

1. GENERAL

- .1 Supply and Install all material, equipment, wiring and labour necessary for the installation of the systems detailed on the drawings in accordance with the latest edition of the Canadian Electrical Code.

2. WORK INCLUDED

2.1 Related Work

- .1 The Administrative Sections under Division 00 (Bidding and Contract Requirements) and 01 (General Requirements) shall be considered to be part of these Specifications.

2.2 General Requirements

- .1 General Clean-up.
- .2 All inspection and other permits, licenses required by various Inspection Agencies and local regulations related to Electrical Trade.
- .3 Scaffolding.
- .4 Shop Drawings.
- .5 Project Record Documents (As-built Drawings) where specified.
- .6 Operating and Maintenance Data, where specified.

2.3 Specific Requirements

- .1 Provide new 5kV equipment and connect to existing 4160 volt distribution equipment located on the service mezzanine of the reservoir pumping station. New equipment shall include a compartment for a 5 kV main breaker (future breaker unit), a tie switch, 3 load break switches, a 2000A 600V breaker, and a UV Disinfection CDP panel.
- .2 New 5kV equipment shall be bus connected to existing 4160 volt switchgear as indicated on drawings and described in specifications herein.
- .3 Provide a 2000 kVA K4 rated dry type transformer with weather proof NEMA 3 enclosure. Mount on roof of pumping station. Transformer to have 4160V 3-phase primary windings (Delta) and 347/600 V, 3-Phase, 4 wire secondary windings (Wye).
- .4 Install City supplied UV Reactor control panels (total of 6).
- .5 Provide cable in tray from UV distribution panel to City supplied UV reactor control panels.
- .6 Supply, install and connect cables between UV Reactor control panels and UV Reactors.

SCOPE OF WORK

- .7 Provide wire and conduit to the flow meters associated with each UV reactor. Flow meters are supplied by the City and installed by the Contractor.
- .8 Provide power and control wiring to the motorized valve actuators associated with each UV reactor. Actuators to be supplied by the City and installed by the Contractor.
- .9 Install, wire and connect valve limit switches to UV Master PVC
- .10 Provide a 300 kVA 4160-600/347 volt transformer and 600-volt panel board for miscellaneous 600-volt equipment as indicated on the drawings and in this specification.
- .11 Provide a 600-120/208 volt transformer and 120/208 volt panel board to service miscellaneous power for equipment noted on drawings or indicated in this Specification.
- .12 Provide transient voltage Surge Protection (TVSS) for new 600 volt equipment as indicated on the Drawings and specified, herein.
- .13 Provide cable tray as specified and as required to provide suitable raceways for cable and wire. Provide bare grounding cable in cable tray and bond to tray.
- .14 Provide power supplies to two new air handling units to be mounted on roof of building.
- .15 Extend existing grounding system to include all new equipment as indicated on the drawings and as specified herein.
- .16 Supply, install and connect cable between HVAC system and existing fire alarm panel for AHU-1 and AHU-2 shutdown. Existing fire alarm panel is located at front entrance to building.

2.4 Demolition

- .1 Disconnect existing "RC" air handling unit located on North mezzanine. This will include disconnection and removal of all associated power and control wiring.
- .2 Relocate existing teck cables, wire and conduit located on underside of roof, within lines '10-11' and 'A-B'.
- .3 Remove existing wall mounted fluorescent light fixtures on walls behind CPP panels on east, north and west mezzanines (total of 5).
- .4 Remove and relocate existing duplex receptacles located behind the proposed CPP control panels. Receptacles to be relocated adjacent to proposed CPP control panels.
- .5 Disconnect power and control cables servicing pump DP-2 located at elev. 227.000 between lines 8 and 9 north of line C. Relocate pump south of line C at line 8. Extend existing wiring and reconnect at new location. Stop/start pushbutton to remain on column C-8.
- .6 Disconnect power and control wiring servicing existing inline pump CP-4 located between lines 9 and 10 north of line C. Pump to be reconnected adjacent to column 10-C with power cable. Control stop/start pushbutton to be relocated to column 10-C and reconnected.

2.5 Additional Requirements

- .1 Provision of all necessary testing, detailed wiring continuity checks, wiring completion checks, installation integrity checks, functional equipment operation checks and written system verification reports to provide a complete system that is ready for commissioning and startup (refer also to Section 16980).
- .2 Provision of commissioning and startup of all systems included in the scope of work.

