STEEL CONSTRUCTION. DROP LENS. 0-10V DIMMING DRIVER STANDARD.	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZBL12 48L ADP GZ10 LP835 OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZBL12 33L ADP GZ10 LP835 OR SIMILAR	NOMINAL 5,000 LUMENS / 3500K	120 V / 41 W
D	RECESSED MOUNTED 2x4 LED LOW PROFILE TROFFER STYLE CENTER BASKET FIXTURE, SHALLOW EXTRUDED ALUMINUM HOUSING, PRECISION FORMED OPTICAL ASSEMBLY WITH DIRECT OPTICAL DISTRIBUTION, 0-10V DIMMING DRIVER STANDARD	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZBLT4 48L ADP GZ10 LP835 OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZBLT2 33L ADP GZ10 LP835 OR SIMILAR	NOMINAL 4000 LUMENS / 3500K	120 V / 38 W
E	RECESSED MOUNTED 2x2 LED LOW PROFILE TROFFER STYLE CENTER BASKET FIXTURE, SHALLOW EXTRUDED ALUMINUM HOUSING, PRECISION FORMED OPTICAL ASSEMBLY WITH DIRECT OPTICAL DISTRIBUTION, 0-10V DIMMING DRIVER STANDARD	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: ZBLT2 33L ADP GZ10 LP835 OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: LDN4 35/10 LD4 AR LSS TRW MVOLT GZ10 OR SIMILAR	NOMINAL 3000 LUMENS / 3500K	120 V / 26 W
F	RECESSED MOUNTED DOWNLIGHT STYLE, 4" APERTURE LED FIXTURE C/W MEDIUM BEAM REFLECTOR, WHITE POLYMER TRIM RING AND SPECULAR CLEAR FINISH. STANDARD 0-10V DIMMING DRIVER, 3500K.	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: LDN4 35/10 LD4 AR LSS TRW MVOLT GZ10 OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: LDN4 35/10 LD4 AR LSS TRW MVOLT GZ10 OR SIMILAR	NOMINAL 1000 LUMENS / 3500K	120 V / 10 W
G	RECESSED MOUNTED LED SHOWER TRIM LED FIXTURE C/W ONE PIECE WHITE POLYMER Baffle, RING AND LENS, 4" APERTURE DOWNLIGHT HOUSING, LED LIGHT ENGINE, 120V DRIVER.	BASE OF DESIGN: GOTHAM LIGHTING CAT. No.: EVO45H 35/10 07 DFF SMO MVOLT EZ10 OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: WPX1 LED P1 40K MVOLT OR SIMILAR	NOMINAL 750 LUMENS / 3500K	120 V / 8 W
H	WALL MOUNTED, FULL CUT-OFF, DIE-CAST ALUMINUM CONSTRUCTION, MOUNTED AT MAN DOOR (8' AFG TYPICAL). POLYESTER POWDER COAT FINISH	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: WPX1 LED P1 40K MVOLT OR SIMILAR BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: WDGE2 LED P3 40K 80CRI VW MVOLT OR SIMILAR	NOMINAL 1500 LUMENS / 4100K	120 V / 11 W
J	WALL MOUNTED, FULL CUT-OFF, LED ARCHITECTURAL AREA LIGHT FIXTURE, 0-10V DIMMING DRIVER STANDANARD. DIE-CAST ALUMINUM HOUSING, VISUAL COMFORT OPTICS	BASE OF DESIGN: LITHONIA LIGHTING CAT. No.: WDGE2 LED P3 40K 80CRI VW MVOLT OR SIMILAR	NOMINAL 3000 LUMENS / 4100K	120 V / 23 W

NO.	DATE	ISSUANCE
1	2024.12.10	ISSUED FOR PERMIT
NO.	DATE	ISSUANCE
DO NOT SCALE DRAWINGS. CALL FOR ANY CLARIFICATIONS THAT ARE REQUIRED. FIELD VERIFY AT ALL BUILT CONDITIONS ALL DWG.'S ARE TO BE READ IN COLOUR ORIGINAL PAGE SIZE ARCH 'D' - 24" x 36"		
CITY OF BRANTFORD		
SEI Electrical Engineering 12 Argyle Street N., Caledonia, ON, N3W1B6 www.sei-ee.com		
STAMP ARCH:	STAMP STRUCT.	
LICENSED PROFESSIONAL ENGINEER K. SEGUIN DATE: 12/10/24 PROVINCE OF ONTARIO		
PROJECT TITLE: GRETZKY GOLF COURSE MAINTENANCE BUILDING 320 BALMORAL DRIVE BRANTFORD, ON N3V 1E6		
DRAWING TITLE: SCHEDULES		
CHECKED BY: KS	DRAWN BY:	
DRAWING SCALE:	DRAWING NO.:	
PROJECT NO.: 23-183		E001

