

GENERAL REQUIREMENTS

- CONFORM TO THE REQUIREMENTS OF DIVISION 1 AS APPLICABLE.

DEFINITIONS

- DEFINITIONS – REFER TO LABORATORIES OF CANADA
- EWT – ELECTRICAL METALLIC TUBING
- CSA – CANADIAN STANDARDS ASSOC.
- AWG – AMERICAN WIRE GAUGE

COOSES AND STANDARDS

- DO COMPLETE INSTALLATION IN ACCORDANCE WITH CSA C22.1 EXCEPT WHERE SPECIFIED OTHERWISE.
- ABREVIATIONS FOR ELECTRICAL TERMS TO CSA 258.

APPENDIX AND REVISIONS

- ALL ADDENDUM, INSTRUCTIONS AND REVISIONS ISSUED DURING THE TENDERING PERIOD SHALL BE INCLUDED IN THE TENDER AND SHALL TAKE PRECEDENCE OVER PREVIOUS INSTRUCTIONS.
- THE OWNER AND ENGINEER RESERVE THE RIGHT TO MAKE REVISIONS TO THE DRAWINGS AND SPECIFICATIONS AT ANY TIME WITHOUT NOTICE. ALL REVISIONS SHALL TAKE PRECEDENCE OVER PREVIOUSLY ISSUED DRAWINGS. ALL REVISIONS TO WORK SHALL BE EXECUTED BY DULY AUTHORIZED CHANGE ORDERS WITH THE AMOUNT OF ADDITION OR DEDUCTION TO THE CONTRACT AMOUNT APPROVED BY THE OWNER BEFORE THE EXECUTION OF ANY WORK ENVAILED IN THE REVISIONS.

SUBSTITUTIONS

- IT IS THE INTENT OF THESE DRAWINGS TO ESTABLISH THE REQUIRED QUALITY OF MATERIALS, WHERE MANUFACTURERS NAMES OR CATALOGUE REFERENCES ARE USED, IT IS DONE IN ORDER TO ESTABLISH THE REQUIRED QUALITY, STYLE, SIZE OR FUNCTION. PRODUCTS OF OTHER MANUFACTURERS WILL NOT BE PERMITTED AFTER THE SIGNING OF THE CONTRACT. THE DRAWINGS SHALL BE PERMITTED TO SUBSTITUTIONS OF EQUIPMENT AND MATERIALS AS LONG AS THEY MEET THE SPECIFICATIONS OF THE CONTRACT. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST FOR ANY OF ALL SUBSTITUTIONS 30 DAYS PRIOR TO THE TENDER CLOSURE. THE REQUEST SHALL INCLUDE THE MANUFACTURER'S DESCRIPTION INCLUDING MANUFACTURER, BRAND NAME, CATALOGUE NUMBER AND TECHNICAL DATA FOR ALL ITEMS. IF REQUESTED BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT FOR INSPECTION A SAMPLE OF THE PROPOSED ITEM. ALL MATERIAL NOT MEETING THE STANDARDS AS SET DOWN BY THESE SPECIFICATIONS SHALL NOT BE ALLOWED ON THE JOB SITE.
- SUBSTITUTIONS AFFECTING THE DESIGN WILL NOT BE PERMITTED. ADDITIONAL COSTS TO ANY OTHER TRADE AS A RESULT OF A CHANGE OR SUBSTITUTION BY THIS CONTRACTOR SHALL BE BORNE BY THIS CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY ACCEPTANCE OF ALL PRODUCTS OF THAT MANUFACTURER AND ONLY PRODUCTS MEETING THE STANDARDS AS SET OUT IN THE SPECIFICATIONS WILL BE ACCEPTED.

