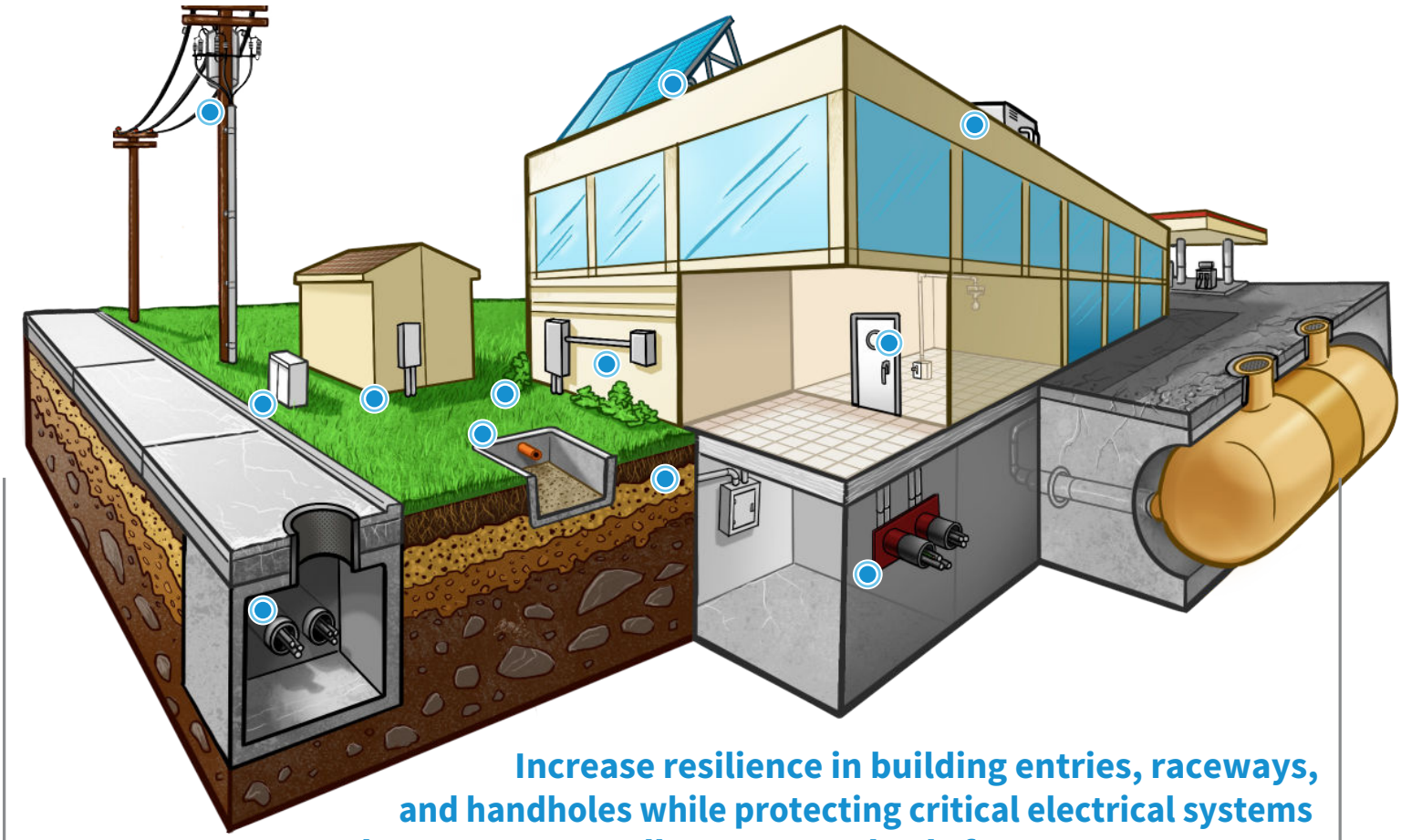
ACHIEVE RESILIENCY BY SEALING VULNERABILITIES

Polywater®
Solutions at work.



Increase resilience in building entries, raceways, and handholes while protecting critical electrical systems and components. Adhere to standards from NEC, TIA, BICSI, NESC, and ITU to achieve compliance and augment system hardening.

