ELECTRICAL SPECIFICATIONS

GENERAL ELECTRICAL REQUIREMENTS

1. CODES & STANDARDS

1.1. COMPLETE THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ONTARIO BUILDING CODE, ONTARIO ELECTRICAL SAFETY CODE, C.S.A. STANDARDS, U.L.C., N.F.P.A., O.H.S.A. AND OTHER CODES, AS REQUIRED. COMPLY WITH ELECTRICAL AND BUILDING CODE BULLETINS IN FORCE AT TIME OF BID SUBMISSION. WHILE NOT IDENTIFIED AND SPECIFIED BY NUMBER IN THIS DIVISION, THEY ARE TO BE CONSIDERED AS FORMING PART OF RELATED STANDARDS. ALSO, ALL ELECTRICAL WORK SHALL COMPLY WITH OWNER'S REQUIREMENTS AND BASE BUILDING STANDARDS. CONTRACTOR SHALL OBTAIN ALL OWNER'S REQUIREMENTS AND BASE BUILDING STANDARDS FROM THE OWNER DURING THE TENDER PERIOD.

2. EXISTING CONDITIONS

2.1. VISIT THE SITE AND EXAMINE THE EXISTING CONDITIONS AFFECTING THE WORK OF THIS DIVISION. NO CLAIM FOR EXTRA PAYMENT SHALL BE MADE FOR EXTRA WORK MADE NECESSARY BY CIRCUMSTANCES ENCOUNTERED DUE TO CONDITIONS WHICH WERE VISIBLE UPON, OR REASONABLY INFERABLE FROM AN EXAMINATION OF THE SITE PRIOR TO SUBMISSION OF THE BID. THIS INCLUDES THE EXISTING SERVICES ABOVE CEILING.

2.2. BE AWARE THAT THERE MAY BE ASBESTOS FIBRES PRESENT IN VARIOUS FINISHES OR ON VARIOUS SURFACES, IN CERTAIN AREAS OF THE BUILDING. ARRANGE WORK SO AS NOT TO DISRUPT THESE MATERIALS, OR TAKE FULL AND NECESSARY MEANS TO PROTECT ALL PERSONNEL FROM CONTACT WITH THEM, IN A WAY TO BE APPROVED BY THE OWNER. INCLUDE ALL COSTS ASSOCIATED WITH ANY REMEDIAL WORK, IN THE BID.

3. DEFINITIONS

3.1. WHEREVER THE WORDS "PROVIDE" OR "SUPPLY AND INSTALL", ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "PROVIDE AND INSTALL, INCLUSIVE OF ALL LABOUR, MATERIALS, INSTALLATION, TESTING, AND CONNECTIONS" FOR THE ITEM TO WHICH IT REFERENCES.

3.2. WHEREVER THE WORDS "EQUAL", "APPROVED", OR "APPROVED EQUAL" ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "EQUAL", "APPROVED", OR "APPROVED EQUAL" IN THE OPINION OF THE CONSULTANT ONLY.

4. MATERIALS AND EQUIPMENT

4.1. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CERTIFIED AS PER C.S.A/C.U.L OR AS APPROVED BY THE O.E.S.C. AND MANUFACTURED TO THE STANDARDS SPECIFIED.

4.2. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CERTIFIED AS PER C.S.A/C.U.L OR AS APPROVED BY THE O.E.S.C., OBTAIN SPECIAL APPROVAL FROM THE ELECTRICAL SAFETY AUTHORITY.

5. PERMITS AND FEES

5.1. THE ELECTRICAL CONTRACTOR SHALL ACT AS THE OWNER'S AGENT IN ACCORDANCE WITH SECTION 2 OF THE O.E.S.C. AND SHALL IMMEDIATELY UPON AWARD OF CONTRACT, SUBMIT TO THE LOCAL ELECTRICAL INSPECTION DEPARTMENT, THE NECESSARY NUMBER OF DOCUMENTS FOR EXAMINATION, SPECIAL INSPECTION AND APPROVAL, PRIOR TO THE COMMENCEMENT OF THE WORK, AND PAY ALL COSTS AND ASSOCIATED FEES. IF REQUIRED, PREPARE ANY ADDITIONAL DRAWINGS/DOCUMENTS REQUIRED BY THE AUTHORITY.

5.2. THE CONSULTANT WILL PROVIDE UPON REQUEST, AT THE CONTRACTOR'S COST, THE REQUIRED QUANTITY OF DRAWINGS.

5.3. PROVIDE CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT, UPON COMPLETION OF WORK.

6. INSURANCE

6.1. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE OWNER, AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID FOR AN AMOUNT ACCEPTABLE TO OWNER.