ELECTRICAL DRAWINGS

- THE DRAWINGS CONSTITUTE AN INTEGRAL PART OF THIS CONTRACT SHALL SERVE AS WORKING DRAWINGS. THEY INDICATE THE GENERAL LAYOUT OF THE COMPLETE ELECTRICAL SYSTEM ARRANGEMENTS OF FEEDERS, CIRCUITS, OUTLETS, SWITCHES, DUCT BANKS, OVERHEAD POLE LINES, POWER CENTERS, ETC.
- FIELD VERIFICATION OF SCALE DIMENSIONS ON PLANS IS DIRECTED SINCE ACTUAL LOCATIONS, DISTANCES, AND LEVELS WILL BE GOVERNED BY THE FIELD CONDITIONS. DISCREPANCIES RELATED TO THE ELECTRICAL WORK SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.

EXAMINATION OF DRAWINGS AND EXISTING CONDITIONS

- THE ELECTRICAL CONTRACTOR SHALL BECOME COMPLETELY FAMILIAR WITH THE DRAWINGS AND SPECIFICATIONS, AS WELL AS CONSTRUCTION METHODS OF OTHER TRADES RELATED TO HIS WORK TO AVOID POSSIBLE CONFLICTIONS ON THE PROJECT. SHOULD DRAWING CHANGES BE NECESSARY, THE CONTRACTOR SHALL OBTAIN THE NECESSARY APPROVAL AND AGREEMENT ON NECESSARY ADJUSTMENTS BEFORE THE INSTALLATION IS STARTED.
- BEFORE SUBMITTING HIS TENDER, THIS CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH SITE CONDITIONS, AVAILABILITY OF STORAGE SPACE AND ALL OTHER FACTORS THAT MAY AFFECT THE WORK.
- THE CONTRACTOR SHALL DETERMINE ALL WORKING CONDITIONS AND RIGIDLY COMPLY. CONDITIONS REQUIRING SPECIAL CONSIDERATION INCLUDE BUT NOT BE LIMITED TO:
 - DUST
 - WATER
 - VIBRATION
 - USE OF POWER ACTUATED TOOLS
 - ACCESS TO WORKING LOCATIONS
 - CONTINUITY OF POWER
 - PROJECT SCHEDULE
 - PHYSICAL PROTECTION OF OWNER'S FACILITY AND EQUIPMENT

- NO EXTRAS WILL BE ALLOWED DUE TO FAILURE TO TAKE SITE CONDITIONS INTO CONSIDERATION.
- THE EXACT ROUGHING-IN DIMENSIONS AND CONNECTION POINTS SHALL BE DETERMINED FROM SHOP DRAWINGS, EQUIPMENT DRAWINGS, AND ON-SITE MEASUREMENTS.

DISCREPANCIES

- BIDDERS IN PREPARING THEIR TENDERS, FINDING ANY ERRORS, OMISSIONS OR DISCREPANCIES IN THE PLANS, SPECIFICATIONS OR OTHER DOCUMENTS, OR HAVING ANY DOUBT IN THE INTENT OR MEANING OF ANY PART THEREOF, SHALL IMMEDIATELY NOTIFY THE ENGINEER, WHO WILL SEND WRITTEN INSTRUCTIONS OR CLARIFICATIONS TO THE BIDDERS. IT IS THE RESPONSIBILITY OF THE BIDDERS TO OBTAIN CLARIFICATIONS FROM THE ENGINEER WITHOUT CLARIFICATION AND WHERE SUCH CLARIFICATION WAS NOT REQUESTED, NO EXTRA TO THE CONTRACT WILL BE CONSIDERED IN ORDER TO HAVE THE RESUBMITTED PROPOSAL MEET THE OWNER AND ENGINEER WILL NOT BE RESPONSIBLE FOR ORAL INSTRUCTIONS.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- SUBMIT SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
- REVIEW AND SIGN SHOP DRAWINGS PRIOR TO SUBMISSION AND VERIFY INFORMATION REQUIRED FOR INSTALLATION, EVALUATION AND IDENTIFICATION.
- INDICATE DETAILS OF CONSTRUCTION, DIMENSIONS, CAPACITIES, WEIGHTS AND ELECTRICAL TERMINALS OF WIRING, SINGLE LINE AND SCHEMATIC DIAGRAMS.
- INCLUDE WIRING DRAWINGS OR DIAGRAMS SHOWING INTERCONNECTION WITH WORK OF OTHER SECTIONS OR DIVISIONS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE DESIGN CONCEPTS. THIS REVIEW SHALL NOT IMPLY THAT THE ENGINEER APPROVES THE DETAIL DESIGN INHERENT IN THE SHOP DRAWINGS. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR. THE CONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS OR OMISSIONS IN THE SHOP DRAWINGS OR OF HIS RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF THE CONSTRUCTION AND CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFORMED EXACTLY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION, AND FOR CO-ORDINATION OF THE WORK OF ALL SUB-TRADES.
- ALL SHOP DRAWINGS SUBMITTED SHALL BE CONSIDERED TO HAVE THE ABOVE PARAGRAPH APPLIED TO EACH ONE.