	NO.	DATE	ISSUANCE
1. GENERAL 1. THIS SPECIFICATION SHALL APPLY TO AND GOVERN ALL WORK OF DIVISION 16. THE ELECTRICAL CONTRACTOR SHALL BE A SUBCONTRACTOR TO THE GENERAL CONTRACTOR AND HIS BID SHALL BE TENDERED DIRECTLY TO THE GENERAL CONTRACTOR. THE CONTRACTOR SHALL SUPPLY, INSTALL, WIRE AND CONNECT ALL EQUIPMENT, ACCESSORIES, DEVICES ETC SHOWN UNLESS SPECIFICALLY NOTED OTHERWISE. SHOULD THE CONTRACTOR BE UNSURE, THEY ARE TO SUBMIT A QUESTION 3 WORKING DAYS PRIOR TO TENDER CLOSE TO HAVE AN ADDENDUM ISSUED TO CLARIFY THE DEVICE, EQUIPMENT OR WORK SCOPE IN QUESTION. 2. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL DRAWINGS AND SPECIFICATIONS PRIOR TO TENDER SUBMITTAL. ELECTRICAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS. ANY DISCREPANCIES BETWEEN THESE SPECIFICATIONS AND THE DRAWINGS THAT CAUSES DOUBT AS TO THE TRUE MEANING OF INTENT OF THE DRAWINGS AND SPECIFICATIONS, A RULING SHOULD BE OBTAINED FROM THE ENGINEER PRIOR TO TENDER SUBMITTAL. NO ALLOWANCE WILL BE MADE FOR FAILURE TO DO SO. IF CLARIFICATION CAN NOT BE OBTAINED IN TIME, THE CONTRACTOR SHALL INCLUDE FOR THE COSTLER INSTALLATION IN THEIR BID. 3. LIABILITY INSURANCE: 1. OBTAIN AND CARRY PROPER INSURANCE TO FULLY PROTECT BOTH THE OWNER AND HIMSELF FROM ANY AND ALL CLAIMS DUE TO ACCIDENTS, MISFORTUNES, ACTS OF GOD, ETC. 4. CODES, PERMITS AND INSPECTION 1. BE RESPONSIBLE FOR AND OBTAIN ALL PERMITS, INSPECTION, ETC., AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION OVER THIS WORK AND PAY FOR ALL FEES RELATED TO SAME. 2. DELIVER ALL PERMITS TO THE ENGINEER AS SOON AS THEY BECOME AVAILABLE. 5. CLOSE OUT DOCUMENTS AND AS-BUILT DRAWINGS: 1. THE CONTRACTOR SHALL SUBMIT AN ENQUIRY TO THE ARCHITECT/OWNER TO OBTAIN THE FINAL ROOM NAMES AND NUMBERS TO BE USED IN ALL THE CLOSE OUT DOCUMENTS, REPORTS, FIRE ALARM/NURSE CALL PROGRAMMING, PANEL SCHEDULES ETC. FAILURE TO USE THE FINAL NAMES AND NUMBERS WILL REQUIRE THE CONTRACTOR TO REPLACE DOCUMENTATION/REPROGRAMMING AS REQUIRED AT THEIR EXPENSE. THEY SHALL KEEP A SEPARATE SET OF WHITE PRINTS ON THE SITE AND NOTE ALL CHANGES AND DEVIATIONS FROM THE ORIGINAL DESIGN. DEVICES ETC NOTED AS "EX" (EXISTING) AND "REL" (RELOCATED) ARE TO HAVE THE CIRCUIT TRACED AND DESIGNATED ON THE DRAWINGS. DEVICES ETC DESIGNATED AS CONNECT TO EXISTING CIRCUIT IN AREA ARE TO HAVE THE CIRCUIT INDICATED ON THE PLANS. PROVIDE AS-BUILT DRAWINGS IN AUTOCAD FORMAT (MIN. RELEASE 2010), PDF FORMAT AND (2) TWO SETS OF THESE PLANS SHOWING ALL AS-BUILT CHANGES TO THE OWNER AT THE COMPLETION OF THIS CONTRACT AND BEFORE APPLYING FOR FINAL PAYMENT. (INCLUDE IN SLAB CONDUIT RUNS). SHOULD NO MARKUPS BE REQUIRED TENDER AND/OR SEALED PLANS BY THE ENGINEER WILL NOT BE ACCEPTED. 2. CLOSE OUT BINDERS SHALL BE PROVIDED WITH ALL TEST RESULTS, WARRANTY LETTERS AND SHOP DRAWINGS. A PDF COPY SHALL BE PROVIDED ALONG WITH THE HARD COPY VERSIONS. PDF VERSION SHALL BE ASSEMBLED VERSIONS WHERE POSSIBLE. SHOULD A DOCUMENT REQUIRE SCANNING, IT SHALL BE PROVIDED IN HIGH RESOLUTION AND BE CLEARLY LEGIBLE. ILLEGIBLE DOCUMENTS WILL NOT BE ACCEPTED. 6. CODES AND STANDARDS: (CURRENT EDITIONS) 1. DO COMPLETE INSTALLATION IN ACCORDANCE WITH C.S.A. C22.1 EXCEPT WHERE SPECIFIED OTHERWISE. 2. COMPLY WITH C.S.A. ELECTRICAL BULLETINS IN FORCE AT TIME OF TENDER SUBMISSION, WHILE NOT IDENTIFIED AND SPECIFIED BY NUMBER IN THIS DIVISION, ARE TO BE CONSIDERED AS FORMING PART OF RELATED C.S.A. PART II STANDARD. 3. DO OVERHEAD AND UNDERGROUND SYSTEMS IN ACCORDANCE WITH C.S.A. C22.3 NO. 1 EXCEPT WHERE SPECIFIED OTHERWISE. 4. ABBREVIATIONS FOR ELECTRICAL TERMS: TO C.S.A. T85. 5. COMPLY ALSO WITH THE FOLLOWING CODES: 1. ONTARIO ELECTRICAL SAFETY CODE 2. NATIONAL BUILDING CODE 3. ONTARIO BUILDING CODE 4. LOCAL HYDRO UTILITY REQUIREMENTS 5. CAN/ULC 5524, 5537 AND S1001 7. VISITING THE SITE: 1. VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE SITE CONDITIONS. REPORT ANY DEVIATION AND/OR CONFLICTS BETWEEN TENDER DOCUMENTS AND SITE CONDITIONS PRIOR TO SUBMITTING TENDER. 8. LOCATION OF OUTLETS: 1. CHANGE LOCATION OF OUTLETS, EQUIPMENT AT NO EXTRA COST OR CREDIT. PROVIDING DISTANCE DOES NOT EXCEED 10'-0" (3m) AND INFORMATION IS GIVEN BEFORE INSTALLATION. 9. CUTTING AND PATCHING: 1. PROVIDE ALL CUTTING, PATCHING AND PAINTING FOR ELECTRICAL WORK, UNLESS NOTED OTHERWISE. 10. EQUIPMENT AND MATERIAL: 1. ALL EQUIPMENT AND MATERIAL, UNLESS SPECIFICALLY NOTED OTHERWISE, SHALL BE NEW AND WITHOUT BLEMISH OR DEFECT. ALL MATERIAL AND EQUIPMENT SHALL BEAR U.L.C. OR C.S.A. LABELS. 11. WARRANTY: 1. WARRANTY ALL WORK AND APPARATUS INSTALLED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF SAME BY THE OWNER. 12. MAINTENANCE OF SERVICE: 1. PROVIDE ALL ACCESS AND MATERIALS NECESSARY TO ENSURE THAT POWER, LIGHTING AND ALL OTHER MISCELLANEOUS ELECTRICAL SERVICES ARE MAINTAINED IN FULL OPERATING CONDITION, IN ALL AREAS OF THE EXISTING BUILDING, DURING THE CONSTRUCTION PERIOD. DISCONNECT, MOVE, RELOCATE, AND RECONNECT CONDUIT AND WIRING AS NECESSARY TO ACCOMMODATE THE NEW WORK AND MECHANICAL INSTALLATION. 13. CLEANING 1. DO FINAL CLEANING. 2. AT TIME OF FINAL CLEANING, CLEAN EQUIPMENT SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. 3. VACUUM INSIDE OF ALL PANEL BOARDS, ETC., ON COMPLETION OF THE PROJECT. 14. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 1. SUBMIT SHOP DRAWINGS, PRODUCT DATA AND/OR SAMPLES FOR ALL EQUIPMENT, POWER DISTRIBUTION, POWER DEVICES, COMMUNICATIONS DEVICES, RACEWAY, LIGHT FIXTURES, EMERGENCY LIGHTING, ETC. THE DRAWINGS ARE TO BE REVIEWED AND STAMPED BY BOTH THE GENERAL AND ELECTRICAL CONTRACTOR PRIOR TO SUBMITTAL. 2. SHOP DRAWINGS SHALL INCLUDE ALL RELEVANT ACCESSORIES AND LAYOUTS WHERE REQUESTED. 3. SHOP DRAWINGS THAT ARE ILLEGIBLE AND OF POOR QUALITY WILL BE REJECTED. 4. SHOP DRAWINGS WILL BE REVIEWED AND RETURN MARKED "REVIEWED", "REVIEWED AS MODIFIED" OR "REVISE AND RESUBMIT". THE DRAWING REVIEW DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ITS ACCURACY OR FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. 5. INSTALLATION OF ANY EQUIPMENT SHALL NOT START UNTIL AFTER FINAL REVIEW OF SHOP DRAWINGS BY THE CONSULTANT HAS BEEN OBTAINED. 6. INCOMPLETE OR INCORRECT SHOP DRAWINGS THAT ARE REJECTED, WHICH ADVERSELY CAUSE OR RESULT IN ANY DELAY OF THE DELIVER SCHEDULE OF ANY EQUIPMENT SHALL BE THE CONTRACTORS RESPONSIBILITY. 7. IF INCORRECT SHOP DRAWINGS ARE SUBMITTED AND REJECTED ANY SUBSEQUENT DELIVERY DELAY WILL RESULT IN THE CONTRACTOR PROVIDING TEMPORARY FACILITIES UNTIL SAID EQUIPMENT IS DELIVERED AND INSTALLED AT NO EXTRA COST TO THE OWNER. 8. PROVIDE SPACE FOR SHOP DRAWING REVIEW STAMPS FOR THE CONTRACTOR AND CONSULTANT. THIS SPACE SHALL BE CLEAR OF ALL TECHNICAL INFORMATION AND SHALL NOT BE ON THE BACK OF ANY SHEETS. 9. SUBMIT SHOP DRAWINGS IN DIGITAL (PDF) FORMAT. 10. ONE (1) ORIGINAL COPY IN DIGITAL FORMAT (PDF) WILL BE RETURNED. ALL COPIES REQUIRED BY TRADES, SUPPLIERS OR OTHER CONSULTANTS WILL BE PROVIDED AND/OR PRINTED BY THE CONTRACTOR. 11. FAILURE TO SUBMIT SHOP DRAWINGS WILL NOT RELIEVE THIS CONTRACTOR FROM ENSURING THAT ALL INSTALLED MATERIALS OR DEVICES COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT ALL INSTALLED MATERIALS OR DEVICES ARE OF THE CORRECT TYPE AND TOTALING THE TOTAL CONTRACT AMOUNT. EACH ITEM IS TO BE BROKEN INTO MATERIAL AND LABOUR COSTS. 12. PROGRESS DRAWS, WHEN SUBMITTED, ARE TO BE ITEMIZED AGAINST EACH OF THE DRAW BREAKDOWNS AND SHALL BE IN TABLE FORM IDENTIFYING CONTRACT AMOUNT, AMOUNT OF THIS DRAWING, TIME TO DATE, REVISION, REVISION DATE. 3. BREAKDOWN SHALL FOLLOW, BUT NOT BE LIMITED TO; 1. PERMITS AND FEES 2. MOBILIZATION 3. DEMOLITION 4. DISTRIBUTION EQUIPMENT (IE. SWITCHBOARDS, PANELBOARDS, ETC.) 5. INCOMING FEEDERS AND CONDUITS 6. BRANCH WIRING CONDUITS 7. BRANCH WIRING 8. MECHANICAL EQUIPMENT WIRING 9. FIRE ALARM DEVICES 10. FIRE ALARM WIRING 11. FIRE ALARM WIRING AND CERTIFICATION 12. EXIT AND EMERGENCY LIGHTING 13. LIGHTING 14. LIGHTING CONTROLS 15. VOICE AND COMMUNICATION CONDUITS 16. VOICE AND COMMUNICATION WIRING AND TERMINATIONS 17. ACCESS CONTROL AND SECURITY 18. MISCELLANEOUS AND SPECIALTY EQUIPMENT (IE. PUBLIC ADDRESS, SOUND, ETC.) 4. ABOVE BREAKDOWNS MUST BE APPROVED BY THE CONSULTANT PRIOR TO SUBMISSION OF THE FIRST DRAW. MOBILIZATION AMOUNT MAY ONLY BE DRAWN WHEN ALL REQUIRED SHOP DRAWINGS HAVE BEEN REVIEWED BY THE CONSULTANT. 16. REVISIONS TO CONTRACT: 1. PROVIDE ITEMIZED LISTS OF MATERIALS/ASSOCIATED COSTS, LABOUR RATE/LABOUR FOR EACH ITEM, COPY OF MANUFACTURERS INVOICE, IF REQUESTED, FOR EACH ITEM GIVEN CHANGE NOTICE. 17. ROOF AND WALL OPENINGS: 1. LOCATION OF CONDUITS PASSING THROUGH ROOF AND WALLS TO BE COORDINATED WITH DIVISION 15. ALL OPENINGS TO BE MADE WATERTIGHT. 18. SCHEDULE OF CONSTRUCTION: 1. CONSULT GENERAL DIVISION FOR SCHEDULE OF CONSTRUCTION BEFORE COMMENCING WORK AND COORDINATE DETAILS WITH ENGINEER, OWNER AND ALL TRADES DURING CONSTRUCTION. 19. DIRECTORIES AND LABELLING: 1. IDENTIFY ALL ELECTRICAL EQUIPMENT. IDENTIFICATION SHALL CONSIST OF ENGRAVED LAMINOID NAMEPLATES HAVING BLACK BACKGROUND WITH WHITE LETTERS. FASTEN NAMEPLATES TO DEVICE USING SELF-TAPPING, COUNTERSUNK SCREWS. TAPE-TYPE NAMEPLATES WILL NOT BE ACCEPTED. 2. ALL RECEPTACLE COVER PLATES SHALL BE LABELED WITH TAPE-TYPE NAMEPLATES. THE LABEL SHALL INDICATE THE PANEL DESIGNATION AND CIRCUIT NUMBER. (IE A19), TAPE SHALL BE NEATLY TRIMMED ON EACH END AND PLACED PLUMB AND LEVEL ON THE FACE PLATE. LABELS SHALL HAVE A NEAT, CLEAN AND PROFESSIONAL APPEARANCE. LABELS NOT TRIMMED OR POORLY POSITIONED WILL NOT BE ACCEPTED. 3. ALL PANELS WITH CIRCUITS ADDED OR REMOVED SHALL HAVE NEW COMPUTER-GENERATED PANEL SCHEDULES PLACED IN THEM. SCHEDULE SHALL INDICATE PANEL DESIGNATION, WHERE PANEL IS FED FROM, VOLTAGE, PHASE, BRANCH CIRCUIT NUMBERS, BREAKER AMPERAGE AND CIRCUIT DESCRIPTION. 20. GROUNDING: 1. GROUND ALL EQUIPMENT IN ACCORDANCE WITH CODE REQUIREMENTS AND AS INDICATED. 2. GROUNDING CONDUCTORS: COPPER, INSULATED (GREEN); SIZE PER CODE. 3. GROUNDING LUGS, CONNECTORS: APPROVED GROUNDING TYPE. 4. ALL GROUND CONDUCTORS #8AWG OR SMALLER SHALL BE RUN IN EMT. 21. FIREPROOFING: 1. WHERE CABLES PASS THROUGH FLOORS OR FIRE RATED WALLS, PACK SPACE BETWEEN WIRING AND SLEEVE FULL WITH APPROVED RATED FIRE STOPS AND SEAL WITH CAULKING COMPOUND CONFORMING TO CGSB 19-GP-9MA. 22. MOUNTING HEIGHTS: 1. MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTRELINE OF EQUIPMENT UNLESS SPECIFIED OR INDICATED OTHERWISE. 2. IF MOUNTING HEIGHT OF EQUIPMENT IS NOT SPECIFIED OR INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION. 3. INSTALL ELECTRICAL EQUIPMENT AS SPECIFIED IN THE OBC FOR BARRIER FREE DESIGN. IF NOT NOTED, INSTALL AT FOLLOWING CENTRELINE HEIGHTS: 1. LOCAL SWITCHES: 3'-5" (1050mm). 2. WALL RECEPTACLES: 1. GENERAL: 1'-6" (450mm). 2. ABOVE TOP OF CONTINUOUS BASEBOARD HEATER: 1'0" (250mm). 3. ABOVE TOP OF COUNTERTOPS OR COUNTER SPLASH BACKS: 6" (150mm). 3. PANELBOARDS: AS REQUIRED BY CODE OR AS INDICATED. 4. TELEPHONE AND INTERPHONE OUTLETS: 1'-6" (450mm). 5. TELEVISION OUTLETS: 1'-6" (450mm). 6. FIRE ALARM PULL STATIONS: 3'-9" (1150mm). 23. LOAD BALANCE: 1. MEASURE PHASE CURRENT TO PANELBOARDS WITH NORMAL LOADS (LIGHTING) OPERATING AT TIME OF ACCEPTANCE. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND RECORD CHANGES. 2. MEASURE PHASE VOLTAGES AT LOADS AND ADJUST TRANSFORMER TAPS TO WITHIN 2% OF RATED VOLTAGE OF EQUIPMENT. 3. SUBMIT, AT COMPLETION OF WORK, REPORT LISTING PHASE AND NEUTRAL CURRENTS ON PANELBOARDS, DRY-CORE TRANSFORMERS AND MOTOR CONTROL CENTRES, OPERATING UNDER NORMAL LOAD. STATE HOUR AND DATE ON WHICH EACH LOAD WAS MEASURED, AND VOLTAGE AT TIME OF TEST. 24. SECURITY DOORS 1. THE CONTRACTOR SHALL INCLUDE FOR ALL WORK (CUTTING, PATCHING, CONDUIT, PULLING CABLE, EQUIPMENT INSTALLATION, ETC.) FOR SECURITY DOORS. MAGNETIC LOCK DOORS SHALL INCLUDE POWER FOR THE CONTROLLER AND CONDUIT/CABLING TO CONNECT TO THE KEY RESET SWITCH. CONFIRM LOCATION AND ROUTING PRIOR TO BID. ALL DOORS SHALL BE FULLY FUNCTIONAL AT COMPLETION OF PROJECT. WHERE SPECIFIED VENDORS ARE INDICATED, THE CONTRACTOR SHALL COORDINATE WITH THIS VENDOR AND INCLUDE FOR ALL WORK NOT IN THE SCOPE OF THE SPECIFIED VENDOR. CONTRACTOR SHALL MAKE ANY ADJUSTMENTS AFTER INSTALLATION AS REQUIRED BY THE OWNER. 2. REFER TO THE FIRE ALARM SECTION FOR VERIFICATION AND TESTING. DOORS SHALL BE TESTED AS A SYSTEM WITH THE FIRE ALARM AND OPERATION SHALL BE CONFIRMED PRIOR TO BRINGING CITY OFFICIALS, BUILDING OWNERS AND THE ENGINEER TO SITE TO WITNESS DOORS. 25. CONDUIT AND CABLE INSTALLATION: 1. INSTALL CONDUIT AND SLEEVES PRIOR TO POURING OF CONCRETE. SLEEVES THROUGH CONCRETE: SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT, AND PROTRUDING 2" (50mm). 2. IF PLASTIC SLEEVES ARE USED IN FIRE RATED WALLS OR FLOORS, REMOVE BEFORE CONDUIT INSTALLATION. 3. INSTALL CABLES, CONDUITS AND FITTINGS TO BE EMBEDDED OR PLASTERED OVER, NEATLY AND CLOSE TO BUILDING STRUCTURE SO FURRING CAN BE KEPT TO MINIMUM. 26. DEFINITIONS: 1. "CONCEALED" - HIDDEN FROM NORMAL SIGHT IN FURRED IN SPACES, SHAFTS, CEILING SPACES, WALLS, UNDERFLOOR. 2. "EXPOSED" - ALL ELECTRICAL WORK EXPOSED TO BUILDING OCCUPANTS. WIRE AND CABLING SHALL BE IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. 3. "PROVIDE" (AND ALL TENSES OF "PROVIDE") SUPPLY, INSTALL, WIRE AND CONNECT COMPLETE. 4. "INSTALL" (AND ALL TENSES OF "INSTALL") INSTALL WIRE AND CONNECT COMPLETE, PRODUCTS AND SERVICES SPECIFIED. 5. "SUPPLY" SUPPLY ONLY. 6. "OR APPROVED EQUAL" MATERIAL OR EQUIPMENT PROPOSED BY THE CONTRACTOR IN LIEU OF THAT SPECIFIED AS APPROVED BY THE CONSULTANT. MATERIAL OR EQUIPMENT SHALL MEET OR EXCEED THE SAME QUALITY, MATERIAL, EFFICIENCY, ETC AS THE SPECIFIED PRODUCTS. 7. "AS INDICATED" AS SHOWN ON DRAWINGS AND/OR NOTED IN SPECIFICATIONS. 27. MILLWORK 1. THE CONTRACTOR SHALL COORDINATE THE LOCATIONS OF THE ELECTRICAL DEVICES WITH THE MILLWORK DRAWINGS. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS AND SECTIONAL ELEVATIONS OF MILLWORK PRIOR TO ROUGH-IN. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES. 2. MILLWORK DRAWINGS SHALL INDICATE LOCATIONS OF ELECTRICAL OUTLETS, DEVICES ETC. 3. EXTRAS WILL NOT BE CONSIDERED FOR DEVICES INSTALLED IN THE INCORRECT LOCATION AND NOT INDICATED ON THE SHOP DRAWINGS. THE CONTRACTOR SHALL RELOCATE THAT DEVICE AT THEIR EXPENSE TO THE CORRECT LOCATION. 28. PHASING 1. THE CONTRACTOR SHALL REVIEW THE PHASING AS INDICATED ON ALL PLANS. THIS INCLUDES ARCHITECTURAL, MECHANICAL PLANS ETC IN THE ENTIRE DRAWING PACKAGE. 2. THE CONTRACTOR SHALL INCLUDE FOR TEMPORARY CONNECTIONS AS REQUIRED TO FACILITATE THE WORK. 3. THE CONTRACTOR SHALL INCLUDE FOR ALL WEEKEND AND PREMIUM TIME REQUIRED TO FACILITATE THE PHASING AS INDICATED IN THE PLANS PACKAGE. 2. PRODUCTS 1. ELECTRICAL EQUIPMENT 1. EQUIPMENT SHALL HAVE 1.0m (39") CLEARANCE IN FRONT OF SAID EQUIPMENT 2. ELECTRICAL EQUIPMENT RATED AT 1200A AND OVER SHALL HAVE 1.5m (59") CLEARANCE IN FRONT OF SAID EQUIPMENT. 3. ALL EQUIPMENT INSTALLED IN SPRINKLERED AREAS ARE TO BE COMPLETE WITH DRIP SHIELDS. 2. PANEL BOARDS 1. PANEL BOARDS: TO C.S.A. C22.2, NO. 29. LOADCENTRES ARE NOT ACCEPTABLE. 2. PANEL BOARDS ARE TO BE THE PRODUCT OF ONE (1) MANUFACTURER. 3. 120/208V-3 PHASE-4 WIRE PANEL BOARDS: BUS AND BREAKERS RATED FOR MINIMUM 10,000A (SYMMETRICAL) INTERRUPTING CAPACITY OR AS INDICATED ON THE DRAWINGS. 4. MAIN BREAKER SHALL OCCUPY A SEPARATE COMPARTMENT FROM BRANCH BREAKERS. PANELS WITH MAIN BREAKERS IN BRANCH BREAKER COMPARTMENT WILL NOT BE ACCEPTED. 5. SEQUENCE PHASE BUSSING WITH ODD NUMBERED BREAKERS ON LEFT AND EVEN ON RIGHT, WITH EACH BREAKER IDENTIFIED BY PERMANENT NUMBER IDENTIFICATION AS TO CIRCUIT NUMBER. 6. PANEL BOARDS: MAINS, NUMBER OF CIRCUITS, AND NUMBER AND SIZE OF BRANCH CIRCUIT BREAKERS AS INDICATED 7. TWO (2) KEYS FOR EACH PANEL BOARD AND KEY PANEL BOARDS ALIKE. 8. COPPER BUS WITH FULL SIZE COPPER MAINS AND NEUTRAL. 9. MAINS FOR BOLT-ON BREAKERS. 10. FINISH TRIM AND DOOR BACKED GRAY ENAMEL. PAINT TUB SAME AS DOOR. 11. COMPLETE CIRCUIT DIRECTORY WITH TYPEWRITTEN LEGEND SHOWING CIRCUIT LABEL, AMPERAGE AND PANEL LOCATION UNDER PLASTIC COVER. 12. EATON CUTLER HAMMER, SQUARE D, SIEMENS CANADA MANUFACTURE. 13. [PROVIDE A COORDINATION STUDY TO CONFIRM BREAKER INTERRUPTING CAPACITY PRIOR TO SUBMITTING SHOP DRAWINGS FOR PANELS.] 3. BREAKERS GENERAL 1. BOLT-ON MOLDED CASE CIRCUIT BREAKER, FULL MODULE (I.E. 1" MINIMUM WIDTH). QUICK-MAKE, QUICK-BREAK TYPE, FOR MANUAL AND AUTOMATIC OPERATION WITH TEMPERATURE COMPENSATION FOR 400C AMBIENT, (MINI-BREAKERS NOT ACCEPTABLE) 2. MAGNETIC INSTANTANEOUS TRIP ELEMENTS IN CIRCUIT BREAKERS, TO OPERATE ONLY WHEN THE VALUE OF CURRENT REACHES SETTING. 4. DISCONNECT SWITCHES FUSED AND UNFUSED 1. ENCLOSED MANUAL AIR BREAK SWITCHES IN NON-HAZARDOUS LOCATIONS: TO C.S.A. C22.2 NO. 4. 2. FUSE HOLDER ASSEMBLIES TO C.S.A. C22.2 NO. 39. 3. FUSIBLE AND NON-FUSIBLE DISCONNECT SWITCHES AS INDICATED. 4. PROVISION FOR PADLOCKING IN ON/OFF SWITCH POSITION BY THREE LOCKS 5. MECHANICALLY-INTERLOCKED DOOR TO PREVENT OPENING WHEN HANDLE IN "ON" POSITION 6. QUICK-WAKE, QUICK-BREAK ACTION. 7. ON/OFF SWITCH POSITION INDICATION ON SWITCH ENCLOSURE COVER. 8. C.S.A. ENCLOSURE 1 UNLESS NOTED OTHERWISE. 9. EATON CUTLER HAMMER, SQUARE D, SIEMENS CANADA MANUFACTURE. 5. CONDUCTORS 1. ALL CONDUCTORS SHALL BE COPPER UNLESS INDICATED OTHERWISE. 2. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS #8 AND LARGER SHALL BE STRANDED. 3. CONDUCTORS SHALL BE SIZED #12 AWG MINIMUM, EXCEPT FOR CONTROL CIRCUITS WHERE #14 AWG MINIMUM SIZE IS PERMITTED. FEEDER SIZES AS INDICATED. 