## PART 1 GENERAL

### 1. GENERAL SPECIFICATION

1.1. IT IS RECOMMENDED THAT THE BIDDERS EXAMINE THE SITE AND THE EXISTING CONDITIONS AFFECTING THE PROJECT. EXAMINE THE COMPLETE SET OF CONTRACT DOCUMENTS TO ENSURE THAT THE WORK CAN BE CARRIED OUT WITHOUT SIGNIFICANT CHANGES TO THE INTENT OF THE DOCUMENTS. NO FUTURE ALLOWANCE WILL BE MADE FOR CHANGES UNLESS THE CONTRACT ADMINISTRATOR HAS BEEN NOTIFIED IN WRITING OF ANY DISCREPANCIES OR INTERFERENCES, PRIOR TO THE CLOSE OF TENDERS. NO ALLOWANCE WILL BE MADE FOR ITEMS WHICH SHOULD HAVE BEEN NOTED DURING A PRE-TENDER SITE INSPECTION.

1.2. THE LOCATION, ROUTING AND ELEVATIONS OF ALL NEW AND EXISTING SERVICES AND UTILITIES AS SHOWN ON THE DRAWINGS ARE TO BE CONSIDERED AS APPROXIMATIONS ONLY. VERIFY THE EXACT LOCATIONS, ROUTINGS AND ELEVATIONS OF ALL SERVICES PRIOR TO COMMENCING WORK, AND ASSUME RESPONSIBILITY FOR LAYING OUT ALL WORK. THE CONTRACTOR SHALL RETAIN RESPONSIBILITY FOR ANY DAMAGE TO EXISTING SERVICES AND UTILITIES.

1.3. ALL ASPECTS OF THE INSTALLATION MUST COMPLY WITH THE MOST STRINGENT OF THE APPLICABLE BUILDING CODES, LOCAL REGULATIONS, AND BY-LAWS. BEFORE PROCEEDING WITH THE WORK, OBTAIN APPROVED DRAWINGS AND SPECIFICATIONS FROM THE AUTHORITIES HAVING JURISDICTION.

1.4. PROVIDE ALL NECESSARY NOTICES, OBTAIN ALL REQUIRED PERMITS, PAY ALL FEES REQUIRED BY LAW, AND ARRANGE FOR ALL INSPECTIONS RELATED TO THE PERFORMANCE OF THE SPECIFIED WORK.

1.5. PROVIDE ALL MATERIALS, LABOUR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS SHOWN AND AS SPECIFIED, SO AS TO LEAVE THE CONTRACT ADMINISTRATOR WITH A COMPLETE AND FUNCTIONING SYSTEM. ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND C.S.A. APPROVED, UNLESS SPECIFICALLY NOTED OTHERWISE. ALL SIMILAR EQUIPMENT AND OR MATERIALS SHALL BE BY THE SAME MANUFACTURER.

1.6. REQUEST FOR APPROVAL OF SUBSTITUTE MATERIAL AND/OR EQUIPMENT FOR THAT SPECIFIED, SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR VIA E-MAIL AT LEAST FIVE WORKING DAYS PRIOR TO TENDER CLOSING. REQUESTS SHALL INCLUDE ALL PERFORMANCE SPECIFICATIONS, PHYSICAL DATA AND OTHER PERTINENT INFORMATION REQUIRED FOR THE CONTRACT ADMINISTRATOR TO MAKE A COMPLETE COMPARISON.

1.7. ALL CUTTING AND PATCHING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXISTING EXPOSED SURFACES SHALL BE RETURNED TO AN "AS-FOUND" CONDITION ACCEPTABLE TO THE CONTRACT ADMINISTRATOR.

1.8. PROVIDE ALL REQUIRED ACCESS PANELS WITH SUITABLE FIRE RATINGS FOR THE WALL OR CEILING THAT THEY ARE BEING INSTALLED IN.

1.9. EACH CONTRACTOR SHALL COORDINATE THE WORK WITH OTHER CONTRACTORS IN ORDER TO AVOID CONFLICTS.

1.10. NEATLY STORE ALL MATERIALS, AND CLEAN UP REFUSE ON A REGULAR BASIS. PROTECT AND MAINTAIN ALL WORK UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE CONTRACT ADMINISTRATOR.

1.11. THE INSTALLATION SHALL BE COMPLETELY TESTED, DEMONSTRATING THAT THE EQUIPMENT AND SYSTEMS INSTALLED ARE PERFORMING IN THE MANNER INTENDED.