MATERIALS AND EQUIPMENT

- PROVIDE MATERIALS AND EQUIPMENT.
- EQUIPMENT AND MATERIAL TO BE CSA CERTIFIED, WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CSA CERTIFIED, OBTAIN RECORD OF MANUFACTURER'S CERTIFICATION AND TESTING PROCEDURES.
- FACTORY ASSEMBLY CONTROL PANELS AND COMPONENT ASSEMBLIES.

WIRING TERMINATIONS

- USE TERMINALS, SPRINGS USED FOR TERMINATION OF WIRING TO BE SUITABLE FOR COPPER CONDUCTORS.

MANUFACTURERS AND CSA LABELS

- VISIBLE AND LEGIBLE AFTER EQUIPMENT IS INSTALLED.

WARNING SIGNS

- AS SPECIFIED, BILINGUAL, AND TO MEET REQUIREMENTS OF ELECTRICAL INSPECTION DEPARTMENT AND ENGINEER.
- DEAL SIGNS, MINIMUM SIZE 7" X 7".

FIELD QUALITY CONTROL

- CONDUCT AND PAY FOR FOLLOWING TESTS:
 - POWER DISTRIBUTION SYSTEM INCLUDING PHASING, VOLTAGE, GROUNDING AND LOAD BALANCING.
 - FURNISH MANUFACTURER'S CERTIFICATE OR LETTER CONFIRMING THAT ENTIRE INSTALLATION AS IT PERTAINS TO EACH SYSTEM HAS BEEN INSTALLED TO MANUFACTURER'S INSTRUCTIONS.
 - INSULATION RESISTANCE TESTING.
 - MEASURER CIRCUITS, FEEDERS AND EQUIPMENT UP TO 350 V WITH A 500 V INSTRUMENT.
 - MEASURER 350-600 V CIRCUITS, FEEDERS AND EQUIPMENT WITH A 1000 V INSTRUMENT.
 - CHECK RESISTANCE TO GROUND BEFORE ENERGIZING.
 - CONDUCT TESTS IN PRESENCE OF ENGINEER UNLESS ADVISED OTHERWISE.
 - PROVIDE INSTRUMENTS, METERS, EQUIPMENT AND PERSONNEL REQUIRED TO CONDUCT TESTS DURING AND AT CONCLUSION OF PROJECT.
 - SUBMIT TEST RESULTS FOR ENGINEER'S REVIEW.

CLEANING

- REMOVE DEBRIS AND WASTE MATERIAL ON A DAILY BASIS.
- THE EXTENSION OF THE CONTRACTOR'S OBLIGATION TO REMOVE DUST LABELS, FINISHMENTS, ETC. FROM EQUIPMENT AND LEAVE IN NEW CONDITION.

GENERAL

DRAWINGS

- DRAWINGS DO NOT INDICATE ALL CONDUIT RUNS.