4. PANEL FEEDER LENGTHS SHALL BE CONTRACTOR VERIFIED. 5. INSTALLATION PATHS 50 AS NOT TO EXCEED 3% VOLTAGE DROP ON INSTALLATION. FEEDERS EXCEEDING THE LENGTH OF THE ALLOWABLE AMPACITY SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BEGINNING ANY ROUGH-INS. 5. SIZE CONDUCTORS FOR A 2% MAXIMUM VOLTAGE DROP FROM OVERCURRENT DEVICE TO FARTHEST OUTLET. 6. CONDUCTOR INSULATION RATED FOR 600V MINIMUM UNLESS STATED OTHERWISE. 7. CONDUCTOR TYPES: 1. TWYS, TWO TO C.S.A. #C22.2 NO. 75 2. RWED RWALPO (XLPPE) TO C.S.A. #C22.2 NO. 38 3. TWYS, RWLP (XPE) - INSIDE BUILDING. 4. TWU, RWLP90 (XLPF) - CONDUCTORS DIRECT BURIED OR IN CONDUIT OUTSIDE BUILDING. 5. BX (ARMOURED CABLE) IS ONLY PERMITTED FOR LIGHT FIXTURE DROPS IN ACOUSTIC CEILINGS (MAX LENGTH 5'-0"), AND MAY BE USED IN HOLLOW PARTITIONS FOR SWITCH (AND/OR RECEPTACLE DROPS) OR SUSPENDED CEILING FOR FIXTURE DROPS ONLY. ANY DROPS SHALL NOT EXCEED 3.0m (10'-0"). AC-90 (BX ARMOURED CABLE) IS NOT TO BE INSTALLED IN OPEN CEILINGS OR ANY OTHER EXPOSED APPLICATION. ALL CABLES ARE TO BE PROPERLY FASTENED TO BUILDING STRUCTURE IN A NEAT AND PROFESSIONAL MANNER. [USE OF AC-90 IN METAL STUD CONSTRUCTION HOLLOW PARTITION IS TO BE LIMITED TO A MAXIMUM OF 3.0m (10'-0").] EXCESSIVE USE OF AC-90, IN THE OPINION OF THE ENGINEER, WILL REQUIRE ELECTRICAL CONTRACTOR TO REPLACE ALL NEW WIRING WITH PROPER CONDUIT AND WIRE AT CONTRACTORS EXPENSE. 6. FASTENINGS AND SUPPORTS 1. SUPPORT EQUIPMENT, CONDUIT OR CABLES USING CLIPS, SPRING-LOADED BOLTS, CABLE CLAMPS DESIGNED AS ACCESSORIES TO BASIC CHAIN MEMBERS. 2. INSTALL FASTENINGS AND SUPPORTS AS REQUIRED FOR EACH TYPE OF EQUIPMENT CABLES AND CONDUIT AND IN ACCORDANCE WITH MANUFACTURERS INSTALLATION. 7. CONDUITS 1. RIGID, GALVANIZED STEEL THREADED CONDUIT TO C.S.A. C22.2, NO. 45, SIZE AS INDICATED. 2. ELECTRICAL METALLIC TUBING (EMT) WITH COUPLINGS AND EXPANDED ENDS AS REQUIRED, TO C.S.A. C22.2, NO. 43, SIZE AS INDICATED. 3. RIGID PVC (UNPLASTICIZED) CONDUIT FOR EXPOSED, ABOVE GROUND WORK, TO C.S.A. C22.2, NO. 211.2, SIZE AS INDICATED. FLEXIBLE PVC IS NOT PERMITTED. 4. FLEXIBLE METAL CONDUIT AND LIQUID-TIGHT FLEXIBLE METAL CONDUIT TO C.S.A. C22.2, NO. 56. 5. EMT CONDUIT FITTINGS, IE. CONNECTORS, COUPLINGS, TO C.S.A. C22.2, NO. 18, ZINC-PLATED STEEL/MALLEABLE IRON CONSTRUCTION. ALL CONNECTIONS AND COUPLINGS TO BE SET SCREW TYPE, IE. CONCRETE TIGHT. 6. CONDUIT SIZES SHALL BE A MINIMUM OF 3/4" AND CONFORM TO ELECTRICAL SAFETY CODE. 7. WHERE SIZES ARE INDICATED AND THEY EXCEED CODE, THEY SHALL NOT BE REDUCED. 7. USE RIGID, GALVANIZED STEEL, THREADED CONDUIT WHERE CONDUIT IS SUBJECT TO MECHANICAL INJURY. 8. RUN PARALLEL TO OR PERPENDICULAR TO BUILDING LINES. 9. USE EMT FOR ALL WIRING FROM OUTLET BOX TO SOURCE. 10. INSTALL NYLON FISH WIRE IN EMPTY CONDUITS AND TERMINATE UNDER SCREW LEAVING 12" SLACK. TAG FISH WIRE IDENTIFYING SYSTEM. 11. DO NOT INSTALL CONDUIT PARALLEL TO STEAM OR HOT WATER LINES WITH A MINIMUM OF 1" (25 mm) AIR AT CROSS-OVER. 12. IN-SLAB CONDUIT: LOCATE TO SUIT REINFORCING STEEL. INSTALL IN CENTRE 1/2 OF SLAB. 13. PROVIDE AND INSTALL 4-38mm (4-1-1/2") SPARE CONDUITS UP TO CEILING SPACE FROM EACH FLUSH MOUNTED ELECTRICAL PANEL. TERMINATE IN 300mm X 300mm (12"x12") JUNCTION BOXES IN ACCESSIBLE CEILING SPACE. 8. JUNCTION AND PULL BOXES 1. DO NOT FLOOR CONSTRUCTION WIRE SCREW-ON FLAT COVERS FOR SURFACE MOUNTING. 2. COVERS WITH 1" (25 mm) MINIMUM EXTENSION ALLOW FOR FLUSH-MOUNTED PULL AND JUNCTION BOXES. 3. INSTALL PULL BOXES IN CONDUIT RUNS SO AS NOT TO EXCEED 30 M OF CONDUIT RUN OR THE EQUIVALENT OF TWO (2) 90° BENDS BETWEEN PULL BOXES. 9. OUTLET AND CONDUIT BOXES: 1. ALL LIGHTING FIXTURES, RECEPTACLES AND OTHER WIRING DEVICES FOR ANY CONDUIT SYSTEM SHOWN SHALL BE PROVIDED WITH AN OUTLET BOX. 2. 4" (102 mm) OCTAGON OR SQUARE OUTLET BOXES OR LARGER, COMPLETE WITH FITTINGS FOR LIGHTING FIXTURES AND AS REQUIRED FOR SPECIAL DEVICES. 3. WALL OUTLET BOXES SHALL BE: 1. NO. 110A SERIES, FLUSH MOUNTED IN DRYWALL PARTITIONS, U.N.O. 2. MBS SERIES MASONRY BOXES (GALVANIZED STEEL) FLUSH MOUNTED IN MASONRY WALLS (BLOCK WALLS). 3. GANG BOXES SHALL BE USED AT LOCATIONS WHERE DEVICES ARE GROUPED. PROVIDE BARRIERS AS REQUIRED. 4. BLANK COVER PLATES FOR BOXES WITHOUT WIRING DEVICES. 10. TRANSFORMERS 1. TRANSFORMERS SHALL BE COMPLETE WITH COPPER WINDINGS AND MEET THE REQUIREMENTS OF CSA 8002.2 CURRENT EDITION FOR ENERGY EFFICIENCY. 2. TRANSFORMERS SHALL BE GENERAL PURPOSE, SUITABLE FOR SPRINKLER LOCATION WITH DELTA-VOLTS CONFIGURATION 600/120/208V, 3PH, 4W SECONDARY C/W THREE (3) COPPER WINDINGS. 3. MOUNT DRY TYPE TRANSFORMER UP TO 75kVA ON WALL WITH ANGLE IRON FRAME SECURELY SUPPORTED FROM STRUCTURE AND VIBRO-ACOUSTIC ISOLATORS, UNO. 4. MOUNT DRY TYPE TRANSFORMER 75kVA AND ABOVE ON 4" CONCRETE PAD C/W VIBRO-ACOUSTIC ISOLATORS, UNO. 5. ACCEPTABLE MANUFACTURERS: HAMMOND POWER SOLUTIONS (HPS), MARCUS AND REX POWER MAGNETICS. 11. WIRING DEVICES: 1. SUPPLY AND INSTALL WIRING DEVICES AS INDICATED COMPLETE WITH COVERPLATES. 2. SWITCHES: MANUALLY OPERATED, GENERAL PURPOSE, AC, SPECIFICATION GRADE, TOTALLY ENCLOSED BODY, RATED 120V, 20 AMPERES MINIMUM OR AS REQUIRED BY CIRCUIT COMPLETE WITH WIRE REDUCING DIEGELS. (THE OWNERS DESIGNER SHALL BE RESPONSIBLE FOR THE DIEGELS). 3. RECEPTACLES: 3 WIRE, U-GROUND TYPE. PREMIUM SPECIFICATION GRADE COMPLETE WITH SCREW-TYPE TERMINALS, DOUBLE WIRE CONTACTS, RIVETED GROUND CONTACTS, BREAK-OFF LINKS FOR SPLIT RECEPTACLES AND WHITE MOLDED HOUSING. RECEPTACLES WITHIN 1.5m OF A SINK ARE TO BE PROTECTED FROM GFI. EXTERIOR RECEPTACLES ARE TO BE GFI AND INCLUDE "EXTRA DUTY IN USE" WEATHERPROOF COVER, HUBBELL CAT NO. MM42C02. 4. OTHER RECEPTACLES WITH AMPACITY AND VOLTAGE AS INDICATED. 5. PRODUCTS: DEVICES TO BE HUBBELL MANUFACTURE, STYLE LINE SERIES: 1. LIGHT RECEPTACLE (STYLE LINE DECORATOR SERIES): 1. 20A-120V SINGLE POLE WHITE - DS120W 2. 20A-120V 3-WAY WHITE - DS320W 3. 20A-120V 4-WAY WHITE - DS420W 4. 20A-347V SINGLE POLE WHITE - COOPER AH18211W 5. 20A-347V 3-WAY WHITE - COOPER AH18223W 2. RECEPTACLES (STYLE LINE DECORATOR SERIES): 1. 15A-125V DUPLEX WHITE - DR15WHI 2. 20A-125V DUPLEX WHITE - DR20WHI 3. 15A-125V GFCI DUPLEX - GF15WLA 4. 20A-125V GFCI DUPLEX - GF20WLA 3. TAMPER RESISTANT RECEPTACLES (STYLE LINE DECORATOR SERIES): 1. 15A-125V DUPLEX WHITE - DR15WHI 2. 20A-125V DUPLEX WHITE - DR20WHI 3. 15A-125V GFCI DUPLEX - GFTR15W 4. 20A-125V GFCI DUPLEX - GFTR20W 4. USB RECEPTACLE (STYLE LINE DECORATOR SERIES): 1. 15A-125V USB DUPLEX WHITE, 5A USB A/C - USB15ACS5W 5. WALL PLATES (STYLE LINE): STANDARD SIZE WHITE NYLON; 1. 1-GANG - NP26W 2. 2-GANG - NP26W2W 3. 3-GANG - NP26W3 4. 4-GANG - NP26W4, ETC. 6. WALL PLATES (STYLE LINE): STANDARD SIZE STAINLESS; 1. 1-GANG - SS24 2. 2-GANG - SS262 3. 3-GANG - SS263 4. 4-GANG - SS264, ETC. 7. ACCEPTABLE MANUFACTURER PASS & SEYMOUR AND COOPER 2.12 ROOF TOP EQUIPMENT 1. COORDINATE SIZE OF BREAKERS AND FEEDERS WITH MECHANICAL. FEEDERS ON DRAWINGS ARE BASED ON DESIGN LOADS PROVIDED IN MECHANICAL DRAWINGS. CONTRACTOR SHALL CONFIRM THE FEEDER SIZES AND BREAKERS ON SHOP DRAWINGS PRIOR TO ROUGH-IN AND PURCHASE OF MATERIAL/EQUIPMENT TO POWER UP UNITS. DISCREPANCIES ARE TO BE NOTED TO THE ENGINEER. 2. PROVIDE MAINTENANCE RECEPTACLES AS REQUIRED BY ESA. COORDINATE WITH MECHANICAL; SHOULD THE EQUIPMENT NOT INCLUDE A MAINTENANCE RECEPTACLE AS AN OPTION, THE CONTRACTOR SHALL INCLUDE TO PROVIDE A 15/20R GFI RECEPTACLE AND A 1P-20A BREAKER FROM THE LOCAL PANEL FOR EACH GROUP OF UNITS. UNITS MORE THAN 50'-0" APART SHALL HAVE ITS OWN RECEPTACLE. RECEPTACLE SHALL BE MOUNTED TO A PEDESTAL OR ROOF CURB AND SEALED WATERTIGHT. PROVIDE AN IN-USE COVER FOR THE RECEPTACLE. 3. LIGHTING 1. MANUFACTURERS OPERATIONAL TESTS: 1. TEST FIXTURE FOR ACCEPTANCE OF LAMP MADE TO MAXIMUM TOLERANCE AS REQUIRED IN A.N.S.I. STANDARDS. 2. TEST FIXTURES WITH RATED LAMPS FOR STARTING AND OPERATION. 3. CHECK WIRING FOR AGREEMENT WITH DESIGN CIRCUIT. 4. TEST FOR SHORT CIRCUITS AND IMPROPER GROUNDING. 2. HANGERS AND FITTINGS 1. SUPPORT FIXTURES AS SHOWN ON THE DRAWINGS, LEVEL, PLUMB AND TRUE WITH THE STRUCTURE AND OTHER EQUIPMENT, AND IN A HORIZONTAL OR VERTICAL POSITION AS INTENDED. 2. WALL OR SIDE BRACKET MOUNTED FIXTURE HOUSINGS SHALL BE RIGIDLY INSTALLED AND ADJUSTED TO GIVE A NEAT FLUSH FIT TO THE SURFACE ON WHICH IT IS MOUNTED. 3. SUPPORTS: 1. SUPPORT FIXTURES BY HANGERS AND MOUNTING ARRANGEMENTS WHICH WILL NOT CAUSE THE FIXTURE FRAME, HOUSING, SIDES OR LENS FRAME TO BE DISTORTED; OR PREVENT COMPLETE ALIGNMENT OF SEVERAL FIXTURES IN A ROW WITH THE WALL OR CEILING. 2. WHERE LIGHTING METHODS FOR FIXTURES ON OR IN SUSPENDED CEILINGS ARE TO BE AS FOLLOWS: 3. WHERE LIGHTING FIXTURES ARE RECESSED INTO SUSPENDED CEILINGS, THESE FIXTURES ARE TO BE SUPPORTED INDEPENDENTLY OF THE CEILING USING #12 JACK CHAIN HANGERS. EACH CHAIN IS TO BE SECURED SEPARATELY TO THE STRUCTURE ABOVE SO THAT NO WEIGHT FALLS ON THE CEILING SUSPENSION SYSTEM. 4. IN NO CASE WILL REINFORCEMENT OF THE CEILING SUSPENSION SYSTEM BE CONSIDERED TO BE ADEQUATE SUPPORT FOR THE LIGHTING FIXTURES. 5. WHERE CROSS MEMBER SUPPORTS ARE REQUIRED ABOVE THE CEILING TO PROVIDE SUPPORT POINTS, THESE ARE TO BE STEEL CHANNELS OR ANGLES. 4. INSTALLATION: 1. INSTALLATION OF ALL LIGHTING EQUIPMENT SHALL COMPLY WITH THE RELEVANT SECTIONS OF THE ONTARIO ELECTRICAL SAFETY CODE. 2. CLUSTER OF RECESSED FIXTURES SHALL BE WIRED WITH BX90 OR R90 WIRE IN FLEXIBLE STEEL CONDUIT TO ADJACENT OUTLET BOXES PLACED ABOVE THE FINISHED CEILING, WITHIN REACH OF THE FIXTURE HOLES. MAIN HOME RUNS TO BE EMT FROM JUNCTION BOX AT CLUSTER OF FIXTURES TO PANEL. 3. AT THE COMPLETION OF CONSTRUCTION AND ACCEPTANCE OF WORK, ALL LIGHTING FIXTURES SHALL BE CLEAN, COMPLETE WITH ALL NECESSARY ACCESSORIES AND PROVIDED WITH THE REQUIRED OPERATING LAMP/PLUGS. 4. FIXTURES AS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE LOCATIONS ONLY. INSTALLATION OF FIXTURES SHALL BE IN ACCORDANCE WITH REFLECTED CEILING PLANS, DETAILS AND/OR FIELD INSTRUCTIONS ISSUED BY THE ARCHITECT. 5. ALL 347V FIXTURES TO HAVE LOCAL DISCONNECT TO COMPLY WITH THE ONTARIO ELECTRICAL SAFETY CODE. 6. UPON COMPLETION CLEAN LIGHTING REFLECTORS, LENSES AND OTHER LIGHTING SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. 7. THE MOUNTING HEIGHTS OF BUILDING MOUNTED FIXTURES SHALL BE CONFIRMED PRIOR TO ROUGH-IN. REVIEW ARCHITECTURAL PLANS/ELEVATIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN PLANS AND INDICATED MOUNTING HEIGHTS IN SCHEDULES/PLANS BETWEEN MECHANICAL AND ELECTRICAL DESIGNATED HEIGHTS. 8. THE CONTRACTOR SHALL ADJUST FIXTURES AS REQUIRED TO ENSURE FIXTURES WHERE FLOATING IN FLOATING CEILINGS ARE EQUALLY SPACED AND FLUSH TO THE SATISFACTION OF THE ARCHITECT. 5. MATERIAL AND EQUIPMENT QUALITY CONTROL 1. REPLACE FIXTURES FAILING WITHIN 12 MONTHS OF TAKEOVER. 4. GROUND FAULT CIRCUIT INTERRUPTERS - CLASS 'A' 1. GENERAL 1. COMPONENTS COMPRISING GROUND FAULT PROTECTIVE SYSTEM TO BE OF SAME MANUFACTURER. 2. BREAKER TYPE GROUND FAULT INTERRUPTER 1. SINGLE POLE GROUND FAULT CIRCUIT INTERRUPTER FOR 15A, 120V, 1 PHASE CIRCUIT C/W TEST AND RESET FACILITIES. 2. SINGLE POLE GROUND FAULT CIRCUIT INTERRUPTER FOR 30A, 120V, 1 PHASE CIRCUIT C/W TEST AND RESET FACILITIES. 3. INSTALLATION 1. DO NOT FLOOR CONDUIT NEUTRAL ON LOAD SIDE OF GROUND FAULT RELAY. 2. PASS PHASE CONDUCTORS INCLUDING NEUTRAL THROUGH ZERO SEQUENCE TRANSFORMERS. 3. CONNECT SUPPLY AND LOAD WIRING TO EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. 4. FIELD QUALITY CONTROL 1. PERFORM TESTS IN ACCORDANCE WITH SECTION 16010 - ELECTRICAL GENERAL REQUIREMENTS. 2. ARRANGE AND PAY FOR FIELD TESTING OF GROUND FAULT EQUIPMENT BY INDEPENDENT TESTER AND OUTLET BOX. 3. PROVIDE GROUND FAULT EQUIPMENT MANUFACTURER CONTRACTOR BEFORE COMMISSIONING SERVICE. 3. SUBMIT REPORT OF TESTS TO CONSULTANT AND A CERTIFICATE THAT SYSTEM AS INSTALLED MEETS CRITERIA SPECIFIED HEREIN. 4. DEMONSTRATE SIMULATED GROUND FAULT TESTS. 5. COMPUTER/TELECOM CABLING SYSTEM 1. SCOPE OF WORK 1. SUPPLY AND INSTALL A STRUCTURED WIRING SYSTEM USING CATEGORY 6 (6A) TWISTED PAIR TECHNOLOGY IN ACCORDANCE WITH EIA/TIA 568B WIRING SPECIFICATION. 2. EACH COMPUTER OUTLET SHOWN TWICE ON THE DRAWINGS SHALL MEET OR EXCEED CATEGORY 6 (6A) EIA/TIA SPECIFICATION. 3. CATEGORY 6 (6A) 4 PAIR TWISTED CABLE FTS (PLENUM RATED) HOME RUN CABLE FROM EACH INDIVIDUAL OUTLET TO HUB CLOSET VIA CONDUIT AND/OR WIREWAY SYSTEM, NO RUNS FROM THE COMPUTER OUTLET TO THE WIRING CLOSET SHALL EXCEED THE RECOMMENDED EIA/TIA 568B SPECIFICATION. 4. CATEGORY 6 (6A) 4 PAIR TWISTED CABLE FTS (PLENUM RATED) SHALL BE PROVIDED TO MEET/EXCEEDS CATEGORY 6 (6A) (EIA/TIA 568B) SPECIFICATIONS. 4. ALL TERMINATIONS, AT THE PATCH PANELS OR OUTLETS SHALL MEET EIA/TIA 568B WIRING CONFIGURATIONS. 4. PROVIDE SLEEVES AND FIRESTOP ALL CABLING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. 5. CABLING SHALL BE IN CONDUIT IN EXPOSED AREAS. J HOOKS MAY BE USED IN CONCEALED SPACES WHERE NOTED AS ACCEPTABLE. OUTLETS IN NEW WALLS SHALL BE PROVIDED IN CONDUIT TO THE WIRING CLOSET. 3. HOME RUN CABLES AND TERMINATE IN THE IT AND TELECOM CLOSET. 4. PROVIDE PATCH PANELS AND TERMINATE ALL OUTLET CABLES, EACH SYSTEM SHALL HAVE ITS OWN PATCH PANEL. DATA AND VOICE OUTLETS SHALL NOT BE TERMINATED ON THE SAME PANEL. 5. PROVIDE PATCH PANELS (FOR THE OWNERS DESIGNER) TO ACCESSIBLE CEILING SPACES. 6. PROVIDE AN ADDITIONAL "PATCH PANEL" IF CAPACITY IS LESS THAN 25%. 5. PROVIDE HORIZONTAL CABLE MANAGERS UNDER AND ABOVE EACH PATCH PANEL. 6. PROVIDE VERTICAL CABLE MANAGERS ON EACH SIDE OF THE RACK. RACKS MOUNTED IN ROWS SHALL BE PROTECTED FROM GFI. EXTERIOR RACKS ARE TO BE GFI AND INCLUDE "EXTRA DUTY IN USE" WEATHERPROOF COVER, HUBBELL CAT NO. MM42C02. 7. ALL REQUIRED COMPUTER EQUIPMENT AND ASSOCIATED WIRING CONNECTIONS WILL BE SUPPLIED AND INSTALLED BY OWNER. 8. AT THE END OF THE PROJECT, SUPPLY AND TURN OVER TO THE OWNER, ONE 7'-0" CATEGORY 6 (6A) PATCH CORD FOR EVERY RJ45 COMPUTER JACK SPECIFIED ON THIS PROJECT. PROVIDE 3 PATCH CORDS OF SUFFICIENT LENGTH TO ALLOW THE OWNER TO PATCH ALL OUTLETS INTO THEIR EQUIPMENT AT THE RACK. CABLING IS TO BE SMALL DIAMETER FOR ALL APPLICATIONS UP TO 30W POE. 9. APPLICATIONS OVER THIS ARE TO USE REGULAR DIAMETER CABLING FOR PATCH CORDS. 9. COMPUTER CABLING SYSTEM (HARDWARE, CABLES, CONNECTORS AND INSTALLATION) SHALL ALL BE IN ACCORDANCE WITH EIA/TIA 568B SPECIFICATIONS. 10. PROVIDE FULL HEIGHT 2 POST DATA RACKS AND SECURELY ANCHOR TO FLOOR. RACKS ARE TO BE CAPABLE OF ATTACHING VERTICAL CABLE MANAGERS. 11. PROVIDE FULL HEIGHT POWER STRIPS WITH 15/20A OUTLETS (MIN 10) ON THE BACKSIDE OF THE RACK. STRIP IS TO INCLUDE 15'-0" CORD. COORDINATION 1. VERIFY AND COORDINATE THE DETAILS OF THE ENTIRE SYSTEM WITH THE END USER PRIOR TO SUBMITTING SHOP DRAWINGS. CONSTRUCTION DRAWINGS 1. THE SYSTEM INTEGRATOR SHALL PROVIDE, UPON COMPLETION OF SHOP DRAWINGS, IN AUTOCAD 2010 FORMAT (ON CD), CONSTRUCTION DRAWINGS. THESE DRAWINGS SHALL HAVE ALL DETAILS IN REGARDS TO THE CABLING SYSTEM, SUCH AS CLOSET LOCATION AND DESIGNATION, CABLE ROUTING AND JACK LOCATION. 4. PRODUCTS 1. CATEGORY 6 (6A) CABLE IN ACCORDANCE WITH EIA/TIA 568B CRITERIA. PROVIDE BLUE CABLE FOR DATA WIRING AND PROVIDE WHITE CABLE FOR VOICE WIRING. 2. COMPUTER FACE PLATES, CAPABLE OF ACCEPTING 4 MODULES FOR DATA. PROVIDE BLANKS FOR UNUSED JACK LOCATIONS IN FACEPLATE. 3. DATA TERMINATIONS MUST BE WIRED TO EIA/TIA 568B WIRING SCHEMATIC IN RJ45 JACKS. 4. OUTLETS ARE TO BE CATEGORY 6 (6A), MODULAR TYPE. PROVIDE INTERNATIONAL WHITE FOR VOICE AND BLUE FOR DATA UNLESS SPECIFIED OTHERWISE. 5. PLATES SHALL BE PLASTIC, INTERNATIONAL WHITE IN COLOUR. 6. NECESSARY 3/4" (19mm) FIRE RATED FLYWOOD BACKBOARDS AS SHOWN ON DRAWINGS. 7. INDIVIDUAL OUTLET CONDUITS AND TERMINAL FEEDER CONDUITS TO BE EMT IN ACCORDANCE WITH SECTION 2.6. 5. OUTLET BOXES 1. TELEPHONE OUTLET: LOW VOLTAGE RING, FLUSH FACEPLATE WITH STANDARD RJ11 TELEPHONE JACK. (RJ45 VOIP JACK) 2. COMPUTER OUTLET: LOW VOLTAGE RING, FLUSH FACEPLATE WITH RJ45 JACK. 3. COMBINATION TELEPHONE/COMPUTER OUTLET: LOW VOLTAGE RING, FLUSH FACEPLATE WITH STANDARD RJ11 TELEPHONE JACK (RJ45 VOIP JACK) AND RJ45 JACK FOR COMPUTER, BOTH ON A COMMON SINGLE GANG PLATE. 4. WIRELESS ACCESS POINT: SURFACE MOUNT BACKBOX, FACEPLATE AND RJ45 JACK. 6. PRODUCT MANUFACTURERS: 1. CATEGORY 6 (6A) TWISTED PAIR CABLE: 1. BELDEN 2. PANDUIT 2. COMPUTER INFRASTRUCTURE COMPONENTS 1. PANDUIT 2. BELDEN 3. RACKS 1. ELECTRON TELNET 2. PANDUIT 4. POWER STRIPS 1. ELECTRON TELNET 2. PANDUIT 5. OTHER MANUFACTURES SUBJECT TO APPROVAL PRIOR TO BID. 7. SYSTEM INSTALLERS 1. ACCEPTABLE INSTALLERS OF THE SYSTEM SPECIFIED HEREIN AND AS DESCRIBED ON THE DRAWINGS SHALL BE CERTIFIED BY THE VENDOR OF THE COMPONENTS BEING INSTALLED. 8. COMPUTER TERMINATION EQUIPMENT 1. SUPPLY AND INSTALL IN-BUILDING DISTRIBUTION EQUIPMENT AS FOLLOWS: 1. NECESSARY PANDUIT MINI-COM MOUNTING FRAMES (24 PORTS CPLL24WBLV) FOR TERMINATING ALL COMPUTER CABLES AND TELEPHONE CABLES PLUS 25% SPARE CAPACITY. PROVIDE ADDITIONAL SPARE FRAMES TO ACCOMMODATE THE 25% SPARE CAPACITY. 2. NECESSARY MINI COM OUTLETS FOR TERMINATING ALL COMPUTER CABLES (RJ45) AND TELEPHONE (RJ11). 3. PROVIDE PIG TAILS (RJ45 CABLE THAT IS RUN OVER AND PUNCHED DOWN TO BIX BLOCK) 4. TEST/CERTIFY CABLING AND CHECK SERVICE. 9. EXECUTION - INSTALLATION 1. INSTALL OUTLET BOXES SO THAT COVERPLATES ARE VERTICAL AND EVEN WITH ADJACENT OUTLETS 2. CONDUITS TO INDIVIDUAL OUTLETS TO CABLE TRAYS TO BE 25mm (1" EMT) STURBED INTO ACCESSIBLE CEILING SPACE COMPLETE WITH BUSHINGS 3. TELEPHONE/COMPUTER SYSTEM SHALL SHARE ONE OUTLET BOX AND ONE CONDUIT.			