2.6 Materials

- .1 Bus systems including all forms of buses integral with the electrical power system, together with their associated insulation, supports, bus ducts and protective devices.
- .2 Conductors, including all types of wires, conductors, cables, which form an integral part of the electrical power system.
- .3 Cables and bus support systems which are intended to enclose or support all forms of electrical conductors used for any purpose covered by this scope. This includes cable trays, raceways and all forms of rigid, flexible, metallic and non-metallic conduit, and including conduit for communication systems or others, which may be installed at a later date, or buried conduit for wiring work by others, only when such buried conduit is indicated in the Contract Documents.
- .4 Control panels (excluding the six UV reactor control panels) associated with any electrical equipment covered under this section of Work.
- .5 Circuit breakers of all types, and for all applications associated with electrical equipment which receives its power supply from the main, auxiliary or emergency (including battery) system.
- .6 Grounding systems, as required by the Electrical Code, or as otherwise specified in the bid documents.
- .7 Control and instrumentation systems - electrical or electronic including high frequency, ultra high frequency and microwave control and instrumentation systems, with auxiliary equipment and components, unless specified otherwise.
- .8 Transformers of various types, dry, encapsulated etc., and for all applications, except control transformers supplied with Mechanical Equipment included in Division 15.
- .9 Electronic data processing and transmission systems, including auxiliary equipment, interface and components.

3. WORK EXCLUDED

3.1 General Requirements

- .1 Temporary power.

.2 Temporary light.

.3 Hoisting.

.4 Barriers.

3.2 Specific Exclusions

.1 Supply of UV Disinfection Control Panel

.2 Supply of Flow Meters

.3 Supply of Motorized Valve Actuators

3.3 Other Work Excluded

.1 Special starters, including multi-speed switches, which are associated with packaged units not detailed in the Electrical specifications.

.2 Perforations through roofing materials for electrical servicing or attachments (Division 07).

.3 Painting (on site), except touch-up of electrical equipment (Division 9).

.4 Ducted fans (Division 15).

.5 Ducted heaters (Division 15).

.6 Pneumatic tube systems (Division 15).

.7 Control transformers supplied with Mechanical Equipment (Division 15).

.8 All control wiring between equipment supplied by Division 15 HVAC system will be performed by Division 15.

4. UNITS OF MEASUREMENT

4.1 General

.1 The Contract Documents have been prepared using the modified International System (SI) units of metric measurement. Whenever appropriate, available metric products shall be used unless otherwise specified herein.

.2 Only metres (m) and millimetres (mm) are used. Generally, metres are used for measurements of 10 metres or more, and millimetres for measurements below 10 m.

.3 All measurements on drawings are in millimetres unless otherwise indicated.

4.2 Conversions

- .1 The following three conversion methods were used in product and location dimensions:
 - .1 Hard Conversion: Industry available products which are manufactured in metric measurements.
 - .2 Soft Conversion: Products which are still manufactured in Imperial units and are converted in specifications using arithmetic conversion factors.
 - .3 Rationalized Conversion: Dimensions which are soft converted and rounded off for ease of measurements.
- .2 In cases where measurements may be open for interpretation, dual dimensions have been incorporated until hard conversions can be used exclusively.

5. DEFINITIONS

5.1 General

- .1 All terminologies, abbreviations and acronyms used in this document are as listed in the various Standards, Codes, Rules and Bulletins used herein.

6. FORMAT

6.1 Practice

- .1 This Scope of Work has been written to conform to the Manitoba Construction Association (MCA) Bid Depository Rules and Procedures and Scope of Work.

6.2 Sections

- .1 The Sections are written in a three part format: General, Products and Execution.

6.3 Reference

- .1 Imperative tense has been used throughout this Document for work intended for the successful Contractor. There shall be no work exclusions unless they have been clearly identified as such herein.
- .2 Any reference to "Design Authority" shall mean EARTH TECH (CANADA) INC., Consulting Engineers.
- .3 The word "provide" shall mean "supply and install" unless otherwise indicated.

SCOPE OF WORK

7. CODES

7.1 General

- .1 All Codes, Standards, Rules, Regulations, Bulletins, By-laws etc., shall be those that are currently enforced in the locality of job site, unless otherwise specified herein.

END OF SECTION