

Address 55 PRINCESS ST. Project No. 2003-134 Description ELECTRICAL SPECIFICATIONS Date 2003.12.04 File Name 03134V1.dwg 2003134E4

NOTES :

PART 1 - POWER

1.1 SCOPE

- A. PROVIDE ALL MATERIALS, LABOUR, PLANT AND EQUIPMENT REQUIRED FOR A COMPLETE AND WORKING INSTALLATION AS HEREIN SPECIFIED AND AS SHOWN ON THE DRAWINGS.
B. THE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE, AND ALL PROVINCIAL AND MUNICIPAL CODES AND REGULATIONS.
C. SUBMIT TO THE ELECTRICAL INSPECTION DEPARTMENT AND SUPPLY AUTHORITY NECESSARY NUMBER OF DRAWINGS AND SPECIFICATIONS FOR EXAMINATION AND APPROVAL PRIOR TO THE COMMENCEMENT OF WORK.
D. OBTAIN ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL RELATED FEES REQUIRED FOR THIS INSTALLATION.
E. ALL EQUIPMENT SUPPLIED UNDER THIS CONTRACT SHALL BE NEW AND SHALL BE C.S.A. APPROVED.

1.2 COORDINATION WITH OTHER TRADES

- A. REFER TO MECHANICAL, STRUCTURAL AND ARCHITECTURAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL WORK IN CONNECTION WITH OTHER DIVISIONS. WHERE SUCH WORK IS INCLUDED IN OTHER SECTIONS OF THE SPECIFICATIONS. PROVIDE LABOUR, EQUIPMENT, CONDUIT, WIRING, ETC. AS REQUIRED FOR OPERATION OF THE SPECIFIED EQUIPMENT.
B. SCHEDULE EXECUTION OF ELECTRICAL WORK WITH ASSOCIATED WORK SPECIFIED IN OTHER DIVISIONS.
C. COORDINATE ELECTRICAL WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICTS WITH PIPES, AIR DUCTS OR OTHER EQUIPMENT. PROVIDE ADDITIONAL SUPPORTS, WIRING, ETC. TO RELOCATE ELECTRICAL EQUIPMENT AS REQUIRED WHERE STRUCTURAL MEMBERS, AIR DUCTS, PIPING OR OTHER EQUIPMENT INTERFERES WITH ELECTRICAL INSTALLATION.

1.3 ACCURACY OF DATA

- A. DRAWINGS ARE SCHEMATIC. EXACT LOCATIONS, DISTANCES, LEVELS AND OTHER DIMENSIONS SHALL BE GOVERNED BY THE BUILDING AS CONSTRUCTED.
B. OUTLETS OR EQUIPMENT SHALL BE MOVED TO ANY POINT WITHIN A 10' RADIUS WHEN RELOCATION IS REQUESTED BY THE CITY BEFORE THE WORK HAS BEEN SUBSTANTIALLY COMPLETED, WITHOUT ADDITIONAL COST.

1.4 SHOP DRAWINGS

- A. SUBMIT SHOP DRAWINGS OF ELECTRICAL EQUIPMENT TO THE CITY FOR REVIEW. FABRICATION OF THE EQUIPMENT SHALL NOT COMMENCE UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED BY THE CONTRACT ADMINISTRATOR. TWO (2) SETS SHALL BE SUBMITTED WITH LOCAL INSPECTION DEPARTMENT FOR APPROVAL.

1.5 RECORD DRAWINGS

- A. KEEP A RECORD SET OF DRAWINGS ON THE SITE AT ALL TIMES RECORDING ALL CHANGES THAT MAY OCCUR. SUBMIT THESE DRAWINGS TO THE CITY. UPON COMPLETION OF THE WORK.
B. SUBMIT A CERTIFICATE OF INSPECTION FROM THE LOCAL INSPECTION AUTHORITY UPON COMPLETION OF THE WORK.
C. ELECTRICAL SUBCONTRACTOR TO PAY FOR AND BE RESPONSIBLE FOR THE REPRODUCTION OF RECORD DRAWINGS.
D. WHERE ORIGINAL DRAWINGS HAVE BEEN PRODUCED ON ACAD, RECORD DRAWINGS ARE TO BE ON CAD. THE CAD SYSTEM MUST BE COMPATIBLE WITH THAT USED TO PRODUCE ORIGINAL DRAWINGS. ELECTRICAL CONTRACTOR TO PROVIDE CITY WITH ELECTRONIC COPY OF COMPLETED RECORD DRAWINGS, OR PAY THE CITY TO PRODUCE CAD DRAWINGS.

1.6 TEST

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

1.7 GROUNDING

- A. THE ENTIRE INSTALLATION SHALL BE GROUNDED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.