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PROJECT NUMBER & NAME: 23-183 GRETZKY GOLF COURSE
DATE PLOTTED: 2024-12-12 12:48:00 PM

3. **INSTALLATION**
 1. INSTALL RACEWAY SYSTEM, INCLUDING OVERHEAD DISTRIBUTION SYSTEM, FISH WIRE, TERMINAL CABINETS, OUTLET BOXES, FLOOR BOXES, PULL BOXES, COVER PLATES, CONDUIT, SLEEVES AND CAPS, SERVICE POLES, MISCELLANEOUS AND POSITIONING MATERIAL TO CONSTITUTE COMPLETE SYSTEM.
 2. ALL SPECIFIED TELEPHONE AND DATA TERMINATION BOXES ARE TO BE FLUSH MOUNTED IN THE WALL 300mm ABOVE THE FLOOR UNLESS OTHERWISE SPECIFIED. THE WALL TERMINATION BOXES ARE TO BE 100mm X 54mm TO ACCOMMODATE 25mm CONDUIT. ALL CONDUIT FROM WALL TERMINATION BOXES IS TO BE 25mm UNLESS OTHERWISE SPECIFIED.
 3. ALL CONDUIT RUNS ARE TO BE CONTINUOUS FROM THE SPECIFIED OUTLET LOCATION TO THE ELECTRICAL ROOM OR TELEPHONE BACKBOARD. ALL JUNCTION AND PULL BOXES ARE TO BE ACCESSIBLE.
 4. ALL EMPTY CONDUIT IS TO HAVE BOTH ENDS OF THE CONDUIT RUN LABELLED AS ITS PURPOSE AND DESTINATION. ALL EMPTY CONDUIT RUNS ARE TO HAVE A PULL CORD INSTALLED THROUGH THEIR ENTIRE RUN WITH BOTH ENDS BEING TIED OFF.
 5. CONDUITS FROM EACH TELEPHONE AND DATA OUTLET TO BE 20mm (3/4") EMT INTO ACCESSIBLE CEILING SPACE OR AS SHOWN ON DRAWINGS.
 6. INSTALL BLANK PLATES FOR ALL UNUSED OUTLETS.

