

ELECTRICAL SYMBOL LEGEND				ELECTRICAL DRAWING LIST		FORMAL ISSUES			
LIGHTING				COMMUNICATIONS		2025-05-14 ISSUE FOR REVIEW			
LINEAR FLUORESCENT LUMINAIRE, TYPE 'X' AS SPECIFIED. HATCHING DENOTES CONNECTED TO EMERGENCY LIGHTING CIRCUIT				FIRE ALARM SYSTEM		2025-05-15 ISSUE FOR REVIEW			
CEILING MOUNTED LUMINAIRE, TYPE 'X' AS SPECIFIED				ABBREVIATIONS		2025-05-16 ISSUE FOR REVIEW			
WALL MOUNTED LUMINAIRE, TYPE 'X' AS SPECIFIED				GENERAL POWER		2025-05-16 ISSUE FOR REVIEW			
DOUBLE SURFACE MOUNTED EMERGENCY LIGHTING REMOTE HEAD, TYPE 'BU' INDICATES BATTERY BANK FROM				POWER DISTRIBUTION		2025-05-16 ISSUE FOR REVIEW			
CEILING MOUNTED EMERGENCY LIGHTING REMOTE HEAD				BRANCH CIRCUITING LEGEND		2025-05-16 ISSUE FOR REVIEW			
EMERGENCY LIGHTING BATTERY UNIT ON DUPLEX RECEPTACLE AND DOUBLE REMOTE HEADS, TYPE 'BU' AS SPECIFIED				GENERAL NOTES		2025-05-16 ISSUE FOR REVIEW			
WALL MOUNTED DOUBLE FACED EXIT LIGHT AND DIRECTIONAL ARROWS AS INDICATED. SHADDED AREAS DENOTE DIRECTION OF FACE OF EXIT SIGN. 'F' DENOTES FLOOR. 'W' DENOTES WALL				CODE SUMMARY		2025-05-16 ISSUE FOR REVIEW			
WALL MOUNTED SINGLE FACED EXIT LIGHT AND DIRECTIONAL ARROWS AS INDICATED. SHADDED AREAS DENOTE DIRECTION OF FACE OF EXIT SIGN				WORKING AREA		2025-05-16 ISSUE FOR REVIEW			
CEILING MOUNTED DOUBLE FACED EXIT LIGHT AND DIRECTIONAL ARROWS AS INDICATED. SHADDED AREAS DENOTE DIRECTION OF FACE OF EXIT SIGN				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CEILING MOUNTED SINGLE FACED EXIT LIGHT AND DIRECTIONAL ARROWS AS INDICATED. SHADDED AREAS DENOTE DIRECTION OF FACE OF EXIT SIGN				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
SECURITY AND ACCESS SYSTEMS				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
SECURITY SYSTEM CONTROL PANEL				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
KEY PAD				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CARD READER				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
REQUEST TO EXIT BUTTON				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOOR CONTACT				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ELECTRIC HOLD OPEN				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
OVERHEAD DOOR CONTACT				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ELECTRIC LOCKSET				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
REMOTE RELEASE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CLOSED CIRCUIT CAMERA				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
SECURITY SYSTEM MONITOR				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
WALL LOCK DEVICE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
WALL LOCK RESET SWITCH				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
KEY SWITCH				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CODE BLUE SPEAKER PHONE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CODE BLUE INTEGRATED UNIT ON ACCESSORIES, POLE OR PEDESTAL MOUNTED				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ALARM SOUNDER				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
PANEL ALARM BUTTON				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ELECTRIFIED CONTINUOUS HINGE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
NURSE CALL SYSTEM				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
BED MONITOR				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CANCEL STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CODE BLUE STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOME LIGHT				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOME LIGHT, ZONE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOMELESS CONTROLLER				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOMELESS CONTROLLER WITH AUDIO				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DOMELESS DUTY CONTROLLER				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
DUTY STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
EMERGENCY STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
KEY PASS STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
MASTER CONSOLE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
PATIENT STATION, SINGLE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
PATIENT STATION, DOUBLE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
PULL CORD STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
REGISTRATION STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
STAFF ASSIST STATION				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
STAFF TERMINAL				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CONTROL PANEL, RECESS				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
CONTROL PANEL, SURFACE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ANNUNCIATOR PANEL, RECESS				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
ANNUNCIATOR PANEL, SURFACE				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			
NURSE CALL STATION CONNECTED WITH PUSH-BUTTON - WALL MOUNTED				CLOSING CAMERA		2025-05-16 ISSUE FOR REVIEW			

7		
6		
5		
4	ISSUED FOR TENDER AND PERMIT	04.06.26
3	ISSUED FOR CLIENT REVIEW	29.05.26
2	ISSUED FOR REVIEW	25.07.25
1	ISSUED FOR REVIEW	15.05.25
NO	ACTION	DATE

Client:
**SCARBOROUGH
HEALTH NETWORK**
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:
**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

Sheet Title:
ELECTRICAL COVER PAGE

Project North	Stamp
Date: APR 2025	Project No.: 24002-02
Scale: N.T.S.	Drawn: P.T./K.O.
Checked: M.C.	
Drawing Number:	

1.	GENERAL
1.1.	<u>GENERAL REQUIREMENTS</u>
1.1.1.	ALL EQUIPMENT INSTALLED AS PART OF THIS PROJECT SHALL BE ANTI-LIGATURE UNLESS OTHERWISE NOTED.
1.1.2.	CODES & STANDARDS THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL CODES IN AFFECT INCLUDING ALL AUTHORIZED AGENCIES HAVING JURISDICTION OVER THE WORK INCLUDING, BUT NOT RESTRICTED TO THE CANADIAN ELECTRICAL SAFETY CODE, ONTARIO ELECTRIC SAFETY CODE, ONTARIO BUILDING CODE, AND ALL OTHER BUILDING CODES IN EFFECT AT THE TIME OF CONSTRUCTION.
1.2.	<u>DEFINITIONS</u>
1.2.1.	THE TERM "THIS SUB-CONTRACTOR MEANS THE FIRM HAVING A SUBCONTRACT WITH THE "CONTRACTOR" TO PERFORM, SUPERVISE AND CO-ORDINATE ALL WORK OF THIS DIVISION.
1.2.2.	THE TERM "INSTALL" (AND TENSES OF "INSTALL") MEANS INSTALL AND CONNECT COMPLETE.
1.2.3.	THE TERM "SUPPLY" MEANS SUPPLY ONLY.
1.2.4.	THE TERM "PROVIDE" OR "PROVISION OF" ARE USED IN RELATIONSHIP TO EQUIPMENT AND OTHER MATERIALS SPECIFIED IT MEANS "SUPPLY, INSTALL AND CONNECT". WHEREVER THE TERMS "PROVIDE" OR "PROVISION OF" ARE USED IN CONNECTION WITH SERVICES SUCH AS TESTING, START-UP AND COMMISSIONING FOR ANY PART OF THE WORK, IT MEANS PROCURE, SUPERVISE, TAKE RESPONSIBILITY AND PAY FOR THESE SERVICES.
1.2.5.	"DRAWINGS AND SPECIFICATIONS" MEANS "THE CONTRACT DOCUMENTS".
1.2.6.	THE TERM "WORK" MEANS ALL EQUIPMENT, PERMITS, MATERIALS AND LABOR TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION AS REQUIRED AND DETAILED IN THE DRAWINGS AND SPECIFICATIONS.
1.3.	<u>SUBMITTALS</u>
1.3.1.	SUBMIT SHOP DRAWINGS FOR ALL MATERIAL AND AS FURTHER IDENTIFIED HEREIN.
1.4.	<u>PERMITS, FEES AND INSPECTIONS</u>
1.4.1.	APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS, EXAMINATIONS AND FEES REQUIRED FOR THE WORK AND OBTAIN ALL PERMITS AS REQUIRED.
1.4.1.	ARRANGE FOR INSPECTION OF ALL WORK BY THE AUTHORITIES HAVING JURISDICTION OVER THE WORK, ON COMPLETION OF THE WORK, PRESENT TO THE CONSULTANT THE FINAL UNCONDITIONAL CERTIFICATE OF APPROVAL OF THE INSPECTING AUTHORITIES.
1.4.2.	IN CASE OF CONFLICT, THE CODES TAKE PRECEDENCE OVER THE CONTRACT DOCUMENTS. IN NO INSTANCE REDUCE THE STANDARD OR SCOPE OF WORK OR INCIDENT ESTABLISHED BY THE DRAWINGS AND SPECIFICATIONS BY APPLYING ANY OF THE CODES REFERRED TO HEREIN.
1.5.	<u>CONTRACT DRAWINGS</u>
1.5.1.	THE DRAWINGS FOR ELECTRICAL WORK ARE PERFORMANCE DRAWINGS, DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT AND APPROXIMATE LOCATION OF APPARATUS, FIXTURES AND CONDUIT RUNS. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN AND STRUCTURAL DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.
1.5.1.	DO NOT SCALE DRAWINGS. OBTAIN INFORMATION INVOLVING ACCURATE DIMENSIONS FROM DIMENSIONS SHOWN ON ARCHITECTURAL DRAWINGS, AND BY SITE MEASUREMENT.
1.5.2.	MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS, AND/OR EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (CONDUITS AROUND BEAMS, COLUMNS, ETC.)
1.5.3.	ALTER, AT NO ADDITIONAL COST, THE LOCATIONS OF MATERIALS AND/OR EQUIPMENT AS DIRECTED THAT DO NOT NECESSITATE ADDITIONAL MATERIAL.
1.5.4.	INSTALL CEILING MOUNTED COMPONENTS (E.G., LIGHT FIXTURES, SPEAKERS, HEAT OR SMOKE DETECTORS) IN ACCORDANCE WITH REFLECTED CEILING DRAWINGS.
1.5.5.	CONFIRM ON THE SITE THE EXACT LOCATION AND MOUNTING ELEVATION OF OUTLETS AND FIXTURES AS RELATED TO ARCHITECTURAL AND STRUCTURAL DETAILS.
1.6.	<u>EXAMINATION OF SITE AND DOCUMENTATION</u>
1.6.1.	PRIOR TO SUBMITTING TENDER, CAREFULLY EXAMINE CONDITIONS AT THE SITE WHICH COULD AFFECT THE WORK. REFER TO AND EXAMINE ALL CONTRACT DOCUMENTS.
1.6.2.	ENSURE THAT MATERIALS AND EQUIPMENT ARE DELIVERED TO THE SITE AT THE PROPER TIME AND IN SUCH ASSEMBLIES AND SIZES SO AS TO ENTER INTO THE BUILDING AND TO BE MOVED INTO THE SPACES WHERE THEY ARE TO BE LOCATED WITHOUT DIFFICULTY. BE RESPONSIBLE FOR ANY CUTTING AND PATCHING INVOLVED IN GETTING ASSEMBLIES INTO PLACE.
1.6.3.	BEFORE TENDERING, EXAMINE SITE AND ALL APPLICABLE DRAWINGS SO THAT THE TENDER PRICE INCLUDES FOR EVERYTHING NECESSARY FOR COMPLETION OF WORK. FAILURE TO VISIT THE SITE OR ADEQUATELY REVIEW ALL THE REQUIRED INTERFACING DETAILS WILL NOT ENTITLE THIS SUB-CONTRACTOR TO ANY ADDITIONAL COMPENSATION.
1.7.	<u>PHASING AND SCHEDULING OF WORK</u>
1.7.1.	PRIOR TO COMMENCING ANY WORK, REFER TO SCOPE OF WORK FOR A DETAILED DESCRIPTION OF THE PHASING AND SCHEDULING OF THE WORK. EXECUTE WORK IN ACCORDANCE WITH THE PHASING AND CONSTRUCTION SCHEDULE. PROVIDE ALL NECESSARY TEMPORARY CONNECTIONS AND EQUIPMENT TO PROVIDE FUNCTIONAL, OPERATIONAL SYSTEMS DURING CONSTRUCTION PERIOD WHEN PART OF THE BUILDING WILL BE OCCUPIED AND CONSTRUCTION IS STILL CONTINUING IN OTHER PORTIONS.
1.8.	<u>COORDINATION DRAWINGS</u>
1.8.1.	PREPARE DRAWINGS IN CONJUNCTION WITH ALL TRADES CONCERNED, SHOWING SLEEVES AND OPENINGS FOR PASSAGE THROUGH STRUCTURE, AND ALL INSERTS, EQUIPMENT BASES, AND SUPPORTS, AND RELATE THESE TO SUITABLE GRID LINES AND ELEVATION DATUM.
1.8.2.	WHEN REQUESTED, PROVIDE WEIGHTS OF MAJOR ITEMS OF EQUIPMENT.
1.8.3.	PREPARE INTERFERENCE AND CO-ORDINATION DRAWINGS FOR ALL AREAS WHERE THE WORK OF THIS DIVISION COULD CONFLICT WITH AND/OR OBSTRUCT THE WORK OF OTHER TRADES AND/OR OTHER SECTIONS OF THIS DIVISION. SUBMIT DRAWINGS FOR REVIEW BY THE CONSULTANT.
1.9.	<u>COORDINATION</u>
1.9.1.	CO-ORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT:
1.9.2.	TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS THAT REDUCE HEADROOM ARE INDICATED.
1.9.3.	TO PROVIDE FOR EASE OF DISCONNECTING THE EQUIPMENT WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS.
1.9.4.	TO ALLOW RIGHT OF WAY FOR PIPING AND CONDUIT INSTALLED AT REQUIRED SLOPE.
1.9.5.	SO CONNECTING RACEWAYS, CABLES, WIREWAYS, CABLE TRAYS, AND BUSWAYS WILL BE CLEAR OF OBSTRUCTIONS AND OF THE WORKING AND ACCESS SPACE OF OTHER EQUIPMENT.
1.9.6.	CO-ORDINATE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SET SLEEVES IN CAST-IN-PLACE CONCRETE, MASONRY WALLS, AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.
1.9.7.	CO-ORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE BEHIND FINISHED SURFACES OR OTHERWISE CONCEALED. PROVIDE ACCESS DOORS AND PANELS TO SUIT THE FINISH THAT IT WILL BE INSTALLED ONTO.
1.9.8.	CO-ORDINATE SLEEVE SELECTION AND APPLICATION WITH SELECTION AND APPLICATION OF FIRESTOPPING.
1.9.9.	APPLY FIRESTOPPING TO PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES FOR ELECTRICAL INSTALLATIONS TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.
1.9.10.	CO-ORDINATE SIZES AND LOCATIONS OF REQUIRED CONCRETE PADS AND BASES TO SUPPORT ELECTRICAL EQUIPMENT.
1.10.	<u>PRODUCT STANDARDS AND ALTERNATIVES</u>
1.10.1.	PROVIDE NEW MATERIAL AND EQUIPMENT AS SPECIFIED AND TO THE ACCEPTANCE OF THE CONSULTANT. MANUFACTURER'S NAMES ARE LISTED TO SET A STANDARD OF QUALITY, PERFORMANCE, CAPACITY, APPEARANCE AND SERVICEABILITY.
1.10.2.	WHERE NO OTHER ACCEPTABLE MANUFACTURERS ARE INDICATED, PROVIDE THE EXACT MAKE SPECIFIED. REQUESTS FOR ACCEPTANCE OF MANUFACTURERS NOT LISTED MUST BE SUBMITTED NOT LESS THAN SEVEN WORKING DAYS PRIOR TO CLOSING DATE OF THE TENDER AND SUBMISSIONS MUST BEAR PROOF OF ACCEPTANCE BY THE CONSULTANT IF USED IN THE TENDER.
1.10.3.	ASSUME FULL RESPONSIBILITY FOR ENSURING THAT WHEN PROVIDING OTHER ACCEPTABLE MANUFACTURERS ALL SPACE, WEIGHT, CONNECTIONS, POWER AND WIRING REQUIREMENTS, ETC., ARE CONSIDERED, AND COSTS THEREFORE INCLUDED IN THE TENDER. EQUIPMENT REQUIRING GREATER THAN SPECIFIED ENERGY REQUIREMENTS OR UNDULY LIMITING SERVICE SPACE REQUIREMENT WILL NOT BE ACCEPTED.
1.11.	RIGHTS RESERVED
1.11.1.	RIGHTS ARE RESERVED TO FURNISH ANY ADDITIONAL DETAIL DRAWINGS, WHICH IN THE JUDGEMENT OF THE CONSULTANT MAY BE NECESSARY TO CLARIFY THE WORK, AND SUCH DRAWINGS SHALL FORM A PART OF THIS CONTRACT.
1.12.	EXPEDITING AND DELIVERY
1.12.1.	CONTINUOUSLY CHECK AND EXPEDITE DELIVERY OF EQUIPMENT AND MATERIALS. WHERE NECESSARY, INSPECT AT THE SOURCE OF MANUFACTURE.
1.12.2.	CONTINUOUSLY CHECK AND EXPEDITE THE FLOW OF NECESSARY INFORMATION TO AND FROM ALL PARTIES INVOLVED.
1.12.3.	IMMEDIATELY INFORM THE CONSULTANT IN CASE INFORMATION IS REQUIRED.
1.13.	<u>SUPERINTENDENCE</u>
1.13.1.	MAINTAIN AT THE JOB SITE, AT ALL TIMES, QUALIFIED PERSONNEL AND SUPPORTING STAFF, WITH PROVEN

	EXPERIENCE IN ERECTING, SUPERVISING, TESTING AND ADJUSTING PROJECTS OF COMPARABLE NATURE AND COMPLEXITY.
1.14.	<u>WORKMANSHIP</u>
1.14.1.	INSTALL EQUIPMENT, CONDUIT AND CABLES IN A WORKMANLIKE MANNER TO PRESENT A NEAT APPEARANCE TO FUNCTION PROPERLY TO THE SATISFACTION OF THE CONSULTANT. INSTALL RUNS PARALLEL AND PERPENDICULAR TO BUILDING LINES, IN CHASES, BEHIND FURRING OR ABOVE CEILINGS, WHERE SUCH CONCEALMENT IS POSSIBLE. IN AREAS WHERE SYSTEMS ARE TO BE EXPOSED INSTALL NEATLY AND GROUP TO PRESENT A TIDY APPEARANCE.
1.14.2.	INSTALL EQUIPMENT AND APPARATUS REQUIRING MAINTENANCE, ADJUSTMENT OR EVENTUAL REPLACEMENT WITH DUE ALLOWANCE THEREFORE.
1.14.3.	INCLUDE IN THE WORK ALL REQUIREMENTS OF MANUFACTURERS SHOWN ON THE SHOP DRAWINGS OR MANUFACTURERS INSTALLATION INSTRUCTIONS.
1.14.4.	REPLACE WORK UNSATISFACTORY TO THE CONSULTANT WITHOUT EXTRA COST.
1.14.5.	MAKE PROVISION TO ACCOMMODATE FUTURE PLANT AND EQUIPMENT INDICATED ON DRAWINGS.
1.14.6.	PROTECT FROM DAMAGE ALL EQUIPMENT DELIVERED TO THE SITE AND DURING INSTALLATION, ANY DAMAGE OR MARKING OF FINISHED SURFACES SHALL BE MADE GOOD TO THE SATISFACTION OF THE CONSULTANT.
1.15.	<u>TRIAL USAGE AND TESTS</u>
1.15.1.	THE OWNER HAS THE PRIVILEGE OF THE TRIAL USAGE OF ELECTRICAL SYSTEMS OR PARTS THEREOF FOR THE PURPOSE OF TESTING AND LEARNING THE OPERATIONAL PROCEDURES.
1.15.1.	ASSIST IN TRIAL USAGE OVER A LENGTH OF TIME AS DEEMED REASONABLE BY THE CONSULTANT AND DO NOT WAIVE ANY RESPONSIBILITY BECAUSE OF TRIAL USAGE.
1.15.2.	TRIAL USAGE SHALL NOT BE CONSTRUED AS SUBSTANTIAL COMPLETION OF THE WORK, OR ACCEPTANCE BY THE OWNER.
1.15.3.	PROVIDE AND PAY FOR ALL TESTING REQUIRED ON THE SYSTEM COMPONENTS WHERE, IN THE OPINION OF THE CONSULTANT, MANUFACTURER'S RATINGS OR SPECIFIED PERFORMANCE IS NOT BEING ACHIEVED.
1.16.	<u>NOISE AND VIBRATION</u>
1.16.1.	ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.
1.16.2.	CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH LIQUID-TIGHT FLEXIBLE CONDUIT AND ASSOCIATED CONNECTORS. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND MOTORS. USE A MINIMUM OF 3FT OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.
1.16.3.	VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 1/2" HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.
1.17.	<u>INTERRUPTION OF SERVICES</u>
1.17.1.	WHERE DISRUPTIONS OF EXISTING SERVICES ARE REQUIRED CO-ORDINATE THE SHUT-DOWNS WITH THE OWNER AND CARRY OUT THE WORK AT A TIME AND IN A MANNER ACCEPTABLE TO THEM. CAREFULLY SCHEDULE ALL DISRUPTIONS AND/OR SHUT-DOWNS AND ENSURE THAT THE DURATION OF SAME IS KEPT TO THE ABSOLUTE MINIMUM. SUBMIT FOR APPROVAL ANY SCHEDULE OF EACH SHUT-DOWN AT LEAST 72 HOURS IN ADVANCE OF PERFORMING WORK AND OBTAIN OWNER'S WRITTEN CONSENT PRIOR TO IMPLEMENTING.
1.17.2.	WHERE DISRUPTIONS OF LIFE SAFETY SYSTEMS ARE REQUIRED COMPLY WITH PARAGRAPH 1.17.1 ABOVE PROVIDE CONTINUOUS MONITORING DURING SHUT-DOWN PERIOD AND ENSURE ALL SYSTEMS ARE REACTIVATED PRIOR TO LEAVING THE SITE AT THE END OF EACH WORKING DAY.
1.17.3.	INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE INCLUDED IN THE PRICE SUBMITTED.
1.17.4.	ASSUME FULL RESPONSIBILITY FOR ANY DISRUPTION OR DAMAGE TO EXISTING SERVICES OR SYSTEMS. SHOULD ANY TEMPORARY CONNECTIONS BE REQUIRED TO MAINTAIN SERVICES DURING WORK IN THE EXISTING BUILDING, SUPPLY AND INSTALL ALL NECESSARY MATERIAL AND EQUIPMENT AND PROVIDE ALL LABOUR AT NO EXTRA COST. SHOULD THIS DIVISION DAMAGE OR DISRUPT ANY EXISTING SERVICE OR SYSTEM IN THE COURSE OF WORK, MAKE FULL REPAIRS WITHOUT EXTRA COST AND TO THE SATISFACTION OF THE OWNER.
1.18.	<u>DEMOLITION</u>
1.18.1.	VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING, AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.
1.18.2.	REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.
1.18.3.	MAKE SAFE AND DISCONNECT ALL POWER AND SYSTEMS, AS AND WHEN, AND TO THE EXTENT REQUIRED TO FACILITATE WITH THE DEMOLITION.
1.18.4.	ENSURE THAT ALL ELECTRICAL LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.
1.18.5.	RELOCATE ANY ELECTRICAL FEEDERS OR EQUIPMENT THAT ARE REQUIRED TO REMAIN IN SERVICE, THAT ARE SECURED TO EXISTING WALLS, FLOORS OR CEILINGS TO BE DEMOLISHED OR THAT ARE BURIED AND REQUIRED TO BE EXCAVATED FOR NEW WORK.
1.18.6.	REMOVE AND REPLACE ANY ELECTRICAL EQUIPMENT ON WALLS OR CEILINGS THAT WILL BE DEMOLISHED AND RESULT.
1.18.7.	WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUIT AND WIRING BACK TO THE ASSOCIATED PANELBOARDS OR CONTROL PANEL. WHERE FLOOR BOXES ARE BEING REMOVED, ENSURE UNDER-FLOOR CONDUIT IS REMOVED BACK TO SOURCE AND FILL ALL CORE HOLES, IN FLOORS AND IN WALLS, WITH APPROPRIATE CONCRETE.
1.18.8.	DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES, DEVICES, OUTLETS, ETC. WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE BOXED AND TURN OVER TO THE OWNER AT A PLACE DESIGNATED BY THE OWNER. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVED UNUSED WIRING BACK TO PANELBOARD IN APPROVED MANNER.
1.18.9.	INCLUDE IN DEMOLITION WORK FOR REMOVAL OF ALL COMMUNICATION DEVICES, OUTLETS, CABLES, CONDUITS, ETC., WHICH ARE NOT TO BE REUSED. ALL REDUNDANT CABLEING AND CONDUIT SHALL BE REMOVED IN ITS ENTIRETY FROM TENANT SPACE BACK TO BASE BUILDING RISER ROOMS. REMOVE ALL UNNECESSARY CABLES AND EQUIPMENT IN HUB ROOMS AND/OR TELEPHONE ROOMS WITH EXTREME CARE TO AVOID ANY ACCIDENTAL SHUTDOWN TO EXISTING SERVICES SERVING OTHER PARTS OF THE BUILDING.
1.18.10.	PROVIDE BLANK COVER PLATE WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.
1.18.11.	ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.
1.18.12.	RETURN TO LANDLORD ANY UNUSED LANDLORD SUPPLIED EQUIPMENT AND MATERIALS; EXIT SIGNS, LIGHT FIXTURES, SPEAKERS, SPEAKER/STROBES.
1.18.13.	BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.
1.18.14.	CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.
1.18.15.	ENSURE THAT ALL EXISTING EQUIPMENT WHICH ARE TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND MEETS THE LOCAL ELECTRICAL SAFETY AUTHORITY'S APPROVAL. OUTLET BOXES AND WIRING AND FOR CONDUIT WHICH ARE CORRODED OR DAMAGED ARE TO BE REPLACED.
1.19.	<u>CLEANING</u>
1.19.1.	BEFORE ENERGIZING ANY SYSTEMS, INSPECT AND CLEAN THE INSIDE OF PANEL BOARDS, SWITCHGEAR AND CABINETS TO ENSURE THAT THEY ARE COMPLETELY FREE FROM DUST AND DEBRIS.
1.19.2.	CLEAN ALL POLISHED, PAINTED AND PLATED WORK BRIGHT. CLEAN ALL LIGHTING FIXTURES.
1.19.3.	REMOVE ALL DEBRIS, SURPLUS MATERIAL AND ALL TOOLS.
1.19.4.	CARRY OUT ADDITIONAL CLEANING OPERATING OF SYSTEMS AS SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATION.
1.20.	<u>COMPLETION</u>
1.20.1.	ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY CONSULTANT.
1.20.2.	LEAVE ELECTRICAL WORK IN SPECIFIED WORKING ORDER.
1.21.	<u>INSTRUCTION TO OWNER</u>
1.21.1.	INSTRUCT THE OWNER'S REPRESENTATIVES IN ALL ASPECTS OF THE OPERATION OF SYSTEMS AND EQUIPMENT.
1.21.2.	ARRANGE FOR AND PAY FOR SERVICES OF SERVICE ENGINEERS AND OTHER MANUFACTURERS' REPRESENTATIVES REQUIRED FOR INSTRUCTION ON SPECIALIZED PORTIONS OF THE INSTALLATION.
1.21.3.	SUBMIT TO THE CONSULTANT AT THE TIME OF FINAL INSPECTION A COMPLETE LIST OF SYSTEMS STATING FOR EACH SYSTEM.
1.21.4.	DATE INSTRUCTIONS WERE GIVEN TO THE OWNER'S STAFF.
1.21.5.	DURATION OF INSTRUCTION.
1.21.6.	NAME OF PERSONS INSTRUCTED.
1.21.7.	OTHER PARTIES PRESENT (MANUFACTURER'S REPRESENTATIVE, CONSULTANTS, ETC.).
1.21.8.	SIGNATURES OF THE OWNER'S STAFF STATING THAT THEY PROPERLY UNDERSTOOD THE SYSTEM INSTALLATION, OPERATION AND MAINTENANCE REQUIREMENTS.
1.22.	<u>ADDITIONAL WORK</u>
1.22.1.	IN CASE WHERE EXTRA WORK OF ANY KIND IS REQUIRED, OBTAIN WRITTEN INSTRUCTION FROM THE ARCHITECT / DESIGN CONSULTANT BEFORE PROCEEDING. PAYMENTS WILL BE MADE FOR AUTHORIZED CHANGES ONLY.
1.22.2.	QUOTATION WITH BREAKDOWN OF MATERIAL, LABOUR, OVERHEAD, PROFIT, ETC., SHALL BE SUBMITTED FOR EACH CHANGE. LABOUR UNITS SHALL BE BASED ON THE LATEST NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) LABOUR COLUMN ONE FOR THE COMPLETE DURATION OF THE PROJECT. MATERIAL PRICES SHALL BE BASED ON THE CURRENT NATIONAL PRICE SYSTEM WITH TRADE DISCOUNTS. HOURLY LABOUR RATE SHALL INCLUDE ALL RATED CHARGES FOR SUPERVISION, HYDRO INSPECTION, HAND TOOLS, PARKING, CLEAN-UP,

	AS-BUILT DRAWINGS AND ADDITIONAL BONDING.
1.23.	<u>MATERIALS AND CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS</u>
1.23.1.	WHERE MATERIALS ARE FURNISHED BY OTHERS FOR INSTALLATION UNDER THIS DIVISION, THE SUB-CONTRACTOR SHALL NOTIFY THE SUPPLIER OF DATES THEY WILL BE READY FOR DELIVERY AS SPECIFIED IN THE GENERAL CONDITIONS. THE SUB-CONTRACTOR SHALL RECEIVE, UNLOAD, HANDLE, STORE, PROTECT AND INSURE THE MATERIAL UNTIL READY FOR ACTUAL INSTALLATION. UPON RECEIPT OF MATERIAL FURNISHED BY OTHERS, THE SUB-CONTRACTOR SHALL SPOT-CHECK OR CHECK THE ENTIRE SHIPMENT AND PROMPTLY ADVISE THE CONSULTANT IN WRITING OF ANY DAMAGE AND/OR MISSING COMPONENTS. ANY MATERIAL WHICH IS SUBSEQUENTLY LOST OR DAMAGED DUE TO NEGLIGENCE ON THE PART OF THE SUB-CONTRACTOR SHALL BE PROMPTLY REPLACED (OR REPAIRED TO THE SATISFACTION OF THE OWNER) AT THE SUB-CONTRACTOR'S EXPENSE.
1.23.2.	WHERE THE DRAWINGS INDICATED EQUIPMENT TO BE FURNISHED BY OTHERS, PROVIDE ELECTRICAL ROUGH-IN FOR EACH UNIT PURSUANT TO ITS SHOP DRAWINGS, AND MAKE FINAL CONNECTIONS, DISCONNECT SWITCHES AND OTHER ELECTRICAL FACILITIES FOR A COMPLETE INSTALLATION.
1.24.	<u>INSERTS, HANGERS AND SLEEVES</u>
1.24.1.	SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT.
1.24.2.	PROVIDE HANGERS, INSERTS, SLEEVES AND SUPPORTS AS REQUIRED.
1.24.3.	STEEL PIPE SLEEVE SHALL BE ASTM A 53/A 53/A 53M, TYPE E, GRADE B, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS.
1.24.4.	SLEEVES FOR RECTANGULAR OPENINGS SHALL BE GALVANIZED SHEET STEEL. MINIMUM METAL THICKNESS:
1.24.5.	FOR SLEEVE CROSS-SECTION RECTANGLE PERIMETER LESS THAN 6" AND NO SIDE MORE THAN 16", THICKNESS SHALL BE 1/16".
1.24.6.	FOR SLEEVE CROSS-SECTION RECTANGLE PERIMETER EQUAL TO OR MORE THAN 4'-0" AND 1 OR MORE SIDES EQUAL TO OR MORE THAN 16", THICKNESS SHALL BE 1/8".
1.24.7.	PROVIDE A CONCRETE BASE 4" HIGH AT ALL SLEEVE LOCATIONS AND CONDUITS PENETRATING THE FLOOR SLAB. CONCRETE BASE TO EXTEND 4" BEYOND THE EDGE OF THE SLEEVE OR CONDUIT. ALL CONCRETE WORK TO BE INCLUDED IN THIS DIVISION.
1.24.8.	INSERTS ARE TO BE OF A LEAD SHIELD TYPE.
1.24.9.	HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.
1.24.10.	DO NOT USE ANY BASE BUILDING SUPPORTS OR EQUIPMENT, INCLUDING CEILING SUPPORT SYSTEM.
1.25.	<u>CUTTING AND PATCHING</u>
1.25.1.	ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE LANDLORD. OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE ANY CUTTING IS CARRIED OUT.
1.25.2.	WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE FIRE STOPPING MATERIAL AND MAINTAIN SAME FIRE RATING OF BUILDING COMPONENT THROUGH WHICH PENETRATION OCCURS. MODULAR SEALING DEVICE, DESIGNED FOR FIELD ASSEMBLY, TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE.
1.26.	<u>PLYWOOD</u>
1.26.1.	ALL SURFACE MOUNTED ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE MOUNTED ON PLYWOOD BACKBOARDS. PROVIDE ALL PLYWOOD BACKBOARDS REQUIRED FOR THE WORK OF THIS DIVISION. PLYWOOD BACKBOARDS SHALL BE (3/4" THICK, OF HIGHEST QUALITY FIRE RETARDANT FIR PRIME AND PAINT BACKBOARDS WITH FIRE RETARDANT PAINT EQUAL TO C558 SPEC. #1-GP-151 M, OF A COLOUR AS SELECTED BY THE DESIGN CONSULTANT/ARCHITECT.
1.27.	<u>CORE DRILLING</u>
1.27.1.	BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, SCAN SLAB OR WALLS AND HAVE THE LOCATIONS ACCEPTED BY THE LANDLORD IN WRITING.
1.27.2.	ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING MUST BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT.
1.27.3.	FLOOR DRILLING TO BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.
1.28.	<u>IDENTIFICATION</u>
1.28.1.	PROVIDE IDENTIFICATION ON ALL PANELS, DISCONNECT SWITCHES, SPLITTERS, ETC., SHOWING THE SIZE, NAME OF EQUIPMENT, SERIAL NUMBER AND ALL INFORMATION USUALLY PROVIDED, WHICH ALSO INCLUDES VOLTAGE, CYCLE, PHASE, HORSEPOWER OF MOTORS AND THE NAME AND ADDRESS OF THE MANUFACTURER. NAMEPLATE SHALL BE MECHANICALLY ATTACHED TO EQUIPMENT BY MEANS OF RIVETS OR SOFT TAPPING SCREWS.
1.28.2.	NAMEPLATES SHALL GENERALLY BE BLACK WHITE, BLACK WITH BEVELLED EDGES, SECURED TO APPARATUS WITH STAINLESS STEEL SCREWS. GENERALLY LETTERING SHALL BE 6MM HIGH BUT EQUIPMENT IN THE MAIN ELECTRICAL ROOM SHALL BE PROVIDED WITH LETTERING 13MM HIGH.
1.28.3.	WARNING SIGNS, IF AND WHEN REQUIRED, SHALL BE RED WITH WHITE LETTERING.
1.28.4.	EQUIP LARGE MULTIPLE CELL OR COMPONENT APPARATUS SUCH AS SWITCHBOARDS AND DISTRIBUTION PANELS WITH MAIN NAMEPLATES IDENTIFYING THE EQUIPMENT, VOLTAGE CHARACTERISTICS AND CAPACITY, AND WITH SUB NAMEPLATES CLEARLY IDENTIFYING EACH CELL OR COMPONENT AND ITS SERVICE.
1.28.5.	PANELBOARD NAMEPLATES SHALL IDENTIFY THE PANELBOARD NUMBERS DESIGNATED ON THE DRAWINGS, UNLESS OTHERWISE INSTRUCTED. NAMEPLATES FOR DISCONNECT SWITCHES, CONTROL PANELS AND CABINETS SHALL OUTLINE THEIR SERVICE.
1.28.6.	MOTOR STARTERS, MAGNETIC AND MANUAL, SHALL IDENTIFY THE PIECE OF MOTORIZED EQUIPMENT BEING SERVICED.
1.28.7.	EXACT NAMEPLATE WORDING AND SIZES MUST BE APPROVED BY AND CONFIRMED BY THE CONSULTANT PRIOR TO MANUFACTURE.
1.28.8.	DIRECTORIES FOR BRANCH CIRCUIT PANELBOARDS SHALL BE CLEARLY AND NEATLY TYPEWRITTEN, ACCURATELY IDENTIFYING THE TYPE, LOCATION AND WATTAGE OF THE CONNECTED LOAD FOR EACH CIRCUIT BREAKER. DIRECTORIES SHALL BE SECURED TO THE REAR OF THE CABINET DOOR UNDER PROTECTIVE PLASTIC. INCORPORATE COPIES OF ALL PANEL BOARD DIRECTORIES IN EACH COPY OF OPERATING AND INSTRUCTION MANUALS.
1.28.9.	CLEARLY IDENTIFY EACH BRANCH CIRCUIT BREAKER IN A PERMANENT MANNER TO CORRESPOND WITH DIRECTORIES. GLUED PAPER IDENTIFICATION WILL NOT BE ACCEPTABLE.
1.28.10.	CLEARLY IDENTIFY MAIN BUS BARS, JUNCTION BOXES (EXCLUDING OBVIOUS OUTLET BOXES) BY PAINTING THE OUTSIDE OF THE COVERS. PAINT COLOURS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE: <div><div>LIGHTING</div><div><div><div></div><div>YELLOW</div></div><div><div>-</div><div>BLUE</div></div><div><div>POWER</div><div>-</div><div>ORANGE</div></div><div><div>EMERGENCY POWER</div><div>-</div><div>RED</div></div><div><div>FIRE ALARM</div><div>-</div><div>CREAM</div></div><div><div>TELEPHONE</div><div>-</div><div>BROWN</div></div><div><div>MISCELLANEOUS SIGNALS</div><div>-</div><div></div></div></div></div>
1.28.11.	IN ADDITION TO PAINTING MISCELLANEOUS SIGNAL BOXES CLEARLY IDENTIFY THE SPECIFIC SYSTEM IN WHICH THE BOX IS INSTALLED.
1.28.12.	COLOUR CODE EMPTY CONDUIT CAPPED AND TERMINATED FOR FUTURE USE AS SPECIFIED ABOVE AND CLEARLY IDENTIFY ITS INTENDED USE BY MEANS OF SECURELY ATTACHED TAGS.
1.28.13.	COLOUR CODE CONDUCTORS THROUGHOUT, TO IDENTIFY PHASES, NEUTRALS AND GROUNDS, BY MEANS OF COLOURED CONDUCTOR INSULATION. COLOURS SHALL BE AS FOLLOWS: <div><div><div>PHASE A</div><div>-</div><div>RED</div></div><div><div>PHASE B</div><div>-</div><div>BLACK</div></div><div><div>PHASE C</div><div>-</div><div>BLUE</div></div><div><div>GROUND</div><div>-</div><div>GREEN</div></div><div><div>NEUTRAL</div><div>-</div><div>WHITE</div></div></div>
1.28.14.	CONTROL CONDUCTORS, IN ADDITION, SHALL BE NUMBERED WITH BRADY LTD., OR ELECTROVERT LTD., Z TYPE MARKERS. COLOUR CODE CONDUCTORS, FOR SPECIAL COMPONENT PER MANUFACTURER'S RECOMMENDATIONS.
1.28.15.	USE DYMO TAPE TO LABEL EACH RECEPTACLE WITH ITS CIRCUIT NUMBER (E.G., UA 27).
1.29.	<u>DOCUMENTATION AND SYSTEMS ACCEPTANCE</u>
1.29.1.	ASSEMBLE THREE COPIES OF OPERATING AND INSTRUCTION MANUALS IN THREE RING BINDERS WITH INDEX TABS EACH CONTAINING THIS SUBCONTRACTOR'S AND SUPPLIERS NAMES AND TELEPHONE NUMBERS.
1.29.2.	EACH MANUAL SHALL CONTAIN THE FOLLOWING DATA: <div><div>1.29.2.1.</div><div>A SET OF AS-BUILT PRINTS AND AUTO CAD FILES</div></div> <div><div>1.29.2.2.</div><div>LETTERS OF OWNER'S INSTRUCTIONS</div></div> <div><div>1.29.2.3.</div><div>FINAL HYDRO CERTIFICATE.</div></div> <div><div>1.29.2.4.</div><div>A COPY OF EACH "REVIEWED" SHOP DRAWING.</div></div> <div><div>1.29.2.5.</div><div>COMPLETE EXPLANATION OF OPERATION PRINCIPLES AND SEQUENCES.</div></div> <div><div>1.29.2.6.</div><div>COMPLETE PART LISTS WITH NUMBERS.</div></div> <div><div>1.29.2.7.</div><div>RECOMMENDED MAINTENANCE PRACTICES AND PRECAUTIONS.</div></div> <div><div>1.29.2.8.</div><div>COMPLETE WIRING AND CONNECTIONS DIAGRAMS.</div></div> <div><div>1.29.2.9.</div><div>CERTIFICATE OF WARRANTY.</div></div> <div><div>1.29.2.10.</div><div>REPRESENTATIVE CERTIFICATES FOR FIRE ALARM SYSTEM</div></div>
1.29.3.	ENSURE THAT OPERATING AND MAINTENANCE INSTRUCTIONS ARE SPECIFIC AND APPLY TO THE MODELS AND TYPES OF EQUIPMENT PROVIDED.
1.30.	<u>TESTING AND COMMISSIONING</u>
1.30.1.	PERFORM, IN CONJUNCTION WITH THE CONSULTANT, TESTING AND VERIFICATION OF ALL FOLLOWING SYSTEMS AS DISCUSSED HEREINAFTER. THIS TESTING AND VERIFICATION SHALL BE PROVIDED AFTER, AND IN ADDITION TO, THE STANDARD MANUFACTURERS' TESTING AND VERIFICATION PROCEDURES.

