

1	ISSUED FOR TENDER	02/08 2017
revision		date

project
WEST PERIMETER WALL
REPAIRS
DORCHESTER SENTINARY
MEDIUM SECURITY
DORCHESTER, NB

drawing
ELECTRONIC SECURITY
SYSTEM
ELECTRICAL NOTES

designed	AEC – MICHAEL LEBLANC	comp
drawn	MDEGRACE / AEC	desain
date	AUGUST 2017	
approved		approved
date		

Tender
R.061898.001
Project Number
R.061898.001
no. du devis

GENERAL REQUIREMENTS

1. CONFORM TO THE REQUIREMENTS OF DIVISION 1 AS APPLICABLE.

DEFINITIONS

1. DEFINITIONS
2. INSURANCE
3. EAT – ELECTRICAL METALLIC TUBING
4. CSA – CANADIAN STANDARDS ASSOC.
5. AWG – AMERICAN WIRE GAUGE

CODES AND STANDARDS

1. DO COMPLETE INSTALLATION IN ACCORDANCE WITH CSA C22.1 EXCEPT WHERE SPECIFIED OTHERWISE.
2. ABBREVIATIONS FOR ELECTRICAL TERMS: TO CSA Z85.

APPENDIX AND REVISIONS

1. ALL ADDENDUM, INSTRUCTIONS AND REVISIONS ISSUED DURING THE TENDERING PERIOD SHALL BE INCLUDED IN THE TENDER DOCUMENTS AND SHALL BE INCLUDED IN THE TENDER, AND SHALL TAKE PRECEDENCE OVER PREVIOUS INSTRUCTIONS.
2. THE OWNER AND ENGINEER RESERVE THE RIGHT TO MAKE REVISIONS TO THE DRAWINGS AND SPECIFICATIONS PRIOR TO THE TENDERING PERIOD. REVISIONS TO THE DRAWINGS AND SPECIFICATIONS SHALL TAKE PRECEDENCE OVER PREVIOUSLY ISSUED DRAWINGS. ALL REVISIONS 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

1. 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 CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
2. SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIAL AND EQUIPMENT OTHER THAN THOSE SPECIFIED, HE SHALL SUBMIT A WRITTEN REQUEST FOR ANY OR ALL SUBSTITUTIONS 10 DAYS PRIOR TO THE TENDER CLOSING DATE. THE REQUEST SHALL BE ACCOMPANIED BY THE FOLLOWING: A 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.
3. ALL MATERIAL, NOT MEETING THE STANDARDS AS SET DOWN BY THESE SPECIFICATIONS SHALL NOT BE ALLOWED ON THE JOB SITE.
4. 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.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.

ELECTRICAL DRAWINGS

1. 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, PANELS, AND EQUIPMENT. THE DRAWINGS SHALL BE USED TO DETERMINE THE LOCATION OF ALL PRODUCTS OF THAT MANUFACTURER AND ONLY PRODUCTS MEETING THE STANDARDS AS SET OUT IN THE SPECIFICATIONS WILL BE ACCEPTED. DISCREPANCIES RELATED TO THE ELECTRICAL WORK SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.

EXAMINATION OF DRAWINGS AND EXISTING CONDITIONS

1. 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 CONFLICTS ON THE PROJECT. SHOULD DRAWING CHANGES BE NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
2. BEFORE SUBMITTING HIS TENDER, THIS CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH SITE CONDITIONS, AVAILABILITY OF STORAGE SPACE AND ALL EXISTING UTILITIES. THE CONTRACTOR SHALL DETERMINE ALL WORKING CONDITIONS AND RIGIDLY COMPLY. CONDITIONS REQUIRING SPECIAL CONSIDERATION INCLUDE BUT NOT BE LIMITED TO:
1. DUST
2. VIBRATION
3. WATER
4. USE OF POWER ACTUATED TOOLS
5. ACCESS TO WORKING LOCATIONS
6. CONTINUITY OF POWER
7. PROJECT SCHEDULE
8. PHYSICAL PROTECTION OF OWNER'S FACILITY AND EQUIPMENT
9. PROJECT SCHEDULE
10. PHYSICAL PROTECTION OF OWNER'S FACILITY AND EQUIPMENT

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

DISCREPANCIES

1. BIDDER'S 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 REVISIONS TO THE BIDDER. THE BIDDER SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

1. SUBMIT SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
2. REVIEW AND SIGN SHOP DRAWINGS PRIOR TO SUBMISSION AND VERIFY INFORMATION REQUIRED FOR INSTALLATION, EVALUATION AND IDENTIFICATION.
3. INDICATE DETAILS OF CONSTRUCTION, DIMENSIONS, CAPACITIES, WEIGHTS, AND ELECTRICAL DATA. INCLUDE WIRING, SINGLE LINE AND SCHEMATIC DIAGRAMS.
4. WHERE APPLICABLE, INCLUDE WIRING, SINGLE LINE AND SCHEMATIC DIAGRAMS.
5. 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 SHALL BE RESPONSIBLE FOR THE SELECTION OF EQUIPMENT. DISCREPANCIES SHALL NOT BE ALLOWED ON THE JOB SITE.
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MATERIALS AND EQUIPMENT

1. PROVIDE MATERIALS AND EQUIPMENT.
2. EQUIPMENT AND MATERIAL TO BE CSA CERTIFIED WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CSA CERTIFIED. OBTAIN REQUIRED APPROVALS FROM THE ENGINEER.
3. FACTORY ASSEMBLY CONTROL, PANELS AND COMPONENT ASSEMBLIES.