7. **SURFACE RACEWAY SYSTEM**

1. **PRODUCT DATA**
 1. SUBMIT PRODUCT DATA IN ACCORDANCE WITH SECTION 1.14
 2. INDICATE TYPES OF RACEWAYS WITH TERMINOLOGY SIMILAR TO THAT USED IN THIS SECTION.
 3. ALL WIRING IS TO BE FISHED IN WALLS WITH CONDUITS. SURFACE RACEWAY SHALL BE INSTALLED WHERE WALLS ARE NOT FISHABLE (IE. STRUCTURAL CONCRETE) AND MUST BE DONE WITH PERMISSION OF THE OWNER/CONSULTANT UNLESS SPECIFICALLY NOTED AS SURFACE RACEWAY ON THE DRAWINGS.
2. **PRODUCTS**
 1. LOW PROFILE RACEWAY
 1. TWO PIECE, STEEL ASSEMBLY
 2. FINISH: IVORY
 3. NECESSARY SWITCH, RECEPTACLE, EXTENSION BOXES, ADAPTERS AND UTILITY FITTINGS REQUIRED FOR COMPLETE INSTALLATION.
 4. HUBBELL 500 [WIREMOLD 500] SERIES OR APPROVED EQUAL
 2. TWO CHANNEL RACEWAY
 1. TWO PIECE, STEEL ASSEMBLY, C/W CENTRE BARRIER.
 2. FINISH: GRAY OR AS INDICATED BY ARCHITECT FROM STANDARD COLOUR CHOICE.
 3. NECESSARY SWITCH, RECEPTACLE, EXTENSION BOXES, ADAPTERS AND UTILITY FITTINGS REQUIRED FOR COMPLETE INSTALLATION.
 4. HUBBELL 4700 SERIES [WIREMOLD D54000] OR APPROVED EQUAL
3. **FITTINGS**
 1. ELBOWS, TEES, COUPLINGS AND HANGER FITTINGS: MANUFACTURED AS ACCESSORIES TO RACEWAY SUPPLIED.

4. **INSTALLATION**

1. INSTALL RACEWAYS BEFORE INSTALLATION OF WIRING. INSTALL COVERS FOR RACEWAYS AND FITTINGS AFTER INSTALLATION OR WIRING.
2. INSTALL CONDUIT FOR RACEWAY IN WALL. NO RACEWAY SHALL BE INSTALLED FROM THE CEILING TO FEED HORIZONTAL RUNS.
3. INSTALL SUPPORTING BRACKETS, ELBOWS, TEES, CONNECTORS, FITTINGS, BUSHINGS, ADAPTORS AS REQUIRED.
4. KEEP NUMBER OF ELBOWS, OFFSETS, CONNECTIONS TO MINIMUM.
5. USE WIRING WITH MECHANICAL PROTECTION IN CHANNEL RACEWAYS.
6. INSTALL BARRIERS IN RACEWAYS WHERE DIFFERENT VOLTAGE SYSTEMS ARE INDICATED.

8. **EXISTING FIRE ALARM SYSTEM**

1. **GENERAL**
 1. THE EXISTING FIRE ALARM SYSTEM IS OF XXXXX MANUFACTURE TYPE XXXXX.
 2. PROVIDE NEW FIRE ALARM SYSTEM OF XXXXX MANUFACTURE TYPE XXXXX. NEW SYSTEM AND DEVICES SHALL BE ULC LISTED, LABELED AND SUPPLIED BY SINGLE MANUFACTURER THROUGHOUT THE PROJECT.
 3. ALL FIRE DETECTION AND SIGNALING DEVICES SHALL BE CONNECTED TO ZONES AS INDICATED ON PLANS.
 4. SUPPLY AND INSTALL ADDITIONAL THERMAL DETECTORS, MANUAL PULL STATIONS, FIRE BELLS AND SMOKE DETECTORS, ALL AS SHOWN ON DRAWINGS.
 5. WIRE NEW AND RELOCATED DEVICES INTO FIRE ALARM ZONE IN THIS AREA.
 6. ALL NEW WIRING FOR ALARM SYSTEM SHALL BE MINIMUM #14 RW90 RUN IN CONCEALED CONDUIT.
 7. ELECTRICAL CONTRACTOR IS TO ENGAGE AN APPROVED TESTING COMPANY TO VERIFY THAT ALL NEW AND EXISTING FIRE ALARM DEVICES WITHIN SCOPE OF WORK AREA HAVE BEEN WIRED AND ARE OPERATING PROPERLY. PROVIDE A CERTIFICATE OF VERIFICATION AND TEST REPORT. ELECTRICAL CONTRACTOR TO PROVIDE ASSISTANCE TO TESTING COMPANY AS REQUIRED BY THEM. INCLUDE ALL COSTS IN TENDER PRICE.
 8. SYSTEM TO BE INSTALLED IN ACCORDANCE WITH CAN/ULC 5-524 (CURRENT EDITION) AND OFC-410(M).
 9. TESTS AND VERIFICATION TO BE PERFORMED IN ACCORDANCE WITH CAN/ULC-5537 (CURRENT EDITION).
 10. WHERE FIRE PROTECTION AND LIFE SAFETY SYSTEMS, AND SYSTEMS WITH FIRE PROTECTION AND LIFE SAFETY FUNCTIONS ARE INTEGRATED WITH EACH OTHER; THE SYSTEMS SHALL BE TESTED AS A WHOLE IN ACCORDANCE WITH CAN/ULC-51001, "INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS", TO VERIFY THAT THE SYSTEMS HAVE BEEN PROPERLY INTEGRATED.
 11. PROVIDE 3/4"Ø CONDUIT DIRECTLY TO TELEPHONE BACKBOARD FOR TELEPHONE LINE AND CONNECTION BY MONITOR COMPANY.
 12. PROVIDE 4#14 WIRES TO EACH ELEVATOR CONTROLLER FROM MAIN FIRE CONTROL PANEL FOR ELEVATOR RECALL.
 13. SMOKE DETECTORS IN FRONT OF ELEVATOR DOORS SHALL BE C/W NORMALLY CLOSED CONTACTS THE OPEN UPON ACTIVATION.
 14. PROVIDE AND INSTALL LAMACOID GRAPHICS BESIDE MAIN CONTROL PANEL AND ANNUNCIATOR PANEL.
 15. PROVIDE OPERATION AND MAINTENANCE DATA FOR FIRE ALARM SYSTEM.
 16. ARRANGE AND PAY FOR ON-SITE LECTURES AND DEMONSTRATIONS BY FIRE ALARM EQUIPMENT MANUFACTURER TO TRAIN OPERATIONAL PERSONNEL IN USE AND MAINTENANCE OF FIRE ALARM SYSTEM.
 17. INCLUDE FOR ALL COSTS INVOLVED FROM BOTH MANUFACTURERS AND THE ELECTRICAL CONTRACTOR'S WORK IN TOTAL TENDER PRICE FROM THE ELECTRICAL CONTRACTOR.
 18. THE CONTRACTOR SHALL ENSURE THE VERIFICATION OF THE FIRE ALARM INCLUDES ANY SECURITY DOORS. THE CONTRACTOR AND FIRE ALARM COMPANY SHALL TEST THE DOORS TO ENSURE THEY CLOSE AND/OR UNLOCK ON LOCAL CONTROL AND ON FACILITY WIDE. THE DOORS ARE TO BE TESTED AS A COMPLETE SYSTEM WITH THE SECURITY AND FIRE ALARM DEVICES.
 19. [VERIFY FIRE ALARM SYSTEM OF THE ENTIRE BUILDING AND PROVIDE A CERTIFICATE OF VERIFICATION AND TEST REPORT.]