SLOPE DRAWINGS

- SUBMIT SHOP DRAWINGS FOR OUTLET BOXES, FIBRE OPTIC CABLING, AND CONDUITS

PRODUCTS

CONDUITS

- THE DRAWINGS DO NOT INDICATE CONDUIT RUNS, THOSE INDICATED ARE IN DIAGRAMATIC FORM ONLY. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING:
 - MECHANICALLY BENT STEEL CONDUIT WITH THEATED COUPLINGS AND FITTINGS.
 - ONE HOLE STAINLESS STEEL STRAPS TO SECURE SURFACE CONDUITS 2" AND SMALLER. TWO HOLE STAINLESS STEEL STRAPS FOR CONDUITS LARGER THAN 2".
 - FACTORY "ELBOW" WHERE 90 DEG BENDS ARE REQUIRED FOR 1" AND LARGER CONDUITS.

PULL, OUTLET AND JUNCTION BOXES

- PROVIDE ALL NECESSARY PULL AND JUNCTION BOXES, SIZED TO ACCEPT CONDUITS ENTERING THEM, AND CONDUCTIONS AND CONNECTORS WITHOUT CONDUITS
- PROVIDE BOXES WITH WATERPROOF SCREWED COVER PLATES UNLESS INDICATED OTHERWISE.
- ALL BOXES TO BE STAINLESS STEEL, WEATHERPROOF

EXECUTION

INSTALLATION OF CONDUITS AND CABLES

- BEND CONDUIT COIL, REPLACE CONDUIT IF KINKED OR FLATTENED MORE THAN 1/10TH OF ITS ORIGINAL DIAMETER.
- MECHANICALLY BEND STEEL CONDUIT OVER 3/4" DIA.
- FIELD THREADS ON RIGID CONDUIT MUST BE OF SUFFICIENT LENGTH TO DRAW CONDUITS UP TIGHT CORN IN EMPTY CONDUITS.
- WHERE CONDUITS BECOME BLOCKED, REMOVE AND REPLACE BLOCKED SECTION, DO NOT USE LIQUIDS TO CLEAN OUT CONDUITS.
- DRY CONDUITS OUT BEFORE INSTALLING WIRE. MINNELS.
- WHERE CONDUITS BECOME BLOCKED, REMOVE AND REPLACE BLOCKED SECTION, DO NOT USE LIQUIDS TO CLEAN OUT CONDUITS.
- TRANSITION FROM RIGID STEEL CONDUIT TO LIQUID FLEX CONDUIT, WITH LIQUID TIGHT FITTING, AT ALL CONNECTIONS INTO BOXES & DEVICES.

GENERAL

FIBRE INSTALLATIONS MUST COMPLY WITH **ES/50W-0110**. ALL NEW FIBRES MUST BE TESTED BY THE CONTRACTOR'S QUALITY CONTROL PERSONNEL. THE CONTRACTOR MUST BE RESPONSIBLE FOR PROVIDING THE NECESSARY TESTING EQUIPMENT. THE CONTRACTOR MUST REPLACE AND/OR REPAIR ANY VIDEO, POWER, CONDUIT AND JUNCTION BOXES USED TO COMPLETE THIS PROJECT IN ACCORDANCE TO THE ELECTRICAL CODE. THE FIBRE MUST BE ON3 50/125, FT4 RATED WITH A GREEN JACKET INSTALLED IN RIGID STEEL CONDUIT. OUTDOOR CONDUIT MUST BE CONDUIT WITH PRESURE RATED TO THE SUN, WIND, RAIN, LIGHTNING, HAIL, SNOW AND ICE AS MAY BE EXPECTED TO OCCUR AT EACH INSTITUTION LOCATION, GALVANIZED OR ZINC COATING.

FIBRE OPTIC BAKBONE CABLE

CABLE:

THE CABLE TO BE SUPPLIED AND INSTALLED FOR BACKBONE PURPOSES SHALL CONSIST OF 12 STRANDS (6 PAIRS) OF LASER OPTIMIZED FIBRE WITH NOMINAL 50/125 UM CORE/CLADDING DIAMETER FORMED INTO A SINGLE CABLE. OPTICAL CABLE SHALL PHYSICALLY CONFORM WITH ANSI/CEA S-83-89B MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS FOR OUTDOOR FIBRE OPTIC CABLE. FIBRE OPTIC CABLE SHALL CONFORM WITH THE REQUIREMENTS OF ON43 AS PER THE ISO 11601-2ND EDITION STANDARDS. ALL FIBRE OPTIC CABLES TO BE FROM ONE MANUFACTURER.

