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How the New ANSI/SCTE 275 Grounding and Bonding Standard Can Improve Your Network Resiliency and Continuity

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Reliability, Resilience and Network Continuity

- Critical facilities are foundational to the network and the delivery of lifeline telecommunications services
- All infrastructure systems must be fully functional at all times
- Cable operators always focus on maintaining robust and redundant systems, but how often do they overlook the proper grounding and bonding of these infrastructure systems?
- A single electrical storm or utility surge can wreak havoc on network equipment in a critical facility, often creating significant performance issues that cost valuable time and money to repair, potentially resulting in a loss of customers
- ANSI/SCTE 275 2021 brings together the best practices and cable industry expertise and experience, helping to guide cable operators in the deployment of grounding and bonding systems that will enable them to meet their reliability targets and ensure resilience and continuity of the network

SCTE | STANDARDS

Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 275 2021

Electrical Grounding and Bonding for Cable Broadband Network Critical Facilities

Grounding and Bonding Task Force

- MSO contributions from Cox, Comcast, Shaw, Rogers, and Charter
- The Working Group reviewed current grounding practices of each of the MSOs over a period of 3 years
- Grounding and bonding Standards from electrical and telecommunications industries were also reviewed
- A ‘matrix’ document comparing the specific practices and requirements was developed and maintained

Overview of Section Content

- Exterior Grounding and Bonding System
- Interior Grounding and Bonding System
- Surge and Lightning Protection Systems
- Environmental Handling for ESD Sensitive Devices
- Commissioning and Maintenance
- Appendix - Sample Commissioning Checklist

Why we need this Standard

A reliable low impedance grounding and bonding system is important in communication networks for the following reasons:

- Personal Safety
- Equipment Protection
- Equipment Operation
- Electrical Noise Reduction
- Reliability & Resilience

Challenges

Variations in intent and approach

- From basic to 'overkill'