1.8 WORKMANSHIP

- A. INSTALL EQUIPMENT, CONDUIT AND CABLES IN A MANNER TO PRESENT A NEAT APPEARANCE TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
B. INSTALL CONDUIT AND CABLE RUNS PARALLEL AND PERPENDICULAR IN CHASES BEHIND FURRING OR CEILINGS WHERE SUCH CONCEALMENT IS POSSIBLE. IN AREAS WHERE SYSTEMS ARE TO BE EXPOSED, INSTALL NEATLY AND GROUP TO PRESENT A TIDY APPEARANCE.
C. INSTALL EQUIPMENT REQUIRING MAINTENANCE, ADJUSTMENT OR EVENTUAL REPLACEMENT WITH ADEQUATE CLEARANCES AND ACCESSIBILITY FOR SAME. INCLUDE, IN THE WORK, ALL REQUIREMENTS SHOWN ON THE SHOP DRAWINGS OR MANUFACTURERS INSTALLATION INSTRUCTIONS.
D. REPLACE WORK UNSATISFACTORY TO THE CITY WITHOUT EXTRA COST. REPLACEMENT WITH ADEQUATE CLEARANCES AND ACCESSIBILITY FOR SAME. INCLUDE, IN THE WORK, ALL REQUIREMENTS SHOWN ON THE SHOP DRAWINGS OR MANUFACTURERS INSTALLATION INSTRUCTIONS.

1.9 WORK IN EXISTING BUILDING

- A. THE BUILDING IS UNOCCUPIED AT THIS TIME AND WILL REMAIN SO DURING THE CONSTRUCTION PERIOD OF THIS CONTRACT.
B. WHERE EXISTING SERVICES SUCH AS ELECTRICAL POWER, FIRE, ALARM SYSTEM, TELEPHONE SYSTEM, ETC. ARE REQUIRED TO BE DISRUPTED AND/OR SHUTDOWN CO-ORDINATE THE SHUTDOWNS WITH THE CONTRACT ADMINISTRATOR AND CARRY OUT THE WORK AT A TIME AND IN A MANNER ACCEPTABLE TO THEM. SCHEDULE ALL DISRUPTIONS AND/OR SHUTDOWNS 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 PREFORMING WORK AND OBTAIN CONTRACT ADMINISTRATOR'S WRITTEN CONSENT PRIOR TO IMPLEMENTING.
C. 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.

- D. 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. BE RESPONSIBLE FOR DETERMINING WHICH EXISTING EQUIPMENT IS TO BE DELETED OR RELOCATED BY EXAMINING THE SITE AND CONSTRUCTION DOCUMENTS.

1.10 CUTTING AND PATCHING

- A. PAY THE COSTS OF ALL CUTTING AND PATCHING FOR INSTALLATION OF ELECTRICAL WORK.
B. CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF ELECTRICAL WORK SHALL BE DONE BY THE PARTICULAR TRADE WHOSE WORK IS INVOLVED. NO CUTTING OR PATCHING SHALL BE CARRIED OUT BY THE TRADESMAN EMPLOYED ON THE ELECTRICAL WORK.
C. OBTAIN THE APPROVAL OF THE CONTRACT ADMINISTRATOR BEFORE ARRANGING FOR ANY CUTTING. PATCHING SHALL RESTORE THE AFFECTED AREA TO THE ORIGINAL CONDITION. MATERIALS AND METHODS USED FOR PATCHING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CORRESPONDING DIVISIONS.

1.11 ACCESS DOORS

- A. PROVIDE ACCESS DOORS IN INACCESSIBLE CONSTRUCTION TO GIVE ACCESS TO ALL CONCEALED JUNCTION BOXES, PULL BOXES, CONDUCTOR JOINTS AND OTHER SIMILAR ELECTRICAL WORK WHICH MAY REQUIRE MAINTENANCE OR REPAIR. BE COMPLETE WITH FLUSH FRAME AND ANCHOR, CONCEALED HINGES, POSITIVE LOCKING SCREWDRIVER LOCK, AND MOUNTING AND FINISHING PROVISIONS TO SUIT THE FINISH MATERIAL FOR WHICH THEY ARE SUPPLIED. ACCESS DOORS TO BE INSTALLED BY THE DIVISION RESPONSIBLE FOR THE PARTICULAR TYPE OF CONSTRUCTION IN WHICH ACCESS DOORS ARE REQUIRED. SUPPLY THE ACCESS DOORS TO THE DIVISION INSTALLING SAME AT THE PROPER TIME TO AVOID CONSTRUCTION DELAYS.