7. CONTRACT DOCUMENTS

7.1. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF ELECTRICAL EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.

7.2. DO NOT SCALE OR MEASURE DRAWINGS, BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM THE DIMENSIONS SHOWN ON THE DESIGN CONSULTANT'S/ARCHITECT'S DRAWINGS, OR BY SITE REQUIREMENTS.

7.3. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS, MUST BE REFERRED TO THE DESIGN CONSULTANT/ARCHITECT BEFORE ANY WORK AFFECTED IS BEGUN.

7.4. COOPERATE AND COORDINATE WITH OTHER CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHER CONTRACTORS. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER CONTRACTOR

7.5. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)

8. INTENT

8.1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED. WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITION SHALL GOVERN.

8.2. ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID.

9. SHOP DRAWINGS

9.1. SUBMIT SINGLE (1) SET OF SHOP DRAWINGS IN EITHER PDF OR HARD COPY FORMAT FOR ALL SPECIFIED EQUIPMENT FOR REVIEW AND RECORDS BEFORE COMMENCEMENT OF WORK.

9.2. CHANGES MADE TO THE SHOP DRAWINGS BY THE CONSULTANT WILL NOT AFFECT THE CONTRACT PRICE.

10. INSERTS, HANGERS AND SLEEVES

10.1. PROVIDE HANGERS, INSERTS, SLEEVES AND SUPPORTS AS REQUIRED.

10.2. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.

10.3. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.

10.4. SLEEVES ARE TO BE OF A TYPE SUITABLE FOR THE APPLICATION AND BE SEALED AND MADE WATERTIGHT. SLEEVES THROUGH CONCRETE SHALL BE SCHEDULE 40 STEEL PIPE, SIZED FOR FREE PASSAGE OF CONDUIT AND INSTALLED FLUSH WITH UNDERSIDE OF CONCRETE SLAB AND EXTEND 103MM (4") ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.

10.5. DO NOT USE ANY BASE BUILDING SUPPORTS OR EQUIPMENT, INCLUDING CEILING SUPPORT SYSTEM.

11. CUTTING AND PATCHING

11.1. ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE OWNER. OBTAIN WRITTEN APPROVAL FROM OWNER BEFORE ANY CUTTING IS CARRIED OUT.

11.2. WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE FIRE STOPPING MATERIAL LISTED WITH, AND BEAR LABEL OF CSA AND ULC, AND MAINTAIN SAME FIRE RATING OF BUILDING COMPONENT PENETRATION.

12. LOCATION OF OUTLETS

12.1. REFER TO DESIGN CONSULTANT'S DRAWINGS FOR EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND WIRING DEVICES.

12.2. CHANGE LOCATION OF OUTLETS AT NO COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3M (10'–0") AND INFORMATION IS GIVEN PRIOR TO INSTALLATION.

12.3. ALL OUTLETS TO BE MARKED ON JOB SITE FOR APPROVAL BY DESIGN CONSULTANT PRIOR TO INSTALLATION.

13. PLYWOOD

13.1. 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 21MM (3/4") THICK, OF HIGHEST QUALITY FIRE RETARDANT FIR. PRIME AND PAINT BACKBOARDS WITH FIRE RETARDANT PAINT EQUAL TO CGSB SPEC. #1–GP–151M.

14. ACCESS DOORS

14.1. PROVIDE ACCESS DOORS APPROVED BY DESIGN CONSULTANT AND HOSPITAL REPRESENTATIVE. ARRANGE FOR ITS INSTALLATION BY THE DIVISION IN WHOSE WORK IT OCCURS.

15. CORE DRILLING

15.1. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, X–RAY SLAB OR WALLS AND HAVE THE LOCATIONS ACCEPTED BY THE OWNER IN WRITING.

15.2. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING MUST BE REPAIRED IMMEDIATELY AT NO COST TO THE HOSPITAL.

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

16. NOISE AND VIBRATION

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.

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 1M (3FT) OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.

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 12MM (1/2") HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.

17. WORK IN NEW AND RENOVATED AREAS

17.1. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES REMOVAL OF ALL DISCONNECTED WIRING BACK TO THE ASSOCIATED PANEL BOARD OR DISTRIBUTION EQUIPMENT.