1.12. AT COMPLETION OF THE INSTALLATION, PROVIDE TWO MARKED-UP COPIES OF THE "AS-BUILT" DRAWINGS FOR RECORD PURPOSES. PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS, IN HARD COPY AND ELECTRONIC FORMAT. PROVIDE ELECTRONIC COPY TO CONTRACT ADMINISTRATOR VIA EMAIL FOR REVIEW WITH HARD COPY AS-BUILTS. PAY ALL COSTS ASSOCIATED WITH THE PRODUCTION OF THE "AS-BUILT" DRAWINGS AND THE MANUALS. SUBMIT THE DOCUMENTS TO THE CONTRACT ADMINISTRATOR FOR REVIEW, AND MAKE ANY REQUESTED CHANGES BEFORE DELIVERING THEM TO THE CONTRACT ADMINISTRATOR.

1.13. REVIEW THE OPERATION AND MAINTENANCE OF THE SYSTEMS WITH THE CONTRACT ADMINISTRATOR MAINTENANCE PERSONNEL AND PROVIDE WRITTEN AND/OR VERBAL INSTRUCTIONS AS REQUIRED.

1.14. FURNISH CERTIFICATES CONFIRMING THAT THE WORK HAS BEEN INSTALLED TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

1.15. NO CERTIFICATE ISSUED, PAYMENT MADE, OR PARTIAL OR ENTIRE USE OF THE SYSTEMS BY THE CONTRACT ADMINISTRATOR, SHALL BE CONSTRUED AS ACCEPTANCE OF DEFECTIVE WORK OR MATERIALS.

1.16. THE CONTRACTOR SHALL PROVIDE A ONE YEAR LABOUR AND MATERIAL WARRANTY ON ALL NEW EQUIPMENT AND COMPONENTS, COMMENCING UPON THE DATE OF ACCEPTANCE BY THE CONTRACT ADMINISTRATOR.

1.17. REPLACE AT NO CHARGE TO THE CONTRACT ADMINISTRATOR, ALL ITEMS WHICH FAIL OR PROVE DEFECTIVE WITHIN A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY THE CONTRACT ADMINISTRATOR, PROVIDED THAT THE FAILURE IS NOT DUE TO IMPROPER USAGE BY THE CONTRACT ADMINISTRATOR. MAKE GOOD ALL DAMAGES INCURRED AS A RESULT OF THE FAILURE AND OF THE REPAIRS.

1.18. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL UNIT, FORCEFLOW AND BASEBOARD HEATERS.

1.19. E.C. RESPONSIBLE TO COORDINATE, SUBMIT AND FACILITATE ALL ITEMS RELATED TO POWER SMART PROGRAM INCENTIVES. ALL REBATES TO BE FORWARDED TO THE CONTRACT ADMINISTRATOR.

### 2. ELECTRICAL SPECIFICATIONS

2.1. REFER TO DIVISION 1 AND ARCHITECTURAL SPECIFICATIONS AND OTHER GENERAL CONDITIONS.

2.2. PROVIDE FOR A COMPLETE AND WORKING INSTALLATION AS HEREIN SPECIFIED AND AS SHOWN ON THE DRAWINGS.

2.3. THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE, PROVINCIAL AND MUNICIPAL CODES AND REGULATIONS.

2.4. OBTAIN ALL PERMITS, APPROVALS AND PAY ALL RELATED FEES REQUIRED FOR THIS INSTALLATION.

2.5. ALL EQUIPMENT SUPPLIED UNDER THIS CONTRACT SHALL BE NEW AND BE C.S.A. APPROVED.

2.6. COORDINATE ALL TELEPHONE CONDUIT RUNS WITH TELEPHONE UTILITY BEFORE INSTALLATION BEGINS.

2.7. ARRANGE FOR, AND COORDINATE, ROUGH-IN AND FINAL INSPECTIONS WITH INSPECTION AUTHORITIES, AND THE CONTRACT ADMINISTRATOR.

2.8. CONFIRM ALL RECEPTACLE CONFIGURATIONS, OUTLETS AND WIRING FOR CONTRACT ADMINISTRATOR SUPPLIED EQUIPMENT BEFORE INSTALLATION OF SAME. VISIT EXISTING SITE WHERE SUCH EQUIPMENT IS PRESENTLY INSTALLED, AND/OR OBTAIN OUTLETS, WIRING AND RECEPTACLE CONFIGURATIONS FROM EQUIPMENT MANUFACTURERS. EXACT CONFIGURATIONS MAY DIFFER FROM THOSE SHOWN ON THE DRAWINGS. INCLUDE ALL COSTS TO PROVIDE NECESSARY OUTLETS WIRING AND RECEPTACLES.