Collecting & aggregating specs

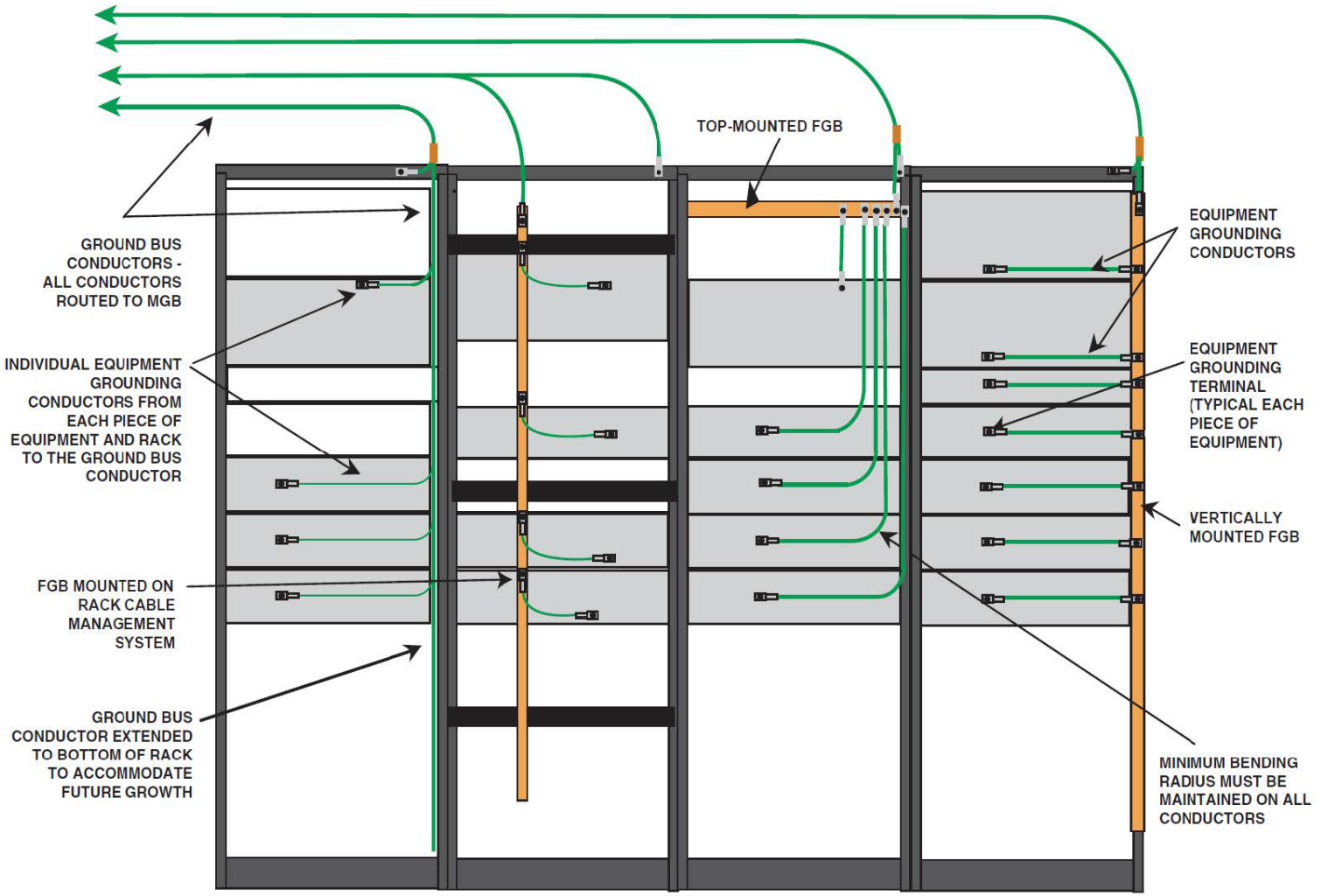
- Similarities & differences

Foundational to safety & reliability

- Awareness & education

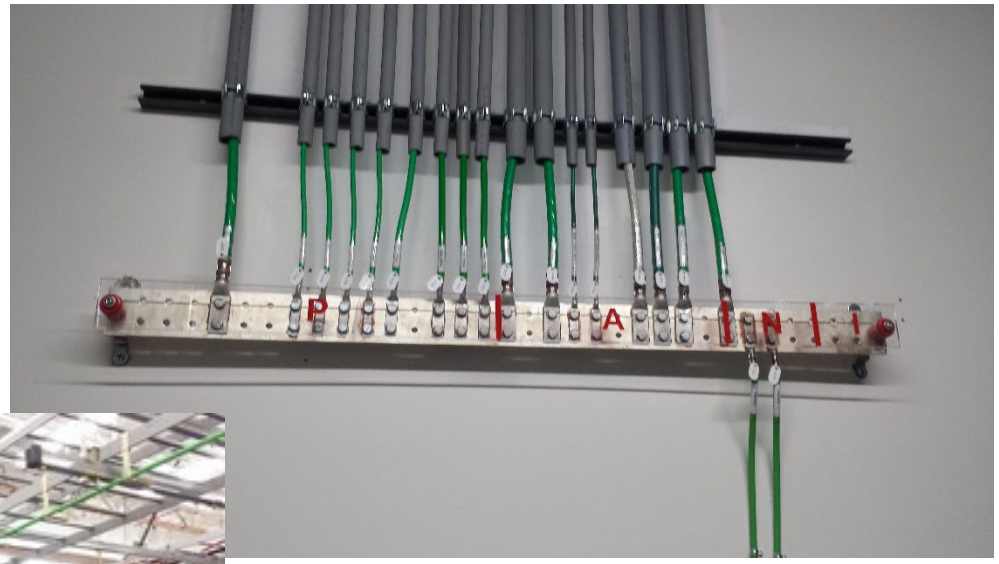
Large amount of reference material

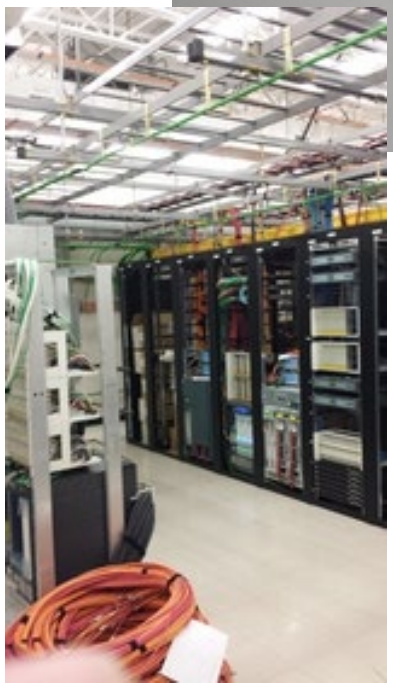
- Dozens of specifications, standards and white papers were reviewed