1.30.1.1.	MAJOR DISTRIBUTION EQUIPMENT AND COMPONENTS;
1.30.1.2.	WIRING;
1.30.1.3.	EMERGENCY LIGHTING;
1.30.1.4.	FIRE ALARM SYSTEM;
1.30.1.5.	LIGHTING CONTROL SYSTEM.
1.30.1.6.	DIMMING SYSTEM.
1.30.2.	TEST AND VERIFY THAT ALL EQUIPMENT IS INSTALLED WITHIN AND OPERATING WITHIN MANUFACTURERS' GUIDELINES AND IN ACCORDANCE WITH THE CONTRACT DOCUMENT REQUIREMENTS, TO ENSURE THE SYSTEMS CAN BE SAFELY ENERGIZED AND OPERATED.
1.30.3.	OBTAIN AND HAVE AVAILABLE THE NECESSARY REFERENCE DOCUMENT FOR REVIEW DURING THE TESTING PERIOD.
1.30.4.	EXECUTE WORK OF THIS SECTION ONLY BY PERSONNEL THAT HAVE TAKEN PART IN THE CONSTRUCTION PROGRAM OF THIS PROJECT AND MANUFACTURER APPOINTED QUALIFIED TECHNICAL STAFF CAPABLE OF SETTING UP, ADJUSTING, BALANCING AND CALIBRATING ALL EQUIPMENT, COMPONENTS AND SYSTEMS.
1.30.5.	BRANCH CIRCUIT BREAKER MECHANICAL OPERATION
1.30.5.1.	REQUIREMENTS:
1.30.5.1.1.	EACH BREAKER TO OPEN AND CLOSE.
1.30.5.2.	METHOD
1.30.5.2.1.	CONFIRM THAT NO UTILIZATION EQUIPMENT IS CONNECTED TO THE SYSTEM.
1.30.5.2.2.	OPEN AND CLOSE EACH BRANCH CIRCUIT BREAKER THREE TIMES.
1.30.5.2.3.	CONFIRM THAT EACH BRANCH CIRCUIT BREAKER OPERATES MECHANICALLY.
1.30.5.2.4.	RECORD GO/NO GO OPERATION OF EACH BREAKER.
1.30.6.	CONDUCTOR INSULATION INTEGRITY TEST (GROUNDED SYSTEMS ONLY)
1.30.6.1.	REQUIREMENTS:
1.30.6.1.1.	NOT LESS THAN 10kV TO GROUND FOR NEUTRAL CONDUCTORS (ALL NEUTRALS COMBINED).
1.30.6.1.2.	NOT LESS THAN 500kV TO GROUND FOR EACH UNGROUNDED CONDUCTOR.
1.30.6.2.	METHOD:
1.30.6.2.1.	USE A 500V DC MEGOHMMETER, ISOLATE THE BRANCH CIRCUITS UNDER TEST AS REQUIRED.
1.30.6.2.2.	ENSURE THAT OTHER CIRCUITS SERVING PATIENTS OR SENSITIVE EQUIPMENT ARE NOT EXPOSED TO THE TEST VOLTAGE.



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1.30.6.2.3. MEASURE THE INSULATION RESISTANCE OF EACH BRANCH CIRCUIT CONDUCTOR WITH ALL WIRING DEVICES CONNECTED.	2.1.8. NEUTRAL CONDUCTORS
1.30.7. RECEPTACLE IDENTIFICATION FORCE TEST	2.1.8.1. IN INTERMEDIATE CARE AREAS AND CRITICAL CARE AREAS, PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR BACK TO THE PANEL SUPPLYING THE RECEPTACLES.
1.30.7.1. REQUIREMENTS:	2.1.8.2. WHERE MULTIPLE CIRCUITS SHARE A CONDUIT, DERATE CONDUCTORS, WHERE REQUIRED, ON THE BASIS THAT THE NEUTRAL CONDUCTORS ARE FULL CURRENT CARRYING CONDUCTORS.
1.30.7.1.1. A FORCE OF 1.1 NEWTONS DOES NOT REMOVE A TEST PIN FROM THE GROUND SLOT OF A RECEPTACLE.	2.2. RACEWAYS
1.30.7.1.2. A FORCE OF 13 NEWTONS DOES NOT REMOVE A TWO PIN TEST ATTACHMENT PLUG FROM A RECEPTACLE.	2.2.1. RIGID STEEL CONDUIT (RSC) SHALL BE ZINC-COATED STEEL THAT CONFORMS TO INDUSTRY STANDARDS. LOCK NUTS SHALL BE STEELZINC PLATED. CONNECTORS AND COUPLINGS SHALL BE STEEL. INSULATED BUSHINGS SHALL BE IRONZINC PLATED. FITTINGS SHALL BE THREADED WITH INSULATED BUSHINGS.
1.30.7.2. METHOD:	2.2.2. ELECTRICAL METALLIC TUBING (EMT) SHALL BE ZINC-COATED STEEL THAT CONFORMS TO INDUSTRY STANDARDS. FITTINGS SHALL BE STEEL WITH SET SCREW CONNECTORS AND COUPLINGS.
1.30.7.2.1. USE THE TEST PINS AND METHODS SPECIFIED IN CSA STANDARD C22.2 NO. 42, AS AN ALTERNATIVE A COMMERCIALY AVAILABLE "TENSION TESTED" COMPLYING WITH CSA STANDARD C22.2 NO.42, GENERAL USE RECEPTACLES, PLUGS AND SIMILAR WIRING DEVICES MAY BE EMPLOYED.	2.2.3. RIGID NON-METALLIC CONDUIT (RNMCC) SHALL BE TYPE EPC-40-PVC, DB-120 AND EPC-80-PVC. CONDUIT SHALL BE 100% VIRGIN POLYVINYL CHLORIDE (PVC), 90°C UL-RATED THAT CONFORMS TO INDUSTRY STANDARDS.
1.30.7.2.2. IF USING THE TENSION CHECKED, ENSURE THAT THE DEVICE IS CALIBRATED FOR TENSION (NEWTONS) FOR BOTH SINGLE-GROUND PIN AND FOR MULTIPLE PIN TESTING.	2.3. BOXES
1.30.7.2.3. FOR EACH OUTLET, CHECK THAT THE TENSION OF GROUND PIN REMOVAL MEETS OR EXCEEDS THE REQUIREMENT.	2.3.1. SUPPORT ALL BOXES INDEPENDENT OF CONDUIT.
1.30.7.2.4. FOR EACH OUTLET, CHECK THAT THE TENSION OF THE TWO PIN REMOVAL MEETS OR EXCEEDS THAT REQUIREMENT.	2.3.2. IN AREAS WITH DRYWALL CEILINGS, CONTRACTOR SHALL LOCATE/RELOCATE ALL NEW/EXISTING JUNCTION BOXES, PULL BOXES, DISCONNECTS, ETC., TO ACCESSIBLE AREAS; AS REQUIRED BY THE CANADIAN ELECTRICAL CODE, WHERE IT IS NO POSSIBLE TO RELOCATE/INSTALL EXISTING/NEW SERVICES IN ACCESSIBLE AREAS, CONTRACTOR SHALL PROVIDE ACCESS PANELS C/W FIRE RATINGS AS REQUIRED. EXACT LOCATION OF ACCESS PANELS SHALL BE CO-ORDINATED WITH THE ARCHITECT.
1.30.7.2.5. RECORD GOING GO TENSION READING FOR EACH OUTLET.	2.3.3. OUTLET BOXES
1.30.8. RECEPTACLE POLARITY TEST	2.3.3.1. PROVIDE AN OUTLET BOX FOR EACH LIGHTING FIXTURE, WIRING DEVICE, DATA OUTLET, TELEPHONE OUTLET, ETC. OUTLET BOXES FOR VARIOUS SYSTEMS AND COMPONENTS SHALL BE AS REQUIRED BY MANUFACTURER AND SUITABLE FOR THE APPLICATION.
1.30.8.1. REQUIREMENTS:	2.3.3.2. OUTLET BOXES ON CONCEALED WORK SHALL BE 4" SQUARE OR OCTAGONAL, GALVANIZED PRESSED STEEL WITH PLASTER RINGS AS REQUIRED. OUTLET BOXES FOR EXPOSED CONDUIT WORK SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.
1.30.8.1.1. RECEPTACLES TO BE CONNECTED IN ACCORDANCE WITH CONFIGURATIONS LISTED IN CANADIAN ELECTRICAL CODE CSA C22.1, LATEST EDITING SECTION 26.	2.3.3.3. WHERE INSTALLED IN PLASTER, BOXES SHALL BE FITTED WITH GALVANIZED STEEL PLASTER COVERS AS REQUIRED TO FINISH FLUSH WITH FINISHED WALL OR CEILING.
1.30.8.2. METHOD:	2.3.3.4. SWITCH BOXES, RECEPTACLE BOXES AND OTHER OUTLET BOXES SHALL BE STANDARD 4" SQUARE WITH PLASTER RINGS OR GANG COVER AS REQUIRED.
1.30.8.2.1. UTILIZE POLARITY TEST SET, AND TEST EACH RECEPTACLE.	2.3.3.5. WEATHERPROOF BOXES SHALL BE CONDULET CAST BOXES WITH WEATHERPROOF DEVICES AND COVERS. PROVIDE HOT-DIPPED GALVANIZED CORROSION-RESISTANT EPOXY ENAMEL FINISH OR PVC-COATED PRODUCTS, WHERE NOTED ON DRAWINGS.
1.30.8.2.2. CORRECT CONNECTION OF RECEPTACLES WHERE POLARITY INDICATION IS INCORRECT.	2.3.3.6. PROVIDE SCREW-JOINT OUTLET BOXES, WITH GASKETED WEATHERPROOF COVERS IN EXTERIOR LOCATIONS, WHERE EXPOSED TO MOISTURE, AT KITCHEN AND CAFETERIA EQUIPMENT WITH OR NEXT TO WATER OR STEAM CONNECTIONS, AND WHERE INDICATED AS WEATHERPROOF ON DRAWINGS.
1.30.8.2.3. RECORD GOING GO TEST RESULTS FOR EACH RECEPTACLE.	2.3.3.7. PROVIDE ONLY ENOUGH CONDUIT OPENINGS TO ACCOMMODATE CONDUITS AT INDIVIDUAL LOCATION. EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE NUMBER AND SIZES OF CONDUITS, WIRES AND SPLICES TO MEET OESC REQUIREMENTS, BUT SHALL BE AT LEAST SIZE SHOWN OR SPECIFIED. NECESSARY VOLUME SHALL BE OBTAINED BY USING BOXES OF PROPER DIMENSIONS. BOX DEPTHS GREATER THAN 2" SHALL NOT BE USED TO OBTAIN NECESSARY VOLUME BUT MAY BE USED WITH ARCHITECT APPROVAL TO FACILITATE INSTALLATION. STANDARD CONCRETE BOXES MAY BE 6" DEEP WHERE NECESSARY TO PERMIT ENTRANCE OF CONDUITS INTO SIDES OF BOXES WITHOUT INTERFERENCE WITH REINFORCING BARS. OCTAGONAL HUNG CEILING BOXES WITH SUSPENSION BARS MAY BE 3-1/2" DEEP. RECTANGULAR BOXES FOR INTER-CONNECTION OF BRANCH CIRCUIT CONDUITS MAY BE 2-1/2" DEEP.
1.30.9. BRANCH CIRCUIT IMPEDANCE TEST (VOLTAGE DROP TEST - GROUNDED SYSTEMS ONLY)	2.3.3.8. DO NOT INSTALL OUTLET BOXES "BACK TO BACK" IN WALLS AND PARTITIONS. SUCH OUTLETS MUST BE STAGGERED AND SEALED AGAINST NOISE TRANSMISSION. "THRU_WALL" TYPE OUTLET BOXES WILL NOT BE PERMITTED FOR ANY APPLICATION.
1.30.9.1. REQUIREMENTS:	2.3.3.9. ALL RECESSED OUTLET BOXES FOR SURFACE MOUNTED DEVICES OR LIGHTING FIXTURES MUST BE TOTALLY CONCEALED BY THE DEVICE OR FIXTURE.
1.30.9.1.1. VOLTAGE DROP IN BRANCH CIRCUIT WIRING FROM PANELBOARDS TO RECEPTACLES NOT TO EXCEED 3% WHEN A LOAD OF NOT LESS THAN 80% OF THE BREAKER RATING IS APPLIED AT THE RECEPTACLE.	2.3.4. JUNCTION BOXES, PULL BOXES AND CABLE TROUGHS
1.30.9.2. METHOD:	2.3.4.1. PROVIDE CABLE GAUGE GALVANIZED STEEL JUNCTION AND PULL BOXES FOR CONDUIT 1-1/4" TRADE SIZE AND LARGER, WHERE INDICATED AND AS NECESSARY TO FACILITATE INSTALLATION, OF REQUIRED DIMENSIONS, WITH ACCESSIBLE, REMOVABLE SCREW-ON COVERS. PROVIDE JUNCTION AND PULL BOXES IN SPECIAL SIZES AND SHAPES DETERMINED IN FIELD WHERE NECESSARY.
1.30.9.2.1. UTILIZE EQUIPMENT APPROVED BY THE CONSULTANT, SEE FIGURE 2 IN CSA STANDARD Z32 FOR TEST CIRCUIT.	2.3.4.2. JUNCTION BOXES FOR EXPOSED CONDUIT WORK IN FINISHED AREAS SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.
1.30.9.2.2. ENSURE THAT ALL CIRCUITS OTHER THAN THE ONE UNDER TEST ARE DE-ENERGIZED.	2.3.4.3. PROVIDE CABLE TROUGHS OF SPECIAL SHAPES, DESIGN AND CONSTRUCTION REQUIRED TO INSTALL, SUPPORT AND ENCLOSE FEEDER CABLE THROUGHOUT INDICATED ROUTING. TROUGHS SHALL BE AS SPECIFIED ABOVE FOR JUNCTION AND PULL BOXES, WITH REINFORCING, INSULATING SUPPORTS AND CLAMPING FOR CABLE INSTALLATION. CABLES SHALL BE CONTINUOUS THROUGHOUT TROUGHS AND SHALL BE RACKED IN DISTRIBUTED PHASE GROUPINGS ARRANGED WITH PHASE CABLES SURROUNDING NEUTRAL CONDUCTORS.
1.30.9.2.3. RECORD NO LEAD VOLTAGE AT RECEPTACLE (VO).	2.3.4.4. ALL BOXES SHALL BE INSTALLED, SO AS TO BE ACCESSIBLE AFTER WORK IS COMPLETE. PROVIDE PULL BOXES ON ALL CONDUIT RUNS ON THE BASIS OF NO MORE THAN TWO (2) - 90 DEG BENDS OR THEIR EQUIVALENT, OR A DISTANCE NOT TO EXCEED 100 FEET BETWEEN BOXES.
1.30.9.2.4. APPLY CURRENT TO 80% OF THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE CIRCUIT UNDER TEST AND RECORD VOLTAGE (VL).	2.4. FLOOR BOXES
1.30.9.2.5. REMOVE LEAD AND RECONFIRM VALUE OF VO.	2.4.1. FLOOR OUTLET BOXES SHALL BE STEEL, CONCRETE TIGHT ADJUSTABLE TYPE LEGRAND EVOLUTION SERIES, EFB45S, 4 OR 5 GANG AS REQUIRED TO SUIT DEVICES AND DEPTH OF CONCRETE. PROVIDE APPLICABLE FLOOR PLATE ASSEMBLY AND WIRING DEVICE TO SUIT THE POWER, COMMUNICATION AND AV REQUIREMENTS AS INDICATED ON THE PLANS. (ALTERNATE MANUFACTURERS: HUBBELL, WELLMARK)
1.30.9.2.6. CALCULATE VOLTAGE DROP AT RECEPTACLE BY THE FORMULA (VO - VL) / VO * 100%	2.4.2. ALL FLOOR PLATES SHALL BE COMPLETE WITH COVER AND FINISHING FLANGES AS REQUIRED TO SUIT FLOOR FINISH AND APPLICATION AS NOTED.
1.30.9.2.7. RECORD THE RESULTS.	2.5. GROUNDING
1.30.9.2.8. WHERE THE CALCULATED VOLTAGE DROP EXCEEDS 3.5%, REWORK THE BRANCH CIRCUIT WIRING AS REQUIRED TO REDUCE THE VOLTAGE DROP WITHIN THE REQUIRED VALUE.	2.5.1. INSTALL GREEN INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.
1.30.9.2.9. NOTE THAT A VOLTAGE DROP UP TO 5%, AS IDENTIFIED IN THE Z32 STANDARD IS NOT ACCEPTABLE FOR THIS PROJECT.	2.5.2. SIGNAL AND COMMUNICATION EQUIPMENT: FOR TELEPHONE, ALARM, VOICE AND DATA, AND OTHER COMMUNICATION EQUIPMENT, PROVIDE NO. #2 AWG MINIMUM INSULATED GROUNDING CONDUCTOR IN RACEWAY FROM GROUNDING ELECTRODE SYSTEM TO EACH SERVICE LOCATION, TERMINAL CABINET, WIRING CLOSET, AND CENTRAL EQUIPMENT LOCATION.
1.30.10. GROUND POINT VOLTAGE RISE TEST (GROUNDED SYSTEMS ONLY)	2.5.2.1. SERVICE AND CENTRAL EQUIPMENT LOCATIONS AND WIRING CLOSETS: TERMINATE GROUNDING CONDUCTOR ON A 1/8" X 2" X 12" GROUNDING BUS.
1.30.10.1. REQUIREMENTS:	2.5.2.2. TERMINAL CABINETS: TERMINATE GROUNDING CONDUCTOR ON CABINET GROUNDING TERMINAL.
1.30.10.1.1. THE VOLTAGE RISE AT THE FOUND POINT OF EACH RECEPTACLE NOT TO EXCEED 2V WHEN A CURRENT OF NOT LESS THAN 8-% OF THE RATING OF THE OVERCURRENT DEVICE, PROTECTING THE CIRCUIT UNDER TEST, IS PASSED THROUGH THE BONDING CONDUCTOR.	2.5.3. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR #4AWG AND SMALLER, AND STRANDED CONDUCTORS FOR #3AWG AND LARGER, UNLESS OTHERWISE INDICATED.
1.30.10.2. METHOD:	2.5.4. UNDERGROUND GROUNDING CONDUCTORS: INSTALL BARE TINNED-COPPER CONDUCTOR, 2/0 AWG MINIMUM.
1.30.10.2.1. USE THE TEST CIRCUIT OF FIGURE 4 IN CSA STANDARD Z32.	2.5.4.1. BURY AT LEAST 24" BELOW GRADE.
1.30.10.2.2. CONNECT THE TEST CIRCUIT TO THE OUTLET.	2.5.4.2. DUCT BANK GROUNDING CONDUCTOR: BURY 12" ABOVE DUCT BANK WHEN INDICATED AS PART OF DUCT-BANK INSTALLATION.
1.30.10.2.3. WITH SWITCH SW OPEN, RECORD THE VOLTAGE INDICATED BY VOLTMETER V1 AS VN, THE NEUTRAL TO GROUND VOLTAGE WITHOUT LOAD. IF IT EXCEEDS ABOVE 2V, DETERMINE THE CAUSE AND CORRECT THE DEFECT.	2.5.5. SIZE ALL WIRE FOR MAXIMUM 2% VOLTAGE DROP.
1.30.10.2.4. USING THE LOW VOLTAGE SUPPLY, (NOMINALLY SW OPEN CIRCUIT) APPLY A LOAD OF 80% OF THE RATED CURRENT OF THE CIRCUIT, BETWEEN THE NEUTRAL AND THE BONDING CONDUCTOR FOR A PERIOD OF FROM 1 TO 5 SECONDS. FEED THE LOW VOLTAGE/INDICATED BY VOLTMETER V1 AS VR, AND THE VOLTAGE INDICATED BY VOLTMETER V2 AS VO.	2.5.6. ALL HOME RUNS TO BE IN CONDUIT.
1.30.10.2.5. RECORD THE RESULTS. THE RETURN PATH VOLTAGE RISE VO NOT TO EXCEED 3V.	2.6. WALL PLATES
1.30.10.2.6. WHERE VOLTAGE RISE EXCEEDS 3V, REWORK THE BRANCH CIRCUIT BONDING CONDUCTOR AS REQUIRED TO REDUCE THE VOLTAGE RISE WITHIN THE REQUIRED VALUE.	2.6.1. FACEPLATES OF FLUSH-MOUNTED TOGGLE SWITCHES AND RECEPTACLES SHALL BE AS FOLLOWS:
1.30.11. POTENTIAL DIFFERENCE BETWEEN GROUND POINTS TEST	2.6.1.1. FINISHED AREAS: STAINLESS STEEL FINISH EACH SUPPLIED INDIVIDUALLY WRAPPED IN A SEALED PROTECTIVE ENVELOPE. MANUFACTURER TO MATCH RECEPTACLE AND SWITCH MANUFACTURER.
1.30.11.1. REQUIREMENTS:	2.6.1.2. UNFINISHED AND SURFACE AREAS: GALVANIZED STEEL.
1.30.11.1.1. POTENTIAL DIFFERENCE BETWEEN THE GROUNDING POLES OF RECEPTACLES AND BETWEEN THESE POLES AND ALL OTHER EXPOSED CONDUCTIVE NON-CURRENT-CARRYING PARTS IN THE SAME PATIENT CARE ENVIRONMENT, TO BE LESS THAN 20MV.	2.6.1.3. WET LOCATION, WEATHER-PROOF COVER PLATES.
1.30.11.2. METHOD:	2.7. LINE VOLTAGE SWITCHES
1.30.11.2.1. US THE STANDARD FREQUENCY-WEIGHTED TEST CIRCUIT OF FIGURE 2 IN CSA STANDARD Z32.	2.7.1. EXTRA HEAVY DUTY SPEC GRADE SWITCHES (20A, 120/277V MAX) SHALL BE LEVITON #121 (SINGLE POLE), #1123 (THREE WAY), MOUNTED 4'-0" AFF, UNLESS OTHERWISE INDICATED UNDER ARCHITECTURAL DRAWINGS.
1.30.11.2.2. CONFIRM THAT ALL RECEPTACLES HAVE BEEN INSTALLED AND THAT NO UTILIZATION EQUIPMENT, EITHER PERMANENTLY WIRED OR CORD-CONNECTED, IS CONNECTED TO THE SYSTEM.	2.7.2. ALL NORMAL POWER LIGHT SWITCHES SHALL BE WHITE COLOUR UNLESS OTHERWISE NOTED.
1.30.11.2.3. ENERGIZE THE SYSTEM.	2.7.3. ALL EMERGENCY POWER LIGHT SWITCHES SHALL BE RED COLOUR UNLESS OTHERWISE NOTED.
1.30.11.2.4. SELECT A LOCAL REFERENCE POINT KNOWN TO BE BONDED TO GROUND AND RECORD THE MEASURED VOLTAGE BETWEEN THIS CHOSEN REFERENCE AND EACH RECEPTACLE GROUND POLE AND EACH EXPOSED CONDUCTIVE NON-CURRENT-CARRYING METAL PAT.	2.7.4. DECORATOR VARIABLE SPEED EXHAUST FAN SWITCHES SHALL BE PASS & SEYMOUR LUMASPEC NON-PRESET SERIES, WATTAGE AS REQUIRED.
1.30.11.2.5. IF THE TEST LEADS ARE LONG, CORRECT THE READINGS FOR PICKUP (ZERO READING WHEN THE TEST LEADS ARE CONNECTED TOGETHER).	2.7.5. ALTERNATE MANUFACTURERS: PASS & SEYMOUR, LUTRON, HUBBELL.
1.30.11.2.6. RECORD THE RESULTS.	2.8. RECEPTACLES
2. MATERIAL AND INSTALLATION	2.8.1. NORMAL DEVICES SHALL BE WHITE IN COLOUR, UNLESS OTHERWISE SPECIFIED.
2.1. WIRING METHODS	2.8.2. EMERGENCY DEVICES SHALL BE RED IN COLOUR, UNLESS OTHERWISE SPECIFIED.
2.1.1. ALL BUILDING WIRES AND CABLES SHALL BE COPPER THERMOPLASTIC TYPE TWH 90 DEGREES C RATED AND INSTALLED IN CONDUIT. MINIMUM SIZE SHALL BE #12 AWG. FOR FINAL CONNECTIONS TO LIGHTING FIXTURES USE TYPE CTF WIRE. FOR FINAL CONNECTIONS TO HEATING EQUIPMENT USE SILICONE INSULATED TYPE WIRE, SUITED FOR THIS PURPOSE. ALL CONDUIT SHALL BE EMT TYPE GALVANIZED STEEL UTILIZING SET SCREW FITTINGS, INSULATED THROAT CONNECTION AND COUPLINGS. ALL CONDUIT SHALL BE CONCEALED EXCEPT IN UNFINISHED AREAS.	2.8.3. HOSPITAL GRADE WITH FREE DOT SYMBOL, TAMPER-RESISTANCE, EXTRA HEAVY DUTY BACK AND SIDE WIRED, DUPLEX U-GROUND, 15 AMPERE 125V, 2-POLE, 3-WIRE GROUNDING DUPLEX RECEPTACLES COMPLETE WITH FRONT CIRCUIT IDENTIFICATION AREA, HOSPITAL GRADE, U-GROUND, 20 AMPERE, 125V, 3-WIRE DUPLEX RECEPTACLE.
2.1.2. BRANCH CIRCUIT WIRING EXCEEDING 100 FEET TO THE FURTHEST OUTLET FROM A PANEL BOARD SHALL BE #10 AWG.	2.8.4. ALL RECEPTACLES THROUGHOUT THE PROJECT SHALL BE HOSPITAL GRADE, UNLESS OTHERWISE NOTED.
2.1.3. ARMoured CABLE (BX) MAY BE USED FOR FIXTURE TAILS AND WALL MOUNTED OUTLETS MAXIMUM LENGTH 10 FEET.	2.8.5. ALL OTHER RECEPTACLE TYPES SHALL BE AS SCHEDULED ON THE DRAWINGS.
2.1.4. ALL CONDUIT SHALL BE RUN PARALLEL TO WALLS AND CEILINGS. PROVIDE A NYLON FISH WIRE IN ALL EMPTY CONDUIT. ALL CONNECTORS SHALL BE IDEAL WING NUT TYPE.	2.8.6. RECEPTACLES LOCATED IN ALL ROOMS CONTAINING PERSONAL WASHING FACILITIES SUCH AS WASHBASINS BATH TUBS, SHOWERS, KITCHEN SINKS OR SIMILAR DEVICES AND LOCATED WITHIN 3 METRES OF SUCH DEVICES SHALL PROVIDE GFCI PROTECTION.
2.1.5. SUPPORT ALL CONDUIT INDEPENDENT OF CEILING SYSTEM.	2.8.7. RECEPTACLES LOCATED IN KITCHENS AND INSTALLED WITHIN 1.5 METRE OF KITCHEN SINK ALONG THE WALL BEHIND COUNTER WORK SURFACES SHALL BE PROTECTED BY GROUND FAULT INTERRUPTER.
2.1.6. WIRING FOR HEALTHCARE	2.8.8. RECEPTACLES DESIGNATED "WP" (WEATHERPROOF) ON THE DRAWINGS SHALL BE G.F.I. PROTECTED AND PROVIDED WITH "IN USE" WEATHERPROOF COVERS.
2.1.6.1. RECEPTACLES	2.8.8. ALTERNATE MANUFACTURERS: LUTRON, HUBBELL.
2.1.6.1.1. RECEPTACLES IN PATIENT CARE AREAS: HOSPITAL GRADE.	
2.1.6.1.2. RECEPTACLES CONNECTED TO THE EMERGENCY POWER SYSTEM: COLOURED RED.	
2.1.6.1.3. RECEPTACLES CONNECTED TO THE UPS POWER SYSTEM IF APPLICABLE: COLOURED ORANGE.	
2.1.6.1.4. RECEPTACLES IN PATENT CARE AREAS SHALL HAVE CIRCUIT IDENTIFICATION IN ACCORDANCE WITH CSA STANDARD Z32.	
2.1.7. BONDING TO GROUND	
2.1.7.1. THE FOLLOWING REQUIREMENT APPLY TO ALL PATIENT CARE AREAS:	
2.1.7.1.1. BOND TO GROUND RECEPTACLE AND PERMANENTLY WIRED ELECTRICAL EQUIPMENT BY INSTALLING AN INSULATED GREEN EQUIPMENT BONDING CONDUCTOR IN THE SAME CONDUIT AS THE BRANCH CIRCUIT CONDUCTORS.	
2.1.7.1.2. TERMINATE THE BONDING CONDUCTOR AT THE LOAD END OF THE CIRCUIT TO THE GROUND SCREW IN THE BODING CONDUCTOR/ON THE GROUND BUS IN THE PANEL.	
2.1.7.1.3. PROVIDE A SEPARATE BONDING CONDUCTOR FOR EACH CIRCUIT, EXCEPT TAT WHERE THE SINGLE PHASE RECEPTACLES IN A PATIENT CARE ENVIRONMENT ARE SUPPLIED FROM TWO 2-WIRE BRAND CIRCUITS IN THE SAME CONDUIT, A SINGLE BONDING CONDUCTOR MAY BE PROVIDED FOR THE TWO CIRCUITS.	
2.1.7.1.4. SIZE BONDING CONDUCTORS NOT LESS THAN THE BRANCH CIRCUIT CONDUCTORS. OVERSIZE BONDING CONDUCTORS WHERE NECESSARY TO COMPLY WITH THE VOLTAGE RISE LIMIT PER CSA STANDARD Z32.	
2.1.7.1.5. IN CRITICAL CARE AREAS PROVIDE A SEPARATE #10 BONDING CONDUCTOR FOR EACH CIRCUIT, FROM THE OUTLET BACK TOT HE PANEL.	
2.1.7.1.6. INTERCONNECT THE GROUND BUSES IN ELECTRICAL PANELS WHICH SERVE THE SAME PATIENT CARE AREAS WITH AN INSULATED GREEN COPPED CONDUCTOR INSTALLED IN THE CONDUIT AND SIZED PER THE ONTARIO ELECTRICAL SAFETY CODE, BUT NOT LESS THAN #6 AWG.	
2.1.7.1.7. BOND THE GROUND EXPOSED METAL NON-CURRENT CARRYING PARTS OF EQUIPMENT LOCATED WITHIN 1.5M HORIZONTALLY FROM THE NOMINAL POSITION OF THE BUS AND WITHIN 2.3M VERTICALLY ABOVE THE FLOOR, USE GREEN INSULATED COPPED BONDING CONDUCTORS.	
2.1.7.1.8. TYPICAL EQUIPMENT TO BE BONDED TO GROUND INCLUDES:	
2.1.7.1.8.1. FIXTURES.	
2.1.7.1.8.2. HEADWALL UNITS.	
2.1.7.1.8.3. SERVICE STRIPS.	
2.1.7.1.8.4. INTERCOM STATIONS.	
2.1.7.1.8.5. NURSE CALL STATIONS.	
2.1.7.1.8.6. VIEW BOXES.	
2.1.7.1.8.7. RECEPTACLES.	
2.1.7.1.8.8. SWITCHES.	
2.1.7.1.8.9. COVER PLATES.	
2.1.7.1.8.10. OUTLET BOXES, AND	
2.1.7.1.8.11. OTHER EQUIPMENT AS REQUIRED BY CODE.	

