



**INSPECTION FORM
POWER CABLE, 4160V**

Cable ID:

| | | |
|----------------|-----------|------------------|
| Project | Facility: | Project Name: |
| | Area : | Bid Opportunity: |

| | | | |
|-------------------|---|--|---|
| Cable Data | Source: | Dest. / Load: | |
| | Manufacturer: | Type: | Conductor: <input type="checkbox"/> Copper <input type="checkbox"/> Aluminum |
| | No. of Conductors: | Size: <input type="checkbox"/> AWG <input type="checkbox"/> MCM | Length: m <input type="checkbox"/> Measured <input type="checkbox"/> Previous Data <input type="checkbox"/> Jacket Markings <input type="checkbox"/> TDR |
| | Rated Voltage: V | Operating Voltage: V | Date Installed: |
| | Installation: <input type="checkbox"/> Cable Tray <input type="checkbox"/> EMT <input type="checkbox"/> Alum. Conduit <input type="checkbox"/> Direct Buried <input type="checkbox"/> Strapped <input type="checkbox"/> Steel Conduit <input type="checkbox"/> PVC Conduit <input type="checkbox"/> Underground Duct | Other: | |

| | | |
|--------------------------|--|--|
| Visual Inspection | Physical Damage on Exposed Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No | Cable Identification Tag Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Visual Signs of Overheating/Corona: <input type="checkbox"/> Yes <input type="checkbox"/> No | Cable Supported Appropriately: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Damage to Splices/Terminations: <input type="checkbox"/> Yes <input type="checkbox"/> No | Shield Grounded: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Bend Radius Acceptable: <input type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |

| | | | | | |
|-----------------------------------|---|--|--|---|--|
| Insulation Resistance Test | Test Preparation: | Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source Isolated | Cable Dest. / Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load Isolated | Note: Approval of City's Representative is required, prior to leaving cables connected during the test. | |
| | Cable Temperature: °C Temperature Correction Factor for 20°C: | | | Ground all conductors not under test for each reading. | |
| | Test Voltage | Insulation Resistance (MΩ) | | | Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed |
| | | A-GND | B-GND | C-GND | |
| | 2500V | Reading | | | |
| | Corrected to 20°C | | | | |
| Comments: | | | | | |



INSPECTION FORM 4160V POWER CABLE

Cable ID: _____

Test Preparation: Source: Disconnected Connected with Source Isolated
 Cable Dest. / Load: Disconnected Connected with Load Isolated
 Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

Frequency: 0.1 Hz Waveform: sinusoidal Ground all conductors not under test for each reading.

High Potential
Very Low Frequency (VLF) Test

| Test Voltage (RMS) | Elapsed Time (min) | Peak Leakage Current (uA) | | |
|--------------------|--------------------|---------------------------|-------|-------|
| | | A-GND | B-GND | C-GND |
| 7000V | 0 | | | |
| 7000V | 1 | | | |
| 7000V | 2 | | | |
| 7000V | 3 | | | |
| 7000V | 4 | | | |
| 7000V | 5 | | | |
| 7000V | 6 | | | |
| 7000V | 7 | | | |
| 7000V | 8 | | | |
| 7000V | 9 | | | |
| 7000V | 10 | | | |
| 7000V | 11 | | | |
| 7000V | 12 | | | |
| 7000V | 13 | | | |
| 7000V | 14 | | | |
| 7000V | 15 | | | |

Test Summary
 Test Passed
 Test Inconclusive
 Further Investigation Required.
 Test Failed

Comments: _____



INSPECTION FORM 4160V POWER CABLE

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Cable ID: _____

| | | | | | | | | | | | |
|--|--|----------------------|-----------------------------|--|----------------------|-----------------------------|--|----------------------|-----------------------------|--|--|
| Dissipation Factor (Tangent Delta) Test | Frequency: 0.1 Hz Waveform: sinusoidal | | | | | | | | | | |
| | Test Voltage (RMS) | A | | | B | | | C | | | |
| | | Tan Delta | Capacitance (nF) | Current (μA) | Tan Delta | Capacitance (nF) | Current (μA) | Tan Delta | Capacitance (nF) | Current (μA) | |
| | 2400V | | | | | | | | | | |
| | 4800V | | | | | | | | | | |
| | Difference | | / | / | | / | / | | / | / | |
| Test Summary | | Comments: | | | | | | | | | |
| <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed | | | | | | | | | | | |