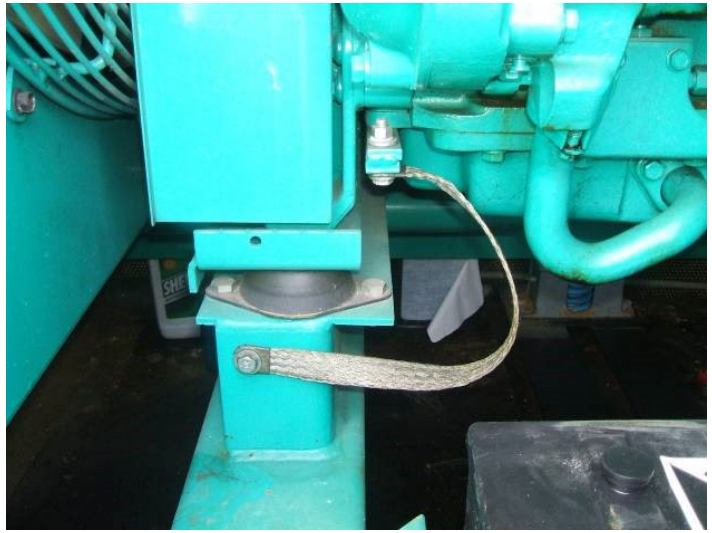


Benefits

- First grounding standard for MSO industry
- Brings together various specifications
- Lays the groundwork for safety & reliability of Critical Facilities from engineering design to ongoing maintenance
- Can be used to ensure vendors are using a standardized approach
- Commissioning checklist
- Educational opportunity for engineers and technicians

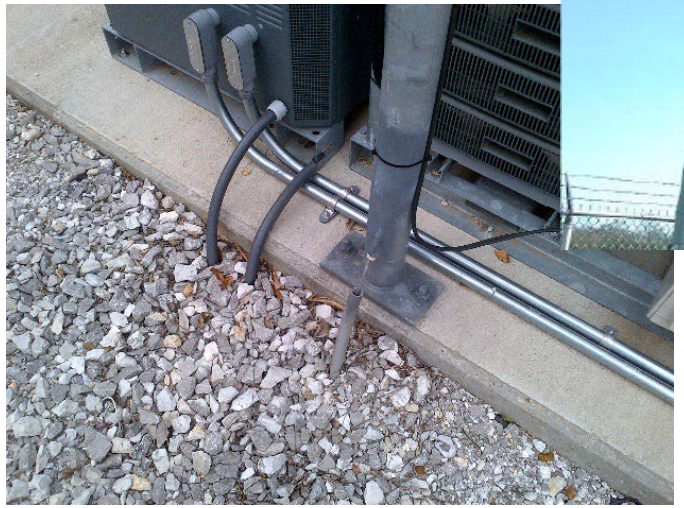


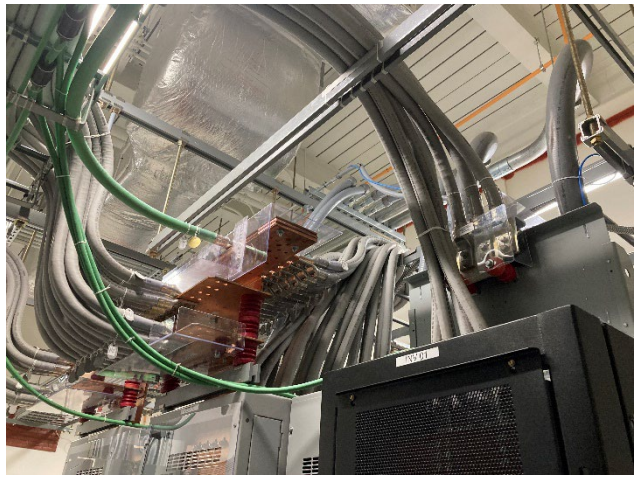




Exterior Grounding System

- Soil types & resistivity
- Tower grounding
- Exothermic welding
- Dissimilar metals
- Ground rings
- Inspection