PART 2 - MATERIALS AND INSTALLATION, POWER

2.1 OUTLET BOXES

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

2.2 WIRING METHODS

- A. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ALL WIRE SHALL BE COPPER, MINIMUM #12 WITH 90 DEGREES CELSIUS X-LINK INSULATION.
B. ALL WIRING IN FINISHED AREAS SHALL BE CONCEALED. CONDUITS SHALL BE RUN AT RIGHT ANGLES TO THE BUILDING LINES.
C. CABLES SHALL BE GROUPED WHERE POSSIBLE AND CLIPPED IN A NEAT AND WORKMANSHIP MANNER.

2.3 CONDUIT

- A. USE ELECTRICAL METALLIC TUBING (EMT) EXCEPT WHERE NOTED OTHERWISE. WIRING HOMERUNS TO PANELS AND MAIN BRANCH WIRING IN CEILING SPACES TO BE RUN IN CONDUIT.
B. USE FLEXIBLE METAL CONDUIT FOR CONNECTION TO MOTORS, TRANSFORMERS, AND EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION. PROVIDE A SEPARATE INSULATED GROUND CONDUCTOR WITHIN FLEXIBLE CONDUIT.
C. USE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR CONNECTION TO EQUIPMENT DESCRIBED ABOVE WHERE EXPOSED TO WET OR CORROSIVE CONDITIONS.

2.4 FASTENING AND SUPPORTS

- A. PROVIDE METAL BRACKETS, FRAMES, HANGERS, CLAMPS AND RELATED TYPE OF SUPPORT STRUCTURES WHERE INDICATED OR AS REQUIRED TO SUPPORT CONDUIT AND CABLE RUNS.

2.5 MECHANICAL EQUIPMENT WIRING

- A. PROVIDE STARTERS, DISCONNECTS AND WIRING FOR ALL HEATING AND VENTILATING EQUIPMENT UNLESS SPECIFIED OTHERWISE. POWER AND CONTROL WIRING FOR THE MECHANICAL EQUIPMENT 50V OR OVER SHALL BE PERFORMED BY THE ELECTRICAL SUB-CONTRACTOR. CONTROL WIRING UNDER 50V SHALL BE PERFORMED BY THE MECHANICAL SUB-CONTRACTOR. IN ALL CASES WHERE ELECTRICAL SUB-CONTRACTOR IS TO PERFORM CONTROL WIRING, A WIRING DIAGRAM IS TO BE OBTAINED FROM THE MECHANICAL SUB-CONTRACTOR.
B. ENSURE MOTOR ROTATION IS AS REQUIRED.
C. REFER TO THE MECHANICAL DRAWINGS FOR THE EXACT LOCATION OF MECHANICAL EQUIPMENT REQUIRING AN ELECTRICAL CONNECTION.

PART 3 - DATA WIRING

3.1 CONTRACTOR QUALIFICATIONS

- A. SUB CONTRACTOR PERFORMING DATA CABLING SHALL HAVE A STRUCTURED CABLE INDUSTRY AFFILIATION SUCH AS BICSI (BUILDING INDUSTRY CONSULTANTS INTERNATIONAL) MEMBERSHIP, RCDD (REGISTERED COMMUNICATIONS DISTRIBUTOR DESIGNER) AND/OR A STRUCTURED CABLING VENDOR CERTIFICATE.

- B. ALL DATA CABLING INSTALLERS SHALL BE LICENSED AND INSURED.

3.2 SHOP DRAWINGS

- A. SUBMIT SHOP DRAWINGS AND SCHEDULES OF DATA EQUIPMENT TO THE CITY FOR REVIEW PRIOR TO ORDERING OF SAME.

3.3 MATERIAL AND COMPONENTS

- A. DATA CABLING SHALL BE CATEGORY 5 ENHANCED (5E) 100 OHM, 24 GA. AWG, FOUR PAIR UNSHIELDED TWISTED PAIR (UTP) CERTIFIED TO A MINIMUM OF 100 MHZ. CATEGORY 5E CABLE SHALL MEET THE MINIMUM TECHNICAL SPECIFICATIONS IN ANSI/TIA/EIA 568-A-5 (COMMERCIAL BUILDINGS TELECOMMUNICATIONS CABLING STANDARD WITH ADDENDUM 5 - ADDITIONAL TRANSMISSION PERFORMANCE GUIDELINES FOR 4 PAIR 100 OHM ENHANCED CATEGORY 5.
B. JACKS, PATCH PANELS, FACEPLATES AND ALL OTHER COMPONENTS SHALL BE FROM ONE MANUFACTURER.