| | | | | | |
|----------------------------------|--------------------|---|----------|----------|-----------------------------|
| Connection Resistance | Termination | Connection Resistance ($\mu\Omega$) - As Left | | | Torque Check |
| | | A | B | C | |
| | Source | | | | <input type="checkbox"/> OK |
| | Dest. / Load | | | | <input type="checkbox"/> OK |
| Comments: | | | | | |

| | | | | |
|---------------------------|--|------------------------------|-----------------------------|-----------|
| Final Analysis | Cable Returned to Service: | <input type="checkbox"/> Yes | <input type="checkbox"/> No | Comments: |
| | Monitoring / Further Inspection Required: | <input type="checkbox"/> Yes | <input type="checkbox"/> No | |
| | Repair / Replacement Required: | <input type="checkbox"/> Yes | <input type="checkbox"/> No | |

| | | | | |
|---------------------|----------------|-------------|------------------|--------------------------|
| | Company | Name | Signature | Date (yyyy/mm/dd) |
| Performed By | | | | |
| Checked By | | | | |

Note: The person performing the check is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.



INSPECTION FORM GROUNDING SYSTEM

ID:

| | | |
|----------------|-----------|------------------|
| Project | Facility: | Project Name: |
| | Area : | Bid Opportunity: |

| | | | | |
|--------------------------|---|---|------------------------------|-----------------------------|
| Visual Inspection | Connection to Ground Electrode is Visible: <input type="checkbox"/> Yes <input type="checkbox"/> No | Facility Contains a Main Ground Bus: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Connecting Conductor: Size: Qty: | Torque Ground Connections: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Visual signs of Corrosion: <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| | Soil Type: | Soil Condition: <input type="checkbox"/> Dry <input type="checkbox"/> Damp <input type="checkbox"/> Wet | | |
| | Comments: | | | |

| Fall Of Potential Test #1 | Date of Test: | | Time of Test: | | | | |
|----------------------------------|------------------------------------|-----------------|-----------------|-------------------|-------------------|---------------------|---------------------|
| | Weather and Temperature: | | Terrain: | | | | |
| | Grounding System Connection Point: | | UTM Coordinate: | GPS Coordinate: | E | N | |
| | Current Probe Injection Point: | | UTM Coordinate: | GPS Coordinate: | E | N | |
| | Test Conditions: | | | Test Layout: | | | |
| | Voltage Probe Distance (meters) | UTM Coordinate: | GPS Coordinate: | Test Current (mA) | Test Voltage (mV) | Resistance @ Hz (Ω) | Resistance @ Hz (Ω) |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | E | N | | | | | |
| Comments: | | | | | | | |



INSPECTION FORM GROUNDING SYSTEM

ID: _____

| | | | | | | | |
|---------------------------|------------------------------------|---------------------|-----------------|-------------------|-------------------|---------------------|---------------------|
| Fall Of Potential Test #2 | Date of Test: | | Time of Test: | | | | |
| | Weather and Temperature: | | Terrain: | | | | |
| | Grounding System Connection Point: | | UTM Coordinate: | GPS Coordinate: | E | N | |
| | Current Probe Injection Point: | | UTM Coordinate: | GPS Coordinate: | E | N | |
| | Test Conditions: | | | Test Layout: | | | |
| | Voltage Probe Distance (meters) | UTM GPS Coordinate: | | Test Current (mA) | Test Voltage (mV) | Resistance @ Hz (Ω) | Resistance @ Hz (Ω) |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| | | E | N | | | | |
| Comments: | | | | | | | |



INSPECTION FORM GROUNDING SYSTEM


ID: _____

| Resistance Checks (Ductor Test) | Point A | Point B | Resistance (mΩ) | Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed |
|------------------------------------|---------------------------|--------------------------|--------------------|--|
| | Facility Ground Electrode | Main Ground Bus | | |
| | Facility Ground Electrode | 4160V Switchgear GND Bus | | |
| | Facility Ground Electrode | System Neutral | | |
| | Facility Ground Electrode | 600V Switchgear GND Bus | | |
| | Facility Ground Electrode | MCC : GND Bus | | |
| | Facility Ground Electrode | MCC : GND Bus | | |
| | Facility Ground Electrode | Other : | | |
| | Facility Ground Electrode | Other : | | |
| | Facility Ground Electrode | Other : | | |
| | | | | |
| | | | | |
| | | | | |
| Comments: _____ | | | | |

| | | |
|-------------------|--|-----------------|
| Final Analysis | Monitoring / Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No | Comments: _____ |
| | Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| | | |

| | Company | Name | Signature | Date (yyyy/mm/dd) |
|---------------------|---------|------|-----------|----------------------|
| Performed By | | | | |
| Checked By | | | | |

