

## Maintaining Electrical Equipment in Risers and Chases

---

Electrical conductors throughout a building are often installed in a way to remain out of sight in overhead plenums and hidden in vertical runs. These concealed spaces that allow service distribution equipment to be installed and accessed are referred to as chases. In multi-story buildings they are often referred to as risers. Properly assessing the condition and needs of equipment in these spaces may reduce the likelihood and severity of unexpected breakdowns or damage.

### Protective Considerations:

- Install electrical conductors and waterlines in separate riser and chases whenever possible. Where electrical cables or bus ducts are installed in chases also containing water lines, additional partitions should be used to separate or protect the conductors from leaks or condensation.
- Electrical conductors and associated equipment should be protected against mechanical damage and potential water intrusion. Cabling should be protected by being installed in conduit. Bus duct is normally well protected against mechanical damage, however only waterproof-rated bus duct should be installed in risers when there is a potential for water exposure. Installation of dikes and the use of alternate drains may prevent water leaks from entering risers.
- Short circuit and coordination studies are critical for the safe, efficient, and economical operation of any electrical distribution system. A short circuit study can help determine the theoretical maximum current value should a worst-case scenario electrical fault occur. The results of this study can help to ensure that equipment is protected by establishing proper circuit interrupting ratings. A coordination study maximizes power system flexibility by isolating faults to the nearest protective device, helping to avoid unnecessary service interruptions. These studies should be updated whenever changes are made to the electrical systems that may impact the validity of the previous studies.
- Properly rated overcurrent protection, either fuses, circuit breakers or some combination of the two, must be installed to protect conductors from current overloads. Ground fault circuit protection should also be installed. Electrical arcing events frequently start as ground faults, especially those caused by moisture.

### Maintenance Guidelines:

To help identify and mitigate potential issues that can develop over the life of the equipment, it is important to follow the preventative maintenance recommendations provided by the equipment manufacturer or other qualified service provider. All maintenance activities should be performed by qualified technicians or personnel.

- Chases may contain a combination of mechanical and electrical services. The mechanical support systems holding piping, cable, conduit, or busway in place should be periodically inspected to make sure there is no sagging or distortion. Additionally, fluid piping systems should be periodically checked for mechanical integrity.
- All electrical connections should be periodically inspected and retorqued as necessary. Arcing faults in risers often begin at loose and overheating bolted connections or at plug-in type connectors. Keeping electrical connections tight reduces the risk of electrical breakdowns.
- An annual infrared survey should be used to help identify components that may be overheating. Thermographic surveys may also be used to discover fault indicators in junction boxes, cable terminations and splices. It is important to note that some equipment covers may need to be removed from enclosures to properly perform a thermographic survey. Certified technicians or personnel should perform these tasks.
- Periodic insulation resistance testing, especially when trended over time, can identify aging insulation in bus ducts and electrical cables.
- If water is found to have entered a chase, the affected electrical system should be deenergized as soon as practical. The source of the water must be identified and repaired. All electrical equipment must be properly dried. The conductors' insulation resistance must be tested and verified to be at satisfactory levels prior to reenergizing. An appropriately qualified service provider should be consulted.

Maintain a detailed and well-documented testing history including the equipment, frequency and results. This practice can assist with identifying potential issues that can develop over the life the equipment.

## Maintaining Electrical Equipment in Risers and Chases

---



---

**boilerre.com**

The Travelers Indemnity Company and its property casualty affiliates. One Tower Square, Hartford, CT 06183

The information provided in this document is intended for use as a guideline and is not intended as, nor does it constitute, legal or professional advice. Travelers does not warrant that adherence to, or compliance with, any recommendations, best practices, checklists, or guidelines will result in a particular outcome. In no event will Travelers or any of its subsidiaries or affiliates be liable in tort or in contract to anyone who has access to or uses this information. Travelers does not warrant that the information in this document constitutes a complete and finite list of each and every item or procedure related to the topics or issues referenced herein. Furthermore, federal, state or local laws, regulations, standards or codes may change from time to time and the reader should always refer to the most current requirements. This material does not amend, or otherwise affect, the provisions or coverages of any insurance policy or bond issued by Travelers, nor is it a representation that coverage does or does not exist for any particular claim or loss under any such policy or bond. Coverage depends on the facts and circumstances involved in the claim or loss, all applicable policy or bond provisions, and any applicable law.

© 2021 The Travelers Indemnity Company. All rights reserved. Travelers and the Travelers Umbrella logo are registered trademarks of The Travelers Indemnity Company in the U.S. and other countries. 914-bre