### 3. EXAMINATION

3.1. EXAMINE THE ARCHITECTURAL, INTERIOR DESIGN, STRUCTURAL AND MECHANICAL DRAWINGS TO ENSURE THAT THE WORK UNDER THIS CONTRACT CAN BE SATISFACTORILY CARRIED OUT. REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR PRIOR TO SUBMISSION OF TENDER.

3.2. THE ELECTRICAL SUBCONTRACTOR SHALL EXAMINE THE SITE AND LOCAL CONDITIONS AND CONSIDER HOW THEY MAY AFFECT THE PROJECT.

### 4. SUPERVISION

4.1. SUPERVISE THE WORK AT ALL TIMES THROUGH A RESPONSIBLE AND COMPETENT JOURNEYMAN ELECTRICIAN / SUPERVISOR.

4.2. FULL COOPERATION SHALL BE SHOWN WITH OTHER TRADES TO FACILITATE INSTALLATIONS AND TO AVOID DELAYS IN CARRYING OUT THE WORK.

### 5. ACCURACY OF DATA

5.1. DRAWINGS ARE SCHEMATIC; EXACT LOCATIONS, DISTANCES, LEVELS AND OTHER DIMENSIONS SHALL BE GOVERNED BY THE BUILDING AS CONSTRUCTED.

5.2. OUTLETS OR EQUIPMENT SHALL BE MOVED TO ANY POINT WITHIN A 10' RADIUS WHEN RELOCATION IS REQUESTED BY THE CONTRACT ADMINISTRATOR BEFORE THE WORK HAS BEEN SUBSTANTIALLY COMPLETED, WITHOUT ADDITIONAL COST.

5.3. BRANCH CIRCUIT WIRING SHALL BE INSTALLED WITH CIRCUITS ARRANGED EXACTLY AS SHOWN ON THE DRAWINGS. CONDUIT AND CABLE RUNS MAY BE MODIFIED TO SUIT THE INSTALLATION.

### 6. APPROVAL OF MATERIAL

6.1. REQUEST FOR APPROVAL OF MATERIAL AS EQUALS OR ALTERNATES TO THAT SPECIFIED SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR VIA E-MAIL FIVE (5) WORKING DAYS PRIOR TO THE TENDER SUBMITTAL. SAMPLES SHALL BE PROVIDED ON REQUEST.

### 7. SHOP DRAWINGS

7.1. SUBMIT SHOP DRAWINGS FOR REVIEW BY THE CONTRACT ADMINISTRATOR IN PDF FORMAT VIA EMAIL.

7.2. PROVIDE ELECTRONIC COPIES OF SHOP DRAWINGS FOR REVIEW BY THE CONTRACT ADMINISTRATOR. THE SHOP DRAWINGS MUST BE ASSEMBLED INTO COMPLETE BROCHURES, WITH NO LOOSE SHEETS.

7.3. THE REVIEW OF THE SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. THE REVIEW SHALL NOT MEAN APPROVAL OF THE DETAILED DESIGN INHERENT IN THE EQUIPMENT, THE RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR. THE REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REMAIN RESPONSIBLE FOR CONFIRMING AND CORRELATING THE DIMENSIONS ON THE JOBSITE, AND FOR INFORMATION THAT PERTAINS TO THE FABRICATION PROCESS, CONSTRUCTION TECHNIQUES, AND INSTALLATION DETAILS, AND FOR COORDINATING ALL WORK OF THE RELATED SUB-TRADES.

7.4. FABRICATION OF EQUIPMENT SHALL NOT COMMENCE UNTIL SHOP DRAWINGS OF SUCH EQUIPMENT HAVE BEEN REVIEWED BY THE CONTRACT ADMINISTRATOR. TWO SETS SHALL BE SUBMITTED WITH LOCAL INSPECTION DEPARTMENT APPROVAL WHERE REQUIRED.

7.5. THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL MECHANICAL SHOP DRAWINGS REQUIRING ELECTRICAL CONNECTION AND COORDINATE VOLTAGE AND SIZES WITH DIVISION 15 AND GENERAL CONTRACTOR.

7.6. REQUIRED SHOP DRAWINGS:

- LIGHT FIXTURES, LAMPS, BALLASTS AND CONTROL SYSTEMS
- EMERGENCY LIGHTING EQUIPMENT
- WIRING DEVICES (RECEPTACLES, SWITCHES, ETC)

### 8. AS-BUILT DRAWINGS

8.1. KEEP A RECORD SET OF DRAWINGS ON THE SITE AT ALL TIMES RECORDING ANY CHANGES THAT MAY OCCUR. SUBMIT THESE DRAWINGS TO THE CONTRACT ADMINISTRATOR UPON COMPLETION OF THE WORK. AS-BUILTS SHALL INCLUDE CIRCUITING OF NEW AND EXISTING EQUIPMENT TO REMAIN.