3.4 SCOPE AND INSTALLATION

- A. CABLING SHALL BE RUN CONCEALED EITHER IN CEILING SPACE, RACEWAY OR WIRE MOULD AS SHOWN ON DRAWINGS. EACH NODE SHALL BE RUN CONTINUOUSLY FROM WIRING RACK TO TERMINATION THERE SHALL BE NO CONNECTOR, IN ANY CABLE RUN BETWEEN WORK AREA AND REAR OF PATCH PANEL.
B. NO CABLE RUN SHALL EXCEED 300 FEET IN LENGTH.

- C. TERMINATE ALL RUNS AT BACK OF RACK MOUNT UTP CATEGORY 5 MODULAR RJ45 PATCH PANELS. THERE SHALL BE A MAXIMUM OF 48 JACKS PER PANEL.

- D. CABLING IN THE WIRING CLOSET AND RACK SHALL BE INSTALLED WITH SUFFICIENT MOUNTING CLIPS, BRACKETS, AND CABLE MANAGEMENT SYSTEM TO PROVIDE A NEAT AND SECURE SYSTEM. CARE SHALL BE TAKEN TO NOT OVER CRIMP ANY CABLE.

- E. THE UTP 5E CABLE SHALL BE TERMINATED WITH A MINIMUM OF 14" SLACK, BUT NOT TO EXCEED 18".

- F. AFTER DRESSING CABLE TO THE FINAL TERMINATION LOCATIONS, THE SHEATH SHALL BE REMOVED TO A POINT THAT ALLOWS THE CONDUCTORS TO BE SPLAYED AND TERMINATED IN A NEAT AND UNIFORM FASHION. MAINTAIN SHEATH INTEGRITY BY REMOVING ONLY MAINTAINED UP TO TERMINATION POINTS. AS PER 568-A, THE PAIRS IN A CABLE SHALL NEVER BE UNTWISTED MORE THAN ONE HALF INCH FROM POINT OF TERMINATION.

3.5 LABELLING

- A. LABEL EACH END OF EACH CABLE RUN WITH MANUFACTURER'S CABLE LABELS. LABEL RUNS IN SEQUENTIAL NUMBER ORDER, EXACTLY AS NUMBERED ON PATCH PANEL. NUMBER AND LABEL PATCH PANELS IN ASCENDING ORDER, INCLUDING ACROSS PANELS. IE. NODE 49 TO FOLLOW NODE 48 AND SO ON. RELABEL PATCH PANELS AS NECESSARY. ALL JACKS IN PATCH PANEL MUST BE IN SEQUENTIAL ORDER.

- B. AT EACH WORK AREA NODE, LABEL FACEPLATE OUTLET WITH PROPER PRINTED JACK NUMBERS, CLEARLY VISIBLE WITHOUT REMOVAL OF FACEPLATE. THE LABELLING SHALL BE METAL OR VINYL ADHESIVE TAPE WITH EMBOSSED PRINTING FOR EACH OUTLET.

3.6 TESTING

- A. VISUALLY INSPECT ALL CABLES, CABLE REELS, AND CARTONS TO ASCERTAIN OF ANY DAMAGE. VISIBLY DAMAGED COMPONENTS SHALL NOT BE ACCEPTED, EVEN THOUGH THEY MAY PASS TESTING HEREIN OR OTHERWISE.

- B. CONDUCT CABLE TESTING ONLY UPON COMPLETE INSTALLATION OF RUNS.

- C. USE A MINIMUM OF A LEVEL II-E FIELD TESTER TO VERIFY CABLING PERFORMANCE. CABLE PERFORMANCE SHALL MEET OR EXCEED SPECIFICATIONS SET OUT IN TSB95 (TECHNICAL PATCH PANELS IN ASCENDING ORDER, INCLUDING ACROSS PANELS. IE. NODE 49 TO FOLLOW NODE 48 AND SO ON. RELABEL PATCH PANELS AS NECESSARY. ALL JACKS IN PATCH PANEL MUST BE IN SEQUENTIAL ORDER.
D. PROVIDE HARD COPY TEST RESULTS. ACCEPTABLE ELECTRONIC FORMAT FOR TEST RESULTS ARE MICROSOFT EXCEL FOR EACH RUN. IN ALL CASES SUPPLY HARD COPY OF RESULTS. ANY RUNS NOT PERFORMING AS SET OUT IN 'C.' ABOVE, SHALL BE REPLACED AND RETESTED UNTIL SPECIFICATIONS ARE MET.

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CITY OF WINNIPEG PLANNING, PROPERTY & DEVELOPMENT DEPARTMENT CIVIC ACCOMMODATIONS DIVISION 300 - 65 GARRY ST. R3C 4K4

PROJECT POLICE AUTO REPAIR FACILITY GARAGE RENOVATIONS 55 PRINCESS STREET

SHEET TITLE ELECTRICAL SPECIFICATIONS

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