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| | | | |
|---|--|------------------|-------------|
|  | INSPECTION FORM SWITCHGEAR, 4160V | | Page 1 of 2 |
| | | | ID: |
| Project | Facility: | Project Name: | |
| | Area : | Bid Opportunity: | |

| | | | | |
|------------------------|------------------|-------------------|-------------------|-------------|
| Switchgear Data | ID: | Location: | | # of Cells: |
| | Manufacturer: | Type: | Serial #: | |
| | Rated Voltage: V | Current Rating: A | Withstand Rating: | A |

| | | | | |
|-------------------------------------|------------------------------------|---|--|---|
| Visual Inspection / Cleaning | Identification Tag Installed: | <input type="checkbox"/> Yes <input type="checkbox"/> No | Visual Signs of Overheating: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Visual signs of Moisture: | <input type="checkbox"/> Yes <input type="checkbox"/> No | Visual Signs of Corona: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Fuse/Breaker Sizes Match Drawings: | <input type="checkbox"/> Yes <input type="checkbox"/> No | PT and CT ratios match drawings: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Elevation Drawings Correct: | <input type="checkbox"/> Yes <input type="checkbox"/> No | Cables Supported Appropriately: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Cleanliness (As Found): | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | Insulators Condition: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor |
| | Connections: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | Electro/Mechanical Interlock Systems: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor |
| | Ground Connection: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | Vents/Filters: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor |
| | Doors Mechanical: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | | |
| | Cell Fit and Alignment: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | | |
| | Required Clearances are Met: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | | |
| | Indicating mechanisms: | <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor | Unit Cleaned: <input type="checkbox"/> Yes | Photograph Taken: <input type="checkbox"/> Yes |

| | | | | | |
|---|---|--|-------|---|----------------------|
| Insulation Resistance Test (Buswork) | Test Preparation: Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source Isolated Cable Dest. / Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load Isolated | | | Note: Approval of City's Representative is required, prior to leaving cables connected during the test. | |
| | Test Voltage | Insulation Resistance (MΩ) Phase To GND | | | Temperature: °C |
| | | A | B | C | |
| | 2500 V | | | | |
| | Test Voltage | Insulation Resistance (MΩ) Phase To Phase | | | |
| A - B | | B - C | A - C | | |
| 2500 V | | | | | |
| Comments: | | | | | |



INSPECTION FORM
SWITCHGEAR, 4160V

ID:

| Ground Resistance | Point A | Point B | Resistance (μΩ) | Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed |
|-------------------|--------------------|---------------------------|-----------------|--|
| | Switchgear GND Bus | Facility Ground Electrode | | |
| | Switchgear GND Bus | Switchgear Enclosure | | |
| | Switchgear GND Bus | System Neutral | | |
| Comments: | | | | |

| Connection Resistance | To | From | Resistance (mΩ) | | | Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed |
|-----------------------|----|------|-----------------|---|---|--|
| | | | A | B | C | |
| | | | | | | |
| | | | | | | |
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| | | | | | | |
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| | | | | | | |
| Comments: | | | | | | |

| | | | | | |
|---------------------|---|-------------------|---|---|--|
| High Potential Test | Test Preparation: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source Isolated | | Note: Approval of City's Representative is required, prior to leaving cables connected during the test. | | |
| | Peak DC Test Voltage (1 minute duration) | Test Summary (mA) | | | Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed |
| | | A | B | C | |
| 12 kV | | | | | |
| Comments: | | | | | |

| | | | |
|----------------|-----------------------------------|--|-----------|
| Final Analysis | Returned to Service: | <input type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |
| | Monitoring / Inspection Required: | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| | Repair / Replacement Required: | <input type="checkbox"/> Yes <input type="checkbox"/> No | |

| | Company | Name | Signature | Date (yyyy/mm/dd) |
|--------------|---------|------|-----------|-------------------|
| Performed By | | | | |
| Checked By | | | | |

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