8.2. AT THE COMPLETION OF INSTALLATION, PROVIDE TWO MARKED-UP COPIES OF THE AS-BUILT DRAWINGS FOR RECORD PURPOSES. PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS. PAY ALL COSTS ASSOCIATED WITH THE PRODUCTION OF THE AS-BUILT DRAWINGS AND THE MANUALS. SUBMIT THE DOCUMENTS TO THE CONTRACT ADMINISTRATOR FOR REVIEW, AND MAKE ANY REQUESTED CHANGES BEFORE DELIVERING THEM TO THE CONTRACT ADMINISTRATOR.

8.3. SUBMIT A CERTIFICATE OF INSPECTION FROM THE LOCAL INSPECTION AUTHORITY UPON COMPLETION OF WORK AND INCLUDE WITH "AS-BUILT" DRAWINGS.

8.4. THE CONTRACT ADMINISTRATOR RESERVES THE RIGHT TO RECOMMEND THAT A PORTION OF THE CONTRACT FUNDS BE WITHHELD PENDING SUBMISSION OF ACCEPTABLE AS-BUILT DRAWINGS.

### 9. TESTING

9.1. THE ELECTRICAL INSTALLATION SHALL BE COMPLETELY TESTED DEMONSTRATING THAT THE EQUIPMENT AND SYSTEMS INSTALLED PERFORM IN THE MANNER INTENDED.

### 10. GUARANTEE

10.1. THE SATISFACTORY OPERATION OF ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF 12 CALENDAR MONTHS AFTER FINAL ACCEPTANCE OF THE BUILDING.

### 11. REQUEST FOR CHANGE

11.1. ALL QUOTATIONS IN RESPONSE TO REQUEST FOR CHANGE SHALL BE SUBMITTED COMPLETE WITH AN ITEMIZED COST BREAKDOWN OF ALL MATERIALS AND LABOUR REQUIRED IN THE CHANGE.

### 12. GROUNDING

12.1. THE ENTIRE INSTALLATION SHALL BE GROUNDED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND AS SHOWN ON DRAWINGS.

### 13. WORKMANSHIP

13.1. INSTALL EQUIPMENT, CONDUIT AND CABLES IN A WORKMANLIKE MANNER TO PRESENT A NEAT APPEARANCE TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR. INSTALL CONDUIT AND CABLE RUNS PARALLEL AND PERPENDICULAR IN CHASES, BEHIND FURRING OR ABOVE CEILINGS. IN AREAS WHERE SYSTEMS ARE TO BE EXPOSED, INSTALL NEATLY AND GROUP TO PRESENT A TIDY APPEARANCE.

13.2. INSTALL EQUIPMENT AND APPARATUS REQUIRING MAINTENANCE, ADJUSTMENT OR EVENTUAL REPLACEMENT WITH ADEQUATE CLEARANCES AND ACCESSIBILITY FOR SAME.

13.3. INCLUDE, IN THE WORK, ALL REQUIREMENTS SHOWN ON THE SHOP DRAWINGS OR MANUFACTURERS' INSTALLATION INSTRUCTIONS.

13.4. REPLACE WORK UNSATISFACTORY TO THE CONTRACT ADMINISTRATOR WITHOUT EXTRA COST.

13.5. USE OF CLIPS FOR SECURING AC90 TO CEILING SYSTEM IS PROHIBITED.

13.6. ALL CONDUITS MUST BE CLIPPED TO STRUCTURAL CONCRETE BY MEANS OF ANCHORS OR SUPPORTED BY UNISTRUT HANGERS AS CLOSE TO UNDERSIDE AS POSSIBLE. TYE WRAPS FOR WIRE HANGING AND FASTENING IS NOT ACCEPTABLE. PERFORATED STRAPPING IS ALSO UNACCEPTABLE. ALL ELECTRICAL COMPONENTS MUST BE SUPPORTED INDEPENDENTLY.

13.7. ALL ELECTRICAL SUPPORTS AND HANGERS ARE TO BE COORDINATED AND ACCEPTABLE TO THE PRE-ENGINEERED MANUFACTURER PRIOR TO INSTALLATION.