2.1.8.	NEUTRAL CONDUCTORS
2.1.8.1.	IN INTERMEDIATE CARE AREAS AND CRITICAL CARE AREAS, PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR BACK TO THE PANEL SUPPLYING THE RECEPTACLES.
2.1.8.2.	WHERE MULTIPLE CIRCUITS SHARE A CONDUIT, DERATE CONDUCTORS, WHERE REQUIRED, ON THE BASIS THAT THE NEUTRAL CONDUCTORS ARE FULL CURRENT CARRYING CONDUCTORS.
2.2.	RACEWAYS
2.2.1.	RIGID STEEL CONDUIT (RSC) SHALL BE ZINC-COATED STEEL THAT CONFORMS TO INDUSTRY STANDARDS. LOCK NUTS SHALL BE STEELZINC PLATED. CONNECTORS AND COUPLINGS SHALL BE STEEL. INSULATED BUSHINGS SHALL BE IRONZINC PLATED. FITTINGS SHALL BE THREADED WITH INSULATED BUSHINGS.
2.2.2.	ELECTRICAL METALLIC TUBING (EMT) SHALL BE ZINC-COATED STEEL THAT CONFORMS TO INDUSTRY STANDARDS. FITTINGS SHALL BE STEEL WITH SET SCREW CONNECTORS AND COUPLINGS.
2.2.3.	RIGID NON-METALLIC CONDUIT (RNMCC) SHALL BE TYPE EPC-40-PVC, DB-120 AND EPC-80-PVC. CONDUIT SHALL BE 100% VIRGIN POLYVINYL CHLORIDE (PVC), 90°C UL-RATED THAT CONFORMS TO INDUSTRY STANDARDS.
2.3.	BOXES
2.3.1.	SUPPORT ALL BOXES INDEPENDENT OF CONDUIT.
2.3.2.	IN AREAS WITH DRYWALL CEILINGS, CONTRACTOR SHALL LOCATE/RELOCATE ALL NEW/EXISTING JUNCTION BOXES, PULL BOXES, DISCONNECTS, ETC., TO ACCESSIBLE AREAS; AS REQUIRED BY THE CANADIAN ELECTRICAL CODE, WHERE IT IS NO POSSIBLE TO RELOCATE/INSTALL EXISTING/NEW SERVICES IN ACCESSIBLE AREAS, CONTRACTOR SHALL PROVIDE ACCESS PANELS C/W FIRE RATINGS AS REQUIRED. EXACT LOCATION OF ACCESS PANELS SHALL BE CO-ORDINATED WITH THE ARCHITECT.
2.3.3.	OUTLET BOXES
2.3.3.1.	PROVIDE AN OUTLET BOX FOR EACH LIGHTING FIXTURE, WIRING DEVICE, DATA OUTLET, TELEPHONE OUTLET, ETC. OUTLET BOXES FOR VARIOUS SYSTEMS AND COMPONENTS SHALL BE AS REQUIRED BY MANUFACTURER AND SUITABLE FOR THE APPLICATION.
2.3.3.2.	OUTLET BOXES ON CONCEALED WORK SHALL BE 4" SQUARE OR OCTAGONAL, GALVANIZED PRESSED STEEL WITH PLASTER RINGS AS REQUIRED. OUTLET BOXES FOR EXPOSED CONDUIT WORK SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.
2.3.3.3.	WHERE INSTALLED IN PLASTER, BOXES SHALL BE FITTED WITH GALVANIZED STEEL PLASTER COVERS AS REQUIRED TO FINISH FLUSH WITH FINISHED WALL OR CEILING.
2.3.3.4.	SWITCH BOXES, RECEPTACLE BOXES AND OTHER OUTLET BOXES SHALL BE STANDARD 4" SQUARE WITH PLASTER RINGS OR GANG COVER AS REQUIRED.
2.3.3.5.	WEATHERPROOF BOXES SHALL BE CONDULET CAST BOXES WITH WEATHERPROOF DEVICES AND COVERS. PROVIDE HOT-DIPPED GALVANIZED CORROSION-RESISTANT EPOXY ENAMEL FINISH OR PVC-COATED PRODUCTS, WHERE NOTED ON DRAWINGS.
2.3.3.6.	PROVIDE SCREW-JOINT OUTLET BOXES, WITH GASKETED WEATHERPROOF COVERS IN EXTERIOR LOCATIONS, WHERE EXPOSED TO MOISTURE, AT KITCHEN AND CAFETERIA EQUIPMENT WITH OR NEXT TO WATER OR STEAM CONNECTIONS, AND WHERE INDICATED AS WEATHERPROOF ON DRAWINGS.
2.3.3.7.	PROVIDE ONLY ENOUGH CONDUIT OPENINGS TO ACCOMMODATE CONDUITS AT INDIVIDUAL LOCATION. EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE NUMBER AND SIZES OF CONDUITS, WIRES AND SPLICES TO MEET OESC REQUIREMENTS, BUT SHALL BE AT LEAST SIZE SHOWN OR SPECIFIED. NECESSARY VOLUME SHALL BE OBTAINED BY USING BOXES OF PROPER DIMENSIONS. BOX DEPTHS GREATER THAN 2" SHALL NOT BE USED TO OBTAIN NECESSARY VOLUME BUT MAY BE USED WITH ARCHITECTS APPROVAL TO FACILITATE INSTALLATION. STANDARD CONCRETE BOXES MAY BE 6" DEEP WHERE NECESSARY TO PERMIT ENTRANCE OF CONDUITS INTO SIDES OF BOXES WITHOUT INTERFERENCE WITH REINFORCING BARS. OCTAGONAL HUNG CEILING BOXES WITH SUSPENSION BARS MAY BE 3-1/2" DEEP. RECTANGULAR BOXES FOR INTER-CONNECTION OF BRANCH CIRCUIT CONDUITS MAY BE 2-1/2" DEEP.
2.3.3.8.	DO NOT INSTALL OUTLET BOXES "BACK TO BACK" IN WALLS AND PARTITIONS. SUCH OUTLETS MUST BE STAGGERED AND SEALED AGAINST NOISE TRANSMISSION. "THRU_WALL" TYPE OUTLET BOXES WILL NOT BE PERMITTED FOR ANY APPLICATION.
2.3.3.9.	ALL RECESSED OUTLET BOXES FOR SURFACE MOUNTED DEVICES OR LIGHTING FIXTURES MUST BE TOTALLY CONCEALED BY THE DEVICE OR FIXTURE.
2.3.4.	JUNCTION BOXES, PULL BOXES AND CABLE TROUGHS
2.3.4.1.	PROVIDE CABLE GAUGE GALVANIZED STEEL JUNCTION AND PULL BOXES FOR CONDUIT 1-1/4" TRADE SIZE AND LARGER, WHERE INDICATED AND AS NECESSARY TO FACILITATE INSTALLATION, OF REQUIRED DIMENSIONS, WITH ACCESSIBLE, REMOVABLE SCREW-ON COVERS. PROVIDE JUNCTION AND PULL BOXES IN SPECIAL SIZES AND SHAPES DETERMINED IN FIELD WHERE NECESSARY.
2.3.4.2.	JUNCTION BOXES FOR EXPOSED CONDUIT WORK IN FINISHED AREAS SHALL BE CAST ALUMINUM ALLOY WITH CAST ALUMINUM ALLOY COVERS.
2.3.4.3.	PROVIDE CABLE TROUGHS OF SPECIAL SHAPES, DESIGN AND CONSTRUCTION REQUIRED TO INSTALL, SUPPORT AND ENCLOSE FEEDER CABLE THROUGHOUT INDICATED ROUTING. TROUGHS SHALL BE AS SPECIFIED ABOVE FOR JUNCTION AND PULL BOXES, WITH REINFORCING, INSULATING SUPPORTS AND CLAMPING FOR CABLE INSTALLATION. CABLES SHALL BE CONTINUOUS THROUGHOUT TROUGHS AND SHALL BE RACKED IN DISTRIBUTED PHASE GROUPINGS ARRANGED WITH PHASE CABLES SURROUNDING NEUTRAL CONDUCTORS.
2.3.4.4.	ALL BOXES SHALL BE INSTALLED, SO AS TO BE ACCESSIBLE AFTER WORK IS COMPLETE. PROVIDE PULL BOXES ON ALL CONDUIT RUNS ON THE BASIS OF NO MORE THAN TWO (2) - 90 DEG BENDS OR THEIR EQUIVALENT, OR A DISTANCE NOT TO EXCEED 100 FEET BETWEEN BOXES.
2.4.	FLOOR BOXES
2.4.1.	FLOOR OUTLET BOXES SHALL BE STEEL, CONCRETE TIGHT ADJUSTABLE TYPE LEGRAND EVOLUTION SERIES, EFB45S, 4 OR 5 GANG AS REQUIRED TO SUIT DEVICES AND DEPTH OF CONCRETE. PROVIDE APPLICABLE FLOOR PLATE ASSEMBLY AND WIRING DEVICE TO SUIT THE POWER, COMMUNICATION AND AV REQUIREMENTS AS INDICATED ON THE PLANS. (ALTERNATE MANUFACTURERS: HUBBELL, WELLMARK)
2.4.2.	ALL FLOOR PLATES SHALL BE COMPLETE WITH COVER AND FINISHING FLANGES AS REQUIRED TO SUIT FLOOR FINISH AND APPLICATION AS NOTED.
2.5.	GROUNDING
2.5.1.	INSTALL GREEN INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.
2.5.2.	SIGNAL AND COMMUNICATION EQUIPMENT: FOR TELEPHONE, ALARM, VOICE AND DATA, AND OTHER COMMUNICATION EQUIPMENT, PROVIDE NO. #2 AWG MINIMUM INSULATED GROUNDING CONDUCTOR IN RACEWAY FROM GROUNDING ELECTRODE SYSTEM TO EACH SERVICE LOCATION, TERMINAL CABINET, WIRING CLOSET, AND CENTRAL EQUIPMENT LOCATION.
2.5.2.1.	SERVICE AND CENTRAL EQUIPMENT LOCATIONS AND WIRING CLOSETS: TERMINATE GROUNDING CONDUCTOR ON A 1/8" X 2" X 12" GROUNDING BUS.
2.5.2.2.	TERMINAL CABINETS: TERMINATE GROUNDING CONDUCTOR ON CABINET GROUNDING TERMINAL.
2.5.3.	CONDUCTORS: INSTALL SOLID CONDUCTOR FOR #4AWG AND SMALLER, AND STRANDED CONDUCTORS FOR #3AWG AND LARGER, UNLESS OTHERWISE INDICATED.
2.5.4.	UNDERGROUND GROUNDING CONDUCTORS: INSTALL BARE TINNED-COPPER CONDUCTOR, 2/0 AWG MINIMUM.
2.5.4.1.	BURY AT LEAST 24" BELOW GRADE.
2.5.4.2.	DUCT BANK GROUNDING CONDUCTOR: BURY 12" ABOVE DUCT BANK WHEN INDICATED AS PART OF DUCT-BANK INSTALLATION.
2.5.5.	SIZE ALL WIRE FOR MAXIMUM 2% VOLTAGE DROP.
2.5.6.	ALL HOME RUNS TO BE IN CONDUIT.
2.6.	WALL PLATES
2.6.1.	FACEPLATES OF FLUSH-MOUNTED TOGGLE SWITCHES AND RECEPTACLES SHALL BE AS FOLLOWS:
2.6.1.1.	FINISHED AREAS: STAINLESS STEEL FINISH EACH SUPPLIED INDIVIDUALLY WRAPPED IN A SEALED PROTECTIVE ENVELOPE. MANUFACTURER TO MATCH RECEPTACLE AND SWITCH MANUFACTURER.
2.6.1.2.	UNFINISHED AND SURFACE AREAS: GALVANIZED STEEL.
2.6.1.3.	WET LOCATION, WEATHER-PROOF COVER PLATES.
2.7.	LINE VOLTAGE SWITCHES
2.7.1.	EXTRA HEAVY DUTY SPEC GRADE SWITCHES (20A, 120/277V MAX.) SHALL BE LEVITON #121 (SINGLE POLE), #1123 (THREE WAY), MOUNTED 4'-0" AFF, UNLESS OTHERWISE INDICATED UNDER ARCHITECTURAL DRAWINGS.
2.7.2.	ALL NORMAL POWER LIGHT SWITCHES SHALL BE WHITE COLOUR UNLESS OTHERWISE NOTED.
2.7.3.	ALL EMERGENCY POWER LIGHT SWITCHES SHALL BE RED COLOUR UNLESS OTHERWISE NOTED.
2.7.4.	DECORATOR VARIABLE SPEED EXHAUST FAN SWITCHES SHALL BE PASS & SEYMOUR LUMASPEC NON-PRESET SERIES, WATTAGE AS REQUIRED.
2.7.5.	ALTERNATE MANUFACTURERS: PASS & SEYMOUR, LUTRON, HUBBELL.
2.8.	RECEPTACLES
2.8.1.	NORMAL DEVICES SHALL BE WHITE IN COLOUR, UNLESS OTHERWISE SPECIFIED.
2.8.2.	EMERGENCY DEVICES SHALL BE RED IN COLOUR, UNLESS OTHERWISE SPECIFIED.
2.8.3.	HOSPITAL GRADE WITH FREE DOT SYMBOL, TAMPER-RESISTANCE, EXTRA HEAVY DUTY BACK AND SIDE WIREED, DUPLEX U-GROUND, 15 AMPERE 125V, 2-POLE, 3-WIRE GROUNDING DUPLEX RECEPTACLES COMPETE WITH FRONT CIRCUIT IDENTIFICATION AREA. HOSPITAL GRADE, U-GROUND, 20 AMPERE, 125V, 3-WIRE DUPLEX RECEPTACLES COMPETE WITH FRONT CIRCUIT IDENTIFICATION AREA.
2.8.4.	ALL RECEPTACLES THROUGHOUT THE PROJECT SHALL BE, HOSPITAL GRADE, UNLESS OTHERWISE NOTED.
2.8.5.	ALL OTHER RECEPTACLE TYPES SHALL BE AS SCHEDULED ON THE DRAWINGS.
2.8.6.	RECEPTACLES LOCATED IN ALL ROOMS CONTAINING PERSONAL WASHING FACILITIES SUCH AS WASHBASINS BATH TUBS, SHOWERS, KITCHEN SINKS OR SIMILAR DEVICES AND LOCATED WITHIN 3 METRES OF SUCH DEVICES SHALL PROVIDE GFCI PROTECTION.
2.8.7.	RECEPTACLES LOCATED IN KITCHENS AND INSTALLED WITHIN 1.5 METRE OF KITCHEN SINK ALONG THE WALL REACHING COUNTERTOP AND WASH BASIN SHALL BE GFCI PROTECTED BY GROUND FAULT INTERRUPTER.
2.8.8.	ALL RECEPTACLES DESIGNATED "WP" (WEATHERPROOF) ON THE DRAWINGS SHALL BE G.F.I. PROTECTED AND PROVIDED WITH "IN USE" WEATHERPROOF COVERS.
2.8.9.	ALTERNATE MANUFACTURERS: LUTRON, HUBBELL.

1. GENERAL

1.1. GENERAL REQUIREMENTS

- 1.1.1. ALL EQUIPMENT INSTALLED AS PART OF THIS PROJECT SHALL BE ANTI-LIGATURE UNLESS OTHERWISE NOTED.
- 1.1.2. CODES & STANDARDS
- THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL CODES IN EFFECT INCLUDING ALL AUTHORIZED AGENCIES HAVING JURISDICTION OVER THE WORK INCLUDING, BUT NOT RESTRICTED TO THE CANADIAN ELECTRICAL SAFETY CODE, ONTARIO ELECTRIC SAFETY CODE, ONTARIO BUILDING CODE, AND ALL OTHER BUILDING CODES IN EFFECT AT THE TIME OF CONSTRUCTION.

1.2. DEFINITIONS

- 1.2.1. THE TERM "THIS SUB-CONTRACTOR MEANS THE FIRM HAVING A SUBCONTRACT WITH THE "CONTRACTOR" TO PERFORM, SUPERVISE AND CO-ORDINATE ALL WORK OF THIS DIVISION.
- 1.2.2. THE TERM "INSTALL" (AND TENSES OF "INSTALL") MEANS INSTALL AND CONNECT COMPLETE.
- 1.2.3. THE TERM "SUPPLY" MEANS SUPPLY ONLY.
- 1.2.4. THE TERM "PROVIDE" OR "PROVISION OF" ARE USED IN RELATIONSHIP TO EQUIPMENT AND OTHER MATERIALS SPECIFIED IT MEANS "SUPPLY, INSTALL AND CONNECT," WHEREVER THE TERMS "PROVIDE" OR "PROVISION OF" ARE USED IN CONNECTION WITH SERVICES SUCH AS TESTING, START-UP AND COMMISSIONING FOR ANY PART OF THE WORK, IT MEANS PROCURE, SUPERVISE, TAKE RESPONSIBILITY AND PAY FOR THESE SERVICES.
- 1.2.5. "DRAWINGS AND SPECIFICATIONS" MEANS "THE CONTRACT DOCUMENTS".
- 1.2.6. THE TERM "WORK" MEANS ALL EQUIPMENT, PERMITS, MATERIALS AND LABOR TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION AS REQUIRED AND DETAILED IN THE DRAWINGS AND SPECIFICATIONS.
- 1.2.7. THE TERM "MEANS ACCEPTABLE TO THE CONSULTANT."

1.3. SUBMITTALS

- 1.3.1. SUBMIT SHOP DRAWINGS FOR ALL MATERIAL AND AS FURTHER IDENTIFIED HEREIN.

1.4. PERMITS, FEES AND INSPECTIONS

- 1.4.1. APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS, EXAMINATIONS AND FEES REQUIRED FOR THE WORK AND OBTAIN ALL PERMITS AS REQUIRED.
- 1.4.1. ARRANGE FOR INSPECTION OF ALL WORK BY THE AUTHORITIES HAVING JURISDICTION OVER THE WORK, ON COMPLETION OF THE WORK, PRESENT TO THE CONSULTANT THE FINAL UNCONDITIONAL CERTIFICATE OF APPROVAL OF THE INSPECTING AUTHORITIES.
- 1.4.2. IN CASE OF CONFLICT, THE CODES TAKE PRECEDENCE OVER THE CONTRACT DOCUMENTS. IN NO INSTANCE REDUCE THE STANDARD OR SCOPE OF WORK OR INTENT ESTABLISHED BY THE DRAWINGS AND SPECIFICATIONS BY APPLYING ANY OF THE CODES REFERRED TO HEREIN.

1.5. CONTRACT DRAWINGS

- 1.5.1. THE DRAWINGS FOR ELECTRICAL WORK ARE PERFORMANCE DRAWINGS, DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT AND APPROXIMATE LOCATION OF APPARATUS, FIXTURES AND CONDUIT RUNS. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN AND STRUCTURAL DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.
- 1.5.1. DO NOT SCALE DRAWINGS. OBTAIN INFORMATION INVOLVING ACCURATE DIMENSIONS FROM DIMENSIONS SHOWN ON ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND BY SITE MEASUREMENT.
- 1.5.2. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS, AND/OR EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (CONDUITS AROUND BEAMS, COLUMNS, ETC.)
- 1.5.3. ALTER, AT NO ADDITIONAL COST, THE LOCATIONS OF MATERIALS AND/OR EQUIPMENT AS DIRECTED THAT DO NOT NECESSITATE ADDITIONAL MATERIAL.
- 1.5.4. INSTALL CEILING MOUNTED COMPONENTS (E.G., LIGHT FIXTURES, SPEAKERS, HEAT OR SMOKE DETECTORS) IN ACCORDANCE WITH REFLECTED CEILING DRAWINGS.
- 1.5.5. CONFIRM ON THE SITE THE EXACT LOCATION AND MOUNTING ELEVATION OF OUTLETS AND FIXTURES AS RELATED TO ARCHITECTURAL AND STRUCTURAL DETAILS.

1.6. EXAMINATION OF SITE AND DOCUMENTATION

- 1.6.1. PRIOR TO SUBMITTING TENDER, CAREFULLY EXAMINE CONDITIONS AT THE SITE WHICH COULD AFFECT THE WORK. REFER TO AND EXAMINE ALL CONTRACT DOCUMENTS.
- 1.6.2. ENSURE THAT MATERIALS AND EQUIPMENT ARE DELIVERED TO THE SITE AT THE PROPER TIME AND IN SUCH ASSEMBLIES AND SIZES SO AS TO ENTER INTO THE BUILDING AND TO BE MOVED INTO THE SPACES WHERE THEY ARE TO BE LOCATED WITHOUT DIFFICULTY. BE RESPONSIBLE FOR ANY CUTTING AND PATCHING INVOLVED IN GETTING ASSEMBLIES INTO PLACE.
- 1.6.3. BEFORE TENDERING, EXAMINE SITE AND ALL APPLICABLE DRAWINGS SO THAT THE TENDER PRICE INCLUDES FOR EVERYTHING NECESSARY FOR COMPLETION OF WORK. FAILURE TO VISIT THE SITE OR ADEQUATELY REVIEW ALL THE REQUIRED INTERFACING DETAILS WILL NOT ENTITLE THIS SUB-CONTRACTOR TO ANY ADDITIONAL COMPENSATION.

1.7. PHASING AND SCHEDULING OF WORK

- 1.7.1. PRIOR TO COMMENCING ANY WORK, REFER TO SCOPE OF WORK FOR A DETAILED DESCRIPTION OF THE PHASING AND SCHEDULING WORK IN ACCORDANCE WITH THE PHASING AND CONSTRUCTION SCHEDULE. PROVIDE ALL NECESSARY TEMPORARY CONNECTIONS AND EQUIPMENT TO PROVIDE FUNCTIONAL, OPERATIONAL SYSTEMS DURING CONSTRUCTION PERIOD WHEN PART OF THE BUILDING WILL BE OCCUPIED AND CONSTRUCTION IS STILL CONTINUING IN OTHER PORTIONS.

1.8. COORDINATION DRAWINGS

- 1.8.1. PREPARE DRAWINGS IN CONJUNCTION WITH ALL TRADES CONCERNED, SHOWING SLEEVES AND OPENINGS FOR PASSAGE THROUGH STRUCTURE, AND ALL INSERTS, EQUIPMENT BASES, AND SUPPORTS, AND RELATE THESE TO SUITABLE GRID LINES AND ELEVATION DATUM.
- 1.8.2. WHEN REQUESTED, PROVIDE WEIGHTS OF MAJOR ITEMS OF EQUIPMENT.
- 1.8.3. PREPARE INTERFERENCE AND CO-ORDINATION DRAWINGS FOR ALL AREAS WHERE THE WORK OF THIS DIVISION COULD CONFLICT WITH AND/OR OBSTRUCT THE WORK OF OTHER TRADES AND/OR OTHER SECTIONS OF THE DIVISION. SUBMIT DRAWINGS FOR REVIEW BY THE CONSULTANT.

1.9. COORDINATION

- 1.9.1. CO-ORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT:
- 1.9.2. TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS THAT REDUCE HEADROOM ARE INDICATED.
- 1.9.3. TO PROVIDE FOR EASE OF DISCONNECTING THE EQUIPMENT WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS.
- 1.9.4. TO ALLOW RIGHT OF WAY FOR PIPING AND CONDUIT INSTALLED AT REQUIRED SLOPE.
- 1.9.5. SO CONNECTING RACEWAYS, CABLES, WIREWAYS, CABLE TRAYS, AND BUSWAYS WILL BE CLEAR OF OBSTRUCTIONS AND OF THE WORKING AND ACCESS SPACE OF OTHER EQUIPMENT.
- 1.9.6. CO-ORDINATE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SET SLEEVES IN CAST-IN-PLACE CONCRETE, MASONRY WALLS, AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.
- 1.9.7. CO-ORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE BEHIND FINISHED SURFACES OR OTHERWISE CONCEALED. PROVIDE ACCESS DOORS AND PANELS TO SUIT THE FINISH THAT IT WILL BE INSTALLED ONTO.
- 1.9.8. CO-ORDINATE SLEEVE SELECTION AND APPLICATION WITH SELECTION AND APPLICATION OF FIRESTOPPING.
- 1.9.9. APPLY FIRESTOPPING TO PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES FOR ELECTRICAL INSTALLATIONS TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.
- 1.9.10. CO-ORDINATE SIZES AND LOCATIONS OF REQUIRED CONCRETE PADS AND BASES TO SUPPORT ELECTRICAL EQUIPMENT.

1.10. PRODUCT STANDARDS AND ALTERNATIVES

- 1.10.1. PROVIDE NEW MATERIAL AND EQUIPMENT AS SPECIFIED AND TO THE ACCEPTANCE OF THE CONSULTANT. MANUFACTURER'S NAMES ARE LISTED TO SET A STANDARD OF QUALITY, PERFORMANCE, CAPACITY, APPEARANCE AND SERVICEABILITY.
- 1.10.2. WHERE NO OTHER ACCEPTABLE MANUFACTURERS ARE INDICATED, PROVIDE THE EXACT MAKE SPECIFIED. REQUESTS FOR ACCEPTANCE OF MANUFACTURERS NOT LISTED MUST BE SUBMITTED NOT LESS THAN SEVEN WORKING DAYS PRIOR TO CLOSING DATE OF THE TENDER AND SUBMISSIONS MUST BEAR PROOF OF ACCEPTANCE BY THE CONSULTANT IF USED IN THE TENDER.
- 1.10.3. ASSUME FULL RESPONSIBILITY FOR ENSURING THAT WHEN PROVIDING OTHER ACCEPTABLE MANUFACTURERS ALL SPACE, WEIGHT, CONNECTIONS, POWER AND WIRING REQUIREMENTS, ETC., ARE CONSIDERED, AND COSTS THEREFORE INCLUDED IN THE TENDER. EQUIPMENT REQUIRING GREATER THAN SPECIFIED ENERGY REQUIREMENTS OR UNDULY LIMITING SERVICE SPACE REQUIREMENT WILL NOT BE ACCEPTED.

1.11. RIGHTS RESERVED

- 1.11.1. RIGHTS ARE RESERVED TO FURNISH ANY ADDITIONAL DETAIL DRAWINGS, WHICH IN THE JUDGEMENT OF THE CONSULTANT MAY BE NECESSARY TO CLARIFY THE WORK, AND SUCH DRAWINGS SHALL FORM A PART OF THIS CONTRACT.

1.12. EXPEDITING AND DELIVERY

- 1.12.1. CONTINUOUSLY CHECK AND EXPEDITE DELIVERY OF EQUIPMENT AND MATERIALS. WHERE NECESSARY, INSPECT AT THE SOURCE OF MANUFACTURE.
- 1.12.2. CONTINUOUSLY CHECK AND EXPEDITE THE FLOW OF NECESSARY INFORMATION TO AND FROM ALL PARTIES INVOLVED.
- 1.12.3. IMMEDIATELY INFORM THE CONSULTANT IN CASE INFORMATION IS REQUIRED.

1.13. SUPERINTENDENCE

- 1.13.1. MAINTAIN AT THE JOB SITE, AT ALL TIMES, QUALIFIED PERSONNEL AND SUPPORTING STAFF, WITH PROVEN EXPERIENCE IN ERECTING, SUPERVISING, TESTING AND ADJUSTING PROJECTS OF COMPARABLE NATURE AND COMPLEXITY.

1.14. WORKMANSHIP

- 1.14.1. INSTALL EQUIPMENT, CONDUIT AND CABLES IN A WORKMANLIKE MANNER TO PRESENT A NEAT APPEARANCE TO FUNCTION PROPERLY TO THE SATISFACTION OF THE CONSULTANT. INSTALL RUNS PARALLEL AND PERPENDICULAR TO BUILDING LINES, IN CHASES, BEHIND FURROWS OR ABOVE CEILINGS, WHERE SUCH CONCEALMENT IS POSSIBLE. IN AREAS WHERE SYSTEMS ARE TO BE EXPOSED INSTALL NEATLY AND GROUP TO PRESENT A TIDY APPEARANCE.
- 1.14.2. INSTALL EQUIPMENT AND APPARATUS REQUIRING MAINTENANCE, ADJUSTMENT OR EVENTUAL REPLACEMENT WITH DUE ALLOWANCE THEREFORE.
- 1.14.3. INCLUDE IN THE WORK ALL REQUIREMENTS OF MANUFACTURERS SHOWN ON THE SHOP DRAWINGS OR MANUFACTURERS INSTALLATION INSTRUCTIONS.
- 1.14.4. REPLACE WORK UNSATISFACTORY TO THE CONSULTANT WITHOUT EXTRA COST.
- 1.14.5. MAKE PROVISION TO ACCOMMODATE FUTURE PLANT AND EQUIPMENT INDICATED ON DRAWINGS.
- 1.14.6. PROTECT FROM DAMAGE ALL EQUIPMENT DELIVERED TO THE SITE AND DURING INSTALLATION. ANY DAMAGE OR MARKING OF FINISHED SURFACES SHALL BE MADE GOOD TO THE SATISFACTION OF THE CONSULTANT.

1.15. TRIAL USAGE AND TESTS

- 1.15.1. THE OWNER HAS THE PRIVILEGE OF THE TRIAL USAGE OF ELECTRICAL SYSTEMS OR PARTS THEREOF FOR THE PURPOSE OF TESTING AND LEARNING THE OPERATIONAL PROCEDURES.
- 1.15.1. ASSIST IN TRIAL USAGE OVER A LENGTH OF TIME AS DEEMED REASONABLE BY THE CONSULTANT AND DO NOT WAIVE ANY RESPONSIBILITY BECAUSE OF TRIAL USAGE.
- 1.15.2. TRIAL USAGE SHALL NOT BE CONSTRUED AS SUBSTANTIAL COMPLETION OF THE WORK, OR ACCEPTANCE BY THE OWNER.
- 1.15.3. PROVIDE AND PAY FOR ALL TESTING REQUIRED ON THE SYSTEM COMPONENTS WHERE, IN THE OPINION OF THE CONSULTANT, MANUFACTURER'S RATINGS OR SPECIFIED PERFORMANCE IS NOT BEING ACHIEVED.

1.16. NOISE AND VIBRATION

- 1.16.1. ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.
- 1.16.2. CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH LIQUID-TIGHT FLEXIBLE CONDUIT AND ASSOCIATED CONNECTORS. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND MOTORS. USE A MINIMUM OF 3PT OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.
- 1.16.3. VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 1/2" HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.

1.17. SEISMIC RESTRAINT CONTROLS

- 1.17.1. PROVIDE A SEISMIC RESTRAINT CONTROLS FOR ALL EQUIPMENT AND SERVICES INSTALLED AS PART OF THIS PROJECT.
- 1.17.2. SRS: ACRONYM FOR SEISMIC RESTRAINT SYSTEM.
- 1.17.3. SFRS: ACRONYM FOR SEISMIC FORCE RESISTING SYSTEM.

- 1.17.4. DESIGN AND PROVIDE A COMPLETE SEISMIC RESTRAINT SYSTEMS FOR ALL ELECTRICAL EQUIPMENT AND SYSTEMS SUCH THAT THE EQUIPMENT OPERATES WITH FUNCTIONALITY DURING AND AFTER A SEISMIC EVENT. THE RESTRAINT SYSTEM SHALL ENSURE THAT OTHER UNRELATED SYSTEMS ARE NOT AFFECTED BY ELECTRICAL SYSTEMS/EQUIPMENT MOTION DURING THE SEISMIC EVENT.

- 1.17.5. INSTALL ELECTRICAL SYSTEMS AND EQUIPMENT WITH ADEQUATE STRUCTURAL SUPPORT TO WITHSTAND SEISMIC FORCES IN ACCORDANCE WITH PART 4 OF THE ONTARIO BUILDING CODE.

- 1.17.6. RETAIN AN ENGINEER LICENSED IN THE PROVINCE OF ONTARIO SPECIALIZING IN THE DESIGN OF SRS/SFRS TO PERFORM A REVIEW OF THE PROPOSED DESIGN AND INSTALLATION, AND PREPARE INSTALLATION DOCUMENTS INDICATING ALL REQUIRED SEISMIC SUPPORTS, BRACINGS, AND FASTENINGS. THESE DOCUMENTS SHALL BE SEALED AND SIGNED BY THE STRUCTURAL ENGINEER AND SUBMITTED AS PART OF THE SHOP DRAWING PACKAGE PRIOR TO ROUGH-IN WORK COMMENCING ON-SITE.

- 1.17.7. SCOPE SHALL INCLUDE BUT NOT BE LIMITED TO:
- A. FIRE ALARM CONTROL PANELS AND DATA GATHERING PANELS.
- B. DATA CABINETS AND RACKS.

- 1.17.8. PROVIDE CONFIRMATION IN WRITING, SIGNED AND SEALED BY THE STRUCTURAL ENGINEER, AT COMPLETION OF PROJECT THAT THE ELECTRICAL INSTALLATION IS IN GENERAL COMPLIANCE WITH THE STRUCTURAL INSTALLATION DRAWINGS SUBMITTED WITH THE SHOP DRAWING PACKAGE.

- 1.17.9. THE ELECTRICAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE FULL SCOPE OF THIS WORK. INCLUDE ALL COSTS OF STRUCTURAL DESIGN, MATERIALS, AND SITE REVIEW IN TENDER PRICE.

- 1.17.10. SRS SHALL BE FULLY INTEGRATED INTO, COMPATIBLE WITH NOISE AND VIBRATION CONTROLS.

- 1.17.11. SRS TO PROVIDE GENTLE AND STEADY CUSHIONING ACTION AND AVOID HIGH IMPACT LOADS.

- 1.17.12. SRS TO LIMIT MOVEMENT TO AVOID DAMAGE TO OTHER BUILDING ELEMENTS AND/OR SYSTEMS.

- 1.17.13. SRS TO RESTRAIN SEISMIC FORCES IN EVERY DIRECTION.

- 1.17.14. FASTENERS AND ATTACHMENT POINTS TO RESIST SAME LOAD AS SEISMIC RESTRAINTS.

- 1.17.15. SRS UTILIZING CAST IRON, THREADED PIPE, OTHER BRITTLE MATERIALS NOT PERMITTED.

- 1.17.16. ATTACHMENTS TO RC STRUCTURE:
- A. USE HIGH STRENGTH MECHANICAL EXPANSION ANCHORS.
- B. DRILLED OR POWER DRIVEN ANCHORS NOT PERMITTED.

- 1.17.17. SEISMIC CONTROL MEASURES NOT TO INTERFERE WITH INTEGRITY OF FIRESTOPPING.

- 1.17.18. FLOOR-MOUNTED STATIC EQUIPMENT SYSTEMS:
- A. ANCHOR EQUIPMENT TO EQUIPMENT SUPPORTS.
- B. ANCHOR EQUIPMENT SUPPORTS TO STRUCTURE.
- C. USE SIZE OF BOLTS SCHEDULED IN APPROVED SHOP DRAWINGS.

- 1.17.19. SUSPENDED STATIC EQUIPMENT SYSTEMS:
- USE ONE OR COMBINATION OF FOLLOWING METHODS:
- A. INSTALL TIGHT TO STRUCTURE.
- B. CROSS-BRACE IN EVERY DIRECTION.
- C. BRACE BACK TO STRUCTURE.
- D. CABLE RESTRAINT SYSTEM.

- 1.17.20. SCS TO PREVENT SWAY IN HORIZONTAL PLANE, "ROCKING" IN VERTICAL PLANE, SLIDING AND BUCKLING IN AXIAL DIRECTION.

- 1.17.21. HANGER RODS TO WITHSTAND COMPRESSIVE LOADING AND BUCKLING. PROVIDE ANGLE STIFFENERS WHERE REQUIRED.

- 1.17.22. SRS FOR FLOOR MOUNTED VIBRATION ISOLATED EQUIPMENT:
- USE ONE OR COMBINATION OF FOLLOWING METHODS:
- A. VIBRATION ISOLATORS WITH BUILT-IN SNUBBERS.
- B. VIBRATION ISOLATORS AND SEPARATE SNUBBERS.
- C. BUILT-UP SNUBBER SYSTEM APPROVED BY CONSULTANT, CONSISTING OF STRUCTURAL ELEMENTS AND ELASTOMERIC LAYER.
- 1.17.23. SRS TO RESIST COMPLETE ISOLATOR UNLOADING.

- 1.17.24. SRS NOT TO JEOPARDIZE NOISE AND VIBRATION ISOLATION SYSTEMS. PROVIDE 4-8 MM CLEARANCE BETWEEN SEISMIC RESTRAINT SNUBBERS AND EQUIPMENT DURING NORMAL OPERATION OF EQUIPMENT AND SYSTEMS.

- 1.17.25. CUSHIONING ACTION: GENTLE AND STEADY BY UTILIZING ELASTOMERIC MATERIAL OR OTHER MEANS IN ORDER TO AVOID HIGH IMPACT LOADS.