9. **EMERGENCY LIGHTING SYSTEM:**

1. **GENERAL**
 1. SUPPLY AND INSTALL SEPARATE 12 VOLT DC LIGHTING SYSTEMS AS SHOWN ON THE PLANS AND AS DESCRIBED HEREIN.
 2. WIRE 347 VOLT NORMAL POWER TO ALL EMERGENCY LIGHT FIXTURES AND ALL "EXIT" FIXTURES AS SHOWN ON THE PLANS.
 3. THE BATTERY UNIT SHALL MEET THE REQUIREMENTS OF CSA STANDARD C22.2, NO. 141 - UNIT EQUIPMENT FOR EMERGENCY LIGHTING.
 4. THE EMERGENCY UNITS SHALL BE CAPABLE OF SUPPLYING THE WATTAGE AS INDICATED, FOR AT LEAST THIRTY (30) MINUTES TO 91% END VOLTAGE; AND FOR NINETY (90) MINUTES TO AUTOMATIC CUT-OFF.
 5. CHARGER AND CONTROLS SHALL CONSIST OF THE FOLLOWING STANDARD FEATURES:
 1. SOLID STATE AUTOMATIC-TYPE CHARTER.
 2. PRESS TO TEST SWITCH.
 3. "ON" AND "HIGH CHARGE" PILOT LIGHTS.
 4. READY DISCONNECT SWITCH AND LIGHT.
 5. FUSED PROTECTION.
 6. AUTOMATIC TEST FEATURE COMPLETE WITH ALARM.
 7. REMOTE TEST FEATURE.
 8. SUPPLY VOLTAGE: 120/347 VAC.
 9. OUTPUT VOLTAGE: 12 VDC, SELF-POWERED
 10. SEALED, MAINTENANCE FREE.
 11. LED HEADS WHERE SPECIFIED AS A BATTERY UNIT WITH HEADS.
 6. EACH BATTERY SHALL OPERATE AT LEAST TEN (10) YEARS ENTIRELY UNATTENDED. THE BATTERY SHALL BE SEALED LEAD, LONG-LIFE TYPE.
 7. MOUNTING HEIGHTS OF ALL BATTERY UNITS TO BE 2130 MM (7'). INSTALL UNIT AS INDICATED ON DRAWINGS.
 8. WARRANTY: ALL EQUIPMENT IS TO BE WARRANTED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE. FOR BATTERIES, THE WARRANTY IS EXTENDED TO 120 MONTHS, WITH A NO-CHARGE REPLACEMENT DURING THE FIRST 5 YEARS AND A PRO-RATE CHARGE ON THE SECOND 5 YEARS.
 9. WIRING: WIRING TO THE EMERGENCY LIGHTS AND EXIT FIXTURES SHALL BE RW90 MINIMUM # 10 GAUGE FOR EACH CIRCUIT AND RUN IN CONDUIT. WIRING SIZES IN ACCORDANCE WITH MANUFACTURERS COMMENDATIONS FOR DISTANCES REQUIRED.
 10. REMOTE EMERGENCY LIGHTING FIXTURES: SUPPLY AND INSTALL EXIT LIGHTING FIXTURES, TYPE 'X', AND LAMPS AS SPECIFIED IN LIGHT FIXTURE SCHEDULE AND SHOWN ON DRAWINGS.
 11. WIRE ALL SYSTEMS USING CONCEALED #10 AWG WIRING RUN IN EMT OR ARMoured CABLE.

2. **TESTING AND VERIFICATION:**

1. WHEN THE INSTALLATION OF THE BATTERY UNITS, AND ALL ASSOCIATED REMOTE EMERGENCY LIGHTS HAVE BEEN COMPLETED, RETAIN THE SERVICES OF A QUALIFIED REPRESENTATIVE OF THE EQUIPMENT MANUFACTURER TO TEST THE COMPLETION AND OPERATION OF THE SYSTEM.
2. FOLLOWING COMPLETION OF THE TEST, OBTAIN A LETTER FROM THE MANUFACTURER/SUPPLIER, STATING THAT THE NEW BATTERY UNIT AND ASSOCIATED LIGHTS HAVE BEEN COMPLETELY CHECKED AND ARE OPERATING SATISFACTORILY.
3. A COPY OF THIS LETTER IS TO BE FORWARDED TO THE CONSULTING ENGINEER AND ONE COPY TO THE ARCHITECT.

10. **EXIT LIGHTS:**

1. **PRODUCTS**
 1. AS SHOWN ON DRAWINGS.
 2. ALL EQUIPMENT IS TO BE WARRANTED FOR A PERIOD OF TWO (2) YEAR FROM DATE OF FINAL ACCEPTANCE.
 3. EXIT LIGHT TO BE SUITABLE FOR 120V/347 AC AND 12V DC.
2. **INSTALLATION**
 1. INSTALL EXIT LIGHTS.
 2. CONNECT FIXTURES TO EXIT LIGHT CIRCUITS.
 3. CONNECT EMERGENCY LAMP SOCKETS TO EMERGENCY CIRCUITS.
 4. ENSURE THAT EXIT LIGHT CIRCUIT BREAKER IS LOCKED IN ON POSITION.

11. **OVER FLOOR RACEWAY**

1. **SHOP DRAWING PRODUCT DATA**
 1. PROVIDE SHOP DRAWINGS IN ACCORDANCE WITH SECTION 1.14.
 2. SHOP DRAWINGS TO CLEARLY INDICATE ALL MATERIAL SUPPLIED BY THIS SECTION, INSTALLATION INSTRUCTIONS AND ALL DIMENSIONS.
2. **PRODUCTS**
 1. CONNETRAC RACEWAY SYSTEMS. SYSTEM SHALL BE COMPLETE WILL ALL ACCESSORIES FOR A COMPLETE INSTALLATION. CONTRACTOR SHALL UTILIZE THE MANUFACTURE POWER CABLE FOR USE WITH THE SYSTEM.
 2. THE CONTRACTOR SHALL PROVIDE LAYOUTS FOR VARIOUS RUN TYPES TO VERIFY PRODUCTS AND ACCESSORIES BEING USED ALONG WITH PROPOSED LAYOUTS. DATA CABLE COUNTS SHALL BE INCLUDED TO VERIFY CABLE FILL WITHIN THE RACEWAY HAS NOT BEEN EXCEEDED.
3. **INSTALLATION**
 1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 2. PROVIDE FURNITURE MONUMENTS TO TRANSITION FROM FURNITURE WHIP TO CONNETRAC CABLE. FURNITURE WHIPS ARE TO BE SHORTENED TO LIMIT COILED CABLING ON THE FLOOR. CABLING SHALL BE NEAT AND TIDY.
 3. COMMUNICATIONS CABLING SHALL BE TRANSITIONED TO SEALTIGHT CONDUIT AND CONNECTED TO THE FURNITURE.
 4. SLOPED FLOOR ACCESSORIES SHALL BE PROVIDED AND INSTALLED TO SUIT ARCHITECTS LAYOUT.
 5. BOARDROOM TABLES ARE TO HAVE POWER CIRCUITS ONLY. PROVIDE RACEWAY AND MANUFACTURE POWER CABLE. RACEWAY SHALL RUN BETWEEN THE WALL AND A TABLE LEG. COORDINATE WORK ON SITE WITH TENNANTS FURNITURE SUPPLIER. TERMINATE WIRING IN JUNCTION BOX AND CONNECT TABLE MONUMENT PROVIDED BY OTHERS.

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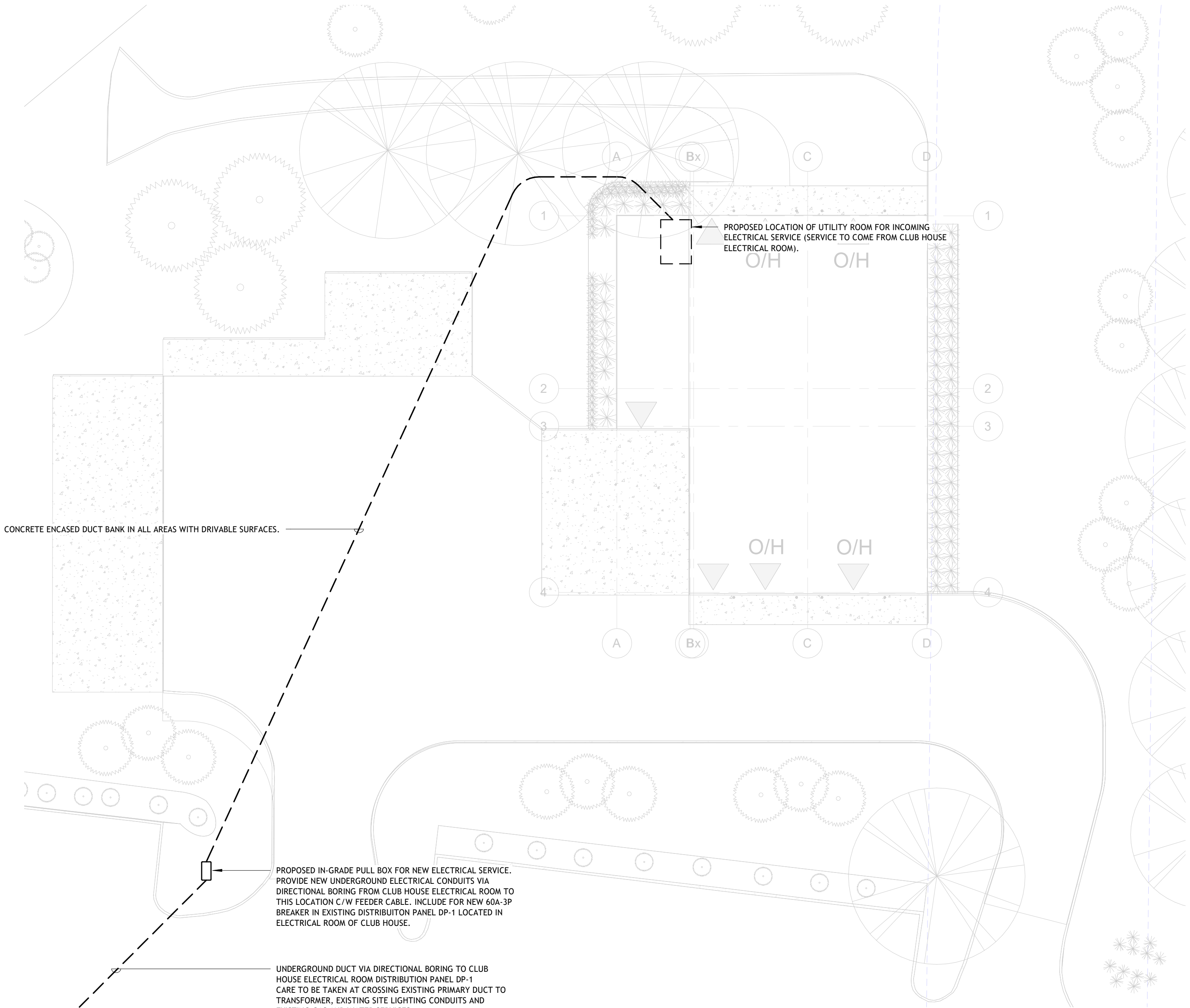
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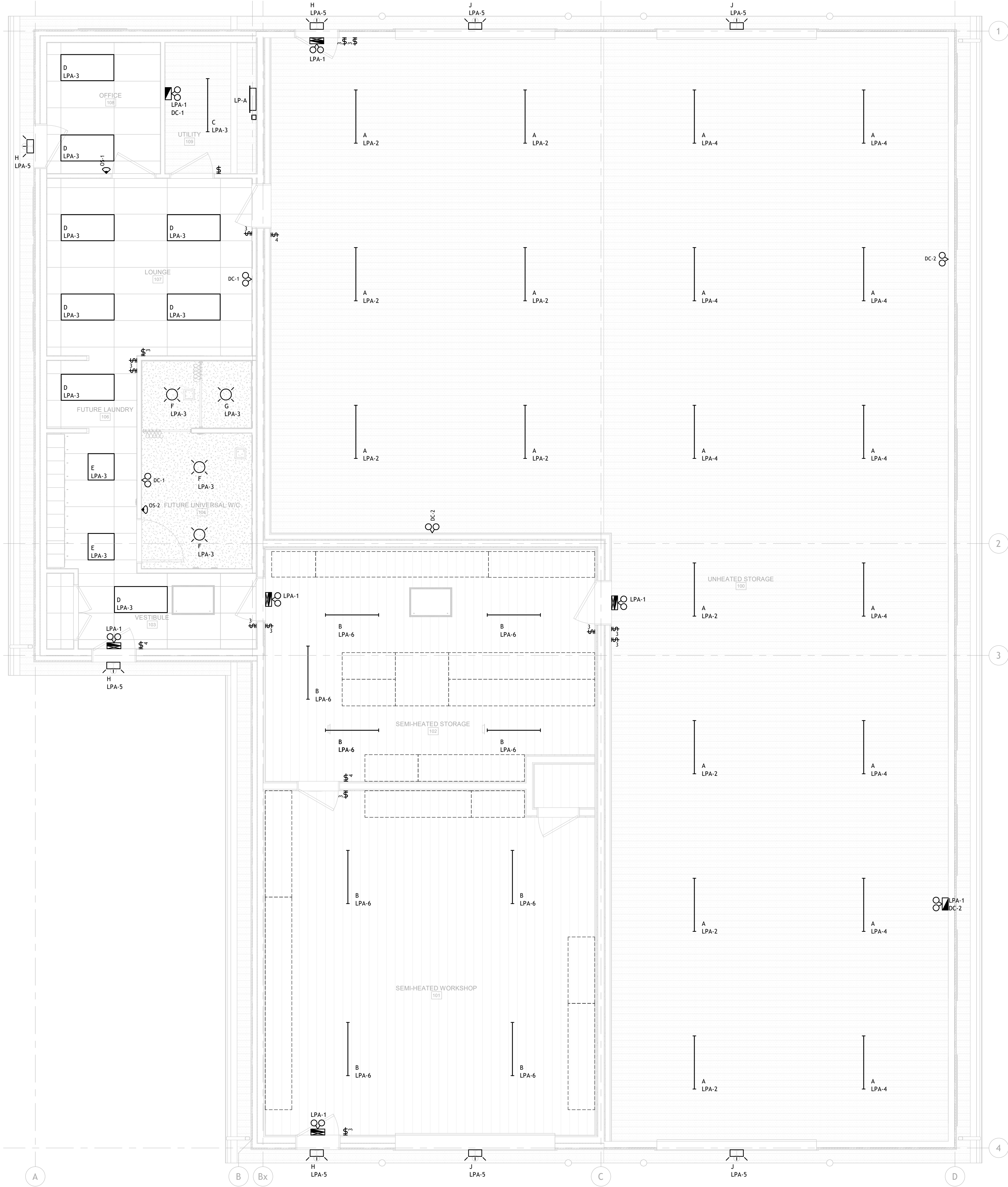
PROJECT TITLE:
**GRETZKY GOLF COURSE
MAINTENANCE BUILDING
320 BALMORAL DRIVE
BRANTFORD, ON N3V 1E6**