### 14. WORK IN EXISTING BUILDING

14.1. THE BUILDING SHALL REMAIN OPEN AND WILL OPERATE NORMALLY DURING THE CONSTRUCTION PERIOD OF THIS CONTRACT.

14.2. REFER TO GENERAL CONDITIONS FOR PHASING AND STAGING OF WORK AND ADHERE TO THAT PROGRAM. COMPLY WITH INSTRUCTIONS REGARDING WORKING HOURS NECESSARY TO MAINTAIN THE BUILDING IN OPERATION. COORDINATE ALL WORK WITH GENERAL CONTRACTOR.

14.3. REFER TO ELECTRICAL, ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS FOR NEW WORK INVOLVED IN EXISTING BUILDING.

14.4. EXAMINE THE SITE AND LOCAL CONDITIONS AFFECTING ALL THE WORK TO OBTAIN DETAILS AND ALL INFORMATION NECESSARY TO DO THE WORK. NO EXTRA COMPENSATION WILL BE ALLOWED DUE TO FAILURE TO MAKE THIS EXAMINATION. REFER TO ARCHITECT'S SUMMARY OF WORK SECTION 01010.

14.5. CONTRACTOR IS RESPONSIBLE TO INCLUDE ALL WORK AND ITEMS REQUIRED TO ACCOMMODATE ALL CHANGES AND ALTERATIONS TO THE EXISTING BUILDING. INCLUDE ALL COSTS IN ORIGINAL TENDER PRICE.

14.6. WHERE EXISTING SERVICES SUCH AS ELECTRICAL POWER AND FIRE ALARM SYSTEM, ETC. ARE REQUIRED TO BE DISRUPTED AND/OR SHUT-DOWN, COORDINATE THE SHUT-DOWNS WITH THE CONTRACT ADMINISTRATOR 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 A MINIMUM. SUBMIT FOR APPROVAL, A WRITTEN SCHEDULE OF EACH DISRUPTION AT LEAST 72 HOURS IN ADVANCE OF PERFORMING WORK AND OBTAIN CONTRACT ADMINISTRATOR WRITTEN CONSENT PRIOR TO IMPLEMENTING.

14.7. SHOULD ANY 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 ANY EXISTING SYSTEM BE DAMAGED, MAKE FULL REPAIRS WITHOUT EXTRA COST, AND TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

14.8. THE DRAWINGS INDICATE MAJOR ITEMS OF EQUIPMENT TO BE DELETED OR RELOCATED BUT MAY NOT INDICATE EVERY ITEM OF EQUIPMENT OR CONDUIT TO BE DELETED OR RELOCATED. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING WHICH EXISTING EQUIPMENT IS TO BE DELETED OR RELOCATED BY EXAMINING THE SITE AND ALL CONSTRUCTION DOCUMENTS.

14.9. WHERE EXISTING DEVICES (RECEPTACLES, SWITCHES, ETC.) MOUNTED ON A WALL WHICH WILL BE COVERED WITH A NEW FINISH, PROVIDE AN EXTENSION RING, COVERPLATE, ETC. AS REQUIRED TO MOUNT THE DEVICE TO THE NEW WALL.

14.10. EXISTING JUNCTION BOXES SHALL REMAIN ACCESSIBLE.

14.11. PROVIDE PIPE GUARD RAILS FOR PANELBOARDS WHERE INDICATED AND WHERE PANELS OR CONDUITS MAY BE SUBJECT TO DAMAGE. COORDINATE ALL WORK WITH G.C.

14.12. RE-WIRE, MODIFY AND EXTEND EXISTING WIRING AS SPECIFIED AND AS MAY BE REQUIRED TO PROVIDE AND COMPLETE, APPROVED AND FULLY OPERATIVE INSTALLATION TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

14.13. IN AREAS WHERE EXISTING WALLS, CEILINGS, ETC. ARE REQUIRED TO BE CUT INTO OR REMOVED, OR OTHER SIMILAR CONSTRUCTION ALTERATIONS ARE REQUIRED WHERE THE EXISTING WIRING IN THE AREAS IS REQUIRED TO REMAIN IN USE FOR ANY REASON, THE CONTRACTOR SHALL RE-ROUTE, ALTER AND /OR EXTEND ALL SUCH WIRING IN THESE AREAS IN AN APPROVED MANNER, CONCEALED IN THE BUILDING STRUCTURE WHERE REQUIRED, IN SUCH A MANNER THAT THE ORIGINAL ELECTRICAL CAPACITY OR CHARACTERISTICS ARE MAINTAINED. ALL WORK SHALL BE TO THE COMPLETE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

14.14. DISCONNECT AND REMOVE EXISTING CEILING MOUNTED ELECTRICAL DEVICES FOR THE CONSTRUCTION OF NEW CEILINGS, SKY-LIGHT OPENINGS OR RELATED WORK. ONCE NEW WORK IS COMPLETE, RE-INSTALL AND RE-CONNECT ELECTRICAL DEVICES TO ORIGINAL LOCATIONS AND CIRCUITS. PROVIDE ALL WIRING REQUIRED.