Global electrical & communications codes and standards

NEC 225.27
A raceway entering a structure from outside[1]

NEC 230.8
A service raceway entering a structure from underground[2]

NEC 300.5 (G)
Where moisture may contact live parts[3]

NEC 300.7 (A)
Preventing the circulation of warm air to a colder section[4]

NEC 300.50 (F)
Preventing moisture or gases entering from an underground system [5]

NESC 322 (b)(4)
The portion of a conduit installed through an exterior building wall[6]

ITU-T L.92
Sealing the ends in manholes and handholes[7]

ITU-T L.162
Sealing microducts[7]

TIA-758-B Standard 5.1.1.2.8
To resist liquid and gas infiltration[8]

TIA-758-B Standard 5.4.2.3
To restrict infiltration of gas, water, and vermin[8]

BICSI - TDMM
All underground conduits to prevent gases and water from entering[9]

NEC, National Electrical Code (NFPA 70)

1. **NEC 225.27** Raceway Seal. Where a raceway enters a building or structure from outside, it shall be sealed. Spare or unused raceways shall also be sealed. Sealants shall be identified for use with cable insulation, conductor insulation, bare conductor, shield, or other components.
2. **NEC 230.8** Raceway Seal. Where a service raceway enters a building or structure from an underground distribution system, it shall be sealed in accordance with 300.5(G). Spare or unused raceways shall also be sealed. Sealants shall be identified for use with the cable insulation, shield, or other components.
3. **NEC 300.5 (G)** Raceway Seals. Conduits or raceways through which moisture may contact live parts shall be sealed or plugged at either or both ends. Spare or unused raceways shall also be sealed. Sealants shall be identified for use with the cable insulation, conductor insulation, bare conductor, shield, or other components. Informational Note: Presence of hazardous gases or vapors may also necessitate sealing of underground conduits or raceways entering buildings.
4. **NEC 300.7 (A)** Sealing. Where portions of a raceway or sleeve are known to be problem, as in cold storage areas of buildings or where passing from the interior to the exterior of a building, the raceway or sleeve shall be filled with an approved material to prevent the circulation of warm air to a colder section of the raceway or sleeve. An explosion proof seal shall not be required for this purpose.
5. **NEC 300.50 (F)** Raceway Seal. Where a raceway enters from an underground system, the end within the building shall be sealed with an identified compound so as to prevent the entrance of moisture or gases, or it shall be so arranged to prevent moisture from contacting live parts.
6. **NESC, National Electrical Safety Code**
   NESC 322 (b)(4) The portion of a conduit installed through an exterior building wall.
7. **ITU, International Telecommunication Union**
   Rec. **ITU-T L.92** (10/2012)
   …sealing the ends of the plastic tubes (at the manholes/pits of our underground infrastructure) with foam filler Water pumps, sealed pipe ends; draining water out (from pits) whenever necessary using water pumps; sealing the ends of the plastic tubes (at the manholes/pits of our underground infrastructure) with foam filler.

   Outside plant facilities are also damaged by floods. Water can enter manholes, hand-holes and cable tunnels, which can cause telecommunication equipment to break down. Therefore, manholes and hand-holes are required to be water tight. Cables entering or exiting a manhole or hand-hole have to be sealed. Cables in a manhole should be tied to shelves away from the manhole floor to avoid damage by water when water leaks into a manhole. In the cable tunnels, waterproof doors and water pumps should be provided.

   Rec. **ITU-T L.162** (11/2016)
   It is mandatory to use pipe – microduct sealing elements (sealing between pipe and microducts), in order to ensure both the seal against the entry of liquids and gases and to avoid slipping, and microduct split elements to protect the branch of microducts. Microcable should be sealed to the microduct both in the cable chamber adjacent to the building as well as inside the building. The installation of empty (spare) microducts that do not contain microcables, should also be sealed in the cable chamber, inside the building.
8. **TIA, Telecommunications Industry Association**
   Complies with TIA-758-B Standard
   5.1.1.2.8: Ducts shall be sealed to resist liquid and gas infiltration at all maintenance holes and building entrance point locations.
   5.4.2.3: All conduits shall be plugged to restrict infiltration of gas, water, and vermin. To further ensure that gases do not enter the building, a venting system may need to be installed external to the building.
9. **BICSI-TDMM, Telecommunications Distribution Methods Manual**
   Seal all underground conduits to prevent gases and water from entering the building or other MHs via the ductbank.