1.81. INTERRUPTION OF SERVICES

- 1.81.1. WHERE DISRUPTIONS OF EXISTING SERVICES ARE REQUIRED CO-ORDINATE THE SHUT-DOWNS WITH THE OWNER AND CARRY OUT THE WORK AT A TIME AND IN A MANNER ACCEPTABLE TO THEM. CAREFULLY SCHEDULE ALL DISRUPTIONS AND/OR SHUT-DOWNS AND ENSURE THAT THE DURATION OF SAME IS KEPT TO THE ABSOLUTE MINIMUM. SUBMIT FOR APPROVAL A WRITTEN CONCISE SCHEDULE OF EACH DISRUPTION AT LEAST 72 HOURS IN

ADVANCE OF PERFORMING WORK AND OBTAIN OWNER'S WRITTEN CONSENT PRIOR TO IMPLEMENTING.

- 18.1.2. WHERE DISRUPTIONS OF LIFE SAFETY SYSTEMS ARE REQUIRED COMPLY WITH PARAGRAPH 1.17.1 ABOVE. PROVIDE CONTINUOUS MONITORING DURING SHUT-DOWN PERIOD AND ENSURE ALL SYSTEMS ARE REACTIVATED PRIOR TO LEAVING THE SITE AT THE END OF EACH WORKING DAY.

- 18.1.3. INTERRUPTIONS SHALL ONLY OCCUR DURING PREMIUM TIME PERIODS; ALL ALLOWANCES FOR THIS SHALL BE INCLUDED IN THE PRICE SUBMITTED.

- 18.1.4. ASSUME FULL RESPONSIBILITY FOR ANY DISRUPTION OR DAMAGE TO EXISTING SERVICES OR SYSTEMS. SHOULD ANY TEMPORARY CONNECTIONS BE REQUIRED TO MAINTAIN SERVICES DURING WORK IN THE EXISTING BUILDING, SUPPLY AND INSTALL ALL NECESSARY MATERIAL AND EQUIPMENT AND PROVIDE ALL LABOUR AT NO EXTRA COST. SHOULD THIS DIVISION DAMAGE ANY EXISTING SYSTEM OR DEVICE IN THE COURSE OF WORK, MAKE FULL REPAIRS WITHOUT EXTRA COST AND TO THE SATISFACTION OF THE OWNER.

19.1. DEMOLITION

- 19.1.1. VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING, AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.

- 19.1.2. REVIEW AND CONFIRM WITH THE ARCHITECT/DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.

- 19.1.3. MAKE SAFE AND DISCONNECT ALL POWER AND SYSTEMS, AS AND WHEN, AND TO THE EXTENT REQUIRED TO FACILITATE WITH THE DEMOLITION.

- 19.1.4. ENSURE THAT ALL ELECTRICAL, LIFE SAFETY SERVICES, AND SERVICES FOR EXISTING EQUIPMENT, IN AREAS OUTSIDE THE AREAS OF THIS WORK, THAT ARE REQUIRED TO REMAIN IN SERVICE, SHALL DO SO.

- 19.1.5. RELOCATE ANY ELECTRICAL FEEDERS OR EQUIPMENT THAT ARE REQUIRED TO REMAIN IN SERVICE, THAT ARE REQUIRED TO EXISTING WALLS, FLOORS OR CEILINGS TO BE DEMOLISHED OR THAT ARE BURIED AND REQUIRED TO BE EXCAVATED FOR NEW WORK.

- 19.1.6. REMOVE AND REPLACE ANY ELECTRICAL EQUIPMENT ON WALLS OR CEILINGS THAT WILL BE DEMOLISHED AND REBUILT.

- 19.1.7. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUIT AND WIRING BACK TO THE ASSOCIATED PANELBOARDS OR CONTROL PANEL. WHERE FLOOR BOXES ARE BEING REMOVED, ENSURE UNDER-FLOOR CONDUIT IS REMOVED BACK TO SOURCE AND FILL ALL CORE HOLES, IN FLOORS AND IN WALLS, WITH APPROPRIATE CONCRETE.

- 19.1.8. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES, DEVICES, OUTLETS, ETC. WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE BOXED AND TURN-OVER TO THE OWNER AT A PLACE DESIGNATED BY THE OWNER. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVED UNUSED WIRING BACK TO PANELBOARD IN APPROVED MANNER.

- 19.1.9. INCLUDE IN DEMOLITION WORK FOR REMOVAL OF ALL COMMUNICATION DEVICES, OUTLETS, CABLES, CONDUITS, ETC., WHICH ARE NOT TO BE REUSED, ALL REDUNDANT CABLEING AND CONDUIT SHALL BE REMOVED IN ITS ENTIRETY FROM TENANT SPACE BACK TO BASE BUILDING RISER ROOMS. REMOVE ALL UNNECESSARY CABLES AND EQUIPMENT IN HUB ROOMS AND/OR TELEPHONE ROOMS WITH EXTREME CARE TO AVOID ANY ACCIDENTAL SHUT-DOWN TO EXISTING SERVICES SERVING OTHER PARTS OF THE BUILDING.

- 19.1.10. PROVIDE BLANK COVER PLATE WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.

- 19.1.11. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.

- 19.1.12. RETURN TO LANDLORD ANY UNUSED LANDLORD SUPPLIED EQUIPMENT AND MATERIALS, EXIT SIGNS, LIGHT FIXTURES, SPEAKERS, SPEAKER/SROBES.
- 19.1.13. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

- 19.1.14. CARRY OUT THE WORK WITH MINIMUM OF NOISE, DUST AND DISTURBANCE.

- 19.1.15. ENSURE THAT ALL EXISTING EQUIPMENT WHICH ARE TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURNISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND MEETS THE LOCAL ELECTRICAL SAFETY AUTHORITY'S APPROVAL. OUTLET BOXES AND WIRING AND FOR CONDUIT WHICH ARE CORRODED OR DAMAGED ARE TO BE REPLACED.

20.1. CLEANING

- 20.1.1. BEFORE ENERGIZING ANY SYSTEMS, INSPECT AND CLEAN THE INSIDE OF PANEL BOARDS, SWITCHGEAR AND CABINETS TO ENSURE THAT THEY ARE COMPLETELY FREE FROM DUST AND DEBRIS.
- 20.1.2. CLEAN ALL POLISHED, PAINTED AND PLATED WORK BRIGHT. CLEAN ALL LIGHTING FIXTURES.
- 20.1.3. REMOVE ALL DEBRIS, SURPLUS MATERIAL AND ALL TOOLS.
- 20.1.4. CARRY OUT ADDITIONAL CLEANING OPERATING OF SYSTEMS AS SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATION.

21.1. COMPLETION

- 21.1.1. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY CONSULTANT.
- 21.1.2. LEAVE ELECTRICAL WORK IN SPECIFIED WORKING ORDER.

22.1. INSTRUCTION TO OWNER

- 23.1.1. INSTRUCT THE OWNER'S REPRESENTATIVES IN ALL ASPECTS OF THE OPERATION OF SYSTEMS AND EQUIPMENT.
- 23.1.3. ARRANGE FOR AND PAY FOR SERVICES OF SERVICE ENGINEERS AND OTHER MANUFACTURERS' REPRESENTATIVES REQUIRED FOR INSTRUCTION ON SPECIALIZED PORTIONS OF THE INSTALLATION.
- 23.1.4. SUBMIT TO THE CONSULTANT AT THE TIME OF FINAL INSPECTION A COMPLETE LIST OF SYSTEMS STATING FOR EACH SYSTEM:

- 23.1.5. DATE INSTRUCTIONS WERE GIVEN TO THE OWNER'S STAFF.

- 23.1.6. DURATION OF INSTRUCTION.

- 23.1.7. NAME OF PERSONS INSTRUCTED.

- 23.1.8. OTHER PARTIES PRESENT (MANUFACTURER'S REPRESENTATIVE, CONSULTANTS, ETC.).

- 23.1.9. SIGNATURES OF THE OWNER'S STAFF STATING THAT THEY PROPERLY UNDERSTOOD THE SYSTEM INSTALLATION, OPERATION AND MAINTENANCE REQUIREMENTS.

24.1. ADDITIONAL WORK

- 24.1.1. IN CASE WHERE EXTRA WORK OF ANY KIND IS REQUIRED, OBTAIN WRITTEN INSTRUCTION FROM THE ARCHITECT / DESIGN CONSULTANT BEFORE PROCEEDING. PAYMENTS WILL BE MADE FOR AUTHORIZED CHANGES ONLY.
- 24.1.12. QUOTATION WITH BREAKDOWN OF MATERIAL, LABOUR, OVERHEAD, PROFIT, ETC., SHALL BE SUBMITTED FOR EACH CHANGE. LABOUR UNITS SHALL BE BASED ON THE LATEST NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) LABOUR COLUMN ONE FOR THE COMPLETE DURATION OF THE PROJECT. MATERIAL PRICES SHALL BE BASED ON THE CURRENT NATIONAL PRICE SYSTEM WITH TRADE DISCOUNTS. HOURLY LABOUR RATE SHALL INCLUDE ALL RATED CHARGES FOR SUPERVISION, HYDRO INSPECTION, HAND TOOLS, PARKING, CLEAN-UP, AS-BUILT DRAWINGS AND ADDITIONAL BONDING.

25.1. MATERIALS AND CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

- 25.1.1. WHERE MATERIALS ARE FURNISHED BY OTHERS FOR INSTALLATION UNDER THIS DIVISION, THE SUB-CONTRACTOR SHALL NOTIFY THE SUPPLIER OF DATES THEY WILL BE READY FOR DELIVERY AS SPECIFIED IN THE GENERAL CONDITIONS. THE SUB-CONTRACTOR SHALL RECEIVE, UNLOAD, HANDLE, STORE, PROTECT AND INSURE THE MATERIAL UNTIL READY FOR ACTUAL INSTALLATION. UPON RECEIPT OF MATERIAL FURNISHED BY OTHERS, THE SUB-CONTRACTOR SHALL SPOT-CHECK OR CHECK THE ENTIRE SHIPMENT AND PROMPTLY ADVISE THE CONSULTANT IN WRITING OF ANY DAMAGE AND/OR MISSING COMPONENTS. ANY MATERIAL WHICH IS SUBSEQUENTLY LOST OR DAMAGED DUE TO NEGLIGENCE ON THE PART OF THE SUB-CONTRACTOR SHALL BE PROMPTLY REPLACED (OR REPAIRED TO THE SATISFACTION OF THE OWNER) AT THE SUB-CONTRACTOR'S EXPENSE.

- 25.1.2. WHERE THE DRAWINGS INDICATED EQUIPMENT TO BE FURNISHED BY OTHERS, PROVIDE ELECTRICAL ROUGH-IN FOR EACH UNIT PURSUANT TO ITS SHOP DRAWINGS, AND MAKE FINAL CONNECTIONS, DISCONNECT SWITCHES AND OTHER ELECTRICAL FACILITIES FOR A COMPLETE INSTALLATION.

26.1. INSERTS, HANGERS AND SLEEVES

- 26.1.1. SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATER/TIGHT.
- 26.1.2. PROVIDE HANGERS, INSERTS, SLEEVES AND SUPPORTS AS REQUIRED.
- 26.1.3. STEEL PIPE SLEEVE SHALL BE ASTM A 53/A 53/A 53M, TYPE E, GRADE B, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS.
- 26.1.5. SLEEVES FOR RECTANGULAR OPENINGS SHALL BE GALVANIZED SHEET STEEL. MINIMUM METAL THICKNESS:
- 26.1.6. FOR SLEEVE CROSS-SECTION RECTANGLE PERIMETER LESS THAN 6" AND NO SIDE MORE THAN 16", THICKNESS SHALL BE 1/16".
- 26.1.7. FOR SLEEVE CROSS-SECTION RECTANGLE PERIMETER EQUAL TO OR MORE THAN 4" AND 1 OR MORE SIDES EQUAL TO OR MORE THAN 16", THICKNESS SHALL BE 1/8".
- 26.1.8. PROVIDE A CONCRETE BASE 4" HIGH AT ALL SLEEVE LOCATIONS AND CONDUITS PENETRATING THE FLOOR SLAB. CONCRETE BASE TO EXTEND 4" BEYOND THE EDGE OF THE SLEEVE OR CONDUIT. ALL CONCRETE WORK TO BE INCLUDED IN THIS DIVISION.
- 26.1.9. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.
- 26.1.10. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.
- 26.1.11. DO NOT USE ANY BASE BUILDING SUPPORTS OR EQUIPMENT, INCLUDING CEILING SUPPORT SYSTEM.

- 27.1. CUTTING AND PATCHING

- 27.1.1. ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE

INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE LANDLORD. OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE ANY CUTTING IS CARRIED OUT.

- 27.1.2. WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE FIRE STOPPING MATERIAL AND MAINTAIN SAME FIRE RATING OF BUILDING COMPONENT THROUGH WHICH PENETRATION OCCURS. MODULAR SEALING DEVICE, DESIGNED FOR FIELD ASSEMBLY, TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE.

- 28.1. PLYWOOD

- 28.1.1. ALL SURFACE MOUNTED ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE MOUNTED ON PLYWOOD BACKBOARDS. PROVIDE ALL PLYWOOD BACKBOARDS REQUIRED FOR THE WORK OF THIS DIVISION. PLYWOOD BACKBOARDS SHALL BE 3/4" THICK, OF HIGHEST QUALITY FIRE RETARDANT FR, PRIME AND PAINT BACKBOARDS WITH FIRE RETARDANT PAINT EQUAL TO CG98 SPEC. #1-GP-151 M, OF A COLOUR AS SELECTED BY THE DESIGN CONSULTANT/ARCHITECT.

- 29.1. CORE DRILLING

- 29.1.1. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, SCAN SLAB OR WALLS AND HAVE THE LOCATIONS ACCEPTED BY THE LANDLORD IN WRITING.

- 29.1.2. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING MUST BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT.

- 29.1.3. FLOOR DRILLING TO BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.

2. COMMUNICATIONS DISTRIBUTION SYSTEM:

2.1. COPPER HORIZONTAL CABLING

- 2.1.1. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF ALL COPPER HORIZONTAL CABLING APPLICATIONS CALLED FOR IN THE BID DOCUMENTS.
- 2.1.2. HORIZONTAL CABLE SHALL CONSIST OF CATEGORY 5E, 6, 6 OR 6A COPPER CABLE FOR ALL DATA AND VOICE APPLICATIONS.
- 2.1.3. LISTED CMR CABLE: SOLID COPPER CONDUCTORS WITH HIGH-DENSITY POLYOLEFIN INSULATION AND AN OVERALL LOW SMOKE POLYVINYL CHLORIDE (PVC) JACKET TO ACHIEVE A RISER (I.E., NON-PLENUM) RATING BY APPLICABLE NEC REQUIREMENTS.
- 2.1.4. LISTED CMP CABLE: SOLID COPPER CONDUCTORS WITH FLUORINATED ETHYLENE PROPYLENE (FEP) INSULATION AND AN OVERALL LOW SMOKE PVC JACKET TO ACHIEVE PLENUM RATING BY APPLICABLE NEC REQUIREMENTS.
- 2.1.5. LSZH CABLE: SOLID COPPER CONDUCTORS WITH NON-HALOGEN HIGH-DENSITY POLYETHYLENE (HDPE) INSULATION AND A LOW SMOKE, ZERO HALOGEN, COMPOUND JACKET TO ACHIEVE A LSZH RATING BY APPLICABLE IEC STANDARDS.
- 2.1.6. LC CABLE: SOLID COPPER CONDUCTORS WITH FEP FLUOROPOLYMER INSULATION AND OVERALL FEP FLUOROPOLYMER JACKET TO ACHIEVE CMP 50 RATING BY UL STANDARDS.
- 2.1.7. OSP OUTDOOR CABLE RATED FOR WET LOCATIONS: SOLID COPPER CONDUCTORS WITH POLYETHYLENE INSULATION, POLYOLEFIN FLUTED CENTER MEMBER WITH FLOODING COMPOUND, AND BLACK POLYETHYLENE JACKET.
- 2.1.8. CABLE SHALL BE INSTALLED FOLLOWING INDUSTRY STANDARD PRACTICES.
- 2.1.9. HORIZONTAL CABLING SHALL BE INSTALLED FROM THE WORK AREA OUTLET LOCATION TO THE NEAREST TELECOMMUNICATIONS SPACE.
- 2.1.10. HORIZONTAL CABLE SHALL BE TERMINATED ON A PATCH PANEL IN THE TELECOMMUNICATION SPACE WHICH IS THE SAME CATEGORY RATING AS THE CABLE. I.E. CAT 6 CABLE TERMINATES ON CAT 6 PANELS.
- 2.1.11. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM PULLING TENSION OR THE MINIMUM BENDING RADIUS FOR TWISTED PAIR CABLES PER MANUFACTURER'S SPECIFICATIONS.
- 2.1.12. CONTRACTOR SHALL TEST ALL HORIZONTAL LINKS PER THE ANSI/TIA-568 REQUIREMENTS.

2.2. COPPER JACK INFORMATION, OUTLETS, CONNECTORS, AND FACEPLATES

- 2.2.1. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF ALL JACK INFORMATION OUTLETS AND CONNECTIONS CALLED FOR IN THE BID DOCUMENTS.
- 2.2.2. THE JACK INFORMATION OUTLETS SHALL MATCH THE CATEGORY OF THE CABLING.
- 2.2.3. ALL JACKS INFORMATION OUTLETS SHALL MEET UL 94 V-0.
- 2.2.4. TELECOMMUNICATIONS JACKS SHALL BE 8-POSITION/8-CONDUCTOR MODULAR OUTLETS ACCEPTING INDUSTRY STANDARD MODULAR RJ45 TYPE PLUGS AND INSULATION DISPLACEMENT CONDUCTOR (IDC) TERMINATIONS.
- 2.2.5. THE UNIVERSAL DESIGN SHALL SUPPORT T568A AND T568B WIRING AND SHALL HAVE UNIVERSAL WIRING LABELS, INCLUDING COLOR-CODED INSERT IDENTIFICATION LABELS TO ENSURE ACCURATE IDENTIFICATION.
- 2.2.6. COLOR SHALL BE SPECIFIED OR SELECTED BY OWNER'S REPRESENTATIVE FROM MANUFACTURER'S STANDARD COLORS.
- 2.2.7. JACK INFORMATION OUTLETS AND CONNECTORS SHALL BE INSTALLED FOLLOWING INDUSTRY STANDARD PRACTICES.

2.3.6 ALL PATCH PANELS SHALL BE INSTALLED LEVEL AND PLUM WITHIN THE RACKS.

2.4 COPPER PATCH CORDS:

2.4.1 PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF ALL COPPER PATCH CORDS INTO THE APPROVED PATCH PANELS CALLED FOR IN THE BID DOCUMENTS.

2.4.2 ALL PATCH/EQUIPMENT CORDS SHALL BE NEW.

2.4.3 ALL PATCH/EQUIPMENT CORDS SHALL BE FACTORY MANUFACTURED AND TESTED FOR COMPLIANCE TO THE APPROPRIATE STANDARDS AND PERFORMANCE.

2.4.4 PATCH/EQUIPMENT CORD LENGTH SHALL BE DETERMINED BY THE END USER.

2.4.5 COPPER PATCH CORDS SHALL CONSIST OF CATEGORY 5E, 6 OR 6A COPPER CABLE FOR ALL DATA AND VOICE APPLICATIONS.

2.5 CABINETS, RACKS, FRAMES, AND ENCLOSURES:

2.5.1 APPROVED CABINET MANUFACTURERS: HAMMOND, BELDEN, PANDUIT, HUBBELL.

2.5.2 NETWORKING WALL-MOUNT CABINETS HWC SERIES & LOW PROFILE CABINETS HLP SERIES.

2.5.3 ADJUSTABLE DEPTH CENTER SWING WALL RACK, HWMR SERIES.

2.5.4 HIGH-DENSITY OPEN-RACK 2-POST SYSTEM DNRHWDW SERIES (1,500LBS), HIGH-DENSITY OPEN-RACK 2-POST SYSTEM DRZA SERIES (2,000LB), HIGH-DENSITY OPEN-RACK 4-POST SYSTEM DCAR SERIES, SERVER CABINETS CARR SERIES, MULTIMEDIA (AV) CABINETS RB-AV SERIES, DATA-CENTER NETWORK CABINETS H1 SERIES.

2.5.5 PROVIDE VERTICAL POWER DISTRIBUTION UNITS (PDU) 208V, 30A, 5KW, L6-30P LOCKED INPUT PLUG, 30XC13 & 6XC19 RECEPTACLES, INTEGRAL CIRCUIT BREAKER, ENVIRONMENTAL MONITORING PORT, HEAT CONTAINMENT, RACK ACCESSORIES SUCH AS: MOUNTING HARDWARE, CAGE NUTS, CLIP NUTS, BOLT DOWN AND GANGING KITS, FILLER/BLANKING PANELS, VERTICAL AND HORIZONTAL CABLE MANAGEMENT.

2.6 IDENTIFICATION:

2.6.1 THE SIZE, COLOR, AND CONTRAST OF ALL LABELS SHOULD BE SELECTED TO ENSURE THAT THE IDENTIFIERS ARE EASILY READ. LABELS SHOULD BE VISIBLE DURING THE INSTALLATION OF AND NORMAL MAINTENANCE OF THE INFRASTRUCTURE.

2.6.2 LABELS SHOULD BE RESISTANT TO THE ENVIRONMENTAL CONDITIONS AT THE POINT OF INSTALLATION (SUCH AS MOISTURE, HEAT, OR ULTRAVIOLET LIGHT), AND SHOULD HAVE A DESIGN LIFE EQUAL TO OR GREATER THAN THAT OF THE LABELED COMPONENT.

2.6.3 ALL LABELS SHALL BE PRINTED OR GENERATED BY A MECHANICAL DEVICE. HAND WRITTEN LABELS ARE NOT ACCEPTABLE.

2.7 GROUNDING AND BONDING:

2.7.1 TWO MOUNTING HOLE GROUND TERMINAL BLOCK SHALL BE MADE OF ELECTROPLATED TIN ALUMINUM EXTRUSION, ACCEPT CONDUCTORS RANGING FROM #14 AWG THROUGH #20, THE CONDUCTORS SHALL BE HELD IN PLACE BY TWO STAINLESS STEEL SET SCREWS. SHALL HAVE TWO 1/4" (6.4 MM) HOLES SPACED ON 5/8" (15.8 MM) CENTERS TO ALLOW SECURE TWO-BOLT ATTACHMENT TO THE RACK OR CABINET.

2.7.2 COMPRESSION LUGS SHALL BE MANUFACTURED FROM ELECTROPLATED TINNED COPPER, HAVE TWO HOLES SPACED ON 5/8" (15.8 MM) OR 1" (25.4 MM) CENTERS TO ALLOW SECURE TWO BOLT CONNECTIONS TO BUSBARS, SIZED TO FIT A SPECIFIC SIZE CONDUCTOR, SIZES #6 TO #40.

2.7.3 OXIDE INHIBITING JOINT COMPOUND FOR COPPER-TO-COPPER, ALUMINUM-TO-ALUMINUM OR ALUMINUM-TO-COPPER CONNECTIONS.

2.7.4 C-TYPE, COMPRESSION TAPS SHALL BE MANUFACTURED FROM COPPER ALLOY, BE C-SHAPED CONNECTORS THAT WRAP AROUND TWO CONDUCTORS FORMING AN IRREVERSIBLE SPLICE AROUND THE CONDUCTORS; INSTALLATION REQUIRES A HYDRAULIC CRIMPING TOOL, BE SIZED TO FIT SPECIFIC SIZE CONDUCTORS, SIZES #2 AWG TO #40.

2.7.5 PEDESTAL CABLE WITH GROUNDING CONNECTOR SHALL BE MADE FROM ELECTROPLATED TINNED COPPER OR BRONZE. INSTALLATION HARDWARE WILL BE STAINLESS STEEL, BE SIZED TO FIT A SPECIFIC SIZE CONDUCTOR, SIZE #6 AND/OR #20. HARDWARE SHALL BE SIZED TO ATTACH TO ROUND AND/OR SQUARE RAISED ACCESS FLOOR PEDESTALS THAT ARE 1-1/8" TO 1-3/4" IN DIAMETER, PROVIDE STRAIGHT (IN-LINE) OR CROSS (INTERSECTION) SUPPORT FOR UP TO TWO CONDUCTORS.

2.7.6 PIPE CABLE WITH GROUNDING CONNECTOR SHALL BE MADE FROM ELECTROPLATED TINNED BRONZE; INSTALLATION HARDWARE WILL BE STAINLESS STEEL, SIZED TO FIT UP TO TWO CONDUCTORS RANGING IN SIZE FROM #6 TO #250 MCM, CONDUCTORS MUST BE THE SAME SIZE, SIZED TO ATTACH TO PIPES, SIZES 1" TO 6" (75 TO 6.85 IN DIAMETER).

2.7.7 EQUIPMENT GROUND JUMPER KIT SHALL INCLUDE ONE 24" L INSULATED GROUND JUMPER WITH A STRAIGHT TWO-HOLE COMPRESSION LUG ON ONE END AND AN L-SHAPED TWO-HOLE COMPRESSION LUG ON THE OTHER END, TWO PLATED INSTALLATION SCREWS, AN ABRASIVE PAD AND A 3 OUNCE TUBE OF ANTIOXIDANT JOINT COMPOUND. GROUND CONDUCTOR IS AN INSULATED GREEN/YELLOW STRIPE #6 AWG WIRE, LUGS ARE MADE FROM ELECTROPLATED TINNED COPPER AND HAVE TWO MOUNTING HOLES SPACES 5" TO .625" APART THAT ACCEPT 1/4" SCREWS.

2.8 TESTING & DOCUMENTATION:

2.8.1 PROVIDE INSTALLATION TESTING OF EQUIPMENT WHERE REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

2.8.2 PROVIDE COMPLETE END TO END TESTING FOR ALL COPPER AND FIBER OPTIC SYSTEMS/CHANNELS BASED ON LATEST APPLICABLE STANDARDS, DOCUMENT ALL TESTING AND SUBMIT WITH FINAL AS-BUILT SUBMITTAL PACKAGE.

2.8.3 FOR ALL CONTROLS AND OPERATING EQUIPMENT, SUBMIT EQUIPMENT'SYSTEMS TO AT LEAST THREE COMPLETE OPERATIONAL SEQUENCES, IN WHICH ALL EQUIPMENT OPERATIONS ARE TESTED, OBSERVED, AND VERIFIED.

2.8.4 PRIOR TO SUBSTANTIAL COMPLETION AND PROJECT ACCEPTANCE INSPECTION, SUBMIT TEST REPORTS TO INDICATED SCOPE OF STARTUP AND OPERATIONAL TESTS, WITH RESULTS OF TESTING FOR EACH SPECIFIED OPERATION.

3 SECURITY SYSTEMS:

3.1 GENERAL

3.1.1 PROVIDE A FULLY INTEGRATED AND COMPATIBLE SECURITY PLATFORM FOR THE ACCESS CONTROL, INTRUSION DETECTION AND VIDEO SURVEILLANCE SYSTEMS.

3.1.2 PROVIDE RACK MOUNTED UPS WITH 20 MINS BACK UP TIME FOR THE SYSTEM IF THE BUILDING UPS POWER IS NOT AVAILABLE.

3.1.3 THE SECURITY SYSTEMS SHALL BE LIMITED TO THE FOLLOWING MANUFACTURERS AND AS SHOWN ON THE DRAWINGS, OR APPROVED EQUAL BY THE CONSULTANT.

- A. ACCESS CONTROL SYSTEM PLATFORM: SALTO XS4, LATCH OS, KANTECH ENTRAPASS, LENEL ONGUARD, GENETEC SYNERGIS, SOFTWARE HOUSE COURE, MILESTONE XPROTECT, EXACOVISION.
- B. CARD READERS: SALTO, LATCH, HD ICCLASS SE OR MULTICLASS SE, KEYSKAN.
- C. VIDEO SURVEILLANCE CAMERAS (ONVIF COMPLIANT): AXIS, BOSCH, AVIGILON, HANWHA.
- D. VIDEO MANAGEMENT SOFTWARE (VMS): MILESTONE XPROTECT, GENETEC OMNICAST, EXACOVISION, SOFTWARE HOUSE COURE.
- E. VIDEO SURVEILLANCE MONITORS: LG, SAMSUNG, PLANAR, NEC.
- F. INTRUSION DETECTION: BOSCH, DSC POWERSERIES PRO, HONEYWELL VISTA, HONEYWELL VISTA PLUS (FOR RESIDENTIAL SUITE).
- G. INTERCOM: AIPHONE, TOA, COMMEND, GUARDIAN TELECOM, CODE BLUE.
- H. ENTRY PHONE: MITROM T3X, BUTTERFLY MX, AIPHONE KG, VISCOINT ENTERPHONE IQ.
- I. SECURITY SWITCH & SERVER MANUFACTURERS: TRANSITION NETWORKS, CISCO, HP, DELL, LENOVO.

3.2 ACCESS CONTROL SYSTEM

3.2.1 THE ELECTRONIC ACCESS CONTROL SYSTEM SOFTWARE SHALL PROVIDE A FULLY INTEGRATED SYSTEM PACKAGE, WITH STANDARD SOFTWARE MODULES TO SUPPORT FUNCTIONS SUCH AS, BUT NOT LIMITED TO, ACCESS CONTROL, ALARM MONITORING & REPORTING, SYSTEM COMMAND AND CONTROL, ELEVATOR CONTROL, VISITOR MANAGEMENT, TIME & ATTENDANCE RECORDING, GENERATIONS, E-MAILS/MESSAGING, FIRE ALARM INTEGRATION, INTRUSION DETECTION ALARM INTEGRATION, BUILDING MANAGEMENT SYSTEM INTEGRATION, ETC.

3.2.3 THE ELECTRONIC ACCESS CONTROL SYSTEM SHALL PROVIDE THE CAPABILITY TO FULLY INTEGRATE WITH VIRTUALLY ANY VIDEO SURVEILLANCE SYSTEM, PROVIDING ON-SCREEN DISPLAY OF LIVE VIDEO, AND PLAYBACK OF RECORDED VIDEO FROM ANY CAMERA ON THE VIDEO SURVEILLANCE SYSTEM. VIDEO DISPLAY SHALL BE MANUALLY REQUESTED, OR LINKED TO AUTOMATICALLY DISPLAY BASED ON ANY SPECIFIC SYSTEM EVENT.

3.3 INTRUSION DETECTION SYSTEM

3.3.1 PROVIDE AN 8-32 ZONES CONTROL PANEL, ONE ZONE PER SECURITY DEVICE, FULLY PROGRAMMABLE TOUCHSCREEN KEYPAD, ENSURE ALL DEVICES ARE PROGRAMMED, LOCATED AND SET TO MINIMIZE FALSE ALARMS.

3.3.2 ALL DEVICES SHALL BE FULLY WIRED. WIRELESS DEVICES ARE NOT ACCEPTABLE.

3.4 VIDEO SURVEILLANCE SYSTEM

3.4.1 REFER TO CAMERA SCHEDULE ON DRAWINGS FOR DETAILS. ALL CAMERAS SHALL BE ONVIF COMPLIANT.

3.4.2 NETWORK VIDEO RECORDER (NVR) SHALL BE 2U RACK MOUNTED SERVER WITH LICENSES INCLUDED, 8 HDD SLOTS AND 64 VIDEO CHANNELS.

3.4.3 NETWORK VIDEO RECORDER (NVR) SHALL BE MINIMUM 24TB, MINIMUM OF 30 DAYS CAMERA RECORDING STORAGE, USE 50% MOTION AS BASIS FOR STORAGE CALCULATION AT 30 FRAMES/SECOND AT MAXIMUM RESOLUTION IN H.264 VIDEO COMPRESSION FORMAT.

3.4.4 PROVIDE ALL POE AND POE+ SWITCHES, AND NETWORK CABLE EXTENDERS AS REQUIRED FOR A COMPLETE SYSTEM.

3.4.5 PROVIDE RACK MOUNT COMPUTER SERVERS, FLAT SCREEN MONITOR AND KEYBOARD AT SECURITY DESK OR AS SHOWN ON THE DRAWINGS.

3.4.6 PROVIDE VIDEO ANALYTICS SYSTEM AND VIDEO MANAGEMENT SOFTWARE AS PART OF THE COMPLETE VIDEO SURVEILLANCE SYSTEM.

4 NURSE CALL SYSTEM

4.1 GENERAL

4.1.1 PROVIDE A COMPLETE WORKING NURSE/PATIENT COMMUNICATIONS NETWORK BASED UPON THE SPECIFICATION OUTLINED HERE TO INCLUDE ALL NECESSARY DEVICES THAT PROVIDE THE FUNCTIONS LISTED IN THIS SPECIFICATION FOR HOSPITAL NAME. THIS FACILITY WILL BE REFERENCED AS THE OWNER IN THIS SPECIFICATION.

4.1.2 IF AN OPERATIONAL FUNCTION IS SPECIFIED THAT REQUIRES HARDWARE OR SOFTWARE TO COMPLETE THAT SPECIFIC FUNCTION, THEN CONSIDER THAT SOFTWARE OR HARDWARE PART OF THIS SPECIFICATION. THE COST OF ANY OMISSIONS OF SOFTWARE OR HARDWARE NECESSARY TO COMPLETE ALL OPERATIONAL FUNCTIONS OUTLINED IN THIS SPECIFICATION SHALL BE BORNE BY THE CONTRACTOR PROVIDING THIS SYSTEM.

4.1.3 ALL NURSE COMMUNICATIONS NETWORK DEVICES SHALL BE UL-1069 LISTED. THIS INCLUDES ROUTERS, HUBS, SWITCHES, AND ROOM CONTROL DEVICES. THE NURSE CALL NETWORK SHALL BE AN FDA REGISTERED CLASS II (OR HIGHER) MEDICAL DEVICE AND THE SYSTEMS MANUFACTURER SHALL BE AN FDA REGISTERED OPERATOR. FIELD WIRING SHALL BE CAT6A CABLE. CONTROL WIRING FOR POWER DISTRIBUTIONS AND VERY LONG RUNS, AND UTILIZE AN OPTIONAL FIBER BACKBONE (WHEN DISTANCES EXCEED NORMAL ETHERNET LIMITATIONS). ALL STATION EQUIPMENT SHALL USE PLUG ON CONNECTORS AND ALL SWITCHES, ROUTERS AND CONTROLLERS SHALL UTILIZE STANDARD RJ-45 MODULAR CONNECTIONS. ALL REMOTE DEVICES UTILIZING STANDARD STRUCTURED CABLING SHALL BE CAPABLE OF POE (POWER OVER ETHERNET) OR POWER SUPPLIED WITHIN THE CAT6A CABLE JACKET. SYSTEMS WHICH REQUIRE SEPARATE DC POWER TO DEVICES, REMOTE POWER SUPPLIES, OR HEAVY DC WIRING TO EACH INDIVIDUAL ROOM SHALL NOT BE ACCEPTED. WIRING SHALL BE CAPABLE OF EITHER BEING INSTALLED IN CONDUIT OR CABLE TRAYS WHERE SHOWN ON THE PLANS. NURSE COMMUNICATIONS CABLING MAY BE RUN ALONG WITH OTHER LOW VOLTAGE AND DATA CABLES WHERE PERMITTED BY CODE. NURSE COMMUNICATIONS CABLING TO BE SEPARATED OUT FROM ANY HIGH VOLTAGE AC OR DC WIRING THAT EXCEEDS 90 VOLTS, OR WHICH VIOLATES ANY NATIONAL OR LOCAL ELECTRICAL CODE.

4.1.4 THE SYSTEM MUST BE UL 1069 LISTED AS A NURSE COMMUNICATIONS NETWORK. SYSTEMS LISTED BY OTHER NATIONALLY RECOGNIZED TESTING LABORATORY MAY NOT BE ACCEPTED. THE SYSTEM SHALL BE CAPABLE OF INTERCONNECTING WITH THE HOSPITAL'S LAN (LOCAL AREA NETWORK). THIS CONNECTION SHALL BE MINIMAL AND UTILIZE ONLY ONE ETHERNET 100 MBPS (OR OPTIONALLY 1 GB) HOSPITAL ADT. HOSPITAL ADT, HOSPITAL ADT INFORMATION, REPORTING SOFTWARE AND INFORMATION EXCHANGE. THE HL7 STANDARD SHALL BE UTILIZED FOR RECEIPT OF PATIENT INFORMATION FROM THE ADT SYSTEM.