14.15. CONDUITS AND BOXES SHALL BE SURFACE MOUNTED ONLY IN AREAS SPECIFIED.

14.16. ALL EXISTING AND NEW EQUIPMENT IS TO BE WIRED AND CONNECTED. SUPPLY AND INSTALL, WIRE AND CONNECT MATCHING RECEPTACLES FOR PORTABLE EQUIPMENT COMPLETE WITH CORD AND CAP. REFER TO EQUIPMENT NAMEPLATE RATING FOR ELECTRICAL CHARACTERISTICS PRIOR TO ROUGH-IN.

14.17. MINIMIZE ELECTRICAL SERVICE AND OTHER SYSTEM INTERRUPTIONS. COORDINATE CHANGE-OVER WORK WITH CONTRACT ADMINISTRATOR ON SITE PRIOR TO INITIATING WORK.

### 15. REMEDIAL WORK SPECIFICATIONS

15.1. ALL AC90 HOME RUN SHALL BE REMOVED AND REPLACED BY EMT CONDUIT AND RW90 XLPE COPPER CONDUCTORS (MINIMUM #12). NUMBER OF HOME RUNS SHALL BE MINIMIZED.

15.2. ALL UNUSED CABLES AND CONDUITS (INCLUDING COMMUNICATIONS CONDUCTORS) SHALL BE REMOVED FROM SITE.

15.3. AC90 MAY BE USED FOR DROPS TO LIGHT FIXTURES AND DROPS FROM ZONED CONDUITS TO STEEL STUD WALLS OR DECK RECEPTACLES WHERE THE CABLE WILL NOT BE EXPOSED IN MORE THAN A FIVE FOOT RADIUS OF THE JUNCTION BOX AT THE DECK.

15.4. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ANY CORING OF HOLES THROUGH DECKS OR FLOOR SLABS WILL NOT PENETRATE EXISTING CONDUITS, CABLES OR MECHANICAL EQUIPMENT IN OR UNDER DECKS OR FLOOR SLABS. HE SHALL AT HIS COST, BE RESPONSIBLE TO TAKE ALL ACTIONS REQUIRED AND AS MAY BE DEEMED NECESSARY BY THE CONTRACT ADMINISTRATOR TO CORRECT ANY DAMAGE. NO CORING SHALL BE UNDERTAKEN UNLESS PERMISSION IS GIVEN BY THE CONTRACT ADMINISTRATOR.

15.5. ALL EXISTING JUNCTION BOXES PRESENTLY MOUNTED ON DUCTWORK OR CEILING SYSTEM SHALL BE RELOCATED AND INDEPENDENTLY SUPPORTED.

## PART 2 MATERIALS AND INSTALLATION

### 1. OUTLET BOXES

1.1. OUTLET, JUNCTION AND SWITCH BOXES SHALL BE GALVANIZED PRESSED STEEL OF SIZE AND TYPE TO SUIT EACH INDIVIDUAL APPLICATION.

1.2. OUTLETS SHALL NOT BE LOCATED ANYWHERE ON THE OUTSIDE CURTAIN WALL. OUTLETS SHOWN THUS SHALL BE MOUNTED ON THE NEAREST DIVIDING WALL 2' FROM OUTSIDE WALL, OR NEAREST FURRED OUT COLUMN.

1.3. PROVIDE ALL REQUIRED ACCESS PANELS WITH SUITABLE FIRE RATINGS FOR THE WALL OR CEILING THAT THEY ARE BEING INSTALLED IN.

### 2. WIRING METHODS

2.1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ALL WIRE SHALL BE COPPER, MINIMUM #12 AWG WITH 90 DEGREES CELSIUS X-LINK INSULATION. WIRING TO BE INSTALLED IN CONDUIT (INCLUDING WIRING ON ROOF DECK FLUTES WHERE APPROVED).

2.2. WIRING IN CONCRETE OR MASONRY CONSTRUCTION SHALL BE INSTALLED IN STEEL ELECTRICAL METALLIC TUBING (EMT). PROVIDE A SEPARATE GROUNDING CONDUCTOR IN EMT CONDUIT RUNS EMBEDDED IN CONCRETE SLABS. CONDUITS INSTALLED IN AREAS EXPOSED TO MOISTURE SHALL HAVE WATERTIGHT FITTINGS.

2.3. ALL WIRING IN FINISHED AREAS SHALL BE CONCEALED. ALL CONDUCTORS AND CONDUITS SHALL BE RUN PERPENDICULAR OR PARALLEL TO THE BUILDING CORE WALLS.