17.2. DISCONNECT AND REMOVE EXISTING LUMINAIRES, DEVICES, OUTLETS, ETC., WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AT A PLACE DESIGNATED BY THE HOSPITAL. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVE UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER. REMOVE ALL REDUNDANT COMMUNICATIONS CABLES BACK TO HUB ROOMS AND/OR TELEPHONE RISER ROOMS.

17.3. ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS 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/OR CONDUITS WHICH ARE CORRODED OR DAMAGED ARE TO BE REPLACED.

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

17.5. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE HOSPITAL INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.

17.6. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.

17.7. PROVIDE TOOLS AND CLEAN–UP EQUIPMENT. OBTAIN THE HOSPITAL PERMISSION FOR THE USE OF ELECTRICAL, ELEVATOR, PLUMBING OR DRAINAGE OUTLETS.

17.8. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN AND PERFECT CONDITION.

17.9. REMOVE AND REROUTE EXISTING CONDUITS WHICH ARE TO REMAIN IN "FINISHED" AREAS WHICH ARE TO BE EXPOSED.

17.10. CONDUITS WHICH ARE TO BE CUT BACK ARE TO TERMINATE IN A JUNCTION BOX.

17.11. CLEAN LUMINAIRE REFLECTORS AND LENSES, LAMPS, AND OTHER SURFACES THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT. CLEAN THE INSIDES AND OUTSIDES OF PANELBOARDS, SPLITTERS AND OTHER ELECTRICAL EQUIPMENT, AND COMPLETELY REMOVE ALL DEBRIS AND TOOLS FROM THE PROJECT.

18. INTERRUPTION OF SERVICES

18.1. INTERRUPTION OF ELECTRICAL SERVICE TO ANY PART OF THE BUILDING SHALL OCCUR ONLY BY PRE–ARRANGEMENT WITH AND AT TIMES SUITABLE TO THE HOSPITAL.

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

19. IDENTIFICATION

19.1. PROVIDE LAMACOID NAMEPLATES ON ALL PANELS, DISCONNECT SWITCHES, SPLITTERS, ETC., TO MATCH HOSPITAL. LAMACOIDS SHALL IDENTIFY EQUIPMENT DESIGNATION, VOLTAGE, PHASE, NUMBER OF WIRES AND LOCATION OF FEED. NAMEPLATES SHALL BE MECHANICALLY ATTACHED TO EQUIPMENT BY MEANS OF RIVETS OR SELF TAPPING SCREWS. LAMACOIDS SHALL BE ATTACHED PRIOR TO EQUIPMENT BEING ENERGIZED.

19.2. PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELS. CONFIRM EXISTING IDENTIFICATION AND CORRECT WHERE NECESSARY.

19.3. CLEARLY MARK ALL EXPOSED CONDUIT, PULLBOXES, JUNCTION BOXES, ETC., TO INDICATE THE NATURE OF THE SERVICE TO MATCH HOSPITAL STANDARDS.

19.4. ALL RECEPTACLES TO BE LABELED COMPLETE WITH CIRCUIT NUMBER AND PANEL DESIGNATION WITH SELF–LAMINATING VINYL LABELS.

20. VALUATION OF CHANGES

20.1. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOUR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE NOTICES ON THIS PROJECT.

20.2. THE HOURLY LABOUR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOUR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN–UP, RECORD DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND PROFIT.

20.3. THE LABOUR HOURS SHALL BE BASED ON THE LATEST ISSUE OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) LABOUR UNITS, COLUMN ONE NORMAL FOR THE DURATION OF THIS CONTRACT.

20.4. THE MATERIAL PRICES SHALL BE BASED ON THE CURRENT NATIONAL PRICES SYSTEM (NPS) CATALOGUE LESS APPLICABLE TRADE DISCOUNTS.

21. ENGINEERS FINAL INSPECTION

21.1. FINAL INSPECTION IS IMPERATIVE. PRIOR TO CLOSING OF CEILINGS, THIS CONTRACTOR SHALL CONTACT MULVEY & BANANI INT. INC. (416) 751–2520 AND THE HOSPITAL'S REPRESENTATIVE TO PERFORM A FINAL INSPECTION WHEN CEILING TILES HAVE BEEN INSTALLED IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE PORTIONS FOR INSPECTION.

22. COMPLETION OF CONTRACT

22.1. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY CONSULTANT.

22.2. FROM THE DATE OF ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL PERFORMANCE", PROVIDE A WRITTEN GUARANTEE FOR ONE YEAR COVERING ALL EQUIPMENT, MATERIALS AND WORKMANSHIP, OTHER THAN LAMPS. INSERT IN OPERATIONS AND MAINTENANCE MANUAL.

