

**PART 1**      **GENERAL**

**1.1**            **SECTION INCLUDES**

- .1      Equipment, fabrication and installation for ground fault protection.

**1.2**            **RELATED SECTIONS**

- .1      Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
- .2      Section 01 33 00 - Submittal Procedures.
- .3      Section 01 45 00 - Quality Control.
- .4      Section 26 80 00 – Commissioning of Electrical Systems.
- .5      Section 26 05 00 – Common Work Results - Electrical.

**1.3**            **PAYMENT PROCEDURES**

- .1      Pay for field testing of ground fault equipment performed by equipment manufacturer.

**1.4**            **REFERENCES**

- .1      Canadian Standards Association (CSA)
  - .1      CAN/CSA-C22.2 No. 144, Ground Fault Circuit Interrupters.
- .2      National Electrical Manufacturers Association (NEMA)
  - .1      NEMA PG 2.2, Application Guide for Ground Fault Protection Devices for Equipment.

**1.5**            **SUBMITTALS**

- .1      Submit product data and shop drawings.
- .2      Submit test report for field testing of ground fault equipment to Departmental Representative and certificate that system as installed meets criteria specified.

**PART 2**      **PRODUCTS**

**2.1**            **EQUIPMENT**

- .1      Ground fault protective equipment: components of one manufacturer.
- .2      Provide ground fault protection on 1000A, 600V, 4 wire, 3 phase service and 2000 A, 208V, 4 wire, 3 phase service and above: to NEMA PG 2.2 and CAN/CSA-C22.2 No. 144.

- .3 Ground fault unit to contain:
  - .1 Ground sensing relay suitable for operation at 500 mA as indicated on electrical drawings. Control voltage: 120 V.
  - .2 Ammeter with scale 0 to 5 A to indicate ground current value.
  - .3 Three position sensitivity control switch to select value of leakage current at which relay will operate.
  - .4 Indicating lamp illuminated when no ground fault exists, extinguished on ground fault or test.
  - .5 Switch:
    - .1 SPDT contacts for alarm and trip.
    - .2 Mechanical target indication.
    - .3 Manually reset.
  - .6 Reset button for contacts and target.
  - .7 Suitable for panel mounting.
- .4 Zero sequence transformer toroidal type with 300 - 3000 mA range.
- .5 Neutral:
  - .1 Use an artificial neutral and grounding resistor.
  - .2 Use neutral ground resistor unit.
- .6 System to operate instantaneously at ground current setting.

## **2.2 FABRICATION**

- .1 Install following components in equipment specified in other Sections and as indicated.
  - .1 Zero sequence transformer.
  - .2 Ground fault relay.
  - .3 Ground resistor unit.

## **2.3 RELATED EQUIPMENT**

- .1 Shunt trip breakers. Load break disconnect switch.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- .1 Do not ground neutral on load side of sensor.
- .2 Install phase conductors including neutral through zero sequence transformer.
- .3 Install ground fault protection system.
- .4 Make connections as indicated and in accordance with manufacturer's recommendations.

**3.2                      FIELD QUALITY CONTROL**

- .1                      Perform tests in accordance with Section 26 05 00 – Common Work Results - Electrical and Section 26 80 00 – Commissioning of Electrical Systems.
- .2                      Arrange and pay for field testing of ground fault equipment by ground fault equipment manufacturer before commissioning service.
- .3                      Check trip unit settings to ensure proper working operation and protection of components.
- .4                      Demonstrate simulated ground fault tests.

**END OF SECTION**