4.1.5 THE OWNER WILL PROVIDE ONE VPN CONNECTION. ONE VPN IS FOR THE SERVICING CONTRACTOR TO DIAGNOSE ANY MAINTENANCE ISSUES AND TO MAINTAIN THE SYSTEM OFFSITE. DIAGNOSTIC SOFTWARE SHALL BE WEB BASED AND PERMIT E-MAIL NOTIFICATION OF HIGH LEVEL ALARMS. ALL SOFTWARE APPLICATIONS SHALL BE HIPAA AND HIPEDA COMPLIANT AND SHALL ALLOW FOR PATIENT NAME ALIASES AND ALTERNATIVE DISPLAY METHODS. COMPLEX USER NAME/ PASSWORDS, GRANULAR PERMISSION SETTINGS AND ROLE BASED SECURITY SHALL BE STANDARD. ALL DATABASES SHALL BE ODBC COMPLIANT, MS SQL 2008 OR LATER.

4.1.6 OVERALL NURSE COMMUNICATIONS NETWORK SHALL UTILIZE VOIP COMMUNICATIONS BETWEEN ALL MAJOR COMPONENTS. THE NURSE CALL STATION TERMINALS, TELEPHONES AND CONTROLLERS, ANY NURSE CALL CONSOLE AND STAFF TERMINAL MUST BE ABLE TO ANSWER ANY PATIENT CALL PLACED IN THE NETWORK. SYSTEMS NOT UTILIZING THE VOIP STANDARD WILL NOT BE ACCEPTABLE. THE COMMUNICATION STANDARD SHALL BE SIP PROTOCOL. WHEN TELEPHONES ARE INTEGRATED, THE OWNER WILL NOT BE PROVIDING ANY ANALOG PORTS TO THE NURSE CALL NETWORK. AS PART OF THIS CONTRACT, THE OWNER WILL EITHER SUPPLY OR ESTABLISH THAT THERE IS A TELEPHONY CALL NETWORK WHICH SUPPORTS THE SIP PROTOCOL WITHIN THE OWNER'S FACILITY. SYSTEMS REQUIRING DIGITAL TO ANALOG CONVERTERS WILL NOT BE ACCEPTED.

4.1.7 THE CAPABILITY TO ASSIGN PATIENTS TO STAFF SHALL BE VIA A NETWORKED SOFTWARE INFRASTRUCTURE ON EXISTING OWNER WORKSTATIONS. THERE ARE NO KNOWN SOFTWARE LIMITS TO THE NUMBER OF USERS OR UNITS BEING ASSIGNED. IT SHALL ALSO BE POSSIBLE TO HAVE MULTIPLE USERS LOGGING ONTO SYSTEM VIA BARCODE OR OTHER STANDARD HUMAN INTERFACE DEVICES. LOG ON PROCESS IDENTIFIES USER AND THE CURRENT DEVICE USED THAT DAY. STAFF UTILIZING BAR CODE OR HID SIGN ON AND/OR ONLY SINGLE PC ASSIGNMENT FROM NURSES' STATION WILL NOT BE ACCEPTED UNDER THIS SPECIFICATION.

4.1.8 ETHERNET PORTS WILL BE PROVIDED BY THE OWNER FOR HL7 INTEGRATION TO THE ENTIRE NETWORK. THOSE NURSE CALL SYSTEMS REQUIRING MORE THAN ONE INTERFACE TO THE LIVE ENVIRONMENT WILL NOT BE ACCEPTABLE. ADDITIONAL SERVICES WILL BE PROVIDED BY THE OWNER ON AN AS NEEDED BASIS. THOSE SPECIFIC NURSE CALL OPTIONS THAT ARE SELECTED, ALL SERVERS WILL BE INSTALLED IN THE FACILITIES DATA CENTER. ALL SOFTWARE MUST BE CAPABLE OF BEING DIAGNOSED AND SUPPORTED BY THE DISTRIBUTOR REMOTELY.

4.1.9 THE NETWORK SHALL BE EXPANDABLE TO ANY COMBINATION OF OVER 15,000 BED, DUTY, OR STAFF STATIONS AND 12,000 SUB-STATIONS CONNECTED AS A CONTIGUOUS INTERCONNECTED SYSTEM. MULTIPLE BUILDINGS AND INTRA-BUILDING CONNECTIONS MAY BE LINKED TOGETHER UTILIZING A FIBER OR AN ETHERNET CONNECTION. GROUND CONDUCTOR IS AN INSULATED GREEN/YELLOW STRIPE #6 AWG WIRE, LUGS ARE MADE FROM ELECTROPLATED TINNED COPPER AND HAVE TWO MOUNTING HOLES SPACES 5" TO .625" APART THAT ACCEPT 1/4" SCREWS.

4.1.10 THE NETWORK SHALL BE CAPABLE OF BACKWARD COMPATIBILITY TO PRIOR GENERATION OF NURSE/PATIENT COMMUNICATIONS NETWORKS. THE MANUFACTURER'S USER MANUAL SHALL BE PROVIDED. THE NETWORK SHALL ALLOW CALLS FROM THE PRIOR GENERATION SYSTEM TO APPEAR AND GO INTO AUDIO COMMUNICATION FROM THE COMMON CONSOLES, STAFF TERMINALS, DUTY STATIONS, ZONE LIGHTS AND PC DISPLAYS AS WELL AS ALLOW PATIENT TO STAFF ASSIGNMENT VIA A COMMON CLIENT APPLICATION.

4.2 QUALIFICATIONS

4.2.1 AUTHORIZED DISTRIBUTOR FOR PRODUCT SUPPLIED. AUTHORIZED DISTRIBUTOR LETTER FROM MANUFACTURER REQUIRED UPON REQUEST OF SPECIFYING AUTHORITY.

4.2.2 CERTIFICATE OF SUCCESSFUL COMPLETION OF MANUFACTURER'S INSTALLATION/TRAINING SCHOOL FOR INSTALLING TECHNICIANS OF THE EQUIPMENT BEING PROPOSED. LETTER FROM MANUFACTURER STATING TECHNICIAN QUALIFICATIONS ON REQUEST.

4.2.3 CERTIFICATE OF COMPLETION OF NETWORK CERTIFICATIONS (I.E. CISCO OR MICROSOFT). COPY AVAILABLE UPON REQUEST.

4.3 SYSTEM DESCRIPTION

4.3.1 SYSTEM HARDWARE SHALL CONSIST OF A NURSE CALL NETWORK COMPRISED OF VOIP NURSE CONSOLES, PC CONSOLES (OWNER PROVIDED), NURSE CALL NETWORK CONTROLLERS, PATIENT STATIONS, POWER SUPPLIES, BATTERY BACK-UP, DOME LIGHTS, ENTERTAINMENT CORDS, CALL CORDS, PULL CORD STATIONS, EMERGENCY PUSH BUTTON STATIONS, WIRING AND OTHER OPTIONS SUCH AS BED SIDE-RAIL INTERFACES, WIRELESS BED INTERFACE, COMPUTER INTERFACES, WIRELESS/TELEPHONE NETWORK INTERFACES, VOIP STAFF TERMINALS, RTLS (REAL TIME LOCATING SYSTEM) AND NETWORK ADAPTER MODULE AS SHOWN ON DRAWINGS. ALL NECESSARY EQUIPMENT REQUIRED TO MEET THE INTENT OF THESE SPECIFICATIONS, WHETHER OR NOT ENUMERATED WITHIN THESE SPECIFICATIONS, SHALL BE SUPPLIED AND INSTALLED TO PROVIDE A COMPLETE AND OPERATING NURSE/PATIENT COMMUNICATIONS NETWORK.

4.3.2 SYSTEM HARDWARE AND FIRMWARE SHALL BE THE PRODUCT OF A SINGLE, REPUTABLE MANUFACTURER WITH A PROVEN HISTORY OF PRODUCT RELIABILITY AND SOLE CONTROL OVER ALL SOURCE CODE. MANUFACTURER SHALL PROVIDE, FREE OF CHARGE, PRODUCT FIRMWARE/SOFTWARE UPGRADES FOR A PERIOD OF ONE YEAR FROM DATE OF INSTALLATION FOR ANY PRODUCT FEATURE ENHANCEMENTS. MANUFACTURER SHALL PROVIDE A 5 YEAR WARRANTY ON ALL MANUFACTURED HARDWARE. SYSTEM CONFIGURATION PROGRAMMING CHANGES SHALL NOT REQUIRE ANY EXCHANGE OF PARTS AND SHALL BE CAPABLE OF BEING EXECUTED REMOTELY VIA A VPN CONNECTION. ANY SUPPLIER WHOSE EQUIPMENT CANNOT SUPPORT REMOTE SYSTEM CONFIGURATION PROGRAMMING AND DIAGNOSTICS VIA VPN OR REQUIRES THE EXCHANGE OF PARTS, CHIPS FOR SYSTEM CONFIGURATION PROGRAMMING CHANGES WILL NOT BE ACCEPTABLE.

4.3.3 ALL PROGRAMMING AND FIRMWARE CHANGES SHALL BE ACCOMPLISHED ON A WORKING SYSTEM WITHOUT INTERRUPTION TO NORMAL OPERATIONS. THE SYSTEM OPERATOR SHALL BE ABLE TO SWITCH BETWEEN CONTROLLERS, WHICH HOLD THIS FIRMWARE AND SYSTEM PARAMETERS MUST HAVE DUAL STORAGE. WHILE UPDATES ARE BEING MADE TO ONE SET OF FIRMWARE, THE SYSTEM SHALL BE WORKING AND FULLY FUNCTIONAL ON THE ORIGINAL FIRMWARE (I.E. A AND B MEMORY BLOCKS). IT SHALL BE POSSIBLE TO SWITCH TO THE NEW SYSTEM CONTROL SOFTWARE SYSTEM BY A SINGLE SYSTEM COMMAND. IN THE EVENT OF AN ERROR OR FAILURE IN THE UPDATE PROCESS, THE SYSTEM SHALL REVERT BACK TO THE PREVIOUS FIRMWARE.

4.3.4 ALL COMMUNICATIONS SHALL BE FULL DUPLEX AUDIO, NOT ONLY ON HANDSETS, BUT ALL LOUD SPEAKING DEVICES, INCLUDING PATIENT AND STAFF. PATIENTS THAT DO NOT HAVE FULL DUPLEX AUDIO OR DO NOT HAVE SEPARATE MICROPHONE AND SPEAKER CAPABILITY WITHIN THE PILLOW SPEAKERS WILL NOT BE ACCEPTED.

4.3.5 ALL WALL MOUNTED STATIONS SHALL BE FLUSH MOUNTED USING SNAP TIGHT COVER PLATES. SUB PLATES SHALL BE SLOTTED AND ADJUSTABLE FOR TRIMMING THE MOUNTING FOR "SQUARING" THE VERTICAL AND HORIZONTAL FIT. ALL SCREWS SHALL BE HIDDEN.

4.3.6 ALL FLUSH MOUNT STATION BUTTONS SHALL USE A BIO-SEAL COVER TO FACILITATE THE USE OF DISINFECTANT CLEANERS.

4.3.7 ENTIRE NETWORK SHALL BE SUPERVISED, INCLUDING ALL SUB-STATIONS. REPORTING OF STATION FAILURE SHALL BE TO ANY DESIGNATED CONSOLE, PC, E-MAIL, OR WIRELESS DEVICE. REMOTE DIAGNOSTICS SHALL BE UTILIZED TO QUICKLY LOCATE THE SOURCE OF THE PROBLEM.

4.3.8 UP TO 99 DIFFERENT STAFF LEVELS MAY BE DEFINED WITHIN THE NURSE CALL NETWORK TO FACILITATE WORK FLOW WITHIN AND OUTSIDE OF NORMAL NURSE CALL ACTIVITY (I.E. ENVIRONMENTAL SERVICES, FACILITIES, TRANSPORTATION, LAB, PHARMACY, ETC.).

4.3.9 NURSE CALL NETWORK SHALL SUPPORT A VLAN CONFIGURATION TO SEPARATE ACTIVITY IN THE NURSE CALL

NETWORK FROM OTHER HOSPITAL LAN TRAFFIC. NURSE CALL NETWORK CAN SPAN MULTIPLE SUBNETS ON A HOSPITAL'S LAN.

4.3.10 ALL SPECIFIED EQUIPMENT SHALL BE MANUFACTURED USING SURFACE MOUNT TECHNOLOGY (SMT) AND MANUFACTURING TESTING EQUIPMENT SHALL UTILIZE ATE (AUTOMATED TEST EQUIPMENT) TO ASSURE THE HIGHEST QUALITY PRODUCTION. SPECIFYING AUTHORITY MAY REQUEST TEST PROCEDURES AND/OR RESULTS OF TESTS ON SPECIFIC EQUIPMENT BEING SUPPLIED. MANUFACTURER'S TESTING PROCEDURES MUST BE AVAILABLE UPON REQUEST, INCLUDING TEST EQUIPMENTS MODEL NUMBER, SERIAL NUMBERS AND DATE OF LAST CALIBRATION.

4.3.11 THE NURSE CALL NETWORK SHALL SUPPORT A GUI INTERFACE THAT SITS ON THE HOSPITAL LAN. THIS INTERFACE CONSISTS OF MULTIPLE MODULES SUCH AS STAFF ASSIGNMENT, PC CALL DISPLAY, CALL DETAIL RECORDING, EXCEPTION REPORTING, ETC.

4.3.12 THE NURSE CALL NETWORK SHALL SUPPORT AT LEAST 990 CALL PROCESSES TO FACILITATE WORK FLOW AND CALL ESCALATIONS TO VARIOUS STAFF AND OR GROUPS.

4.3.13 NURSE CALL NETWORK SHALL SUPPORT ANY REAL TIME LOCATING SYSTEM (RTLS) VIA AN OPEN ARCHITECTURAL INTERFACE.

4.3.14 NURSE CALL NETWORK SHALL SUPPORT ANY TELEPHONE DEVICE VIA AN OPEN ARCHITECTURAL INTERFACE.

4.3.15 NURSE CALL NETWORK SHALL SUPPORT ANY ADT SYSTEM VIA AN OPEN ARCHITECTURAL INTERFACE.

4.3.16 NURSE CALL NETWORK SHALL SUPPORT ANY STAFF ASSIGNMENT SYSTEM VIA AN OPEN ARCHITECTURAL INTERFACE.

4.3.17 NURSE CALL NETWORK SHALL SUPPORT ANY DATA BACKUP SYSTEM.

4.3.18 NURSE CALL NETWORK SHALL SUPPORT HL7 INTEGRATION WITH 3RD PARTY SYSTEMS FOR PATIENT STATUS AND WORKFLOW INCLUDING:

- A. ELECTRONIC MEDICAL RECORDS (EMR) WITH BI-DIRECTIONAL ROOM STATUS AND WORKFLOW
- B. SMART BEDS (UNIDIRECTIONAL BED STATUS INCLUDING BRAKE STATUS, PATIENT WEIGHT, RAIL STATUS, BED ANGLE, ETC.)
- C. OTHER SYSTEMS PROVIDING HL7 STATUS AND EVENT MESSAGES

4.4. MANUFACTURERS

4.4.1 THE PRODUCTS SPECIFIED SHALL BE NEW AND OF THE STANDARD MANUFACTURE OF A SINGLE REPUTABLE MANUFACTURER. BASIS OF DESIGN: DUKANE

4.5 NURSE CALL NETWORK WIRING

4.5.1 ALL NURSE CALL NETWORK WIRING SHALL BE ONLY CAT6A. PLENUM WIRE SHALL BE USED IN OPEN AREAS AND STANDARD CAT6A WITHIN CONDUIT. SYSTEM SHALL BE CAPABLE OF INJECTING DC POWER INTO A CAT6A RUN, FOR ADDITIONAL ROOMS, OR LONG RUNS, BY RUNNING A SEPARATE DC CABLE PAIR TO A REMOTE LOCATION.

4.6 NURSE CALL CONTROLLER(S)

4.6.1 FURNISH AS NEEDED IN EACH NURSING UNIT A NURSE CALL NETWORK CONTROLLER. EACH CONTROLLER SHALL PROVIDE THE FOLLOWING:

- A. NON-BLOCKING, DUPLEX COMMUNICATIONS BETWEEN CONSOLES AND ROOMS, SUB STATIONS AND DUPLEX PILLOW SPEAKERS, WITHIN EACH 6 STATION LOOP; PROVIDE FOUR LOOPS FOR A TOTAL OF 12 DYNAMICALLY ALLOCATED SPEECH PATHS.
- B. CAT6A WIRING STANDARD UTILIZING POE (POWER OVER ETHERNET) BETWEEN CONSOLE AND NURSE CALL CONTROLLERS AND LOCAL WIRING TO POWER ROOM STATION EQUIPMENT AND DOME LIGHTS.

C. VOIP AUDIO TO NURSE CALL NETWORK, VOIP NURSE CONSOLE, VOIP STAFF TERMINAL, WIRED OR WIRELESS PHONES VIA SIP PROTOCOL. VOIP DIGITAL AUDIO STREAM OUT TO ROOMS WITHOUT IP OVERHEAD SIGNALING.

D. UP TO 96 CORRIDOR LIGHTS CAN BE OPERATED WITH A SINGLE CONTROLLER.

4.6.2 CONTROLLER MUST BE LIFE SAFETY GRADE MEANING THAT IT SHALL NOT REQUIRE REGULAR REBOOTING FOR CONTINUED BASIC FUNCTIONS OF SYSTEM AND IT SHALL BE POSSIBLE FOR CONTROLLER TO ACT AS A STAND ALONE CONTROLLER SHOULD LOSS OF NETWORK COMMUNICATION OCCUR. PERSONAL COMPUTERS MAY NOT BE USED FOR THIS PURPOSE. PCS WILL ONLY BE ALLOWED OUTSIDE OF THE UL-LISTED NURSE CALL NETWORK ON THE CUSTOMER SUPPORTED LAN.

4.6.3 NURSE CALL CONTROLLER(S) ARE CONNECTED TO THE HOSPITAL'S LAN VIA ETHERNET SWITCHES. THE NURSE CALL SERVERS ALSO CONNECTED TO THE HOSPITAL'S LAN ARE RUNNING SPECIALIZED SOFTWARE FOR USING HOSPITAL DATA RESOURCES AND TELEPHONE COMMUNICATIONS RESOURCES.

4.7 VOIP NURSE CONSOLES

4.7.1 FURNISH AS SHOWN ON PLANS, A UL-1069 LISTED VOIP NURSE CONSOLE CAPABLE OF THE FOLLOWING FUNCTIONS:

- A. FULL DUPLEX AUDIO
- B. COLOR DISPLAY
- C. 12 OR 24 HOURS TIME DISPLAY AND SYNCHRONIZATION TO HOSPITAL STANDARD NETWORK TIME FROM THE NURSE CALL GATEWAY SERVER INCLUDING ANY DAYLIGHT SAVINGS TIME CHANGES SUPPORTED BY THE NETWORK.
- D. DISPLAY UP TO 3 INCOMING CALLS EACH WITH AN INDIVIDUAL ELAPSED TIME WHICH INCREMENTS TIME SINCE CALL WAS PLACED. ALSO PROVIDE THE ABILITY TO SCROLL TO SEE MORE INCOMING CALLS.
- E. POWER OVER ETHERNET POWERED CONNECTION TO UL-1069 LISTED ETHERNET CONTROLLER. NO LOCAL POWER SUPPLIES REQUIRED.
- F. CHOICE OF HANDS-FREE DUPLEX COMMUNICATIONS THROUGH BUILT IN SPEAKER AND SEPARATE MICROPHONE OR PRIVATE HANDSET CONVERSATION.
- G. ABILITY TO CREATE UP TO 32 SOFT KEYS. USER CONFIGURABLE, WITH 4 BUTTONS, 8 SCREENS DEEP.
- H. CONSOLE SHALL BE INTERACTIVE WITH AN ASSOCIATED PC WORKSTATION (USER PROVIDED) WITHOUT THE NECESSITY OF ANY INTERCONNECTION TO THE PC. THE WORK PROCESS RELATIONSHIP SHALL BE SOFTWARE DEFINED THROUGH THE NETWORK CONNECTIONS.
- I. OPTIONAL TONE/MUTE OF CALLS IS IN PROGRESS.
- J. ABILITY TO BLOCK ALL NURSE CALL LOUDSPEAKER PAGING TO FACILITATE A LOW NOISE PATIENT ENVIRONMENT. PASSWORD PROTECTION CAN BE ENABLED TO ONLY ALLOW AUTHORIZED ACCESS TO AUDIO PAGING.
- K. ABILITY TO SWING AN INDIVIDUAL ROOM OR ANY GROUP OF ROOMS BY TOUCHING ONE LABELED TOUCH POINT. ROOM(S) AND CONSOLES MAY BE LOCATED ANYWHERE WITHIN HOSPITAL NURSE/PATIENT COMMUNICATIONS NETWORK.
- L. CONSOLE CAN BE PROGRAMMED TO BE THE RECEIVER OF ANY CALL THAT IS NOT ANSWERED BY ANOTHER CONSOLE, OR CAN BE PROGRAMMED TO RECEIVE ANY CALL FROM A CONSOLE THAT HAS FAILED OR HAS BEEN UNPLUGGED, OR OTHERWISE NOT RECEIVING THE CALL (CALL ORPHANING).
- M. ABILITY TO DIAL THROUGH BUILT IN KEY PAD.
- N. SELF-CONTAINED UNIT WHICH SHALL NOT OCCUPY MORE THAN 88 SQUARE INCHES OF DESK SPACE AND IS DESK OR WALL-MOUNTABLE.
- O. SUPPORT MANUAL STAFF FOLLOW FUNCTIONS. WHEN STAFF FOLLOW IS ENABLED, CALL-TONES FOR A PRESCRIBED AREA WILL AUTOMATICALLY BE FORWARDED TO THE ROOM STATION SPEAKER WHERE STAFF MEMBERS ARE LOCATED. STAFF LOCATION MAY BE DETERMINED MANUALLY BY ENTERING THE ROOM NUMBER INTO THE CONSOLE OR AUTOMATICALLY USING STAFF REGISTER STATIONS OR REGISTRATION VIA RTLS. PRESSING THE CALL BUTTON ON THAT STATION SHALL SILENCE THE TONES. WHEN A NEW CALL IS PLACED, THE TONES SHALL AUTOMATICALLY BE RESTORED.

4.8 PC CONSOLE DISPLAY

4.8.1 PROVIDE A PC CONSOLE DISPLAY ON ANY NETWORKED OWNER PROVIDED PC THAT MEETS THE SYSTEM MANUFACTURER'S MINIMUM SPECIFICATIONS, WHETHER IT UTILIZES TOUCH SCREEN OR STANDARD MOUSE CONTROL. ALSO, OWNER PROVIDED WALL MOUNTED PC DISPLAYS SHALL HAVE THE GLOBAL OPTION PROVIDED IN THIS SOFTWARE PACKAGE OF A TOUCH SCREEN KEYBOARD. WHEN A PC IS 'ASSOCIATED' WITH A VOIP CONSOLE DESCRIBED PREVIOUSLY, IT SHALL HAVE FULL INTEROPERABILITY TO PROVIDE USER WITH EASY TO FOLLOW ON SCREEN FUNCTIONS. SUCH AS DISPLAY OF CALL PRIORITY, ROOM AND PATIENT INFORMATION. SELECTING A TOUCH POINT OR BY MOUSE CLICK SHALL PROVIDE AN AUTOMATED SERVICE REMINDER. WHILE IN AUDIO CONTACT WITH THE PATIENT, AN ENRICHED DISPLAY SHALL SHOW ALL USER DEFINED DISPLAY INFORMATION, SUCH AS CAREGIVER ASSIGNED, AND PERTINENT PATIENT INFORMATION.

4.8.2 THE FOLLOWING ADDITIONAL FUNCTIONS SHALL BE PROVIDED AT EACH ONE OF THESE USERS' SCREENS:

4.8.3 FULL DISPLAY OF ALL CALLS, INCLUDING CORRIDOR LIGHT COLOR SEQUENCE.

4.8.4 COMPLETE ELECTRONICALLY GENERATED CENSUS OF PATIENTS SHOWING ASSIGNED CAREGIVER, CURRENT PATIENT NEEDS AS SENT BY SERVICE REMINDER PROCESS, TIME PATIENT HAS BEEN WAITING FOR CALL ANSWERING, OR NEED, LIST OF CAREGIVERS ON DUTY AND STAFF LOCATION.

4.8.4 CUSTOMIZABLE VIEWS INCLUDING 1 WINDOW WITH 8 COLUMNS, 2 WINDOWS WITH 4 COLUMNS, AND 3 WINDOWS WITH 3 COLUMNS.

4.8.5 ABILITY TO TEXT MESSAGE TO ANY SINGLE INDIVIDUAL, GROUP OF USERS, OR ALL USERS, A TEXT MESSAGE TO A WIRELESS PHONE DISPLAY.

4.8.6 ABILITY TO DISPLAY CALLS IN A CENTRALIZED DISPLAY FORMAT (I.E. CENTRALIZED CODE BLUE DISPLAY).

4.8.7 ABILITY TO DISPLAY AND ROUTE CALLS IN A DE-CENTRALIZED WORK FLOW ENVIRONMENT.

4.8.8 ABILITY TO DISPLAY ALL STAFF INFORMATION, STAFF STATUS, WIRELESS EXTENSION AND THEIR LOCATION.

4.8.9 ABILITY TO INITIATE A ROOM STATUS OR CALL FROM THE PC CONSOLE.

4.9 VOIP STAFF TERMINAL

4.9.1 FURNISH AS SHOWN ON PLANS, AS PART OF THE NURSE CALL COMMUNICATIONS NETWORK, A UL 1069 LISTED VOIP STAFF TERMINAL. THIS DYNAMIC DEVICE SHALL SERVE AS A PATIENT OR PROCEDURE ROOM COMMUNICATIONS TOOL WHILE PROVIDING STAFF WITH "SOFT" TOUCH-POINTS TO INITIATE AN INSTANTANEOUS NOTIFICATION OF AN IN-ROOM NEED. ADDITIONALLY THIS TERMINAL MAY BE USED AS A FUNCTIONAL NURSE CALL CONSOLE.

4.9.2 THE FOLLOWING FUNCTIONS SHALL BE PROVIDED:

- A. COLOR TOUCHSCREEN DISPLAY.
- B. ABILITY TO CRETE UP TO 32 SOFT KEYS. USER-CONFIGURABLE, UP TO 8 SCREENS PER TERMINAL.
- C. SENDS SPECIFIC NEED FOR THAT LOCATION, EXAMPLES: EMERGENCY, STAFF ASSIST, CLEANING NEEDED, LIFTING HELP, TRANSPORT, ORDER, STAFF ORDER, ROUNDING, ETC.
- D. SPEED DIAL TO ANY LOCATION
- E. POWER OVER ETHERNET POWERED CONNECTION TO UL-1069 LISTED ETHERNET SWITCH. LOCAL POWER NOT REQUIRED.
- F. FULL DUPLEX AUDIO
- G. HANDS-FREE DUPLEX COMMUNICATIONS THROUGH BUILT IN SPEAKER AND SEPARATE MICROPHONE.
- H. DISPLAY UP TO 3 INCOMING CALLS EACH WITH AN INDIVIDUAL ELAPSED TIME WHICH INCREMENTS TIME SINCE CALL WAS PLACED. ALSO PROVIDE THE ABILITY TO SCROLL TO SEE MORE INCOMING CALLS.

G. ABILITY TO DIAL THROUGH TOUCH KEY PAD

H. ABILITY TO CAPTURE AN INDIVIDUAL NURSING UNIT, SELECTED UNITS, OR ALL UNITS IN HOSPITAL BY

TOUCHING SINGLE CUSTOM LABELED TOUCH POINT.

I. ABILITY TO BI-DIRECTIONALLY INTERFACE TO THE EMR IN ORDER TO ALLOW STAFF TERMINAL WORKFLOW EVENTS TO BE LOGGED IN THE EMR AND HAVE EMR EVENTS (I.E. FALL RISK) ACTIVATE WORKFLOW IN THE STAFF TERMINAL INCLUDING CORRIDOR LIGHT ILLUMINATION, CALL PLACEMENT AND WIRELESS MESSAGING.

4.10 CAREGIVER ASSIGNMENTS AND SIGNING ON AND OFF DUTY

4.10.1 PROVIDE SOFTWARE TO MAKE CAREGIVER TO PATIENT ASSIGNMENTS FROM ANY OWNER PROVIDED PC WORKSTATION WITHIN THE HOSPITAL. BY EASY USER SIGN ON ASSIGNMENT PROCESS SHALL BE INTUITIVE AND INDICATE TO THAT SUPERVISOR MAKING THE ASSIGNMENT, EACH CAREGIVER'S PATIENT LOAD BASED ON NUMBER OF PATIENTS AND PATIENT DIFFICULTY. THESE ASSIGNMENTS SHALL STAY IN QUEUE UNTIL EACH INDIVIDUAL SIGNS ON DUTY. THE ASSIGNMENT IS RELEASED WHEN THE CAREGIVER GOES OFF DUTY.

4.10.2 THE FOLLOWING ADDITIONAL FUNCTIONS SHALL BE PROVIDED:

A. UNLIMITED ASSIGNMENT OF CAREGIVERS TO PATIENTS, PATIENTS TO CAREGIVERS.

B. GROUP ASSIGNMENTS.

C. ASSIGNMENTS MAY BE MADE UP TO 7 DAYS IN ADVANCE.

D. EASY DISPLAY OF PRIOR DAY'S ASSIGNMENT AND EASY CLICK TO ACCEPT IF YOU WANT TO KEEP ASSIGNMENT THE SAME.

E. DISPLAY PERTINENT HL7 FIELDS FOR PATIENT.

F. ALLOW FOR ASSIGNING ADVANCED CALL ESCALATION FOR UN-ANSWERED CALLS.

G. STAFF MEMBER SHALL HAVE ABILITY TO USE BAR CODE FOR ID AND WIRELESS DEVICES.

H. USER'S ASSIGNMENT CAN PRINT OUT TO A LOCAL PRINTER.

I. USER SHALL HAVE THE ABILITY TO GO ON AND OFF BREAK FORWARDING THEIR DEVICE TO ANOTHER CAREGIVER AND REFLECTING THIS ACTIVITY IN THE REPORTING SOFTWARE.

J. PUT STAFF ON AND OFF DUTY AND ASSIGN A PHONE.

K. CONDUCT DEVICE BASED ASSIGNMENTS AS WELL AS STAFF BASED ASSIGNMENTS.

4.11.1 PATIENT STATIONS

4.11.2 PROVIDE SINGLE PATIENT OR DUAL PATIENT STATION AS SHOWN ON PLANS.

4.11.3 EACH PATIENT STATION SHALL BE CAPABLE OF THE FOLLOWING FUNCTIONS:

- A. SEPARATE SPEAKER AND MICROPHONE FOR FULL DUPLEX AUDIO. ENTERTAINMENT AUDIO SHALL BE MUTED WHEN INTERCOM IN USE.
- B. ONE DIN PILLOW SPEAKER RECEPTACLE PER BED THAT SHALL HAVE A TILT DESIGN, WITH AUTOMATIC RELEASE OF PILLOW SPEAKER PLUG WHEN PILLOW SPEAKER CORD IS PULLED AT ANY ANGLE.
- C. STATION SHALL BE FLUSH MOUNTED TO THE WALL



NOTES FOR NEW WORK PLAN

- EXISTING DEVICES SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS AND EXISTING DEVICES PRIOR TO ANY WORKS.
- ALL EXIT SIGNS SHOWN SHALL BY TYPE E1. SEE LIGHT FIXTURE SCHEDULE FOR DETAILS.
- ALL NEW LIGHTING COLOR TEMPERATURES SHALL MATCH HOSPITAL STANDARD. CONTRACTOR SHALL VERIFY ON SITE AND PROVIDE TO SUIT.
- CIRCUIT NUMBER SHOWN IN () ARE INDICATIVE ONLY TO IDENTIFY CIRCUITING ARRANGEMENT. CONTRACTOR SHALL COORDINATE EXACT CIRCUIT NUMBERS WITHIN PANEL ON SITE TO SUIT CONDITIONS.
- ALL EMERGENCY LIGHTING SHALL BE PROVIDED WITH UL-924 RELAY TO TURN ON AUTOMATICALLY UPON LOSS OF POWER.
- EMERGENCY POWER LIGHT FIXTURES SHALL FOLLOW THE CSA Z32 REQUIREMENTS IN PATIENT CARE AREA.
- NORMAL POWER LIGHT FIXTURES SHALL FOLLOW THE CSA Z32 REQUIREMENTS IN PATIENT CARE AREA.
- EXIT SIGN SHALL FOLLOW THE CSA Z32 REQUIREMENTS IN PATIENT CARE AREA.
- CONTRACTOR SHALL UTILIZE THE EXISTING CIRCUITS AND WIRING FROM THE DEMOLISHED LIGHTS. DO NOT OVERLOAD THE CIRCUIT, VERIFY EXACT CIRCUIT ON SITE.
- RECEPTACLES IN ALL AREAS SHALL BE HOSPITAL GRADE AND PROVIDED IN ACCORDANCE WITH CURRENT OESC, APPLICABLE BULLETINS, AND CSA-Z32 REQUIREMENTS.
- CONTRACTOR SHALL ADD THE NEW FIRE ALARM INITIATION AND NOTIFICATION DEVICES TO THE EXISTING FIRE ALARM LOOP AS PART OF THE EXISTING FIRE ALARM ZONE AND COORDINATE ALL INSTALLATION ON SITE TO SUIT SITE CONDITIONS.
- EXISTING FIRE ALARM SYSTEM SHALL BE RE-VERIFIED IN ACCORDANCE WITH ALL APPLICABLE CODE REQUIREMENTS AND CANULC-5537.
- CONTRACTOR SHALL UTILIZE THE EXISTING BRANCH CIRCUITS, WHERE POSSIBLE TO FEED THE NEW RECEPTACLES IN THE SCOPE OF WORK AREA. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH CURRENT OESC, APPLICABLE BULLETINS, AND CSA-Z32 REQUIREMENTS.
- ENSURE EXISTING BRANCH CIRCUIT WIRING GROUND CONDUCTOR SERVING PATIENT CARE AREAS ARE INSULATED PER CODE REQUIREMENTS. CONTRACTOR SHALL PROVIDE AND INCLUDE AN ITEMIZED PRICE FOR REMOVING EXISTING PATIENT CARE AREA WIRING AND REPLACING WITH NEW TO MEET CURRENT CODE REQUIREMENTS.
- SEE DRAWING E1-02 FOR NEW PANELS LOCATION.
- ALL EXISTING TO REMAIN RECEPTACLES AND WIRING DEVICES CIRCUITING ARRANGEMENTS SHALL BE MAINTAINED WHERE POSSIBLE. WHERE CIRCUITING ALTERATIONS ARE NECESSARY, PROVIDE ALL NECESSARY MATERIALS FOR COMPLETE AND CODE COMPLAINT INSTALLATIONS.
- ALL NEW FIRE ALARM DEVICES SHALL BE ADDRESSABLE TYPE AND SAME PRODUCTS ONLY TO MATCH EXISTING SYSTEM AND DEVICES ON SITE.
- ALL NEW PROPOSED SYSTEMS, EQUIPMENT, AND DEVICES SHALL BE FULLY COMPATIBLE WITH, AND THE SAME MANUFACTURER AS, EXISTING SYSTEMS, EQUIPMENT, AND DEVICES ON SITE. VERIFY ALL EXISTING SYSTEMS, EQUIPMENT, AND DEVICES ON SITE.
- CONTRACTOR SHALL VERIFY IF THE EXISTING FIRE ALARM SYSTEM HAS STROBING FUNCTION. IF IT DOES NOT, ALL FIRE ALARM SPEAKER STROBE DEVICES SHOWN ON THIS DRAWING SHALL BE FIRE ALARM SPEAKERS TO SUIT THE EXISTING SYSTEM.
- SEE MECHANICAL DRAWINGS FOR MECHANICAL EQUIPMENT SCHEDULE.
- REFER TO I.C.A.T. SPECIFICATIONS (DWG. E0-02a&b) FOR TYPE OF DATA CABLES.
- ALL DATA CABLES SHALL BE HOME RUN BACK TO COMMUNICATION ROOM 3135. SEE DRAWING E1-02 FOR LOCATION.
- ALL COMMUNICATIONS RACEWAYS SHALL BE INSTALLED IN STRAIGHT LINES WITH AS FEW TURNS AS POSSIBLE AND SHALL ALIGN WITH BUILDING GEOMETRY. ALL RACEWAYS SHALL BE INSTALLED IN COMMON CIRCULATION SPACES.
- ALL HORIZONTAL CABLEING SHALL RUN IN CONDUITS OR J-HOOKS. CONDUITS SHALL BE MINIMUM 25MM, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL PROVIDE POE INJECTOR FOR EACH DATA DROP AND NECESSARY PULL BOXES IF HORIZONTAL CABLE PERMANENT LINK LENGTH EXCEEDS 90M. COORDINATE EXACT CABLE ROUTING AND PATHWAYS ON SITE AND PROVIDE TO SUIT.
- PROVIDE ROUGH-INS ONLY FOR ALL SECURITY SYSTEMS, EQUIPMENT, AND DEVICES. SEE ELECTRICAL TYPICAL DETAILS AND SPECIFICATIONS FOR DETAILS. ALL SECURITY SYSTEMS, EQUIPMENT, AND DEVICES SHALL BE SUPPLIED AND INSTALLED BY THE OWNER.
- NURSE CALL SYSTEM AND ASSOCIATED DEVICES SHALL BE AUTSCO TO MATCH BASE BUILDING STANDARD. ALL NEW NURSE CALL DEVICES SHALL BE CONNECTED TO THE EXISTING BASE BUILDING NURSE CALL SYSTEM.
- UPDATE FIRE ALARM ANNUNCIATOR PANEL AT THE ASSOCIATED NURSING STATION TO SUIT THE PROPOSED CHANGES AS PART OF THIS SCOPE OF WORK.
- INITIATION OF SMOKE DETECTOR WITHIN THE ROOM SHALL ACTIVATE SIGNAL ON DOME LIGHT.