22.3. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR REPLACED, AT NO COST.

22.4. PROVIDE ONE YEAR WARRANTY FOR ALL LED TYPE LUMINAIRES AND/OR LAMPS.

22.5. IF, DURING THE WARRANTY PERIOD, TRANSFORMERS, BALLASTS OR OTHER NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE OWNER. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS, MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE TO THE HOSPITAL.

23. RECORD DRAWINGS

23.1. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE RECORD DRAWINGS OF THE INSTALLATION IN AUTOCAD. AN ELECTRONIC COPY (AUTOCAD FORMAT) OF ALL DRAWINGS WILL BE PROVIDED TO THE ELECTRICAL CONTRACTOR BY THE CONSULTANT AT NO COST. THE DRAWINGS WILL REFLECT THE TENDER AND/OR CONSTRUCTION SET OF DRAWINGS. SHOULD THE CONTRACTOR REQUIRE ADDITIONAL ELECTRONIC COPIES DURING CONSTRUCTION, THEY CAN BE PURCHASED FROM THE CONSULTANT AT THE FOLLOWING COSTS:
- $50.00 PER DRAWING FOR THE FIRST 10 DRAWINGS
- $30.00 PER DRAWING FOR ADDITIONAL DRAWINGS 11 THROUGH 20
- $750.00 FOR 20 DRAWINGS OR MORE

23.1. INCORPORATE ALL CHANGES AND DEVIATIONS FROM TENDER DRAWINGS, UTILIZING NORMAL RECOGNIZED DRAFTING PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY.

23.2. ALL MAIN BRANCH CONDUIT RUNS, JUNCTION BOX LOCATIONS, CONDUIT RUNS FOR ALL FLOOR OUTLETS, ETC., MUST BE REFLECTED ON THE DRAWINGS.

23.3. REMOVE THE ELECTRICAL ENGINEER'S STAMP FROM ALL RECORD DRAWINGS.

23.4. ENSURE THE MULVEY AND BANANI LOGO REMAINS ON ALL RECORD DRAWINGS.

23.5. CLEARLY INDICATE THE WORDS "RECORD DRAWINGS" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE ELECTRICAL CONTRACTOR'S NAME AND ADDRESS.

23.6. SUBMIT A SINGLE (1) SET OF CAD AND PDF DRAWINGS TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE (3) SETS OF PRINTS TOGETHER WITH THE CAD–DISK FOR PRESENTATION TO THE HOSPITAL.

24. OPERATION AND MAINTENANCE MANUALS

24.1. PROVIDE 2 (TWO) SETS OF OPERATION AND MAINTENANCE MANUALS SUBMITTED IN HARD COVER 3–RING BINDERS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:

24.1.1. NAMES AND ADDRESS OF LOCAL SUPPLIERS FOR THE ITEMS INCLUDED.
24.1.2. TECHNICAL MANUAL PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
24.1.3. THE CONSULTANT'S REVIEWED SHOP DRAWINGS.
24.1.4. CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT.
24.1.5. VERIFICATION REPORTS AND CERTIFICATE(S) FOR ANY NEW FIRE ALARM COMPONENTS TIE–INS AND ANY BASE BUILDING TIE–INS FOR MISCELLANEOUS SYSTEMS (I.E. SECURITY, LIGHTING CONTROL, DIGITAL METERING).
24.1.6. LOAD BALANCE REPORT
24.1.7. WRITTEN GUARANTEE
24.1.8. LIST OF EACH FIXTURE TYPE IDENTIFYING TYPE OF LAMP, WATTAGE AND MANUFACTURER'S CONTACT INFO.
24.1.9. COORDINATION STUDY
24.1.10. LIFE SAFETY SYSTEMS.
24.1.11. CONTRACTOR'S INSTALLATION LETTER FOR FIRE ALARM, EMERGENCY LIGHTING, AND EXIT LIGHTING SYSTEMS.

25. DEMOLITION

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

25.2. REVIEW AND CONFIRM WITH THE DESIGNER'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.

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

25.4. 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.

25.5. 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.

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

25.7. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES ALL CONDUIT AND WIRING BACK TO THE ASSOCIATED PANELBOARDS OR CONVENIENT PANEL. WHERE FLOORBOXES ARE BEING REMOVE BACK TO SOURCE AND FILL ALL CORE HOLES, IN FLOORS AND IN WALLS, WITH APPROPRIATE CONCRETE.