DRAWING TITLE:
SPECIFICATIONS

CHECKED BY: KS	DRAWN BY:
DRAWING SCALE: NTS	DRAWING NO.:
PROJECT NO.: 23-183	E051

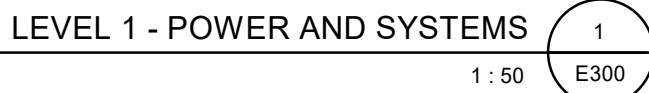


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PROJECT TITLE: GRETZKY GOLF COURSE MAINTENANCE BUILDING 320 BALMORAL DRIVE BRANTFORD, ON N3V 1E6		
DRAWING TITLE: SITE PLAN		
CHECKED BY: Checker	DRAWN BY: Author	
DRAWING SCALE: 1 : 200	DRAWING NO.:	
PROJECT NO.: 23-183	E100	



LEVEL 1 - LIGHTING
1:50

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PROJECT TITLE: GRETZKY GOLF COURSE MAINTENANCE BUILDING 320 BALMORAL DRIVE BRANTFORD, ON N3V 1E6		
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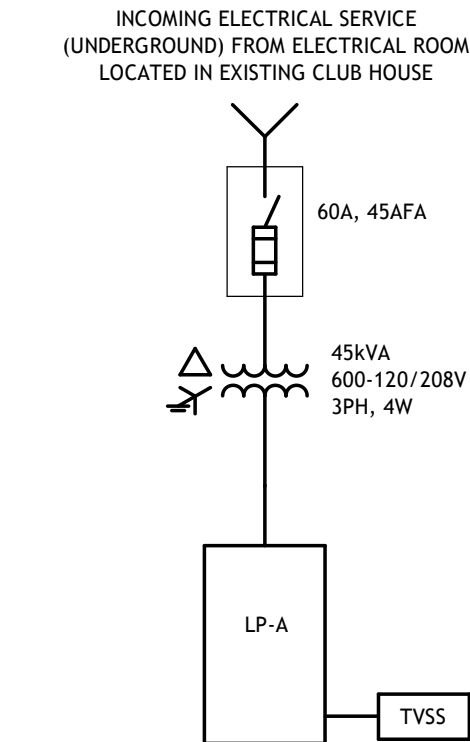


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NEW BRANCH PANEL: LP-A													
Volts: 120/208 Wye				AIC Rating				Supply From:					
Phases: 3				Mains Type: Copper									
Wires: 4				Enclosure: Type 2									
Mains Rating: 225 A													
Main Breaker: 60 A													
CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
LPA-1	EMERGENCY LIGHTING (LOCK)	15 A	1	480 W	460 W					1	20 A	LIGHTING	LPA-2
LPA-3	LIGHTING	20 A	1			394 W	460 W			1	20 A	LIGHTING	LPA-4
LPA-5	LIGHTING	20 A	1					136 W	288 W	1	20 A	LIGHTING	LPA-6
LPA-7	RECEPTACLE	20 A	1	400 W	400 W					1	20 A	RECEPTACLE	LPA-8
LPA-9	RECEPTACLE	20 A	1			1000 W	400 W			1	20 A	RECEPTACLE	LPA-10
LPA-11	FRIDGE	20 A	1					200 W	2496 W	2	40 A	HEAT PUMP	LPA-12
LPA-13	MICROWAVE	20 A	1	1000 W	2496 W								LPA-14
LPA-15	COUNTER RECEPTACLE	20 A	1			200 W	400 W			1	20 A	RECEPTACLE	LPA-16
LPA-17	COUNTER RECEPTACLE	20 A	1					200 W	400 W	1	20 A	RECEPTACLE	LPA-18
LPA-19	COUNTER RECEPTACLE	20 A	1	200 W	600 W					1	20 A	RECEPTACLE	LPA-20
LPA-21	WASHER	20 A	1			700 W	600 W			1	20 A	RECEPTACLE	LPA-22
LPA-23								100 W	600 W	1	20 A	RECEPTACLE	LPA-24
LPA-25	DRYER	30 A	2	100 W	400 W					1	20 A	RECEPTACLE	LPA-26
LPA-27	HOUSEKEEPING RECEPTACLES	20 A	1			300 W	0 W			2	15 A	AIR COMPRESSOR	LPA-28
LPA-29	AUTOMATIC DOOR	15 A	1					500 W	0 W				LPA-30
LPA-31	WASHROOM RECEPTACLE	20 A	1	200 W	0 W					1	20 A	SPARE	LPA-32
LPA-33	EXTERIOR RECEPTACLES	20 A	1			600 W	0 W			1	20 A	SPARE	LPA-34
LPA-35	EXTERIOR RECEPTACLE	20 A	1					200 W	0 W	1	20 A	SPARE	LPA-36
LPA-37	ERV-1	15 A	1	233 W	0 W					1	20 A	SPARE	LPA-38
LPA-39	ERV-2	15 A	1			347 W	0 W			1	20 A	SPARE	LPA-40
LPA-41	RECEPTACLE	20 A	1					800 W	0 W	1	20 A	SPARE	LPA-42
LPA-43	SPARE	15 A	1	0 W	0 W					1	20 A	SPARE	LPA-44
LPA-45	SPARE	15 A	1			0 W	0 W			1	20 A	SPARE	LPA-46
LPA-47	SPARE	15 A	1					0 W	0 W	1	20 A	SPARE	LPA-48
LPA-49	SPARE	15 A	1	0 W	0 W					1	20 A	SPARE	LPA-50
LPA-51	SPARE	15 A	1			0 W	0 W			1	20 A	SPARE	LPA-52
LPA-53	SPARE	15 A	1					0 W	0 W	1	20 A	SPARE	LPA-54
LPA-55	SPARE	20 A	1	0 W	0 W								LPA-56
LPA-57	SPARE	20 A	1			0 W	0 W						LPA-58
LPA-59	SPARE	20 A	1					0 W	0 W	3	30 A	TVSS	LPA-60
Total Load:				6525 W		4964 W		5639 W		17128 W			
Total Amps:				55 A		41 A		48 A					
Panel Location:													
Notes:													
Mounting: Surface													
Main Breaker Location: Seperate compartment from branch breakers.													



DETAIL NOTES:
A. PROVIDE NEW DISCONNECT, TRANSFORMER AND PANEL FOR BUILDING SERVICE
B. PANEL SHALL BE COMPLETE WITH A SURGE SUPPRESSOR

SINGLE LINE DIAGRAM
NTS

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E400

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MAINTENANCE BUILDING
320 BALMORAL DRIVE
BRANTFORD, ON N3V 1E6

DRAWING TITLE:
SINGLE LINE DIAGRAM AND
PANEL SCHEDULE

CHECKED BY:
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DRAWING SCALE:
NTS

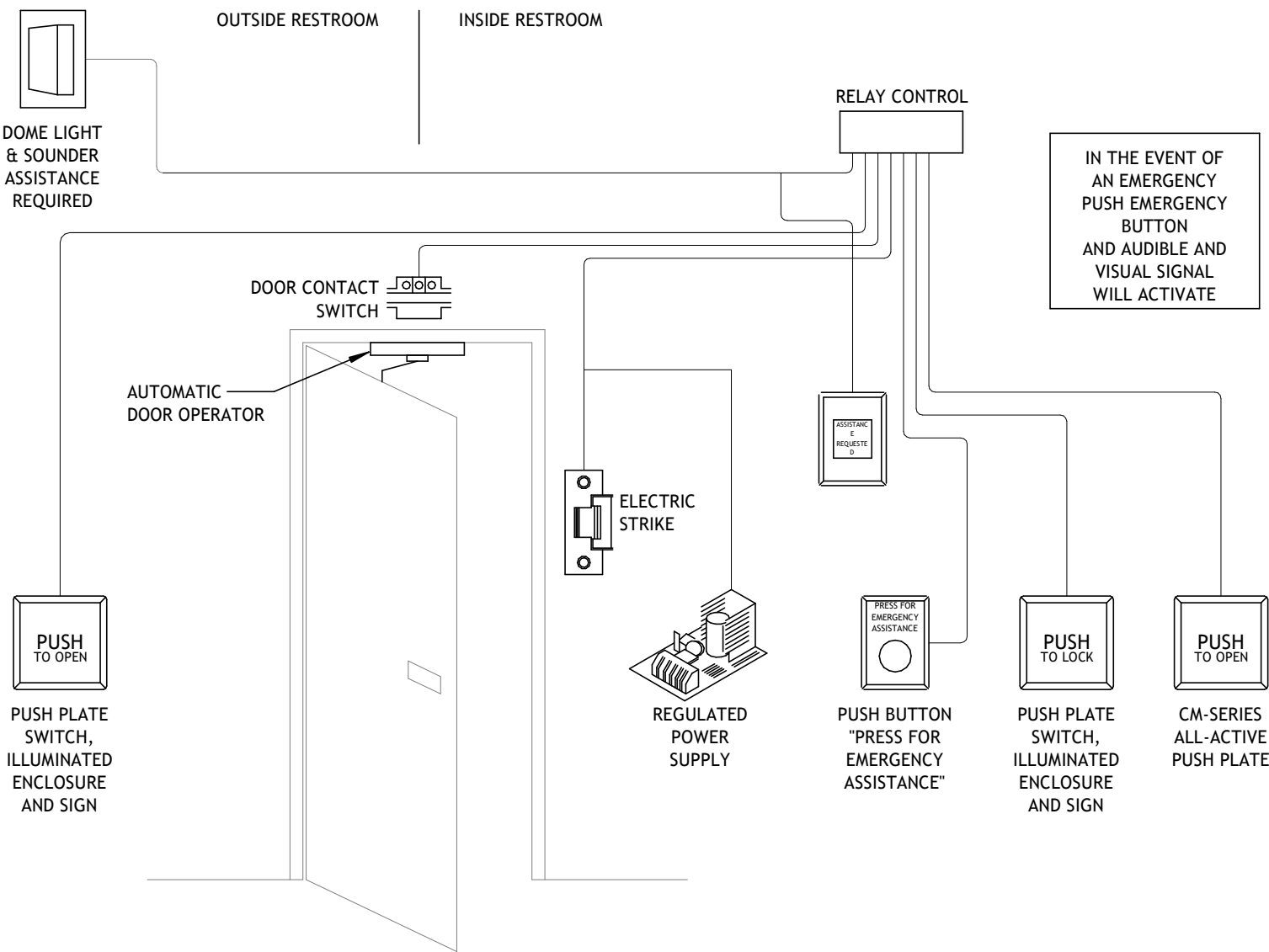
PROJECT NO.:
23-183

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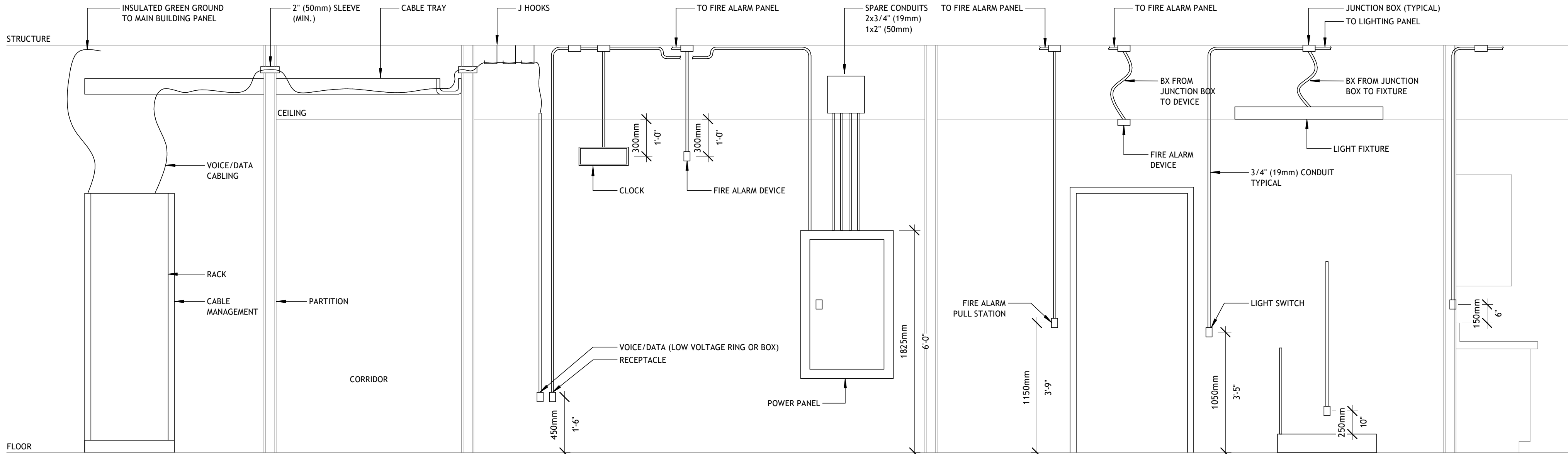
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DATE PLOTTED 2024-12-10 2:48:04 PM PROJECT NUMBER & NAME 23-183 GRETZKY GOLF COURSE FILE PATH: C:\Users\dshch_2\Documents\23-183 Grezky Golf Course Maintenance_E_V24_Daryl_Nichols.rvt