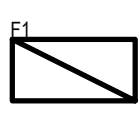
PROVIDE AND INSTALL NEW LIGHTING FIXTURE TO MATCH EXISTING FIXTURES IN STAIRWELL. CONTRACTOR SHALL FIELD VERIFY EXISTING FIXTURE SPECIFICATIONS AND ATTEMPT TO SOURCE AN IDENTICAL MATCH IN THE MARKET. IF THE EXISTING FIXTURE IS UNAVAILABLE, CONTRACTOR TO PROVIDE "F4" (REFER TO FIXTURE SCHEDULE). FEED THIS LIGHT FROM THE SAME SOURCE AS THE NEARBY STAIR LIGHTS.

ALL LIGHT FIXTURES, LIGHT SWITCHES, AND LIGHTING CONTROL DEVICES IN PATIENT-ACCESSIBLE AREAS SHALL BE ANTI-LIGATURE AND TAMPER-RESISTANT. FIXTURES MUST BE HIGH-IMPACT VANDAL-RESISTANT RATINGS SUITABLE FOR BEHAVIORAL HEALTH ENVIRONMENTS. SEAL ALL FIXTURE PERIMETERS WITH PICK-RESISTANT CAULK. SECURE WITH TAMPER-PROOF TORX SECURITY SCREWS.

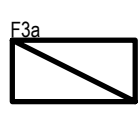
LEGEND:



NOT IN SCOPE AREA



LIGHT "F1", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



LIGHT "F3a", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



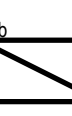
LIGHT "F4", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



LIGHT "D1", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



LIGHT "F2", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



LIGHT "F3b", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE



LIGHT "F5", DETAILS
REFER TO LIGHT
FIXTURE SCHEDULE

LEVEL 1 - PATIENT CARE CLASSIFICATION	
ROOM NO.	PATIENT CARE CLASSIFICATION
PATIENT ROOM	BASIC

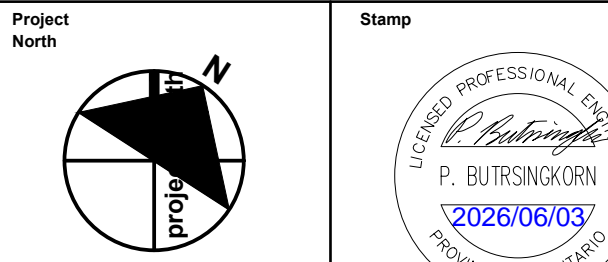
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7		
6		
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4	ISSUED FOR TENDER AND PERMIT	04.06.26
3	ISSUED FOR CLIENT REVIEW	29.05.26
2	ISSUED FOR REVIEW	25.07.25
1	ISSUED FOR REVIEW	15.05.25
NO	ACTION	DATE

Client:
**SCARBOROUGH
HEALTH NETWORK**
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:
**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

Sheet Title:
NEW LIGHTING PLAN



Date:
APR 2025

Scale:
1:75

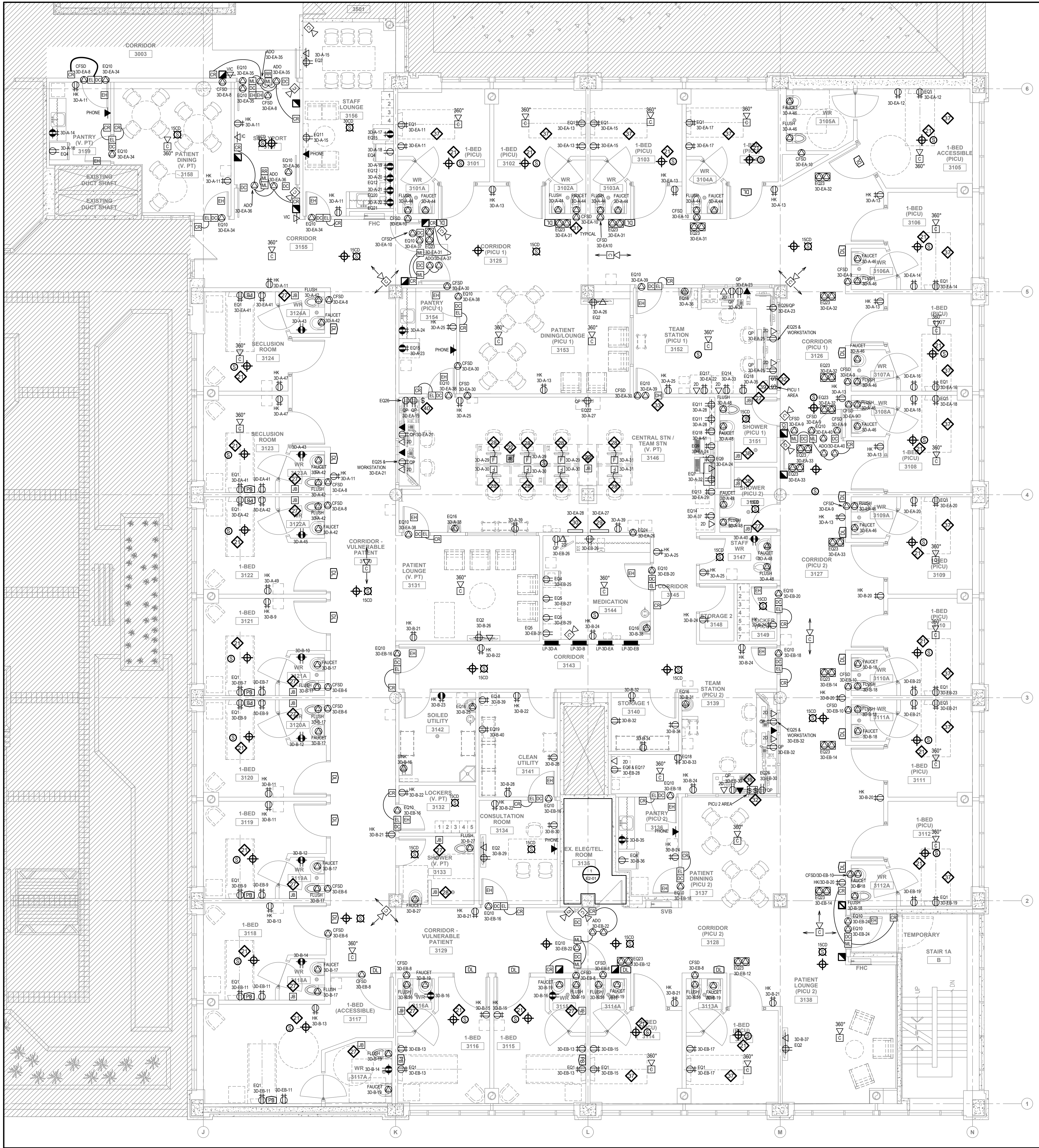
Drawing Number:

Project No.:
24002-02

Drawn:
P.T./K.O.

Checked:
M.C.

E1-01



NOTES FOR NEW WORK PLAN

1. CIRCUIT NUMBER SHOWN IN () ARE INDICATIVE ONLY TO IDENTIFY CIRCUITING ARRANGEMENT. CONTRACTOR SHALL COORDINATE EXACT CIRCUIT NUMBERS WITHIN PANEL ON SITE TO SUIT CONDITIONS.
2. RECEPTACLES IN ALL AREAS SHALL BE HOSPITAL GRADE AND PROVIDED IN ACCORDANCE WITH CURRENT OESC, APPLICABLE BULLETINS, AND CSA-232 REQUIREMENTS.
3. CONTRACTOR SHALL ADD THE NEW FIRE ALARM INITIATION AND NOTIFICATION DEVICES TO THE EXISTING FIRE ALARM LOOP AS PART OF THE EXISTING FIRE ALARM ZONE AND COORDINATE ALL INSTALLATION ON SITE TO SUIT CONDITIONS.
4. EXISTING FIRE ALARM SYSTEM SHALL BE RE-VERIFIED IN ACCORDANCE WITH ALL APPLICABLE CODE REQUIREMENTS AND CANULC-S537.
5. CONTRACTOR SHALL UTILIZE THE EXISTING BRANCH CIRCUITS, WHERE POSSIBLE TO FEED THE NEW RECEPTACLES IN THE SCOPE OF WORK AREA. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH CURRENT OESC, APPLICABLE BULLETINS, AND CSA-232 REQUIREMENTS.
6. ENSURE EXISTING BRANCH CIRCUIT WIRING GROUND CONDUCTOR SERVING PATIENT CARE AREAS ARE INSULATED PER CODE REQUIREMENTS. CONTRACTOR SHALL PROVIDE AND INCLUDE AN ITEMIZED PRICE FOR REMOVING EXISTING PATIENT CARE AREA WIRING AND REPLACING WITH NEW TO MEET CURRENT CODE REQUIREMENTS.
7. SEE THIS DRAWING FOR EXISTING NEW PANELS LOCATION.
8. RESERVED
9. ALL NEW FIRE ALARM DEVICES SHALL BE ADDRESSABLE TYPE AND SAME PRODUCTS ONLY TO MATCH EXISTING SYSTEM AND DEVICES ON SITE.
10. ALL NEW PROPOSED SYSTEMS, EQUIPMENT, AND DEVICES SHALL BE FULLY COMPATIBLE WITH, AND THE SAME MANUFACTURER AS, EXISTING SYSTEMS, EQUIPMENT, AND DEVICES ON SITE. VERIFY ALL EXISTING SYSTEMS, EQUIPMENT, AND DEVICES ON SITE.
11. CONTRACTOR SHALL VERIFY IF THE EXISTING FIRE ALARM SYSTEM HAS STROBING FUNCTION. IF IT DOES NOT, ALL FIRE ALARM SPEAKER STROBE DEVICES SHOWN ON THIS DRAWING SHALL BE FIRE ALARM SPEAKERS TO SUIT THE EXISTING SYSTEM.
12. SEE MECHANICAL DRAWINGS FOR MECHANICAL EQUIPMENT SCHEDULE.
13. REFER TO I.C.A.T. SPECIFICATIONS (DWG. E0-0228b) FOR TYPE OF DATA CABLES.
14. ALL DATA CABLES SHALL BE HOME RUN BACK TO COMMUNICATION ROOM 3135. SEE DRAWING E2-01 FOR LOCATION.
15. ALL COMMUNICATIONS RACEWAYS SHALL BE INSTALLED IN STRAIGHT LINES WITH AS FEW TURNS AS POSSIBLE AND SHALL ALIGN WITH BUILDING GEOMETRY. ALL RACEWAYS SHALL BE INSTALLED IN COMMON CIRCULATION SPACES.
16. ALL HORIZONTAL CABLING SHALL RUN IN CONDUITS OR J-HOOKS. CONDUITS SHALL BE MINIMUM 25MM, UNLESS OTHERWISE NOTED.
17. CONTRACTOR SHALL PROVIDE POE INJECTOR FOR EACH DATA DROP AND NECESSARY PULL BOXES IF HORIZONTAL CABLE PERMANENT LINK LENGTH EXCEEDS 90M. COORDINATE EXACT CABLE ROUTING AND PATHWAYS ON SITE AND PROVIDE TO SUIT.
18. PROVIDE ROUGH-INS ONLY FOR ALL SECURITY SYSTEMS, EQUIPMENT, AND DEVICES. SEE ELECTRICAL TYPICAL DETAILS AND SPECIFICATIONS FOR DETAILS. ALL SECURITY SYSTEMS, EQUIPMENT, AND DEVICES SHALL BE SUPPLIED AND INSTALLED BY THE OWNER.
19. NURSE CALL SYSTEM AND ASSOCIATED DEVICES SHALL BE AUTSTCO TO MATCH BASE BUILDING STANDARD. ALL NEW NURSE CALL DEVICES SHALL BE CONNECTED TO THE EXISTING BASE BUILDING NURSE CALL SYSTEM.
20. UPDATE FIRE ALARM ANNUNCIATOR PANEL AT THE ASSOCIATED NURSING STATION TO SUIT THE PROPOSED CHANGES AS PART OF THIS SCOPE OF WORK.

- INITIATION OF SMOKE DETECTOR WITHIN THE ROOM SHALL ACTIVATE SIGNAL ON DOME LIGHT
- PROVIDE (1) 27MM FOR POWER AND (1) 35MM FOR DATA TO A RECESSED FLOOR BOX. EACH FLOOR BOX SHALL CONTAIN (4) 15A RECEPTACLES, (4) CAT6 DATA OUTLETS, AND (1) VOICE OUTLET. RUN POWER CONDUIT UP TO CEILING SPACE AND ROUTE BACK TO ELECTRICAL PANEL. RUN DATA/VOICE CONDUIT UP TO CEILING SPACE AND ROUTE BACK TO TELECOM ROOM. PROVIDE MODULAR RENTRACKS FROM THE FLOOR BOX UP TO THE DESK CHASSIS TO TERMINATE ALL HARDWARE ON THE WORKSTATION AT 400MM AFF.
- ALL FIRE ALARM MUST BE COMPLETED BY BLACK AND McDONALD.
- ALL STRUCTURED CABLING SCOPE TO BE COMPLETED BY COMWORK.
- THE EXISTING SECURITY SYSTEM IS C-CURE. ALL SECURITY SYSTEMS MUST BE COORDINATED WITH A.C. TECHNICAL SYSTEMS. CAMERAS SHALL BE AVIGILON, AND ACCESS CONTROLS SHALL BE HID.
- MAG LOCKS TO RELEASE SIMULTANEOUSLY UPON VALID CARD READ, REMOTE RELEASE, OR INITIATION OF A 2ND STAGE EVACUATION SIGNAL. ONCE MAG LOCKS ARE CONFIRMED RELEASED VIA INTERNAL SENSORS, BOTH ADOS SHALL ACTIVATE TO OPEN DOOR LEAVES.

- PROVIDE WATERPROOF BEHAVIORAL HEALTH GRADE EMERGENCY NURSE CALL BUTTON. MUST FEATURE WITH FLUSH ANTI LIGATURE SWITCH. WIRE TO CENTRAL NURSE CALL SYSTEM. SYSTEM SHALL TRIGGER AUDIBLE VISUAL ALARM AT CENTRAL STATION AND CORRIDOR DOME LIGHT. RESET CAPABILITY FROM INSIDE SHOWER ONLY. COORDINATE LOCATION WITH ARCHITECT TO ENSURE DEVICE IS REACHABLE FROM FLOOR LEVEL.
- EACH DESK TO HAVE (1) 15A QUADPLEX RECEPTACLE, (1) DATA OUTLET WITH TWO PORT, AND (1) VOICE OUTLET. ONLY 2 DESKS TOTAL REQUIRE ACTIVE VOICE CORES). ALL OUTLETS MOUNTED ON FURNITURE AT 400MM AFF.
- PROVIDE RELAY CONTROL PANEL WHERE SHOWN. PANELS SHALL RECEIVE CONTROL SIGNALS FROM THE NURSE STATION CONSOLE TO SIMULTANEOUSLY:
- 1) TRIGGER SHUNT-TRIP BREAKERS OR CONTACTORS ISOLATING ALL POWER CIRCUITS FOR THE ASSIGNED GROUPS OF PICU PATIENT ROOMS.
 - 2) ENERGIZE/DE-ENERGIZE LOW VOLTAGE CONTROL CIRCUITS ROUTED TO NORMALLY CLOSED ELECTRIC SOLENOID VALVES ON THE MAIN DOMESTIC WATER SUPPLY LINES FOR THE ASSIGNED GROUPS OF PICU ROOMS.
 - 3) PROVIDE FEEDBACK TO THE NURSE STATION CONSOLE FOR LED STATUS INDICATIONS. COORDINATE REQUISITE CONDUIT RUNS, VOLTAGES, AND TERMINATIONS WITH MECHANICAL CONTRACTOR.

- PROVIDE LIGHTING CONTROL PANEL EQUIPPED WITH INTEGRAL TIMECLOCK AND MANUAL OVERRIDE SWITCHES. THE PANEL SHALL INDEPENDENTLY CONTROL LIGHTING ON/OFF FOR ALL PATIENT ROOMS VIA SCHEDULED TIMECLOCK OPERATIONS, WITH INDIVIDUAL MANUAL OVERRIDE CONTROL LOCATED AT THE NURSE STATION.
- REFER TO MECHANICAL DRAWINGS FOR THE EXACT LOCATIONS AND QUANTITIES OF COMBINATION FIRE/SMOKE DAMPERS (CFSD). PROVIDE ONE DEDICATED EACH DUCT MOUNTED SMOKE DETECTOR IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND APPLICABLE CODES. COORDINATE ALL FINAL POWER, CONDUIT, AND WIRING LOCATIONS WITH THE MECHANICAL CONTRACTOR ON-SITE PRIOR TO ROUGH-IN.
- PROVIDE AN EMERGENCY WATER SHUT-OFF SWITCH LOCATED WHERE SHOWN ON DRAWINGS TO INTERLOCK WITH AND CONTROL THE MECHANICAL SOLENOID VALVES SERVING THE PICU PATIENT WASHROOMS. SWITCH SHALL BE A MUSHROOM STYLE TYPE WITH A CLEARLY LABELED ENGRAVED NAMEPLATE AND RED LED PILOT LIGHT TO INDICATE "WATER SHUT-OFF ACTIVATED". REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR VALVES, CONDUIT ROUTING, AND EXACT ZONE CONTROL REQUIREMENTS. COORDINATE FINAL ROUGH-IN LOCATIONS WITH MECHANICAL CONTRACTOR ON-SITE.

- ELECTRICAL DOOR CLOSERS INTERCONNECT WITH THE BUILDING FIRE ALARM SYSTEM VIA ADDRESSABLE CONTROL MODULE OR RELAY. UPON FIRE ALARM ACTIVATION, POWER SHALL BE INTERRUPTED TO ALLOW THE DOOR TO CLOSE AUTOMATICALLY.
- ALL NURSE CALL DEVICES (INCLUDING CALL STATIONS, PUSH BUTTONS) IN PATIENT BEDROOMS, WASHROOMS, AND ALL OTHER PATIENT-ACCESSIBLE AREAS SHALL BE ANTI-LIGATURE AND TAMPER-RESISTANT. DEVICES MUST BE SPECIFICALLY APPROVED FOR BEHAVIORAL HEALTH ENVIRONMENTS. FASTEN ALL DEVICES USING TAMPER-PROOF TORX SECURITY SCREWS.
- PROVIDE REMOTE NURSE CALL LOCKOUT FUNCTION CONTROLLED FROM THE MAIN NURSE SYSTEM REGULATION STATION. THE SYSTEM SHALL ALLOW STAFF TO TEMPORARILY DISABLE PATIENT CALL STATIONS. PROVIDE A DEFAULT AUTOMATIC TIMEOUT RE-ENABLE TIME OF 10 MINUTES. FINAL CONFIGURATION, TIMEOUT DURATION, AND OPERATION PROTOCOLS TO BE CONFIRMED BY THE HOSPITAL SYSTEM USER PRIOR TO COMMISSIONING.
- ALL ELECTRICAL WIRING DEVICES, INCLUDING RECEPTACLES, DATA OUTLETS, AND FACEPLATES IN PATIENT-ACCESSIBLE AREAS SHALL BE ANTI-LIGATURE AND TAMPER-RESISTANT. ALL DEVICES MUST BE SUITABLE FOR BEHAVIORAL HEALTH ENVIRONMENTS. RECESSED MOUNT ALL ENCLOSURES AND SECURE COVERS WITH TAMPER-PROOF TORX SECURITY SCREWS.

- PROVIDE TWO (2) DUPLEX RECEPTACLES PER PICU ROOM, TIED TO EMERGENCY POWER CIRCUIT. PROVIDE RECESSED IMPACT-RESISTANT LOCKABLE SECURITY COVERS OVER ALL RECEPTACLES, DEVICES AND PLATES TO BE ANTI-LIGATURE AND TAMPER-RESISTANT SUITABLE FOR BEHAVIORAL HEALTH ENVIRONMENTS. SECURE WITH PHIN-TORX SECURITY SCREWS. COORDINATE EXACT HEIGHT AND LOCATION WITH ARCHITECTURAL HEADWALL ELEVATIONS PRIOR TO ROUGH-IN. POWER ON/OFF TO BE CONTROLLED BY A MASTER SWITCH AT TEAM STATION.
- PROVIDE WATERPROOF (MIN. IP65), FLUSH-MOUNTED, ANTI-LIGATURE NURSE CALL PUSH BUTTON STATION. EQUIPMENT SHALL FEATURE STAINLESS STEEL FACEPLATE, PIEZOELECTRIC BUTTON WITH NO MOVING PARTS, AND TAMPER-PROOF SECURITY SCREWS. APPLY PICK-RESISTANT SECURITY SEAL AROUND PERIMETER OF FACEPLATE. COORDINATE EXACT MOUNTING LOCATION WITH ARCHITECTURAL ELEVATIONS.
- PROVIDE A DEDICATED EMERGENCY RECEPTACLE CONTROL SHUT-OFF SWITCH FOR EACH INDIVIDUAL PICU PATIENT ROOM. LOCATED WHERE SHOWN ON DRAWINGS, TO INTERLOCK WITH AND CONTROL THE ELECTRICAL POWER CONTACTOR SERVING THAT SPECIFIC ROOM'S RECEPTACLES. SWITCH SHALL BE A HEAVY-DUTY, KEY-OPERATED TYPE WITH A CLEARLY LABELED ENGRAVED NAMEPLATE AND RED LED PILOT LIGHT TO INDICATE "RECEPTACLE POWER DE-ENERGIZED". COORDINATE FINAL ROUGH-IN LOCATIONS ON-SITE.

- PROVIDE AND INSTALL REMOTE DOOR RELEASE CONTROL SWITCH AT TEAM STATION (V.P.T). ROUTE CONDUIT AND WIRING FROM SWITCH TO SALLYPORT DOOR CONTROL PANEL. COORDINATE EXACT INTERFACE AND ELECTRICAL REQUIREMENTS WITH THE DOOR HARDWARE SUPPLIER AND SECURITY CONTRACTOR. COORDINATE EXACT LOCATION PRIOR TO INSTALLATION.

FURNITURE AND EQUIPMENT	
PATIENT BED	EQ1
WALL MOUNTED TV IN PROTECTIVE ENCLOSURE	EQ2
WALL MOUNTED TV	EQ3
FRIDGE	EQ4
AUTOMATIC MEDICATION DISPENSING UNIT	EQ5
PYXIS MED-STATION'S RETURN BINS	EQ6
WALL MOUNTED ELECTRONIC WHITEBOARD	EQ7
BLANKET WARMER	EQ8
WORKSTATION ON WHEEL	EQ9
POWER SUPPLY FOR DOOR HARDWARE	EQ10
PHONE CHARGING STATION	EQ11
MICROWAVE	EQ12
CRASH CART	EQ13

PRINTER	
ICE-WATER DISPENSING MACHINE	EQ14
HAND HYGIENE SINK	EQ15
PYXIS - MEDFLEX (MED)	EQ16
VITAL SIGN MONITOR ON STAND	EQ17
WARMER, BATHING WIPES	EQ18
COFFEE MACHINE	EQ19
ELECTRIC KETTLE	EQ20
EPIC ROVER	EQ21
WATER SOLENOID VALVES	EQ22
MEDICAL GAS ZONE ALARM BOX	EQ23
STAFF DRESSER COMPUTER	EQ24
CCTV MONITORS	EQ25



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4	ISSUED FOR TENDER AND PERMIT	04.06.26
3	ISSUED FOR CLIENT REVIEW	29.05.26
2	ISSUED FOR REVIEW	25.07.25
1	ISSUED FOR REVIEW	15.05.25
NO	ACTION	DATE

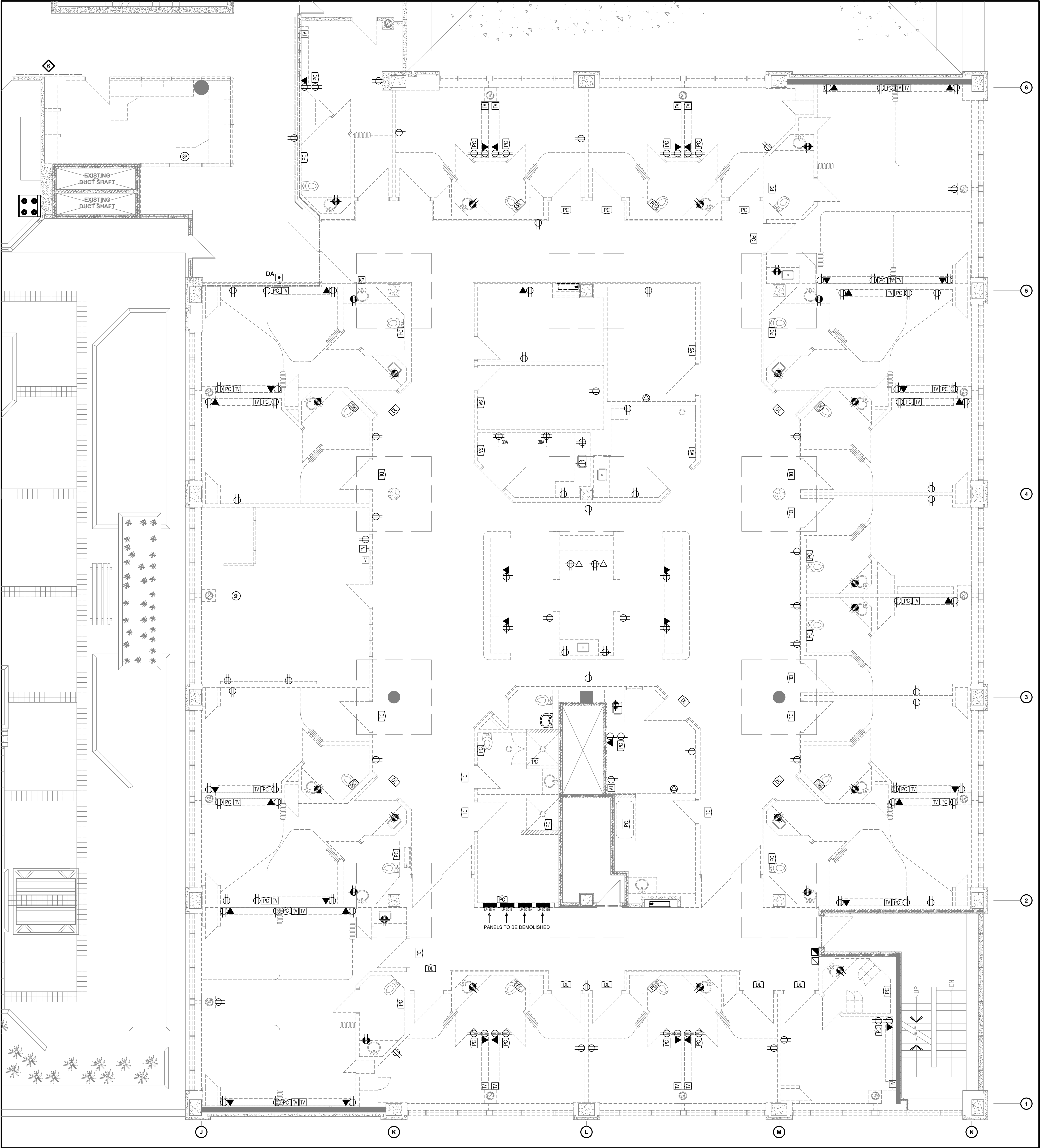
Client:
SCARBOROUGH HEALTH NETWORK
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:
SHN MENTAL HEALTH INPATIENT CONSOLIDATION POD 3A

Sheet Title:
NEW POWER & SYSTEM

Project North	Stamp
Date: APR 2025	Project No.: 24002-02
Scale: 1:75	Drawn: P.T./K.O.
Drawing Number:	Checked: M.C.

E1-02



NOTES FOR DEMOLITION PLAN

- EXISTING DEVICES AND ASSOCIATED SCOPE SHOWN ON THE DEMOLITION DRAWINGS ARE BASED ON AS-BUILT DRAWINGS RECEIVED AND/OR VISUAL ONLY SITE VISIT WHICH MAY NOT REFLECT EXISTING SITE CONDITIONS. CONTRACTOR SHALL COMPLETE SITE VISIT TO SURVEY EXISTING CONDITIONS AND UNDERSTAND FULL DEMOLITION SCOPE PRIOR TO ANY DEMOLITION WORKS.
- DEMOLITION OF ALL EXISTING ELECTRICAL SERVICES, DEVICES, AND EQUIPMENT SHALL BE COORDINATED WITH THE OWNER AND MADE SAFE & GOOD.
- COORDINATE ALL DEMOLITION WORKS ON SITE BASED ON SITE CONDITIONS. ALL EXISTING TO REMAIN OR RELOCATE DEVICES SHALL BE PROTECTED DURING DEMOLITION WORKS.
- EXISTING POWER AND DATA FOR MECHANICAL EQUIPMENT WITHIN SCOPE OF WORK AREA SHALL BE EXISTING TO REMAIN AND KEPT SAFE DURING CONSTRUCTION.
- ALL DEVICES ARE TO BE DEMOLISHED, UNLESS OTHERWISE NOTED.
- EXISTING LIGHT FIXTURE TO BE REMOVED AND REINSTALLED AFTER THE NEW WALL IS BUILT.
- REMOVE AND REINSTALL EXISTING CEILING FIXTURES IN CORRIDOR AS REQUIRED TO ACCOMMODATE NEW MECHANICAL INSTALLATION. COORDINATE WITH MECHANICAL TRADES ON SITE.

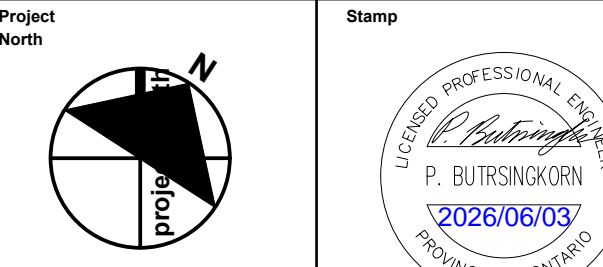
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NO	ACTION	DATE

Client:
**SCARBOROUGH
HEALTH NETWORK**
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:
**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

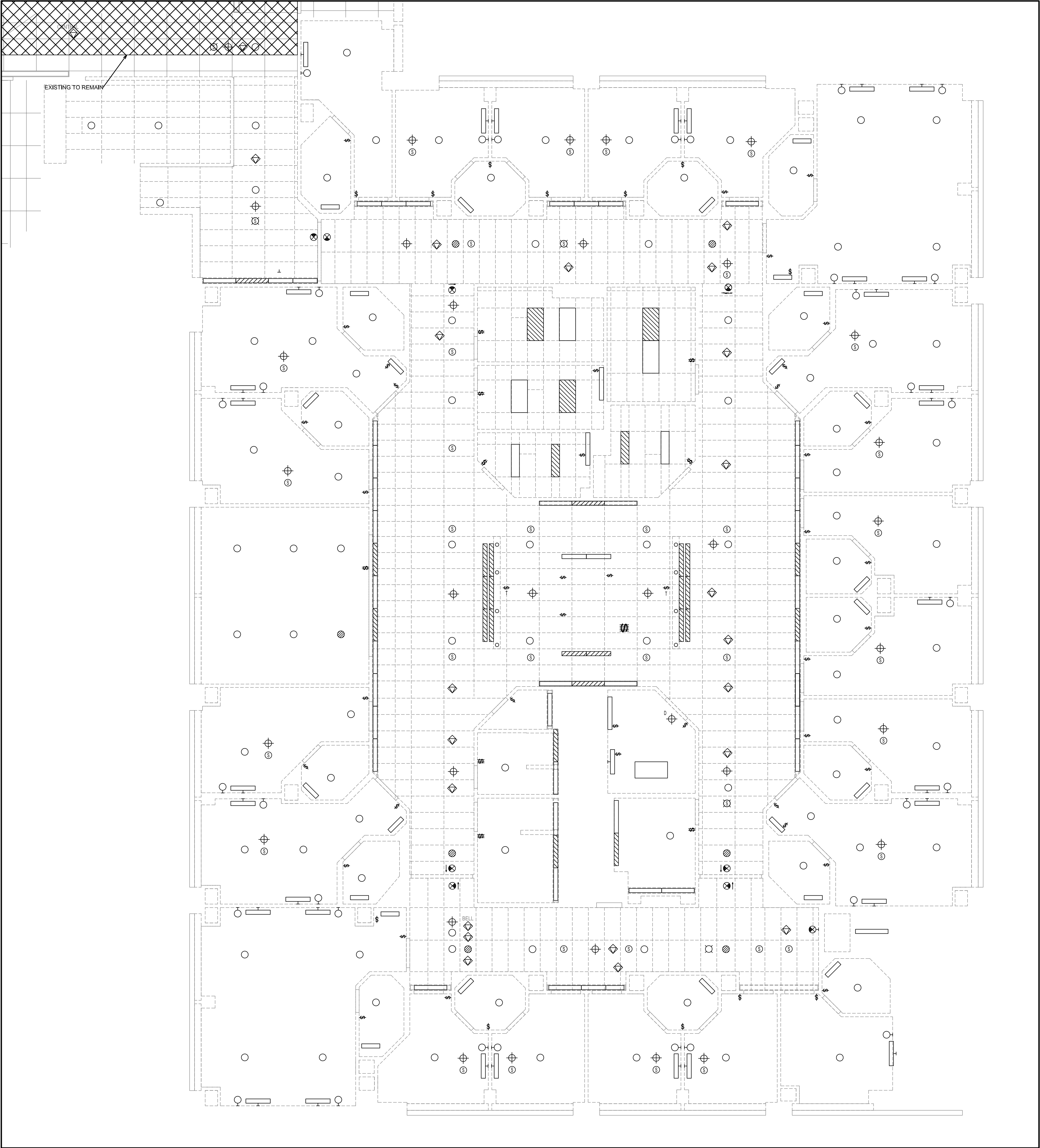
Sheet Title:
DEMOLITION - FLOOR PLAN



Date: APR 2025	Project No.: 24002-02
Scale: N.T.S.	Drawn: P.T./K.O.
	Checked: M.C.

Drawing Number:

E1-03



NOTES FOR DEMOLITION PLAN

1. EXISTING DEVICES AND ASSOCIATED SCOPE SHOWN ON THE DEMOLITION DRAWINGS ARE BASED ON AS-BUILT DRAWINGS RECEIVED AND/OR VISUAL ONLY SITE VISIT WHICH MAY NOT REFLECT EXISTING SITE CONDITIONS. CONTRACTOR SHALL COMPLETE SITE VISIT TO SURVEY EXISTING CONDITIONS AND UNDERSTAND FULL DEMOLITION SCOPE PRIOR TO ANY DEMOLITION WORKS.
2. DEMOLITION OF ALL EXISTING ELECTRICAL SERVICES, DEVICES, AND EQUIPMENT SHALL BE COORDINATED WITH THE OWNER AND MADE SAFE & GOOD.
3. COORDINATE ALL DEMOLITION WORKS ON SITE BASED ON SITE CONDITIONS. ALL EXISTING TO REMAIN OR RELOCATE DEVICES SHALL BE PROTECTED DURING DEMOLITION WORKS.
4. EXISTING POWER AND DATA FOR MECHANICAL EQUIPMENT WITHIN SCOPE OF WORK AREA SHALL BE EXISTING TO REMAIN AND KEPT SAFE DURING CONSTRUCTION.
5. ALL DEVICES ARE TO BE DEMOLISHED. UNLESS OTHERWISE NOTED.
6. REMOVE AND REINSTALL EXISTING CEILING FIXTURES IN CORRIDOR AS REQUIRED TO ACCOMMODATE NEW MECHANICAL INSTALLATION. COORDINATE WITH MECHANICAL TRADES ON SITE.