25.8. INCLUDE IN DEMOLITION WORK FOR REMOVAL OF ALL COMMUNICATION DEVICES, OUTLETS, CABLES, CONDUITS ETC. WHICH ARE NOT TO BE REUSED. ALL REDUNDANT CABLING AND CONDUIT SHALL BE REMOVED IN ITS ENTIRETY FROM SPACE BACK TO 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.

25.9. PROVIDE BLANK COVERPLATE WHERE OUTLETS ARE REMOVED FROM EXISTING WALLS TO REMAIN.

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

25.11. 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.

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

26. FIRE ALARM

26.1. INITIATING AND SIGNALLING DEVICES

26.1.1. ALL PULL–STATIONS, EVAC SPEAKERS, VISUAL DEVICES AND SMOKE DETECTORS TO MATCH EXISTING HOSPITAL DEVICES.

26.1.2. ALL SMOKE DAMPERS SHALL BE CONNECTED TO THE NEAREST AVAILABLE 120V LIFE SAFETY EMERGENCY CIRCUIT. TIE DEVICE INTO FIRE ALARM SYSTEM. PROVIDE ALL REQUIRED RELAYS AND SWITCHES AND ACCESSORIES FOR APPROPRIATE MONITORING AND CONTROL. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH–IN.

26.1.3. FIRE ALARM PULL STATIONS SHALL BE MOUNTED BETWEEN AT 1200mm TO TOP OF DEVICE ABOVE FINISHED FLOOR AND MAXIMUM 600mm FROM DOOR LATCH. WHERE FIRE ALARM PULL STATIONS ARE BEING REMOVED AND RELOCATED, ENSURE THAT THEY ARE REINSTALLED AS PER THE ABOVE NOTED DIMENSIONS.

26.1.4. ELECTRICAL CONTRACTOR SHALL PROVIDE TIE–IN TO BASE BUILDING MAGLOCK RISER ON EACH FLOOR TO ENSURE THAT ALL MAGLOCKS DROP IN THE EVENT OF A FIRE ALARM. MAGLOCKS SHALL ALSO RESET WITH MAGLOCK KEYSWITCH OVERRIDE. COORDINATE INSTALLATION WITH BASE BUILDING FIRE ALARM CONTRACTOR AND PROVIDE ALL NECESSARY COMPONENTS FOR A COMPLETE INSTALLATION. WHERE EXISTING MAGLOCK RELEASE/RESET RELAYS ARE LOCATED IN THE FIELD THEY SHALL BE REMOVED AND RELOCATED INTO NEAREST DGP PANEL. EXTEND NEW CONDUIT AND WIRING BACK TO MAGLOCK POWER SUPPLY

26.1.5. ELECTRICAL CONTRACTOR SHALL INCLUDE FOR A QUALIFIED REPRESENTATIVE TO ATTEND THE FIRE ALARM AUDIBILITY TESTING IN ORDER TO ADJUST THE FIRE ALARM ANNUNCIATION DEVICE TAP SETTINGS AS REQUIRED TO ACHIEVE THE MINIMUM/MAXIMUM AUDIBILITY REQUIREMENTS AS OUTLINED IN THE O.B.C. INCLUDE COSTS FOR ANY NECESSARY RE–VERIFICATION.

26.1.6. UPON COMPLETION OF FIRE ALARM AUDIBILITY TESTING, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE ELECTRICAL CONSULTANT A DRAWING OUTLINING AUDIBILITY RESULTS THROUGHOUT THE RENOVATED AREAS. INCLUDE FOR A RE–VISIT TO SITE TO ALLOW FOR ADJUSTMENTS TO ANNUNCIATION DEVICE TAP SETTINGS AS DIRECTED BY THE ELECTRICAL CONSULTANT. INCLUDE FOR ANY AND ALL RE–VERIFICATION COSTS. ELECTRICAL CONTRACTOR SHALL INCLUDE ALL ANNUNCIATION DEVICE TAP SETTINGS ON RECORD DRAWINGS.

26.1.7. SMOKE DETECTORS IN PATIENT BEDROOMS SHALL BE CONNECTED TO THE NURSE CALL SYSTEM AND, IN THE EVENT THE DETECTOR IS ACTIVATED, IT SHALL CAUSE AN AMBER LAMP IN THE NURSE CALL DOME LIGHT OUTSIDE THE ROOM DOOR TO ILLUMINATE, AND DISPLAY THE BEDROOM NUMBER ON THE NURSE CALL CONSOLE AT THE CARE DESK.