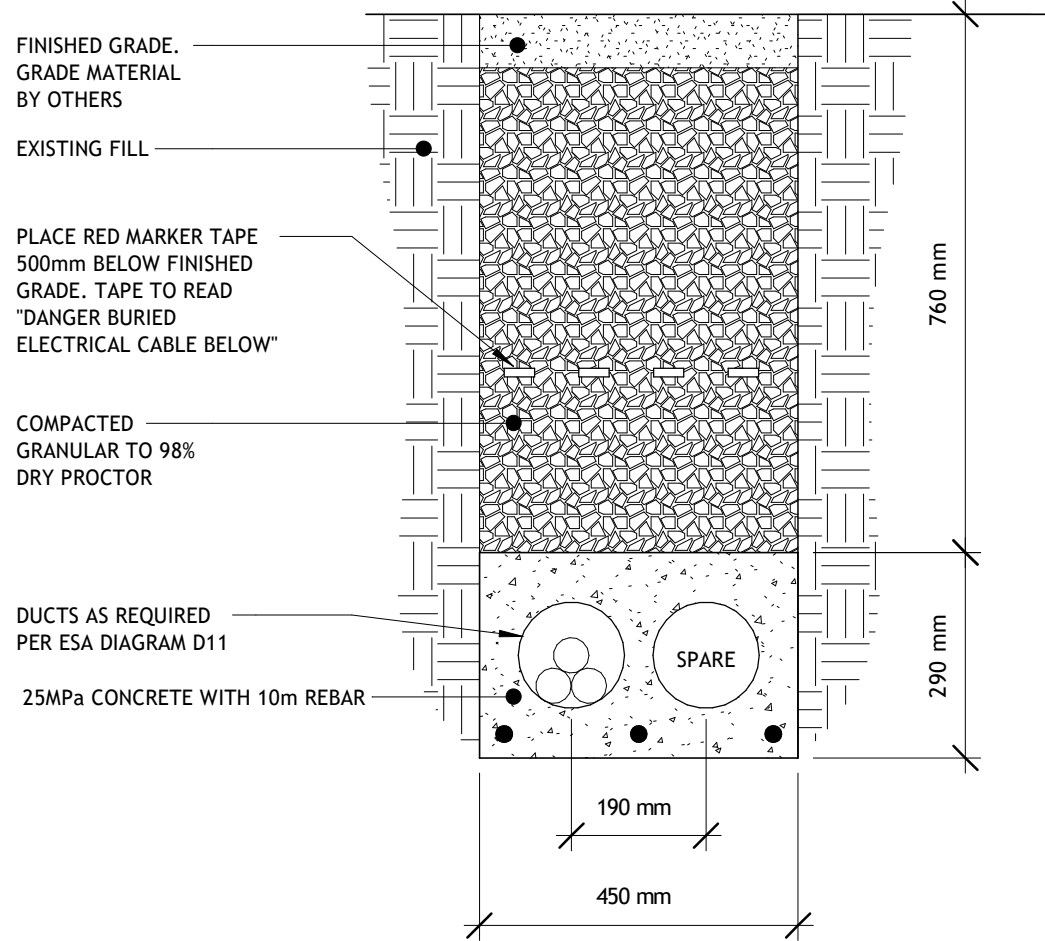
- DETAIL NOTES:
- A. UNIVERSAL WASHROOM SHALL BE EQUIPPED WITH AN AUTOMATIC DOOR OPENER. THE OPENER SHALL ALSO INCLUDE A "PUSH TO LOCK" BUTTON ON THE INSIDE. ONCE ENGAGED, THIS WILL DISABLE THE EXTERIOR DOOR OPERATOR BUTTON. THE EXTERIOR OCCUPIED LIGHT WILL ILLUMINATE. WHEN THE PATRON HAS FINISHED USING THE WASHROOM, THEY SHALL PRESS THE DOOR OPERATOR BUTTON AND THE "PUSH TO LOCK" WILL DISENGAGE AND THE DOOR OPERATOR WILL OPEN THE DOOR AND TURN OFF THE OCCUPIED LIGHT.
 - B. THE JUNCTION BOX SHALL BE MOUNTED AT HIGH LEVEL ON THE INSIDE OF THE ROOM.
 - C. ALL CONDUITS SHALL BE A MINIMUM OF 3/4". PROVIDE PULL ROPES FOR LOW VOLTAGE WIRING BY OTHERS. CONDUITS ARE TO BE CONCEALED IN WALL. SURFACE DEVICES AND CONDUIT IS NOT PERMITTED.
 - D. COORDINATE THE LOCATION OF ALL DEVICES PRIOR TO ROUGH-IN WITH DOOR HARDWARE SUPPLIER/INSTALLER.
 - E. COORDINATE WORK WITH HARDWARE SUPPLIER AND PROVIDE ANY MATERIALS NOT INCLUDED IN THEIR QUOTE TO FACILITATE A COMPLETE SYSTEM.
 - F. TEST AND ADJUST THE OPERATION OF THE DOOR TO THE OWNERS SATISFACTION. PROVIDE TRAINING AS REQUIRED TO OWNERS MAINTENANCE STAFF ON DOOR OPERATION, MAINTENANCE AND ADJUSTMENT.

UNIVERSAL WASHROOM DETAIL
N.T.S. 2 E500

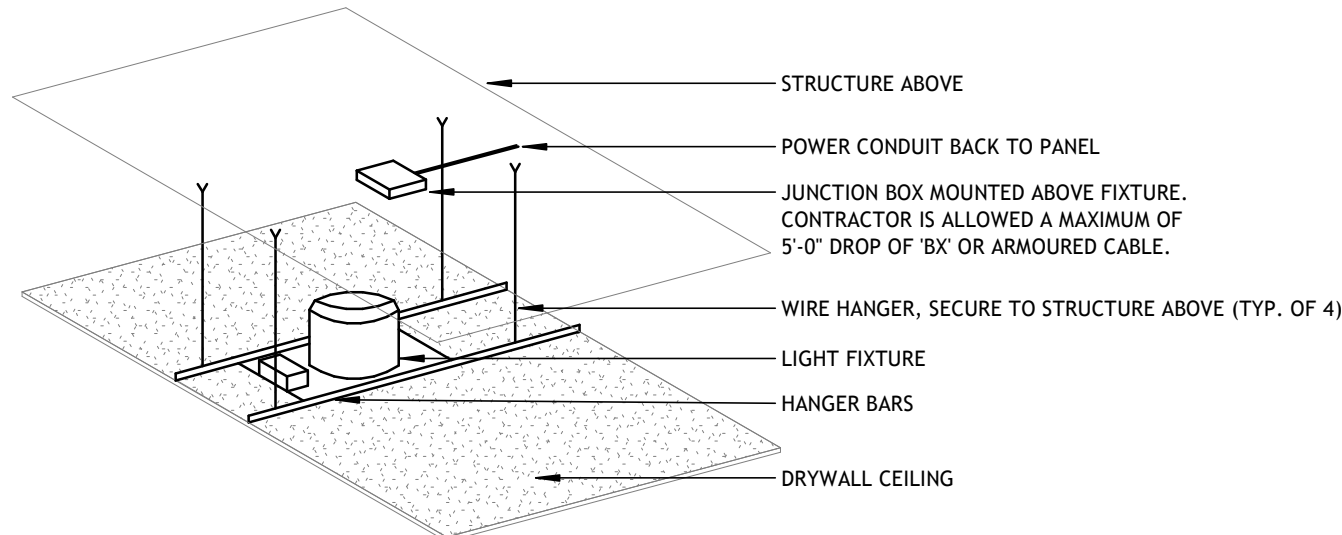


- DETAIL NOTES:
- A. DETAIL IS APPLICABLE FOR DEVICES SHOWN ON PLANS. ALL THE DEVICES INDICATED IN THE DETAIL MAY NOT OCCUR ON THE PLANS.
 - B. ALL CONDUITS SHALL HAVE BUSHINGS INSTALLED TO PREVENT CHAFFING OF WIRE(S).
 - C. ALL CONDUITS ARE TO GO DIRECTLY FROM THE OUTLET BOX UP THE WALL INTO THE CEILING SPACE. NO HORIZONTAL RUNS OF CONDUIT, OR GROUPING OF CONDUITS WITH OTHER SERVICES IN CLOSE PROXIMITY.
 - D. CONDUITS ARE TO HAVE PULL ROPES INSTALLED AND LEFT BEHIND TO ALLOW THE PULLING OF ADDITIONAL SERVICES IN THE FUTURE.
 - E. ALL BREACHES IN WALLS ARE TO BE FIRESTOPPED TO MAINTAIN THE FIRE SEPARATIONS.
 - F. PROVIDE SUPPORTS FOR ALL CEILING MOUNTED ELEMENTS (IE CHAIN HANGERS FOR FIXTURES ETC.). DEVICES SHALL NOT BE SUPPORTED BY A CEILING TILE.

TYPICAL MOUNTING HEIGHTS/INSTALLATION DETAIL
N.T.S. 1 E500

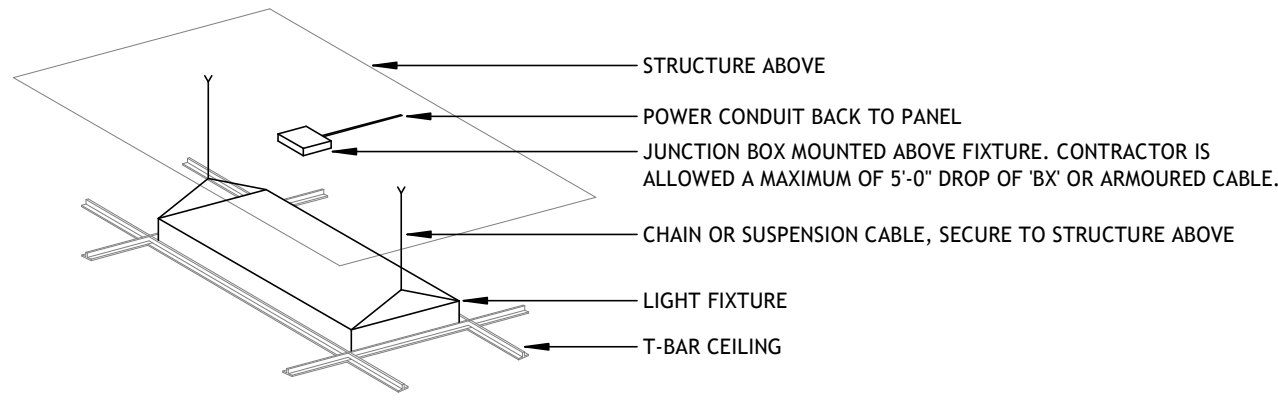


DUCT BANK DETAIL
N.T.S. 5 E500



- DETAIL NOTES:
- A. BX OR ARMoured CABLE IS TO BE RUN NEAT AND TIDY IN CEILING SPACE. PROVIDE CABLE TIES TO AFFIX TO SUSPENSION CHAINS. CLIP ENDS OF TIES.
 - B. JUNCTION BOXES ARE TO BE LOCATED CLOSE TO FIXTURES. PROVIDE P-TOUCH TYPE LABEL ON COVER PLATE WITH CIRCUIT NUMBER.

RECESSED DOWNLIGHT IN DRYWALL
N.T.S. 4 E500



- DETAIL NOTES:
- A. BX OR ARMoured CABLE IS TO BE RUN NEAT AND TIDY IN CEILING SPACE. PROVIDE CABLE TIES TO AFFIX TO SUSPENSION CHAINS. CLIP ENDS OF TIES.
 - B. JUNCTION BOXES ARE TO BE LOCATED CLOSE TO FIXTURES. PROVIDE P-TOUCH TYPE LABEL ON COVER PLATE WITH CIRCUIT NUMBER.

RECESSED FIXTURE IN T-BAR
N.T.S. 3 E500

DO NOT SCALE DRAWINGS. CALL FOR ANY CLARIFICATIONS THAT ARE REQUIRED. FIELD VERIFY AT ALL BUILT CONDITIONS. ALL DWG.'S ARE TO BE READ IN COLOUR. ORIGINAL PAGE SIZE ARCH 'D' - 24" x 36"

CITY OF
BRANTFORD

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STAMP ARCH.



STAMP STRUCT.

PROJECT TITLE:
GRETZKY GOLF COURSE
MAINTENANCE BUILDING
320 BALMORAL DRIVE
BRANTFORD, ON N3V 1E6

DRAWING TITLE:
DETAILS

CHECKED BY:

KS

DRAWING SCALE:

As indicated

PROJECT NO.:

23-183

DRAWN BY:

DRAWING NO.:

E500