2.4. CONDUIT AND WIRING SHALL BE GROUPED WHERE POSSIBLE AND CLIPPED IN A NEAT AND WORKMANLIKE MANNER.

2.5. AC90 CABLE TO BE USED FOR DROPS FROM CONDUIT SYSTEMS TO RECESSED LIGHTING FIXTURES IN ACCESSIBLE CEILINGS OR OUTLET BOXES IN STEEL STUD WALLS ONLY. HOME RUNS SHALL BE IN CONDUIT. MAXIMUM RUN OF AC-90 IN ACCESSIBLE CEILING SPACE SHALL BE 5'-0".

2.6. CONDUIT RUNS SHALL BE INSTALLED AND INSPECTED BEFORE AC90 RUNS ARE INSTALLED TO ENSURE CONFORMANCE WITH ITEM .5 HEREIN.

2.7. THREE WIRE AC90 SHALL NOT BE USED FOR ISOLATED GROUND WIRING, UNLESS IT INCLUDES A GREEN INSULATED CONDUCTOR FOR THIS PURPOSE.

2.8. ALL AC90 USED FOR DROPS SHALL BE RUN TIGHT TO DECK AND FOLLOW LINES OF BEAMS AND BUILDING.

2.9. ALL WIRING IN SERVICE AREAS TO BE IN SURFACE MOUNTED EMT. DO NOT RUN CONDUIT HORIZONTALLY ON WALLS, VERTICAL DROPS ONLY.

. ALL CONDUITS TO BE MINIMUM 3/4" IN SIZE.
. DIE CAST SET SCREW COUPLINGS AND CONNECTORS (INSULATED THROAT)

### 3. IDENTIFICATION OF EQUIPMENT

3.1. ALL EQUIPMENT SHALL BE IDENTIFIED WITH 3/8" X 1 ½" (1/8" LETTERS) ENGRAVED LAMACOID NAMEPLATES INDICATING PANEL AND CIRCUIT NUMBER OR FIRE ALARM HORN DESIGNATION. LAMACOIDS SHALL BE EITHER SCREWED OR RIVETED IN PLACE. WITH EXCEPTION TO RECEPTACLES AND LIGHTING SWITCHES, SELF ADHESIVE TYPE IS NOT ACCEPTABLE. LAMACOIDS SHALL BE WHITE LETTERING ON RED FACE FOR EMERGENCY AND FIRE ALARM DEVICES AND WHITE LETTERING ON BLACK FACE TO NORMAL POWER DEVICES AND COMMUNICATION PANELS.

3.2. PROVIDE 1" X 3" LAMACOIDS FOR EACH NEW CDP BREAKER, INDICATING PANEL OR FEED BEING FED.

### 4. MECHANICAL EQUIPMENT WIRING

4.1. PROVIDE STARTERS (MINIMUM SIZE NEMA 1) AND WIRING FOR ALL HEATING, VENTILATING AND PLUMBING EQUIPMENT UNLESS SPECIFIED OTHERWISE.

4.2. POWER WIRING FOR THE MECHANICAL EQUIPMENT SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR. OBTAIN A WIRING DIAGRAM FROM THE MECHANICAL SUBCONTRACTOR.

4.3. PROVIDE CONTROL WIRING FOR ALL MECHANICAL EQUIPMENT AS INDICATED. REFER TO MOTOR SCHEDULE FOR CONTROL WIRING REQUIREMENTS.

4.4. REFER TO THE MECHANICAL DRAWINGS FOR THE EXACT LOCATION OF MECHANICAL EQUIPMENT REQUIRING AN ELECTRICAL CONNECTION.

4.5. WHERE CONDUIT IS TO BE INSTALLED IN DESIGNATED EXPOSED AREAS (OPEN BEAM CEILING, ETC), E.C. SHALL COORDINATE EXACT INSTALLATION LOCATION WITH G.C. AND CONTRACT ADMINISTRATOR. WHERE CONDUIT IS INSTALLED WITHOUT COORDINATION AND IS DEEMED TO NOT BE IN AN ACCEPTABLE LOCATION, IT SHALL BE RELOCATED WITHOUT COST TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

4.6. PROVIDE, INSTALL AND CONNECT FORCE FLOW/BASEBOARD HEATERS C/W BUILT-IN THERMOSTAT. AS INDICATED ON DRAWINGS. ACCEPTABLE MANUFACTURERS: CHROMALOX, Q-MARK, STELPRO AND OUELLET OR APPROVED EQUAL.