TERMINATIONS:

FIBRE OPTIC CABLES SHALL BE TERMINATED TO SC PHYSICAL CONTACT CONNECTORS SHALL BE ABLE TO SUSTAIN A MINIMUM OF 200 MATING CYCLES PER ENA/TA-485-21 WITHOUT VIOLATING SPECIFICATIONS. THESE CONNECTORS WILL BE USED TO TERMINATE THE FIBRE OPTIC CABLES TO THE SC PHYSICAL CONTACT PANELS. THE MAXIMUM OPTICAL ATTENUATION PER PAIR OF MATED CONNECTORS SHALL NOT EXCEED 0.75 DB. ADA9 WILL DO ALL TERMINATIONS, TURN OVER TWO CONNECTORS FOR ALL STRANDS IN EACH PATCH CABLE INSTALLED.

TESTING:

ALL TERMINATED FIBRE MEDIA AND RELATED CONNECTING HARDWARE SHALL BE TESTED IN ACCORDANCE WITH THE TEST SPECIFICATIONS OF THE INITIAL INSTALLATION WITH AN OTHER IN BOTH DIRECTIONS. TESTING WILL INCLUDE END-TO-END ATTENUATION TESTING THAT SHALL MEASURE EACH FIBRE IN ONE DIRECTION AND COMPARE WITH THE CALCULATED LOSS BASED ON THE MANUFACTURER'S SPECIFICATIONS AND KNOWN LENGTH OF FIBRE USING 850 NANOMETERS AND 1300 NANOMETERS WAVELENGTHS. THE DIFFERENCE IN VALUE BETWEEN ANY TWO MATED FIBRE SHALL NOT EXCEED 0.5 DB. THE POWER LEVELS OF THE TERMINATED FIBRES SHALL BE DOCUMENTED TO ALLOW THE CONTRACTOR TO REPRODUCE THE SAME POWER LEVELS ON OTHER TERMINATED EQUIPMENT. THIS WILL PREVENT THE RECEIVERS FROM BEING OVERLOADED. IF THE ATTENUATION MEASUREMENTS ARE NOT WITHIN THE REQUIRED SPECIFICATIONS, AN OPTICAL TIME DOMAIN REFLECTOMETER SHALL BE USED TO IDENTIFY THE CAUSE AND LOCATION OF THE POWER LOSS. ANY FAILURE WILL BE REPAIRED IMMEDIATELY. ALL TEST RESULTS TO BE MACHINE PRINTED AND DOCUMENTED IN DUPLICATE AND DELIVERED COMPLETE WITH AS-BUILT DRAWINGS TO CORRECTED IN CANADA REGIONAL OFFICE.

CAT6 CABLES:

CAT6 CABLES 4 PAIR, 23 AWG SOLID COPPER WITH POLYETHYLENE INSULATION, INDUSTRIAL GRADE PVC OUTER JACKET, RATED FOR EXTREME TEMPERATURES, BELDEN 793 (FOR EDAU).

TESTING
TEST ALL CAT6 CABLES IN ACCORDANCE WITH BELDEN /DOT TESTING OF CAT6 CABLES, AND EIA/TIA568 TESTING FOR UTP CABLES.

1	ISSUED FOR TENDER	08/28/2017	date
revision			date
project	WEST PERIMETER WALL REPAIRS DORCHESTER PENITENTIARY MEDIUM SECTOR DORCHESTER, NB		
drawing no.			no. du dessin
designer	AEC - MICHAEL LEBLANC		conçu
drawn	MDEGRACE / AEC		dessiné
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