26.1.8. ENSURE THAT ALL FIRE ALARM JUNCTION ACCESS ENCLOSURES ARE CLEARLY LABELED AS "FIRE ALARM".

26.1.9. SYSTEM CONNECTIONS FOR INITIATING AND SIGNALING LINE CIRCUITS SHALL BE CLASS "A" AND NOTIFICATION APPLIANCE CIRCUITS SHALL ALSO BE CLASS "A".

26.1.10. CIRCUIT SUPERVISION. CIRCUIT FAULTS SHALL BE INDICATED BY A TROUBLE SIGNAL AT THE FACP. PROVIDE A DISTINCTIVE INDICATING AUDIBLE TONE AND ALPHANUMERIC ANNUNCIATION.

26.1.11. THE ELECTRICAL CONTRACTOR AND THE FIRE ALARM MANUFACTURER SHALL INCLUDE COST TO ALLOW SUFFICIENT TIME TO ASSIST AND PARTICIPATE IN THE TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEM WHICH WILL BE CONDUCTED BY OTHERS ACCORDANCE TO CAN/ULC–S1001 "INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS".

26.2. VISUAL OUTPUT DEVICES

26.2.1. VISUAL DEVICE TO BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM. CONTRACTOR TO PROVIDE ALL ASSOCIATED DRIVERS, POWER SUPPLIES, CONDUIT, WIRE AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM.

26.2.2. STROBE SHALL BE LISTED TO ULC–S526 AND SUITABLE FOR OPERATION WITH EXISTING FIRE ALARM SYSTEM. THE V/O SHALL CONSIST OF A XENON FLASH TUBE AND ASSOCIATED LENS/REFLECTOR SYSTEM. THE V/O ENCLOSURE SHALL MOUNT DIRECTLY TO STANDARD SINGLE GANG, DOUBLE GANG OR 4" SQUARE ELECTRICAL BOX, WITHOUT THE USE OF SPECIAL ADAPTERS OR TRIM RINGS. V/O APPLIANCES SHALL BE PROVIDED WITH DIFFERENT MINIMUM ADJUSTABLE FLASH INTENSITIES OF 15CD, 30CD, 75CD AND 110CD. PROVIDE A LABEL INSIDE THE STROBE LENS TO INDICATE THE LISTED CANDELA RATING OF THE SPECIFIC VISIBLE/ONLY APPLIANCE. WHEN MULTIPLE STROBES AND THEIR REFLECTIONS CAN BE SEEN FROM ONE LOCATION PROVIDE STROBE FLASH SYNCHRONIZATION. QUANTITY, SPACING AND CANDELA DESIGN REQUIREMENTS OF VISUAL SIGNALS TO COMPLY TO CAN/ULC S524 STANDARD FOR THE INSTALLATION OF FIRE ALARM SYSTEMS SECTION 5.4.

27. CONSTRUCTION PHASING

27.0.1. REFER TO ARCHITECTURAL DOCUMENTS FOR CONSTRUCTION PHASING REQUIREMENTS.

MATERIALS AND INSTALLATION

1. CONDUITS AND CONDUIT FITTINGS

1.1. PROVIDE ALL CONDUIT UP TO AND INCLUDING 103MM (4") SIZE, AS EMT THIN WALL WITH STEEL SET SCREW TYPE FITTINGS AND WEATHERPROOF CONNECTORS WITH "O" RINGS IN SPRINKLERED BUILDINGS. BUSHINGS AND CONNECTORS TO BE C/W INSULATED THROAT.

1.2. PROVIDE FLEXIBLE LIQUID–TIGHT CONDUIT FOR CONNECTION TO MOTORS, TRANSFORMERS AND WHEN CROSSING BUILDING EXPANSION JOINTS.

1.3. INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CADDIE CLIP CONDUITS TO CEILING HANGERS.

1.4. ALL EMPTY CONDUITS SHALL BE COMPLETE WITH NYLON FISH WIRE.

1.5. RUN TWO (2) 27MM (1") SPARE CONDUITS UP TO CEILING SPACE FOR EACH RECESSED PANELBOARD. TERMINATE THESE CONDUITS IN A 150MMX150MMX100MM (6"X6"X4") COVERED JUNCTION BOX IN CEILING SPACE.

1.6. ALL COMMUNICATIONS CONDUIT SHALL BE REAMED AND INSTALLED COMPLETE WITH INSULATED BUSHINGS A