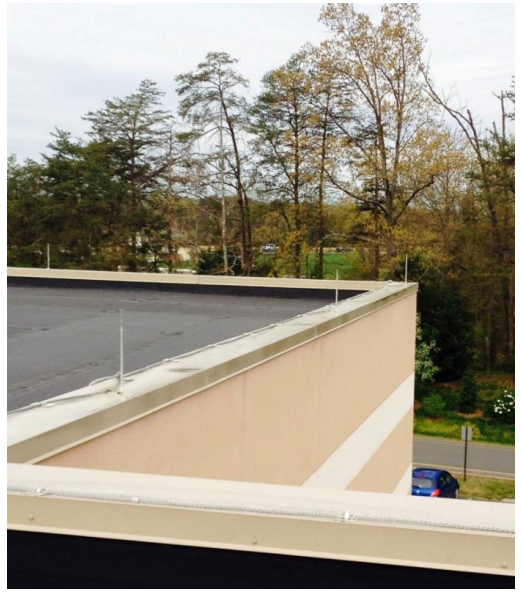


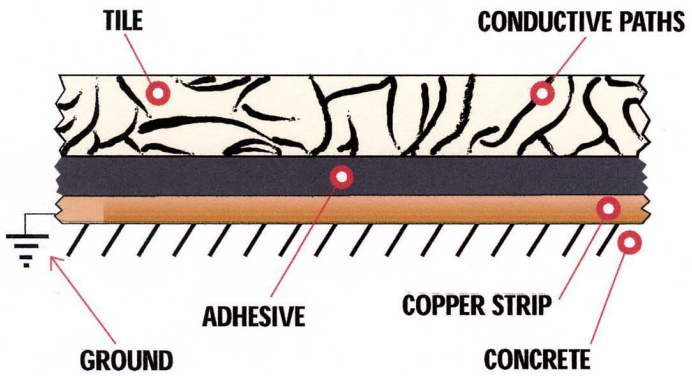
Interior Grounding System

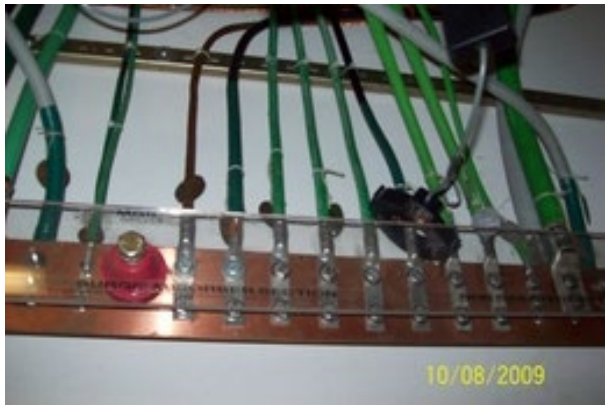
- Single-point ground
- Ground zones
- Master Ground Bar
- Equipment grounding
- Rack & frame grounding
- Cable entrance grounding

Surge and Lightning Protection Systems Humidity and Electrostatic Discharge

- Surge protection at multiple levels
- Lightning protection in all regions
- LPS tied to ground ring
- Humidity monitoring
- ESD floor tile
- Wrist straps







GROUNDING AND PROTECTION SYSTEM COMMISSIONING CHECKLIST

Name of Site: _____ **Location:**

Name of Inspector: ____ **Date:**

	YES	NO	N/A
A. Exterior Grounding System			
1. Were soil resistivity measurements made prior to the design of the grounding system?	☐	☐	☐
2. Was the exterior grounding system design based on these soil resistivity measurements and the soil boring report?	☐	☐	☐
3. Did the exterior grounding system resistance measurement meet the design criteria of 5 ohms or less?	☐	☐	☐
4. Is there a properly sized (#2 AWG minimum) bare copper grounding conductor buried around the building?	☐	☐	☐
5. Is this buried ground ring installed below the frost line or 30 inches, whichever is greater?	☐	☐	☐

Commissioning and Maintenance

- Critical to building function
- Safety & reliability
- Commissioning checklist
- Periodic system testing
- Visual inspections

Takeaways:

Differences of intent and approach to grounding

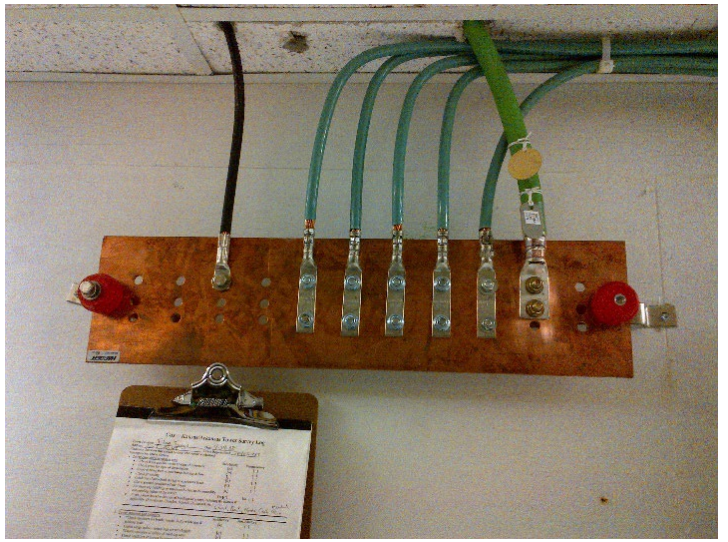
- This document provides harmonized & standard approach

Proper grounding & bonding is foundational to:

- Personnel safety
- Building integrity
- Equipment & network reliability

Use this document for:

- Engineers & technicians
- Vendors & contractors
- Education & training
- Ensuring resilience & network continuity



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Thank You!

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