WIRING TERMINATIONS

1. LUGS, TERMINALS, SPRINGS USED FOR TERMINATION OF WIRING TO BE SUITABLE FOR COPPER CONDUCTORS.

MANUFACTURERS AND CSA LABELS

1. VISIBLE AND LEGIBLE AFTER EQUIPMENT IS INSTALLED.

WARNING SIGNS

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

FIELD QUALITY CONTROL

1. CONDUIT AND PAY FOR FOLLOWING TESTS:
1. POWER DISTRIBUTION SYSTEM INCLUDING PHASING, VOLTAGE, GROUNDING AND LOAD BALANCING.
2. FURNISH MANUFACTURER'S CERTIFICATE OR LETTER CONFIRMING THAT ENTIRE INSTALLATION AS IT PERTAINS TO EACH SYSTEM HAS BEEN INSTALLED TO MANUFACTURER'S INSTRUCTIONS.
3. INSULATION RESISTANCE TESTING.
4. MEASURE CIRCUITS, FEEDERS AND EQUIPMENT UP TO 350 V WITH A 500 V INSTRUMENT.
5. MEASURE 350-600 V CIRCUITS, FEEDERS AND EQUIPMENT WITH A 1000 V INSTRUMENT.
6. CHECK RESISTANCE TO GROUND BEFORE ENERGIZING.
7. CHECK RESISTANCE TO GROUND AFTER ENERGIZING.
8. CHECK RESISTANCE TO GROUND AFTER ENERGIZING.
9. PROVIDE INSTRUMENTS, METERS, EQUIPMENT AND PERSONNEL REQUIRED TO CONDUCT TESTS DURING AND AT CONCLUSION OF PROJECT.
10. SUBMIT TEST RESULTS FOR ENGINEER'S REVIEW.

CLEANING

1. REMOVE DEBRIS AND WASTE MATERIAL ON A DAILY BASIS.
2. THE OPERATION OF THE TOOL SHALL BE SUCH AS TO REMOVE DUST, LABELS, FINGERPRINTS, ETC. FROM EQUIPMENT AND LEAVE IN NEW CONDITION.

GENERAL

DRAWINGS

1. DRAWINGS DO NOT INDICATE ALL CONDUIT RUNS.

SLOPE DRAWINGS

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

CONDUITS

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

PULL, OUTLET AND JUNCTION BOXES

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

EXECUTION

INSTALLATION OF CONDUITS AND CABLES

1. BEND CONDUIT GENTLY. REPLACE CONDUIT IF KINKED OR FLATTENED MORE THAN 1/10TH OF ITS ORIGINAL DIAMETER.
2. MECHANICALLY BEND STEEL CONDUIT OVER 3/4" DIA.
3. FIELD THREADS ON RIGID CONDUIT MUST BE OF SUFFICIENT LENGTH TO DRAW CONDUITS UP TIGHT CORN IN EMPTY CONDUITS.
4. CONDUITS UP TIGHT CORN IN EMPTY CONDUITS.
5. WHERE CONDUITS BECOME BLOCKED, REMOVE AND REPLACE BLOCKED SECTION. DO NOT USE LIQUIDS TO CLEAN OUT CONDUITS.
6. DRY CONDUITS OUT BEFORE INSTALLING WIRE.
7. CONDUITS SHALL BE INSTALLED WITH THE FOLLOWING COUPLINGS AND FITTINGS:
8. 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 BOTH PRIOR TO AND AFTER INSTALLATION. ALL FIBRE MUST BE INSTALLED WITH THE FOLLOWING COUPLINGS AND FITTINGS:
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FIBRE OPTIC BOMBONE 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-S96 MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS FOR OUTDOOR FIBRE OPTIC CABLE. OPTIC CABLE SHALL CONFORM WITH THE REQUIREMENTS OF OM3 AS PER THE ISO 11801-2ND EDITION STANDARDS.
ALL FIBER 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 EIA/TIA-455-21 WITHOUT VIOLATING SPECIFICATIONS. THESE CONNECTORS WILL BE INSTALLED IN THE FOLLOWING MANNER:
1. FIBRE OPTIC CABLE SHALL PHYSICALLY CONFORM WITH ANSI/CEA S-83-S96 MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS FOR OUTDOOR FIBRE OPTIC CABLE. OPTIC CABLE SHALL CONFORM WITH THE REQUIREMENTS OF OM3 AS PER THE ISO 11801-2ND EDITION STANDARDS.
ALL FIBER OPTIC CABLES TO BE FROM ONE MANUFACTURER.

TESTING:

- ALL TERMINATED FIBRE MEDIA AND RELATED CONNECTING HARDWARE SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
1. FIBRE OPTIC CABLES SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
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10. FIBRE OPTIC CABLES SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING:

CAT6 CABLES:

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

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