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NO	ACTION	DATE

Client:

**SCARBOROUGH
HEALTH NETWORK**
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:

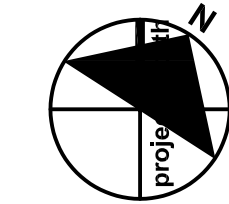
**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

Sheet Title:

DEMOLITION - CEILING PLAN

Project

North



Stamp



Date:

APR 2025

Project No.:

24002-02

Scale:

1:75

Drawn:

P.T./K.O.

Checked:

M.C.

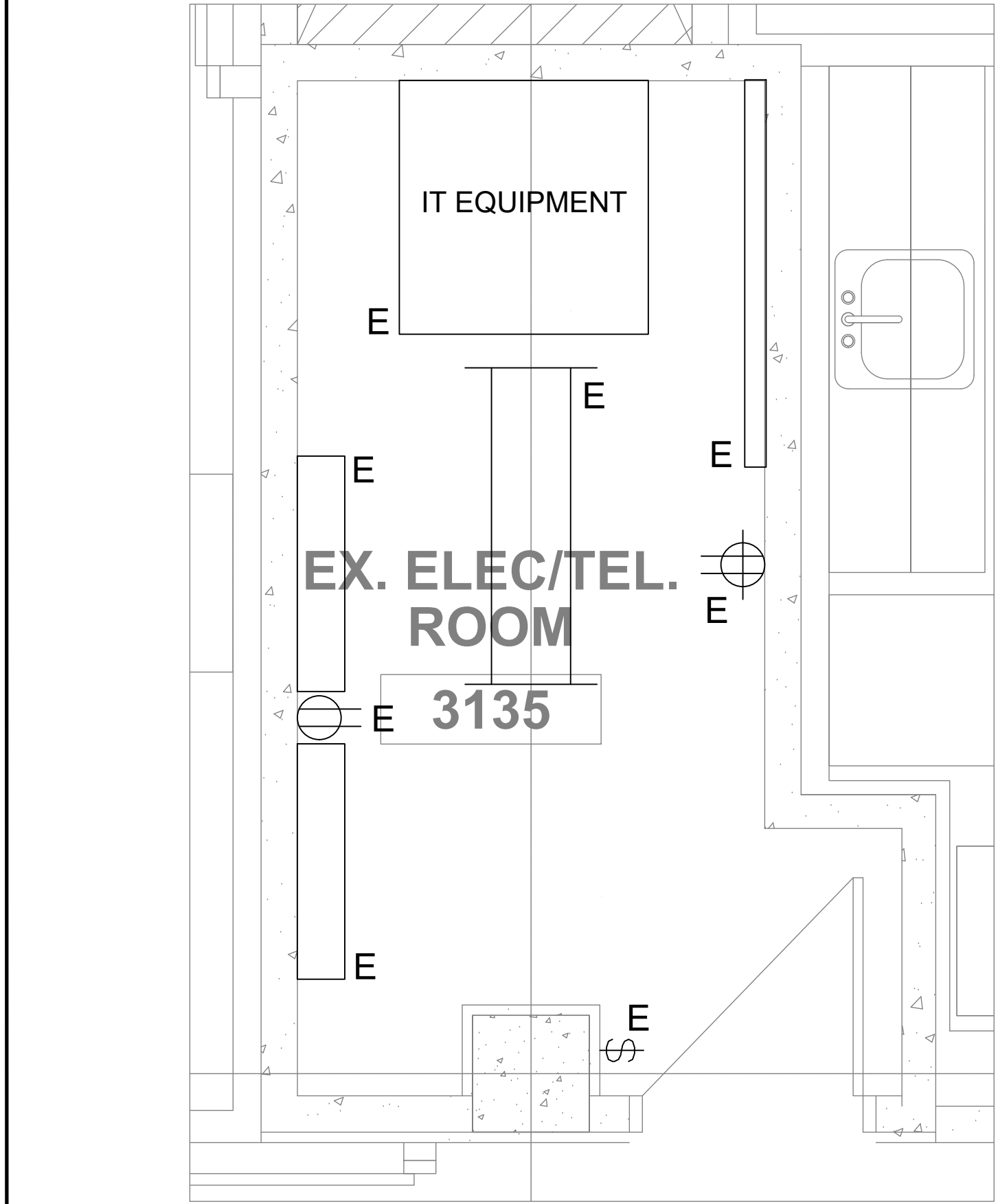
Drawing Number:

E1-04

TYPE	DESCRIPTION	BALLAST / DRIVER				CRI	MANUFACTURER CAT. NO. (BASE)	ALTERNATE MANUFACTURERS	IMAGE (REFERENCE ONLY)	COMMENTS / USE (SEE DRAWINGS)		
		WATTS	LUMENS	TYPE	Color Temp							
F1	The MBH1 series by Cerulux is a recessed luminaire with plenum access that provides access above the ceiling, through the fixture. The fixture is fixture resistant and resists intentional abuse. It comes standard with tamper resistant hardware and durable polycarbonate lensing. The architectural diffuser provides a desirable yet non-clinical appearance. The one-piece inset door seals directly to the housing. The mounting is for targeted installations drywall or security ceilings. Most models are listed in the Guide and accepted for use in high risk areas, but for use with 1" x 4" grid ceilings.	73W	8030	LED	TURNABLE FROM 2700K-6500K	120-277	LED	90+	LEVMON MBH1248P/LED205K/14590/-UNV-C84G-P08-V11A(B01)-F37	APPROVED EQUIVALENT		PATIENT ROOM
F2	The VRWB-3551 is a specification-grade, vandal-resistant wall-mounted luminaire designed for high-security and behavioral health environments. Built with a heavy-duty cast-alum design, it features a single-piece precision deformed housing with TIG-welded corners to ensure a sealed and secure joint.	47W	5200	LED	3500K	120-277	LED	80+	LEVMON VRWB-3551-1MA-BIS-LED36050SLUM-V10A-P08-C12C-V09	APPROVED EQUIVALENT		PATIENT ROOM
F3a	The VRIF-4104 is a high-performance, recessed T-bar ceiling light engineered specifically for the demanding environments of a mental health hospital. It provides a seamless balance between a safe, therapeutic atmosphere for patients and a high-visibility workspace for medical staff.	36W	3900	LED	3500K	120-277	LED	80+	LEVMON VRIF-4104-254-BIS-LED36050SLUM-V10A-P08-V09-B0	APPROVED EQUIVALENT		CORRIDOR LOUNGES, DINING AREA
F3b	The VRIF-4104 is a high-performance, recessed T-bar ceiling light engineered specifically for the demanding environments of a mental health hospital. It provides a seamless balance between a safe, therapeutic atmosphere for patients and a high-visibility workspace for medical staff.	36W	3900	LED	4000K	120-277	LED	80+	LEVMON VRIF-4104-254-BIS-LED36050SLUM-V10A-P08-B0	APPROVED EQUIVALENT		STAFF OFFICE AREAS
F4	Output and color selectable commercial-grade LED strip luminaires ideal for many applications requiring a low-profile, small profile, lighting solution.	19 - 34W	MATCHING THE EXISTING LIGHTING FIXTURE IN STAR 1A	LED	MATCHING THE EXISTING LIGHTING FIXTURE IN STAR 1A	120-277	LED	80+	LEVMON LCOM48-LED36050K5-UNV-V08	APPROVED EQUIVALENT OR MATCHING THE EXISTING LIGHTING FIXTURE IN STAR 1A		STAR 1A
F5	The newest technology in flexible LED tape is the COB (Chip On Board). Tightly spaced diodes are encapsulated into a single phosphor strip that provides a seamless linear light display with no LED isolation.	3W/FT	285FT	LED	4000K	120	LED	95+	GM LIGHTINGS Standard Channel (White Finish) LED CHL2-4WH END CAPS: LED-CHL2-ECW LED TAPE LIGHT: LTR-S-COB	APPROVED EQUIVALENT		UNDERCABINET LIGHT (COLOR TO BE CONFIRMED)
D1	The Cerulux BDL downlights provide acute behavioral health centers with the protections they need, combined with a comfortable residential appeal. Our sealed, specification-grade downlights are engineered to withstand high abuse and tampering using a rigid, vandal-resistant construction and lensing choices, without looking clinical nor institutional. These highly capable downlights are tested to IK10, the highest IK impact level. They are also certified for cleanability to NSF2, carry a certified IP65 seal, and feature antimicrobial finishes. Designed with ligature-resistant construction to minimize the risk of self-harm, these downlights ensure a secure environment for all.	41.3W	2867	LED	3500K	120-277	LED	90+	LEVMON BDL48-FSS-WD-MKR040GLUM-F37-V40	APPROVED EQUIVALENT		SHOWER & WASH ROOM
E1	INTERNALLY ILLUMINATED EDGE LIT EXIT SIGN, ALUMINUM HOUSING, HIGH CLARITY, ACRYLIC FACER PLATE, CSA-APPROVED, UNIVERSAL MOUNT, SINGLE OR DOUBLE FACE, GREEN RUNNING MAN PICTOGRAM AND DIRECTIONAL INDICATOR TO SUIT APPLICATION, ARCHITECT TO CONFIRM FINISH.	2W	N/A	LED	N/A	120	LED	N/A	LITHONIA LIGHTING EDORM RUNNING MAN LED SIGN	APPROVED EQUIVALENT		INDOORS

1 LIGHTING FIXTURE SCHEDULE
E2-01 SCALE : N.T.S.

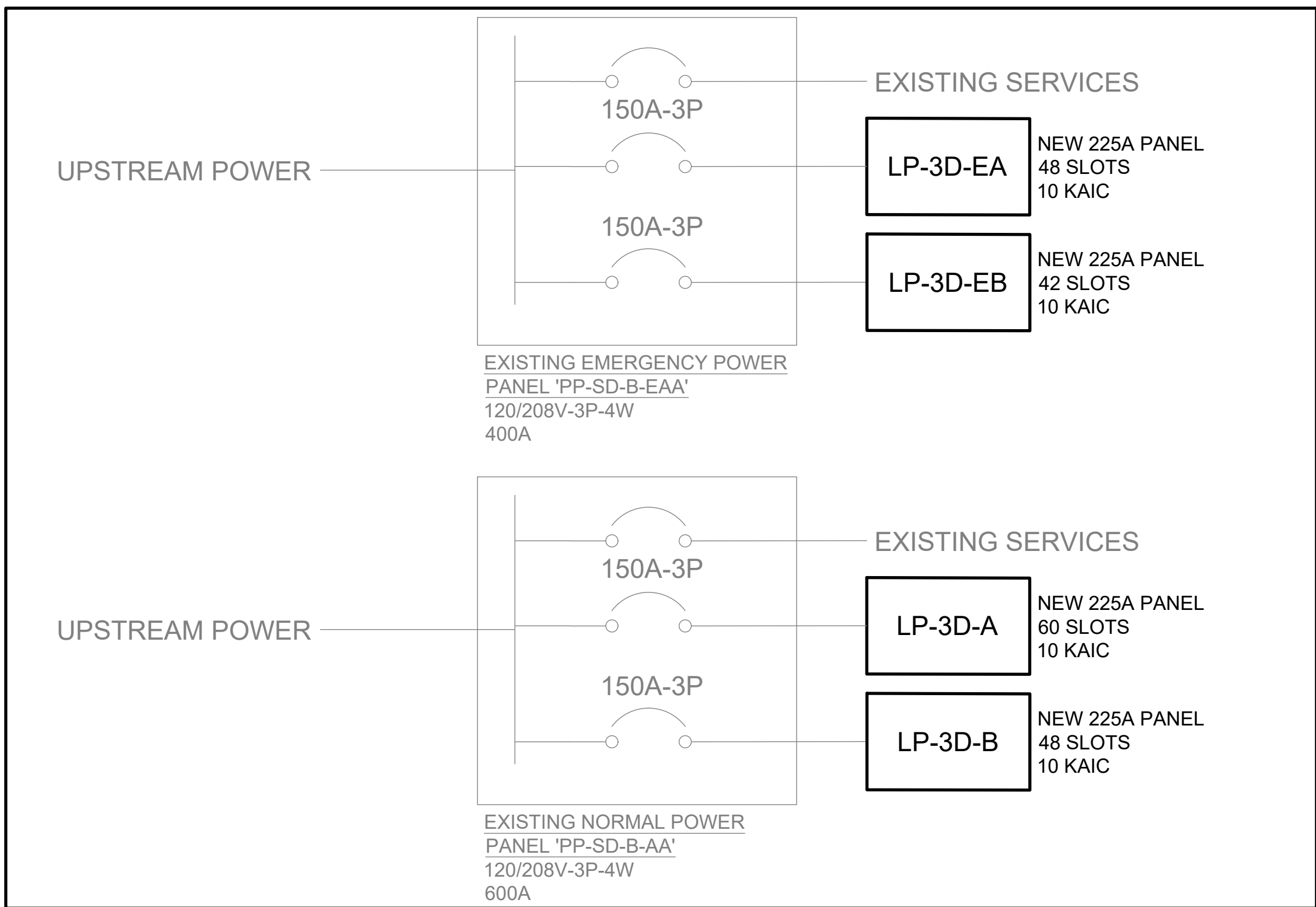
NOTE:
1.IF EXISTING EQUIPMENT IN THIS ROOM CURRENTLY CONNECTED TO PANELS L3-3D-A, L3-3D-B, L3-3D-EA, OR L3-3D-EB SHALL BE RECONNECTED TO THE NEW PANELBOARDS TO MAINTAIN CONTINUITY OF SERVICE. CONTRACTOR TO FIELD VERIFY EXISTING CIRCUITING PRIOR TO DEMOLITION/CONSTRUCTION.



3 ELECTRICAL/IT ROOM LAYOUT
E2-01 SCALE : 1:20

LIGHTING CONTROL ZONES													
ROOM NAME	ROOM NO.	LIGHTING CONTROL ZONE	LEVEL	LIGHTING CONTROL SYSTEM	MANUAL (S)	RESTRICTED TO MANUAL ON (S)	RESTRICTED TO PARTIAL AUTOMATIC ON (OS)	BLEVEL (D)	AUTOMATIC PARTIAL OFF (OS)	AUTOMATIC FULL OFF (OS)	SCHEDULED SHUT-OFF (TC)	PHOTOCELL	SEQUENCE
STAFF LOUNGE	3156			-	Y	-	Y	Y	-	Y	-	-	LOCAL CONTROLS. ALL LIGHT TYPES WITHIN STAFF LOUNGE TO BE DIMMABLE. OCCUPANT MUST MANUALLY TURN ON LIGHTS TO 100%. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY. LIGHTS SHALL BE ON AT 50% UPON VACANCY.
PANTRY				-	Y	-	-	-	-	Y	-	-	LOCAL CONTROLS. LIGHTS, AUTO-ON TO 100% UPON OCCUPANCY, AUTOMATIC FULL-OFF AFTER 20 MINUTES OF VACANCY.
STORAGE 1&2	3140 & 3141			-	Y	-	-	-	-	Y	-	-	LOCAL CONTROLS. LIGHTS SHALL AUTOMATICALLY TURN ON TO 100% UPON ENTRY. LIGHTS SHALL AUTOMATICALLY TURN OFF AFTER 20 MINUTES OF VACANCY.
PATIENT LOUNGE (V PT) PATIENT LOUNGE (PCU 2) PATIENT DINING/LOUNGE (PCU 1) PATIENT DINING (V PT) PATIENT DINING (PCU 2)				-	Y	-	Y	Y	-	Y	-	-	LOCAL CONTROLS. ALL LIGHT TYPES WITHIN VULNERABLE PATIENT LOUNGE TO BE INDIVIDUALLY DIMMABLE. OCCUPANT MUST MANUALLY TURN ON LIGHTS TO 100%. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY. LIGHTS SHALL BE ON AT 50% UPON VACANCY.
SOILED UTILITY	3142			-	Y	Y	-	-	-	Y	-	-	LOCAL CONTROLS. OCCUPANT MUST MANUALLY TURN ON LIGHTS UPON ENTERING. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
CLEAN UTILITY	3141			-	Y	Y	-	-	-	Y	-	-	LOCAL CONTROLS. OCCUPANT MUST MANUALLY TURN ON LIGHTS UPON ENTERING. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
SHOWER (V PT & PCU)				-	Y	-	-	-	-	-	-	-	MANUAL ON/OFF BY STAFF VIA SWITCH LOCATED IN STAFF MONITORED CORRIDOR.
PATIENT LOCKERS	3132			-	Y	-	-	-	-	Y	-	-	LOCAL CONTROLS. LIGHTS SHALL AUTOMATICALLY TURN ON TO 100% UPON ENTRY. LIGHTS SHALL AUTOMATICALLY TURN OFF AFTER 20 MINUTES OF VACANCY.
MED ROOM	3144			-	Y	Y	-	-	-	Y	-	-	LOCAL CONTROLS. OCCUPANT MUST MANUALLY TURN ON LIGHTS UPON ENTERING. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
PCU UNIT 1 & 2 TEAM STATION	3152 & 3139			-	Y	-	-	Y	-	Y	-	-	LOCAL CONTROLS. ALL LIGHT TYPES WITHIN PCU UNIT TEAM STATION TO BE INDIVIDUALLY DIMMABLE. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
CENTRAL STN/TEAM STN	3146			-	Y	-	-	Y	-	Y	-	-	LOCAL CONTROLS. ALL LIGHT TYPES WITHIN PCU UNIT TEAM STATION TO BE INDIVIDUALLY DIMMABLE. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
CONSULTATION ROOM	3134			-	Y	Y	-	Y	-	Y	-	-	LOCAL CONTROLS. ALL LIGHT TYPES WITHIN CONSULTATION ROOM TO BE INDIVIDUALLY DIMMABLE. OCCUPANT MUST MANUALLY TURN ON LIGHTS UPON ENTERING. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
CORRIDOR, SALLYPORT				-	-	-	Y	-	Y	-	-	-	LIGHTS SHALL BE ON AT 50% UPON VACANCY AND ACTIVATE TO 100% UPON OCCUPANCY. LIGHTS SHALL DECREASE DOWN TO 50% AFTER 20 MINUTES OF VACANCY.
STAFF WASHROOM	3147			-	Y	-	-	-	-	Y	-	-	LOCAL CONTROLS. OCCUPANT MUST MANUALLY TURN ON LIGHTS UPON ENTERING. LIGHTS SHALL AUTOMATICALLY TURN OFF FULLY AFTER 20 MINUTE VACANCY.
PATIENT ROOM				Y	Y	-	-	Y	-	-	Y	-	LOCAL ON/OFF SWITCH COMPLETE WITH DIMMER. ALL LIGHTS WITHIN PATIENT ROOM TO BE CONTROLLED VIA TIMECLOCK AND OVERRIDE AT THE NURSE STATION.
WASHROOM IN PATIENT ROOM				-	Y	-	-	-	-	-	-	-	LOCAL MANUAL ON/OFF CONTROLS.
S - MANUAL TOGGLE SWITCH OS - DUAL TECHNOLOGY OCCUPANCY SENSOR D - MANUAL TIMER TC - TIME CLOCK *MEASURED ON THE FLOOR AS AVERAGE													

2 LIGHTING CONTROL ZONES
E2-01 SCALE : N.T.S.



4 SINGLE LINE DIAGRAM
E2-01 SCALE : N.T.S.

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5		
4	ISSUED FOR TENDER AND PERMIT	04.06.26
3	ISSUED FOR CLIENT REVIEW	29.05.26
2	ISSUED FOR REVIEW	25.07.25
1	ISSUED FOR REVIEW	15.05.25
NO	ACTION	DATE

Client:

SCARBOROUGH
HEALTH NETWORK
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:

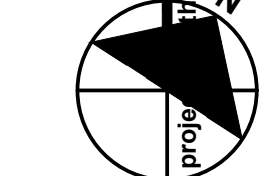
SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A

Sheet Title:

ELECTRICAL DETAILS

Project

North



Stamp



Date:
APR 2025

Project No.:
24002-02

Scale:
N.T.S.

Drawn:
P.T./K.O.

Checked:
M.C.

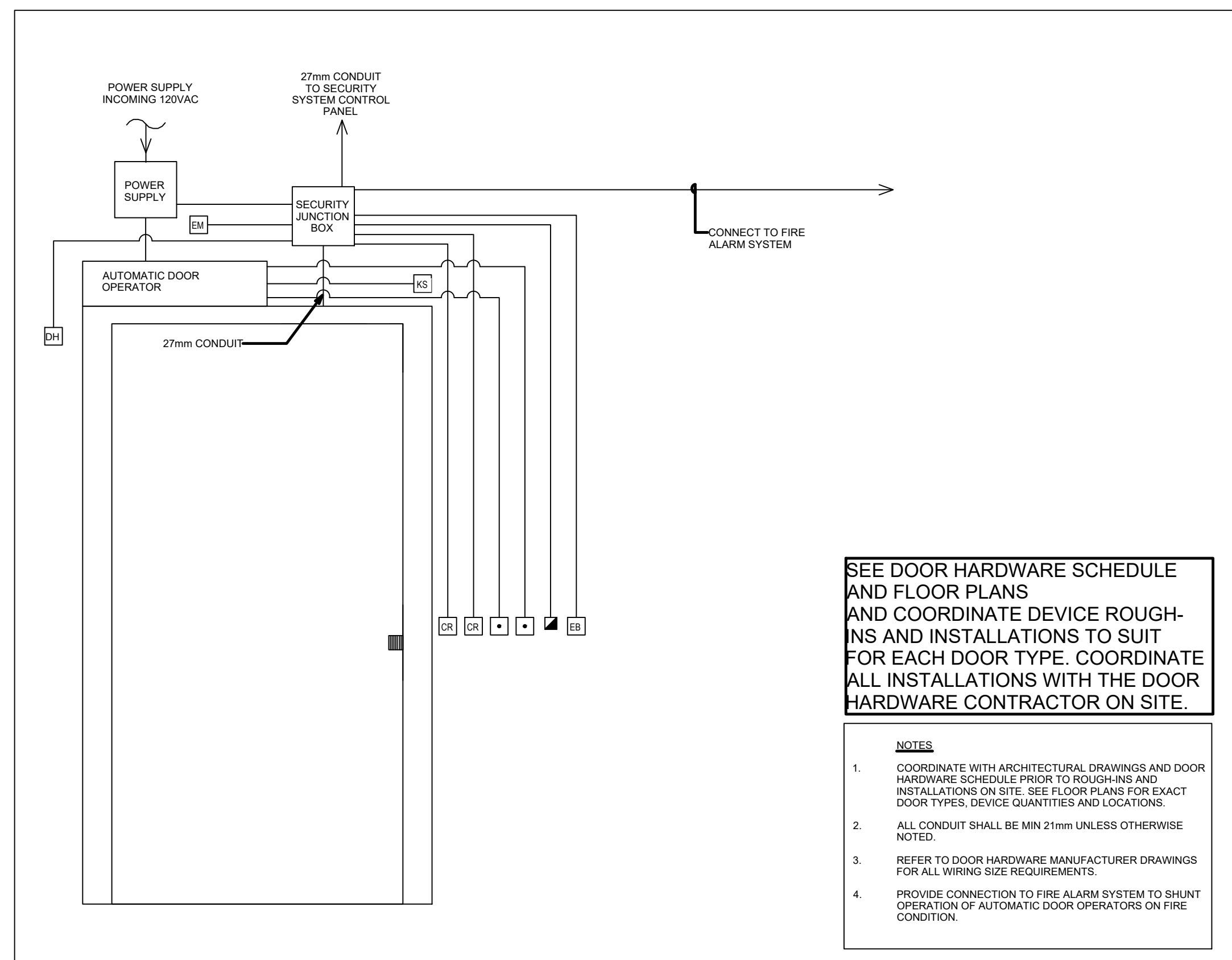
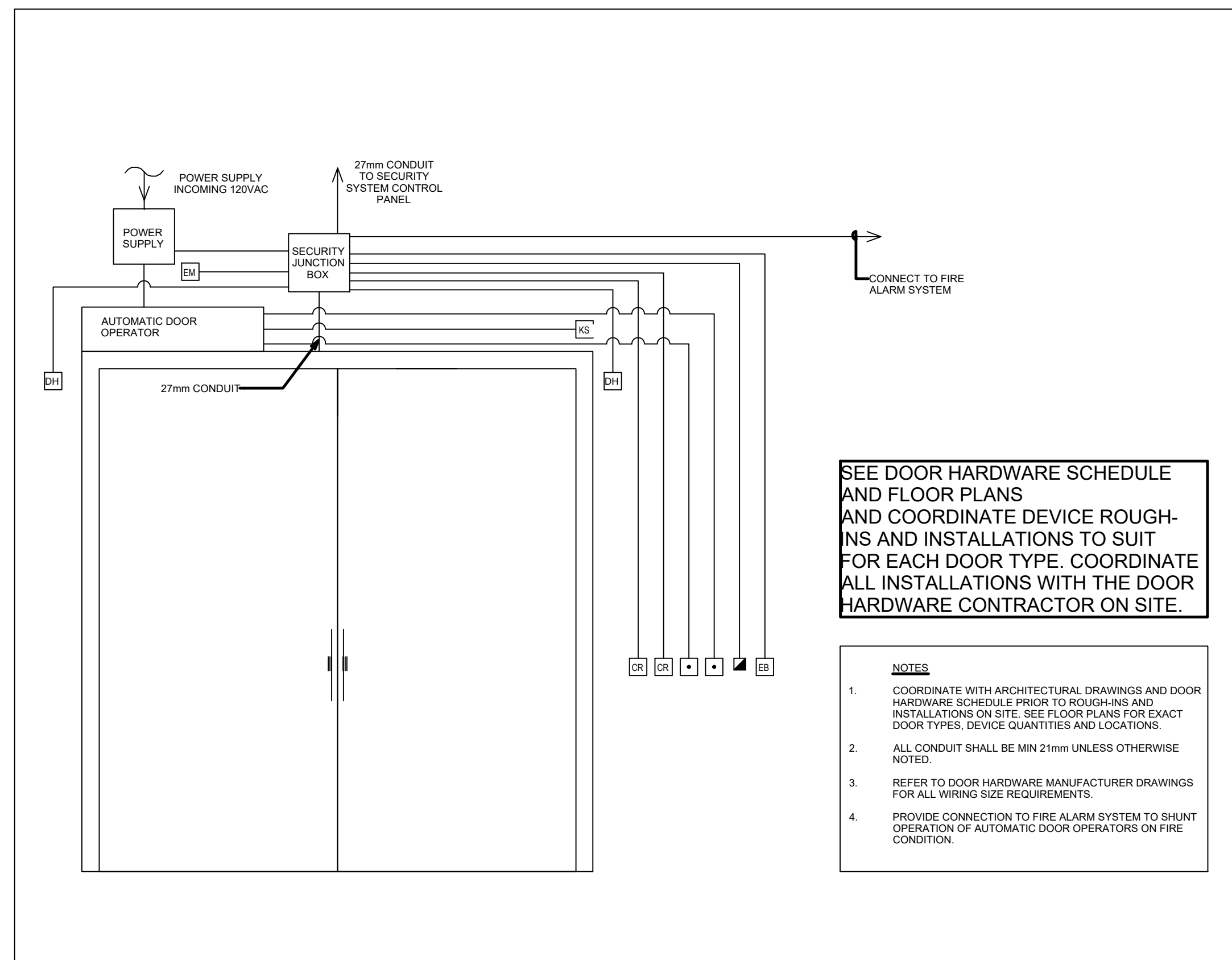
Drawing Number:

E2-01

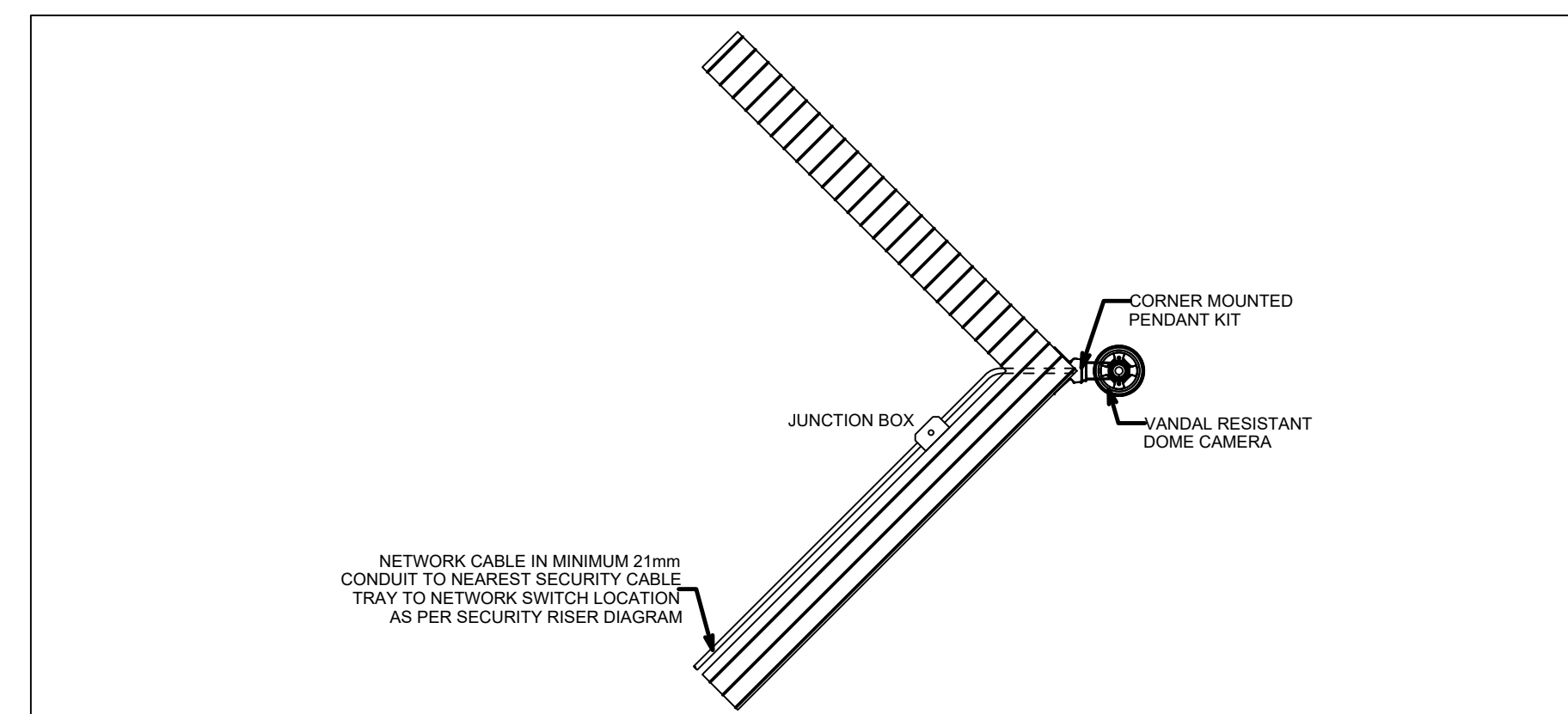
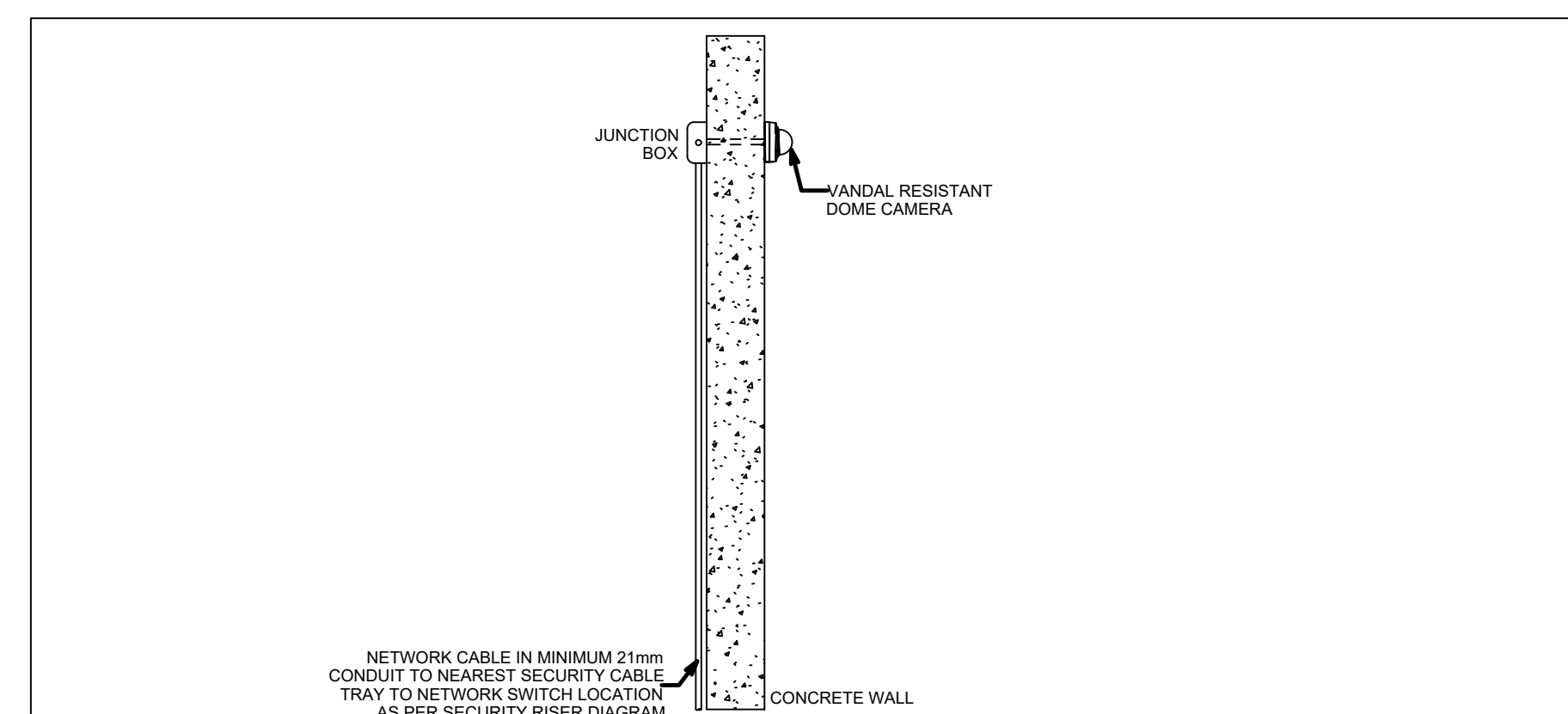
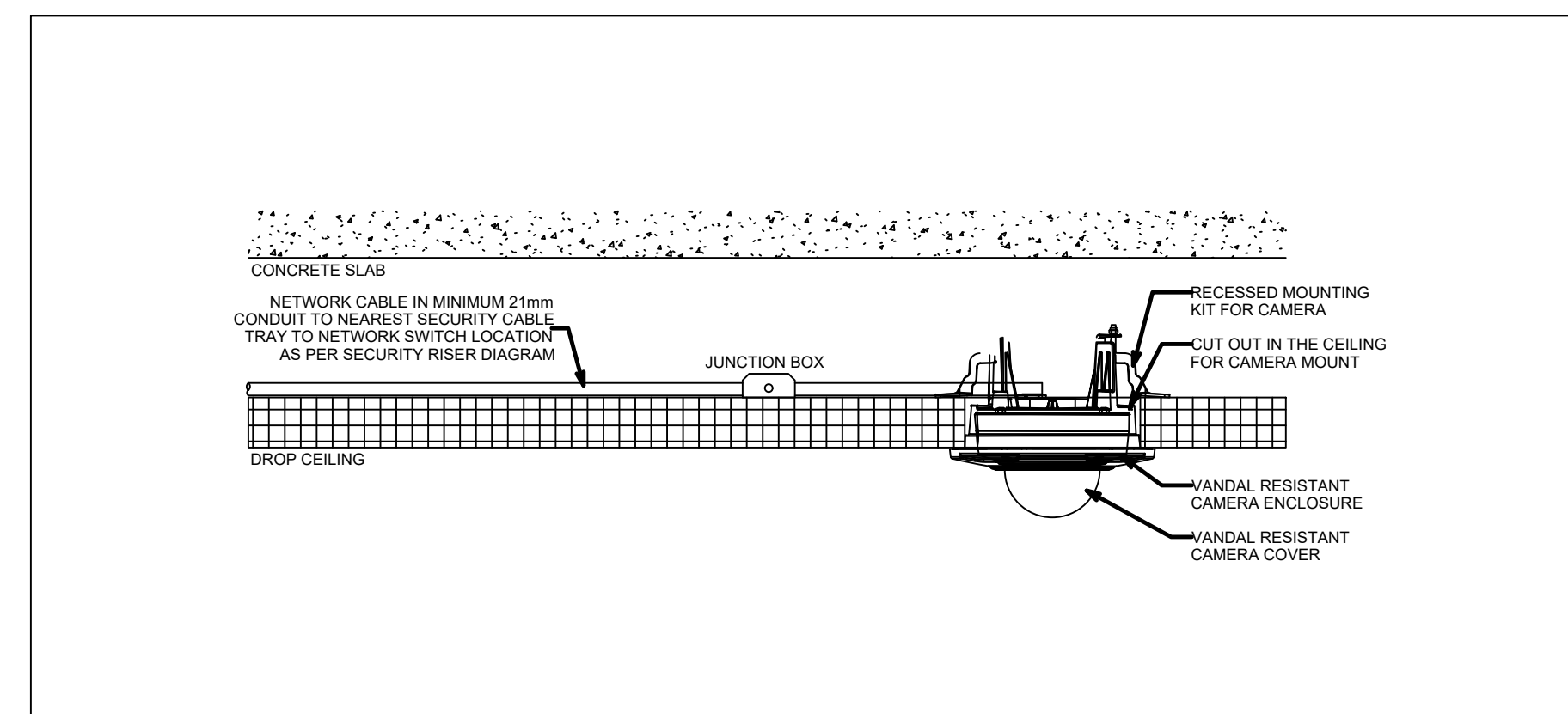
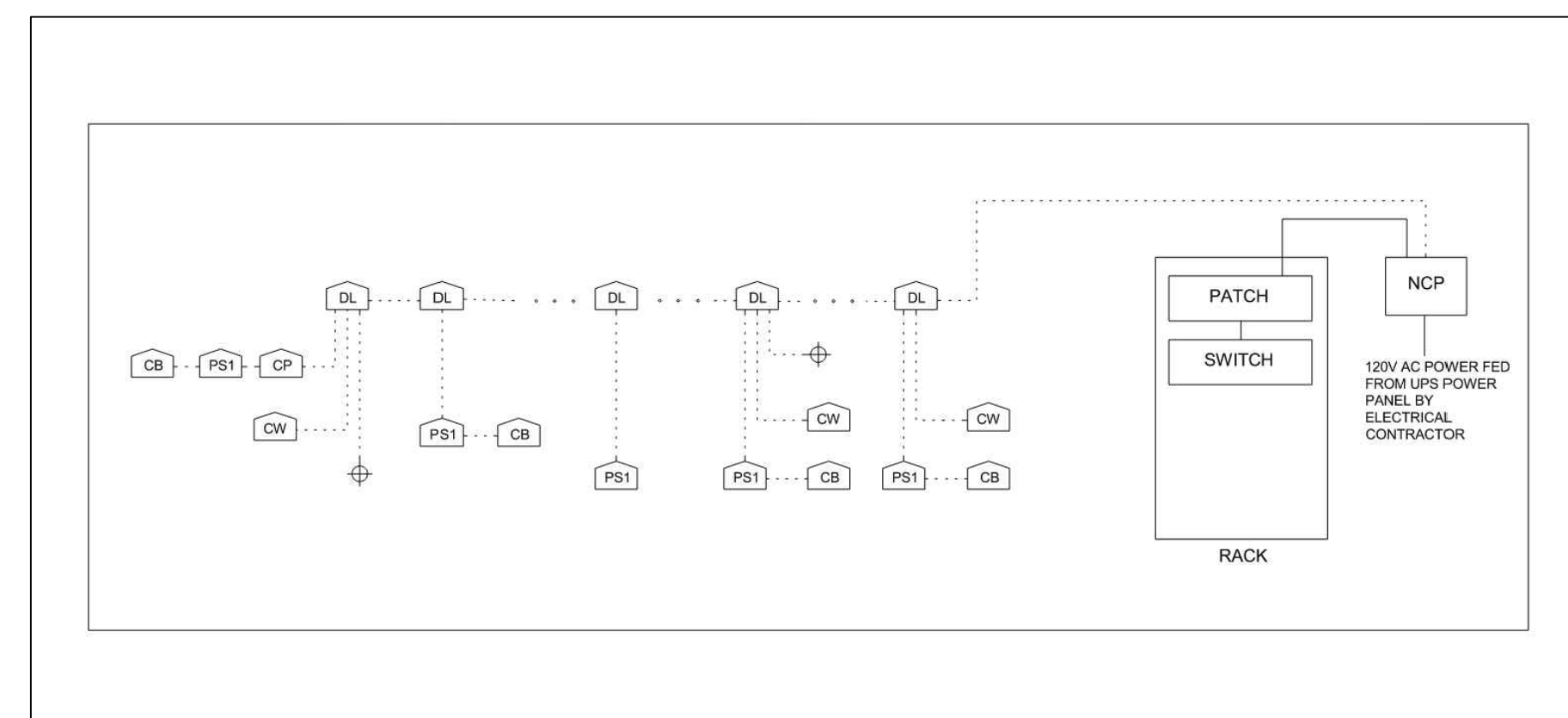
Branch Panel: LP-3D-A												
Location: CORRIDOR 3143												
Supply From: PP-SD-B-AA												
Mounting: RECESSED												
Enclosure: LOCKABLE												
Volts: 120/208												
Phase: 3												
Wires: 4												
A.I.C. Rating: 10K												
Mains Rating: 225A												
Note * Lockable breaker												
Shaded Breakers denote existing												
CKT	Load Name	# REC	Trip (A)	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip (A)	# REC	Load Name	CKT
1	LTG (AREA 3156, 3158, 3159)		15	1	135 264				1	15	LTG (AREA 3130, 3155, 3157)	2
3	LTG (PATIENT ROOM 3122-3124)		15	1		306 665			1	15	LTG (AREA 3125, 3126, 3127)	4
5	LTG (PATIENT ROOM 3101-3104)		15	1			353 483		1	15	LTG (PATIENT ROOM 3105-3109)	6
7	LTG (AREA 3153-3154)		15	1	108 216				1	15	LTG (AREA 3146, 3152)	8
9	LTG (AREA 3131)		15	1		108 83			1	15	LTG (AREA 3150, 3151)	10
11	HK RECEPTACLES		20	1			1440 70		1	15	LTG (AREA 3144, 3147-3149)	12
13	HK RECEPTACLES		20	1	1680 240				1	20	COUNTERTOP RECEPTACLES (AREA 3159)	14
15	TV & PHONE CHARGING STATION (AREA 3156)		15	1		480 1000			1	15	FRIDGE (AREA 3159)	16
17	ICE-WATER DISPENSING MACHINE (AREA 3156)		20	1			1200 1000		1	15	FRIDGE (AREA 3156)	18
19	MICROWAVE (AREA 3156)		20	1	1000 1000				1	20	COFFEE MACHINE (AREA 3156)	20
21	MICROWAVE (AREA 3156)		20	1		1000 1000			1	20	ELECTRIC KETTLE (AREA 3156)	22
23	ICE-WATER DISPENSING MACHINE (AREA 3154)		20	1			1200 240		1	20	COUNTERTOP RECEPTACLES (AREA 3154)	24
25	HK RECEPTACLES		20	1	960 240				1	15	TV (AREA 3153)	26
27	EPIC ROVER (AREA 3146)		15	1		480 960			1	15	PHONE CHARING STATIONS (AREA 3146)	28
29	WORK STATION RECEPTACLES (AREA 3146)		15	1			1440 1440		1	15	WORK STATION RECEPTACLES (AREA 3146)	30
31	WORK STATION RECEPTACLES (AREA 3146)		15	1	960 240				1	15	MONITOR TV (AREA 3146)	32
33	PRINTER (AREA 3152)		20	1		240 480			1	15	WORK STATION RECEPTACLES (AREA 3152)	34
35	VITAL SIGN MONITOR (AREA 3152)		20	1			240 240		1	15	HAND HYGIENE SINK (AREA 3152)	36
37	PRINTER (AREA 3146)		20	1	1000 240				1	15	HAND HYGIENE SINK (AREA 3146)	38
39	GENERAL RECEPTACLES (AREA 3146)		20	1		480 240			1	15	COUNTERTOP RECEPTACLES (AREA 3147)	40
41	HK RECEPTACLES (PATIENT ROOM 3122-3124)		20	1			720 200		1	15	FAUCET & FLUSH (PATIENT ROOM 3122-3124)	42
43	WR RECEPTACLES (PATIENT ROOM 3123-3124)		15	1	480 200				1	15	FAUCET & FLUSH (PATIENT ROOM 3101-3104)	44
45	WR RECEPTACLES (PATIENT ROOM 3122)		15	1		480 240			1	15	FAUCET & FLUSH (PATIENT ROOM 3105-3109)	46
47	HK RECEPTACLES (PATIENT ROOM 3123-3124)		20	1			720 200		1	15	FAUCET & FLUSH (AREA 3150, 3151, 3147)	48
49	HK RECEPTACLES (PATIENT ROOM 3122)		20	1	240 0							50
51	VITAL SIGN MONITOR (AREA 3146)		20	1		0 0						52
53							0 0					54
55					0 0							56
57						0 0						58
59							0 0					60
Total Load:					8283	7522	10266					
Total Amps					69	63	86					

Branch Panel: LP-3D-B												
Location: CORRIDOR 3143												
Supply From: PP-SD-B-AA												
Mounting: RECESSED												
Enclosure: LOCKABLE												
Volts: 120/208												
Phase: 3												
Wires: 4												
A.I.C. Rating: 10K												
Mains Rating: 225A												
Note * Lockable breaker												
Shaded Breakers denote existing												
CKT	Load Name	# REC	Trip (A)	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip (A)	# REC	Load Name	CKT
1	LTG (CORRIDORS 3130, 3129)		15	1	144 519				1	15	LTG (PATIENT ROOM 3118-3121)	2
3	LTG (CORRIDORS 3128, 3127)		15	1		312 607			1	15	LTG (PATIENT ROOM 3113-3117)	4
5	LTG (CORRIDORS 3143)		15	1			72 265		1	15	LTG (PATIENT ROOM 3110-3112)	6
7	LTG (AREA 3134, 3132, 3139-3142, 3136-3138)		15	1	468 83				1	15	LTG (SHOWER 3133)	8
9	HK RECEPTACLES (PATIENT ROOM 3121)		20	1		240 240			1	15	WR RECEPTACLES (PATIENT ROOM 3121)	10
11	HK RECEPTACLES (PATIENT ROOM 3119-3120)		20	1			480 480		1	15	WR RECEPTACLES (PATIENT ROOM 3119-3120)	12
13	HK RECEPTACLES (PATIENT ROOM 3117-3118)		20	1	480 480				1	15	WR RECEPTACLES (PATIENT ROOM 3117-3118)	14
15	HK RECEPTACLES (PATIENT ROOM 3115-3116)		20	1		480 480			1	15	WR RECEPTACLES (PATIENT ROOM 3115-3116)	16
17	FAUCET & FLUSH (PATIENT ROOM 3118-3121)		15	1			400 400		1	15	FAUCET & FLUSH (PATIENT ROOM 3110-3122)	18
19	FAUCET & FLUSH (PATIENT ROOM 3113-3117)		15	1	500 720				1	20	HK RECEPTACLES	20
21	HK RECEPTACLES		20	1		1200 960			1	20	HK RECEPTACLES	22
23	HK RECEPTACLES (AREA 3142)		20	1			240 960		1	20	HK RECEPTACLES	24
25	SINK (AREA 3142)		20	1	400 240				1	20	TV RECEPTACLE (AREA 3131)	26
27	FAUCET & FLUSH (AREA 3133)		15	1		200 480			1	20	GENERAL RECEPTACLE (AREA 3141)	28
29	TV RECEPTACLE (AREA 3134)		15	1			240 480		1	20	GENERAL RECEPTACLE (AREA 3134)	30
31	HAND HYGIENE SINK (AREA 3139)		15	1	200 480				1	20	GENERAL RECEPTACLE (AREA 3140)	32
33	VITAL SIGN MONITOR ON STAND (AREA 3139)		20	1		240 480			1	20	GENERAL RECEPTACLE (AREA 3140)	34
35	COUNTERTOP RECEPTACLE (AREA 3136)		20	1			240 1000		1	15	FRIDGE (AREA 3136)	36
37	TV RECEPTACLE (AREA 3138)		15	1	240 200				1	15	HAND HYGIENE SINK (AREA 3144)	38
39	BLANKET WARMER (AREA 3141)		20	1		240 240			1	20	WARMER, BATHING WIPES (AREA 3141)	40
41							0 0					42
43					0 0							44
45						0 0						46
47							0 0					48
Total Load:					5154	6399	5257					
Total Amps					43	53	44					

Branch Panel: LP-3D-EA												
Location: CORRIDOR 3143												
Supply From: PP-SD-B-EAA												
Mounting: RECESSED												
Enclosure: LOCKABLE												
Volts: 120/208												
Phase: 3												
Wires: 4												
A.I.C. Rating: 10K												
Mains Rating: 225A												
Note * Lockable breaker												
Shaded Breakers denote existing												
CKT	Load Name	# REC	Trip (A)	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip (A)	# REC	Load Name	CKT
1	EXIT SIGN		15	1	30 72				1	15	LTG (AREA 3158,3156)	2
3	LTG (CORRIDORS)		15	1		288 252			1	15	LTG (AREA 3153,3146,3152,3131,3144)	4
5	LTG (AREA 3150-3151)		15	1			83 213		1	15	LTG (PATIENT RM 3122-3124)	6
7	LTG (PATIENT RM 3101-3109)		15	1	639 500				1	20	CFSD	8
9	CFSD		20	1		700 600			1	20	CFSD	10
11	RECEPTACLES (PATIENT ROOM 3101)		20	1			480 480		1	20	RECEPTACLES (PATIENT ROOM 3105)	12
13	RECEPTACLES (PATIENT ROOM 3102)		20	1	480 480				1	20	RECEPTACLES (PATIENT ROOM 3106)	14
15	RECEPTACLES (PATIENT ROOM 3103)		20	1		480 480			1	20	RECEPTACLES (PATIENT ROOM 3107)	16
17	RECEPTACLES (PATIENT ROOM 3104)		20	1			480 480		1	20	RECEPTACLES (PATIENT ROOM 3108)	18
19	WORK STATION (AREA 3146)		15	1	960 480				1	20	RECEPTACLES (PATIENT ROOM 3109)	20
21	WORK STATION (AREA 3146)		15	1		960 240			1	20	PYXIS - MedFlex (MED) (AREA 3152)	22
23	WORK STATION (AREA 3152)		15	1			960 480		1	20	WORK STATION ON WHEEL (AREA 3146)	24
25	WORK STATION (AREA 3152)		15	1	960 200				1	20	MEDICAL GAS ZONE ALARM (AREA 3146)	26
27	VALVE CONTROL PANEL (AREA 3146)		20	1		500 500			1	20	LIGHTING CONTROL PANEL (AREA 3146)	28
29	CRASH CART (AREA 3146)		20	1			240 600		1	20	CFSD	30
31	SOLENOID VALVES (PATIENT ROOM 3101-3104)		20	1	500 600				1	20	SOLENOID VALVES (PATIENT ROOM 3105-3109)	32
33	SOLENOID VALVES (PATIENT ROOM 3109, WR 3151,3150)		20	1		300 400			1	20	POWER FOR DOOR HARDWARE	34
35	POWER FOR DOOR HARDWARE		20	1			500 500		1	20	POWER FOR DOOR HARDWARE	36
37	POWER FOR DOOR HARDWARE		20	1	500 500				1	20	POWER FOR DOOR HARDWARE	38
39	POWER FOR DOOR HARDWARE		20	1		500 500			1	20	POWER FOR DOOR HARDWARE	40
41	RECEPTACLES (PATIENT ROOM 3123-3124)		20	1			960 480		1	20	RECEPTACLES (PATIENT ROOM 3122)	42
43					0 0							44
45						0 0						46
47							0 0					48
Total Load:					6901	6700	6936					
Total Amps					58	56	58					



- NOTES:**
1. DETERMINE EXACT LOCATION AND MOUNTING HEIGHT OF BACK BOX ONSITE PRIOR TO ANY INSTALLATION.
 2. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONDUIT C/W PULLSTRING, WIRING AND BACK BOXES, COMMUNICATIONS CONTRACTOR SHALL PROVIDE ALL NETWORK CABLING.
 3. ALL CONDUITS SHALL BE 21mm, UNLESS OTHERWISE NOTED.
 4. ALL CONDUITS SHALL BE MARKED CLEARLY AT BOTH ENDS.
 5. PROVIDE ALL MOUNTING BRACKETS AND ACCESSORIES AS REQUIRED.
 6. ADJUST CAMERA LENS TO OBTAIN OPTIMUM FIELD OF VIEW.
 7. COORDINATE WITH ARCHITECTURAL DOCUMENTS FOR EXACT MOUNTING HEIGHTS AND LOCATIONS



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4	ISSUED FOR TENDER AND PERMIT	04.06.26
3	ISSUED FOR CLIENT REVIEW	29.05.26
2	ISSUED FOR REVIEW	25.07.25
1	ISSUED FOR REVIEW	15.05.25
NO	ACTION	DATE

Client:

**SCARBOROUGH
HEALTH NETWORK**

**3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON**

Project Title:

**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

Sheet Title:

MISCELLANEOUS DETAILS - 1

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<div data-label="Text"> <p>Scale: N.T.S.</p> </div>	<div data-label="Text"> <p>Drawn: P.T./K.O.</p> <p>Checked: M.C.</p> </div>

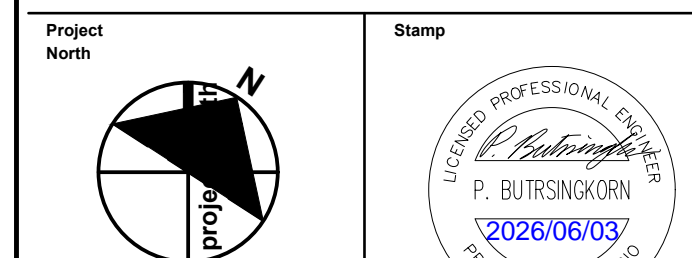
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NO	ACTION	DATE

Client:
**SCARBOROUGH
HEALTH NETWORK**
3030 BIRCHMOUNT ROAD
SCARBOROUGH, ON

Project Title:
**SHN MENTAL HEALTH
INPATIENT CONSOLIDATION
POD 3A**

Sheet Title:
MISCELLANEOUS DETAILS - 2



Date:
APR 2025

Project No.:
24002-02

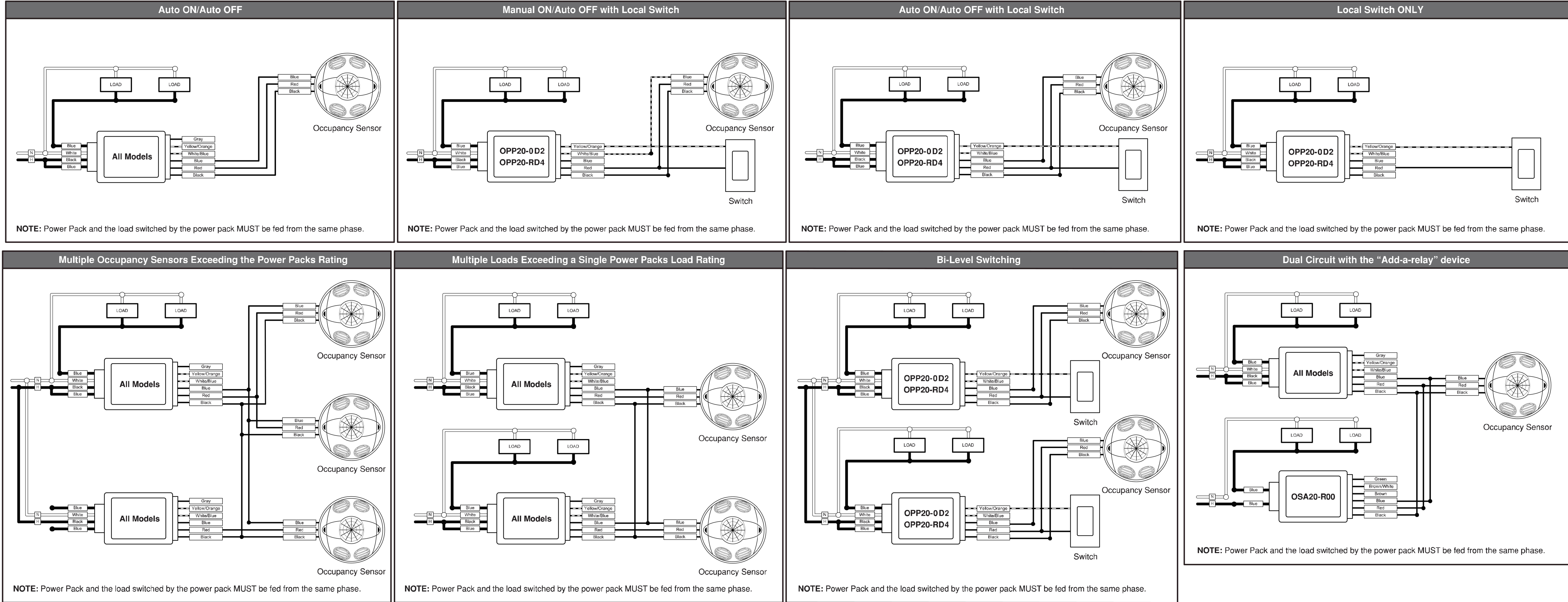
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Drawn:
P.T./K.O.

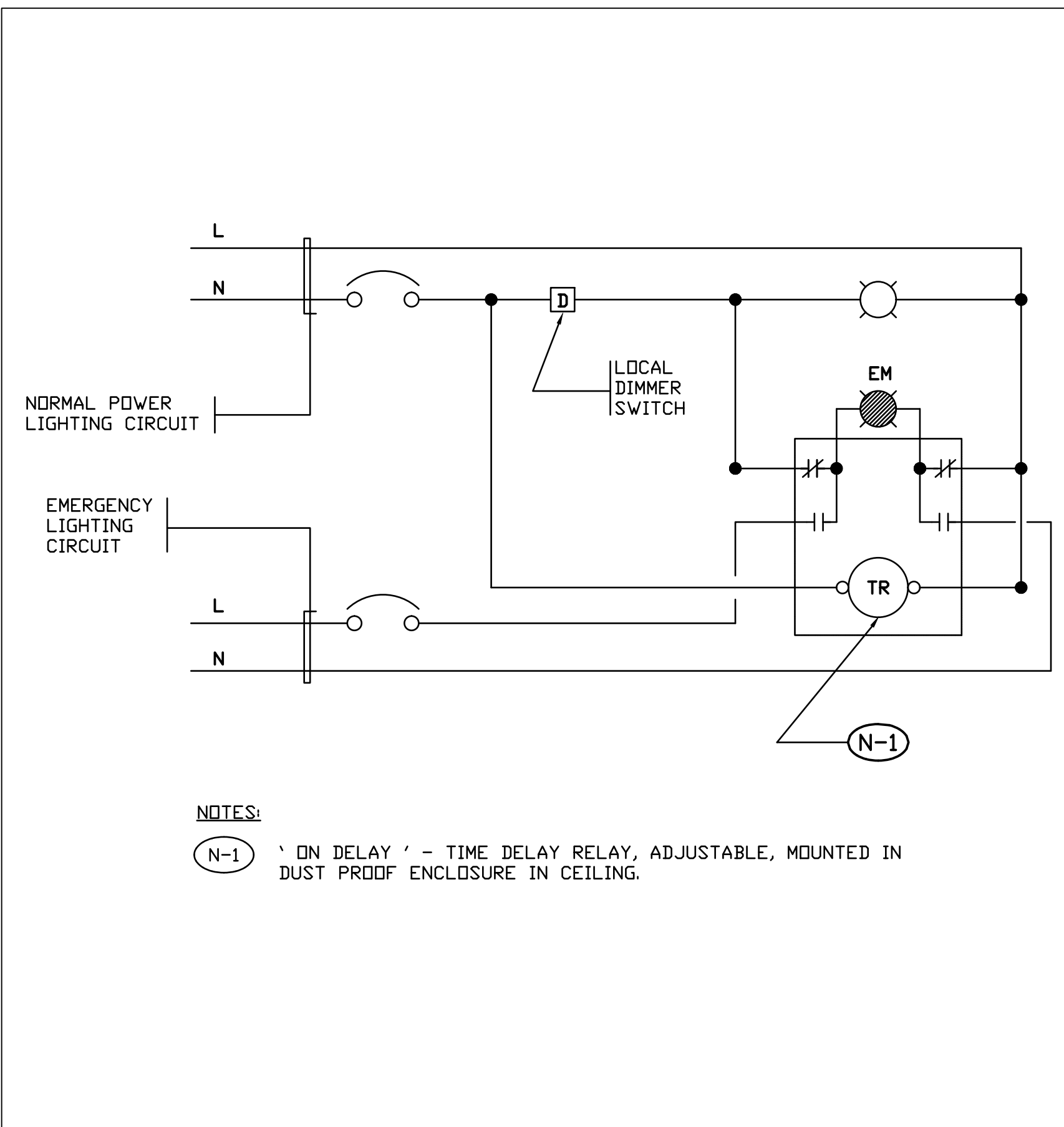
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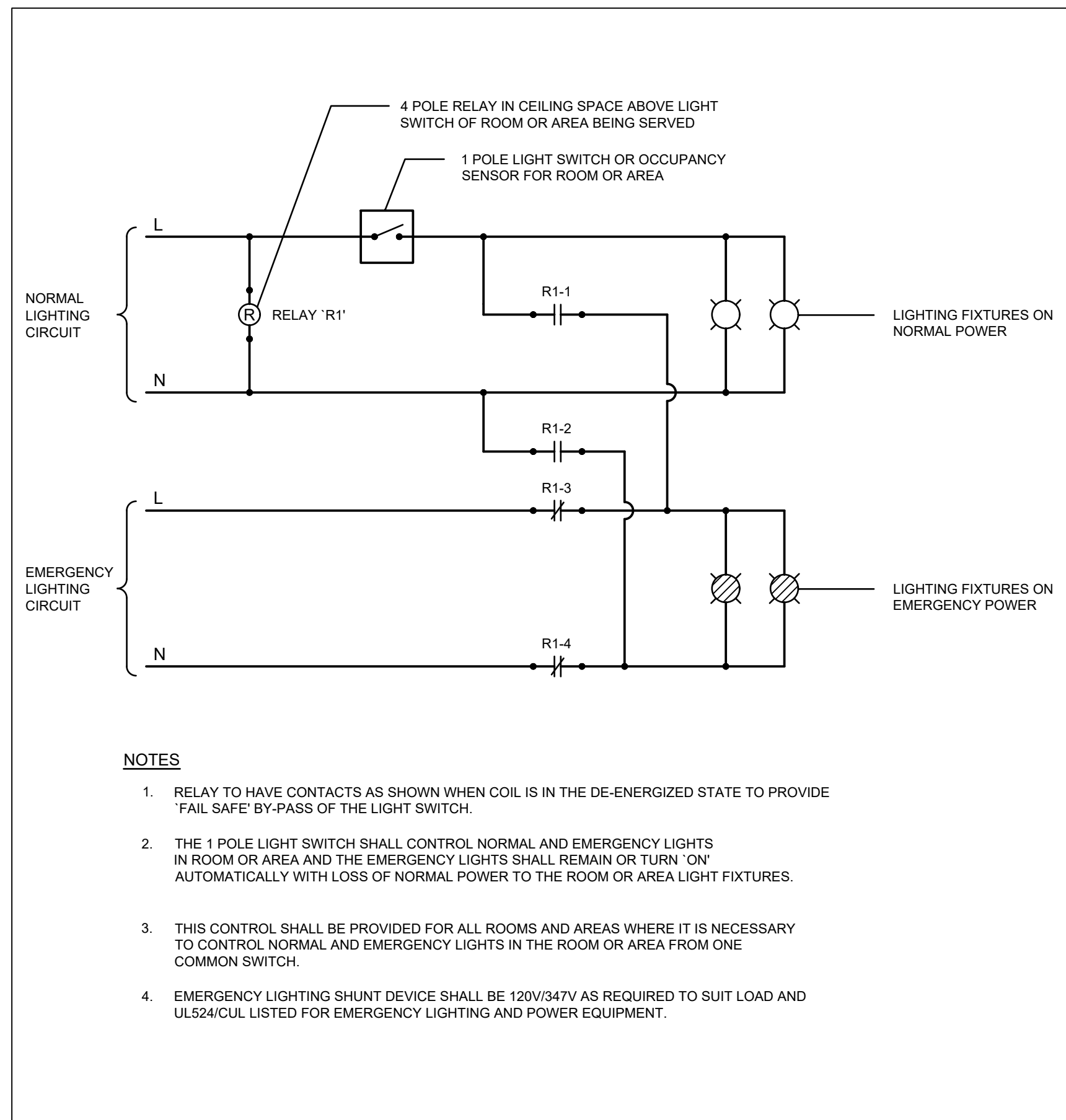
E2-04



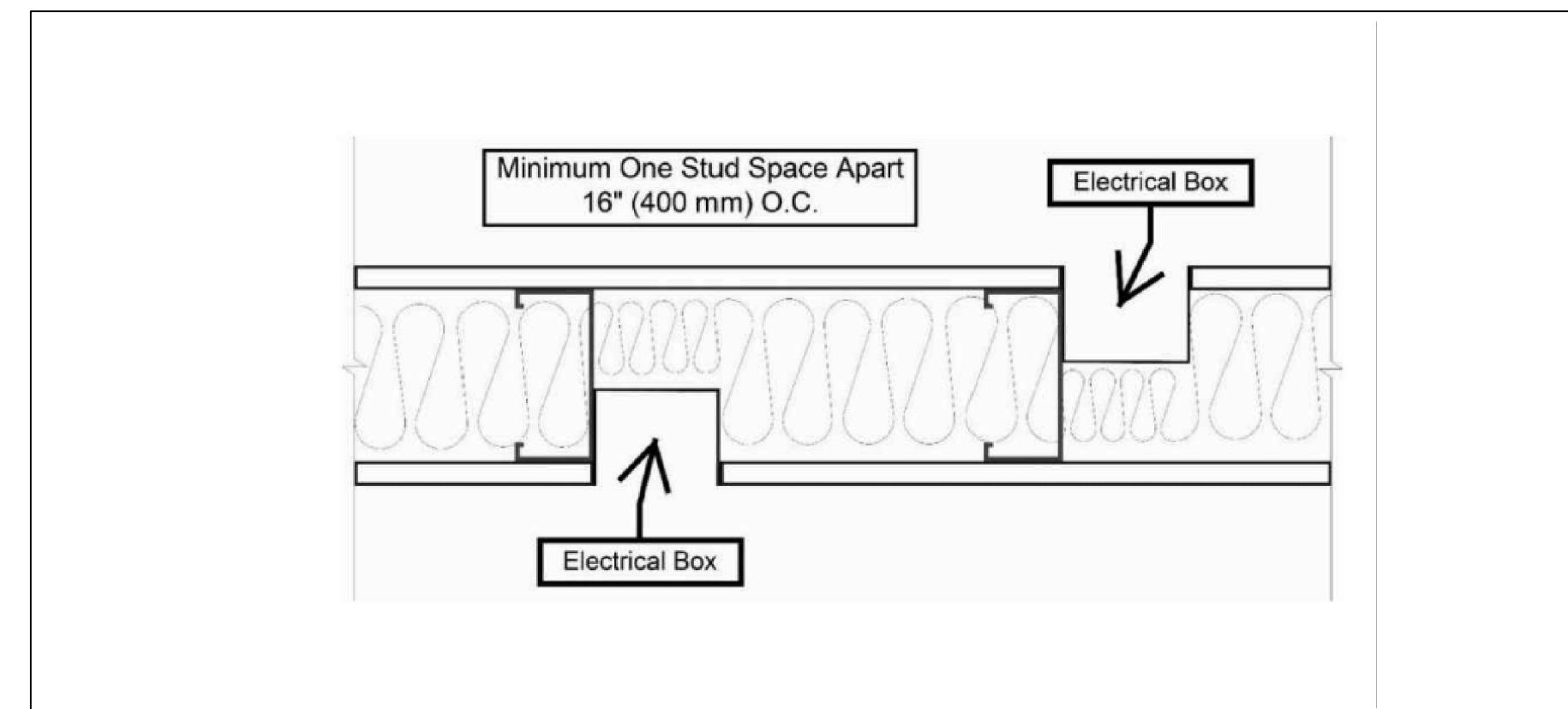
3 TYPICAL LIGHTING CONTROL DIAGRAM
E2-04 N.T.S.



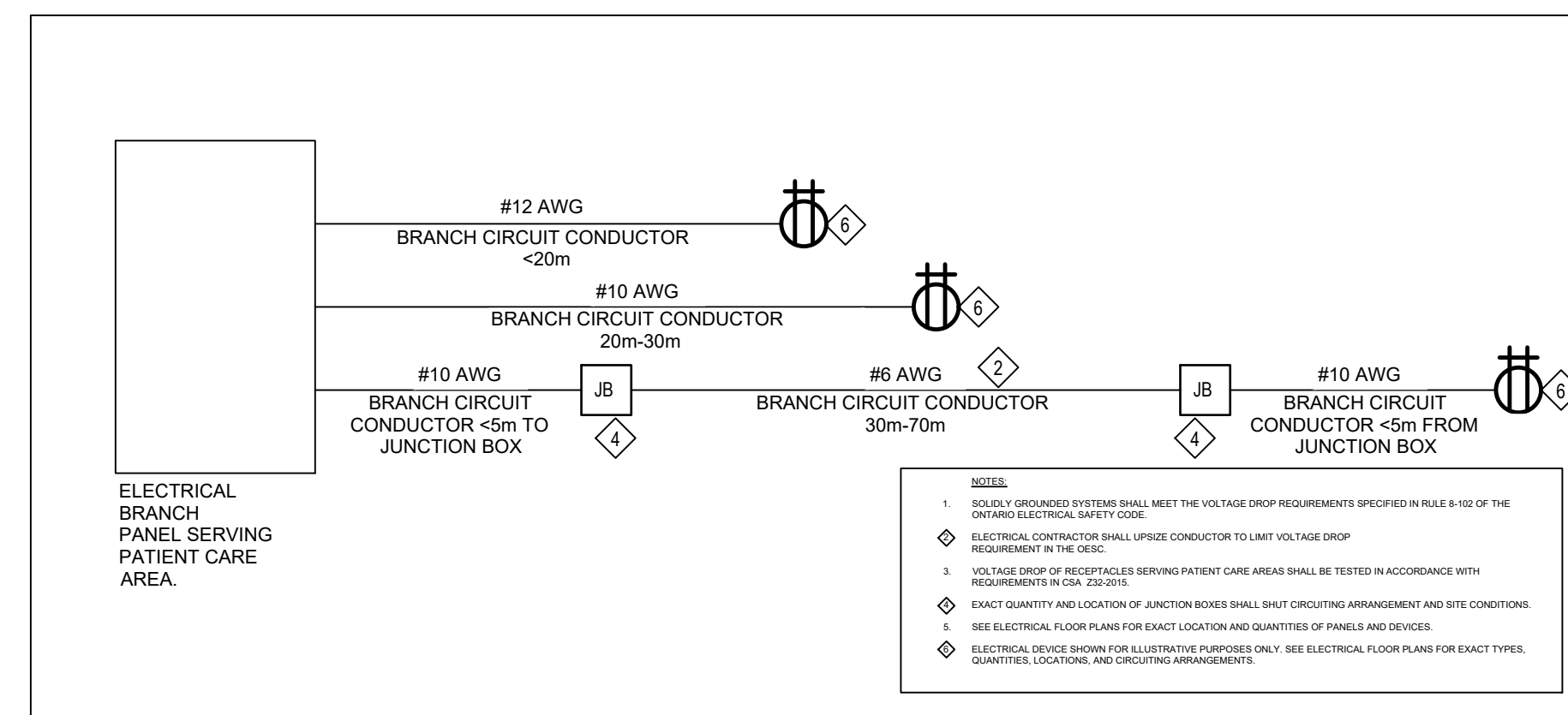
5 TYPICAL AUTOMATIC EMERGENCY LIGHTING CONTROL DIAGRAM
E2-04 N.T.S.



4 TYPICAL AUTOMATIC EMERGENCY LIGHTING CONTROL DIAGRAM
E2-04 N.T.S.



2 BACKBOX SPACING - TYPICAL
E2-04 N.T.S.



1 PATIENT CARE AREA TYPICAL VOLTAGE DROP DETAIL
E2-04 N.T.S.