### 5. LUMINAIRES

5.1. SUPPLY AND INSTALL LED FIXTURES COMPLETE AS INDICATED ON DRAWINGS.

5.2. INSTALL LUMINAIRES SUPPLIED BY THE CONTRACT ADMINISTRATOR, AS INDICATED.

5.3. ALL LED LAMPS SHALL BE 4000 K AND 90 CRI MINIMUM, UNLESS NOTED OTHERWISE.

5.4. ALL SWITCHING SHALL BE RUN IN CONDUIT.

### 6. PANELBOARDS

6.1. BRANCH CIRCUIT BREAKERS SHALL MATCH EXISTING.

6.2. AFFIX TYPEWRITTEN DIRECTORY TO THE INSIDE OF THE PANELBOARD INDICATING LOADS CONTROLLED BY EACH CIRCUIT. INCLUDE COPY IN OPERATION AND MAINTENANCE MANUALS.

6.3. PROVIDE BREAKER LOCK ON DEVICE FOR NIGHT LIGHTS AND FIRE ALARM CIRCUITS, AND PAINT BREAKER COLOUR RED.

### 7. CUTTING AND PATCHING

7.1. ARRANGE AND PAY FOR ALL CUTTING AND PATCHING AS REQUIRED FOR THE ELECTRICAL INSTALLATION.

7.2. PROVIDE APPROPRIATE FIRE STOP AT ALL FIRE WALL PENETRATIONS. ACCEPTABLE MANUFACTURERS: DOW CORNING, FIRE-STOP SYSTEMS (ELASTA-SEAL) OR G.E. SILICONE.

7.3. REFER TO ARCHITECTURAL SPECIFICATIONS FOR PRODUCT AND INSTALLATION DETAILS.

### 8. DISTRIBUTION

8.1. GENERAL ARRANGEMENT AND SIZE OF COMPONENTS SHALL BE AS SHOWN ON THE DRAWINGS.

8.2. ALL DISTRIBUTION EQUIPMENT IS TO BE COMPLETE WITH LOCKING DOOR AND SPRINKLER HOODS.

8.3. ACCEPTABLE MANUFACTURERS: MATCH EXISTING.

### 9. DEVICES

9.1. COLOURS OF RECEPTACLES, SWITCHES, OUTLETS AND COVERPLATES SHALL BE WHITE, UNLESS NOTED OTHERWISE. RECEPTACLES SHALL BE DECORA STYLE.

9.2. SWITCHES SHALL BE HUBBELL, ARROW HART, BRYANT, LEVITON, WOODHEAD, PASS & SEYMOUR, 15 AMPS, 125 VAC. MOUNT SWITCHES 1200mm A.F.F. TO CENTRE UNLESS OTHERWISE NOTED. SWITCHES SHALL BE DECORA STYLE.

9.3. ACCEPTABLE MANUFACTURERS FOR RECEPTACLES SHALL BE HUBBELL, ARROW HART, BRYANT, LEVITON, WOODHEAD, PASS & SEYMOUR. CATALOGUE NO.5252 FOR ALL MANUFACTURERS.

9.4. PROVIDE STAINLESS STEEL COVERPLATES FOR RECESSED DEVICES.

9.5. INSTALL ELECTRICAL DEVICES AT THE FOLLOWING HEIGHTS:
9.5.1. SWITCHES: 1200mm TO CENTRE
9.5.2. RECEPTACLES: 400mm TO BOTTOM

### 10. EMERGENCY AND EXIT LIGHTING

10.1. DESIGN INTENT IS TO UTILIZE EXISTING 12 VOLT BATTERY BANK TO SERVE NEW EMERGENCY LIGHTING. PROVIDE REMOTE FIXTURE AS INDICATED ON THE DRAWING.

10.2. WIRING SHALL BE MINIMUM #12 AWG. PROVIDE #10 AWG WHERE REQUIRED TO ATTAIN 2% (OR LESS) VOLTAGE DROP, UNLESS OTHERWISE NOTED. ALL WIRING IN EMT.

10.3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING BATTERY BANK SIZE AND CAPACITY TO PROVIDE A MINIMUM OF 30 MINUTE BACK-UP.

10.4. ACCEPTABLE MANUFACTURERS: EMERGI-LITE, BEGHELLI, LUMACELL, AIMLITE, READI-LITE AND DUAL-LITE.

10.5. PROVIDE A WRITTEN GUARANTEE, STATING THAT THE BATTERY FOR EMERGENCY LIGHTING IS GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR PERIOD OF TEN YEARS, WITH A NO-CHARGE REPLACEMENT DURING THE FIRST FIVE YEAR